

Aims of my talk (1):

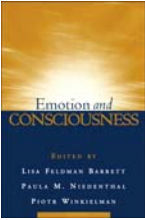
- ◆ Show how affect guides:
 - Judgments and decision
 - Behavior





Aims of my talk (2):


- ◆ Explore the role of consciousness of:
 - Affective stimulus
 - Affective reactions
- ◆ Is there "unconscious emotion"?






What is an affect/emotion?

A set of loosely coordinated changes in:

1. Cognition – perception, attention, memory, reasoning
2. Motivation – general behavioral direction, action tendency
3. Expression -- facial, vocal, postural
4. Physiology – peripheral changes (reflexes, HR, SCR, etc)
5. Subjective Feeling – **conscious experience**,
"what it's like to be in that state"



Traditional position: Conscious feeling is considered a central or even necessary component of affect

- ◆ James: "*Take away the feeling, and there is nothing left to call emotion.*"
 - From: *What is an emotion?* 1894
- ◆ Freud: "*It is surely of the essence of an emotion that we should feel it*".
 - From: *The Unconscious*, 1915
- Clore: "*In agreement with Freud, I would argue that it is not possible to have an unconscious emotion because emotion involves an experience, and one cannot have an experience that is not experienced*"
 - From: *Why emotions are never unconscious*, 1994

The emphasis on conscious experience permeates social psychology

- 1) Presence/absence of emotion is determined by asking people about their conscious experience.
(e.g., mood questionnaires, affective checklists, etc)
- 2) Affect influence is often thought of as resulting from the use of conscious experience as a shortcut to judgment
(e.g., "Feeling as information" model)

But, does unconscious emotion exist?

◆ Emotion =

- ◆ Behavior
- ◆ Cognition
- ◆ Expression
- ◆ Physiology
- ◆ ~~Experience~~



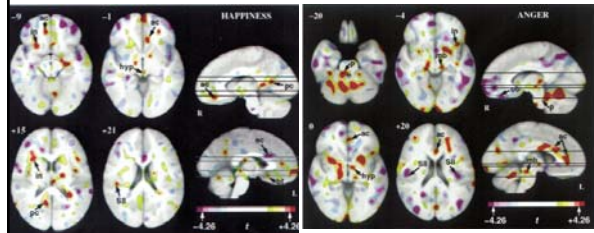
Berridge & Winkelman, 2005, Winkelman & Berridge, 2006, Winkelman, Berridge, & Wilbarger, 2006

Clues from social and cognitive psychology

◆ People in this room!

Clues from neuroscience . . .

Typically, emotion is represented across the whole brain

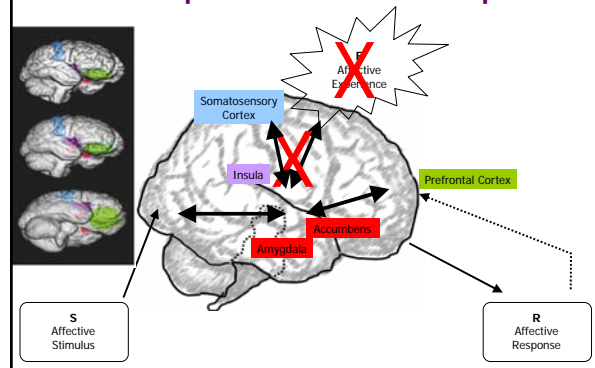


Subcortical and cortical brain activity during the feeling of self-generated emotions

Damasio et al. 2000

But . . .

Regions contribute differently to affective response and affective experience



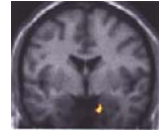
Evidence

Amygdala supports several basic affect-cognition processes

Amygdala activates to basic affective stimuli

- Faces, even subliminal
- Words, even subliminal (intercranial)

DeGelder, Naccache, Morris, Ohman, & Dolan, Vuilleumier, Whalen, etc



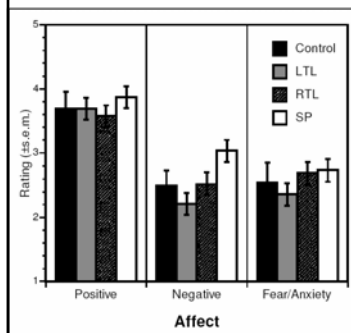
Amygdala damage impairs affective modulation of:

- Attention and perception
- Memory (conditioning and arousal-potentiated memory)
- Reflexes (startle, etc)

Adolphs, Bechara, Damasio, Phelps, etc



But, sometimes amygdala damage does not impair affective experience.



Procedure: PANAS. Participants rate on a scale: 1 = "very slightly or not at all"; 5 = "extremely" the extent of experienced positive-, negative-, and anxiety/fear-related affect during the past week/month/year.

Participants:
 - Control
 - LTL = left temporal lobectomy
 - RTL = right temporal lobectomy
 - S.P. = patient with bilateral amygdala damage

Anderson & Phelps, 2002.

Insula supports conscious feelings and introspective access

- Insula activates to a variety of "sensations" (*Craig, Critchley, etc*)
- Insula damage impairs experience (*Bechara & Damasio, etc*)

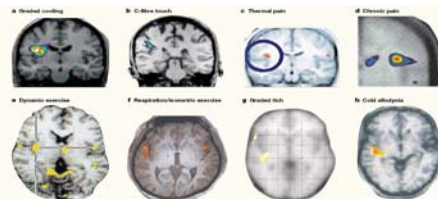
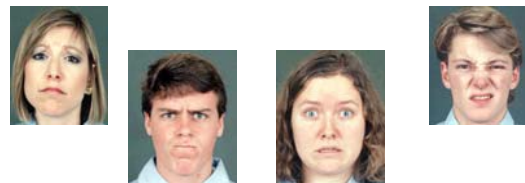


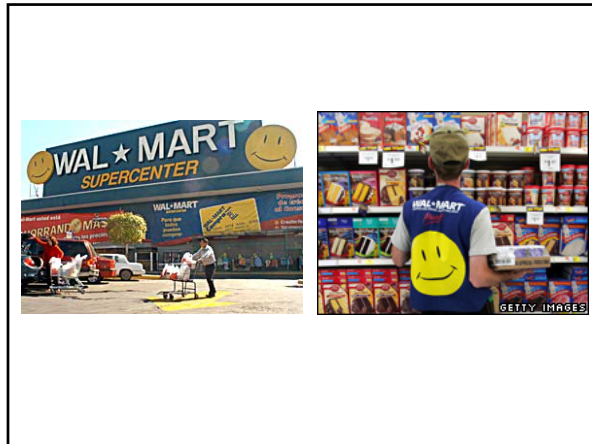
Figure 4 Activation of the interoceptive cortex in the dorsal posterior insula by various modalities. a) Cooled cooling experiment, with participants from 800 to 2000 Millikan-Magnum (M.M.) in control (n=4) and with insularity (n=4) in the anterior-posterior (AP) axis. b) Cold stimulation for 10-second experiment, with participants from 800 to 2000 Millikan-Magnum (M.M.) in control (n=4) and with insularity (n=4) in the anterior-posterior (AP) axis. c) Thermal pain for 10-second experiment, with participants from 800 to 2000 Millikan-Magnum (M.M.) in control (n=4) and with insularity (n=4) in the anterior-posterior (AP) axis. d) Thermal pain for 10-second experiment, with participants from 800 to 2000 Millikan-Magnum (M.M.) in control (n=4) and with insularity (n=4) in the anterior-posterior (AP) axis. e) Thermal pain for 10-second experiment, with participants from 800 to 2000 Millikan-Magnum (M.M.) in control (n=4) and with insularity (n=4) in the anterior-posterior (AP) axis. f) Thermal pain for 10-second experiment, with participants from 800 to 2000 Millikan-Magnum (M.M.) in control (n=4) and with insularity (n=4) in the anterior-posterior (AP) axis. g) Thermal pain for 10-second experiment, with participants from 800 to 2000 Millikan-Magnum (M.M.) in control (n=4) and with insularity (n=4) in the anterior-posterior (AP) axis. h) Thermal pain for 10-second experiment, with participants from 800 to 2000 Millikan-Magnum (M.M.) in control (n=4) and with insularity (n=4) in the anterior-posterior (AP) axis. i) Thermal pain for 10-second experiment, with participants from 800 to 2000 Millikan-Magnum (M.M.) in control (n=4) and with insularity (n=4) in the anterior-posterior (AP) axis. j) Thermal pain for 10-second experiment, with participants from 800 to 2000 Millikan-Magnum (M.M.) in control (n=4) and with insularity (n=4) in the anterior-posterior (AP) axis. k) Thermal pain for 10-second experiment, with participants from 800 to 2000 Millikan-Magnum (M.M.) in control (n=4) and with insularity (n=4) in the anterior-posterior (AP) axis. l) Thermal pain for 10-second experiment, with participants from 800 to 2000 Millikan-Magnum (M.M.) in control (n=4) and with insularity (n=4) in the anterior-posterior (AP) axis. m) Thermal pain for 10-second experiment, with participants from 800 to 2000 Millikan-Magnum (M.M.) in control (n=4) and with insularity (n=4) in the anterior-posterior (AP) axis. n) Thermal pain for 10-second experiment, with participants from 800 to 2000 Millikan-Magnum (M.M.) in control (n=4) and with insularity (n=4) in the anterior-posterior (AP) axis. o) Thermal pain for 10-second experiment, with participants from 800 to 2000 Millikan-Magnum (M.M.) in control (n=4) and with insularity (n=4) in the anterior-posterior (AP) axis. p) Thermal pain for 10-second experiment, with participants from 800 to 2000 Millikan-Magnum (M.M.) in control (n=4) and with insularity (n=4) in the anterior-posterior (AP) axis. q) Thermal pain for 10-second experiment, with participants from 800 to 2000 Millikan-Magnum (M.M.) in control (n=4) and with insularity (n=4) in the anterior-posterior (AP) axis. r) Thermal pain for 10-second experiment, with participants from 800 to 2000 Millikan-Magnum (M.M.) in control (n=4) and with insularity (n=4) in the anterior-posterior (AP) axis. s) Thermal pain for 10-second experiment, with participants from 800 to 2000 Millikan-Magnum (M.M.) in control (n=4) and with insularity (n=4) in the anterior-posterior (AP) axis. t) Thermal pain for 10-second experiment, with participants from 800 to 2000 Millikan-Magnum (M.M.) in control (n=4) and with insularity (n=4) in the anterior-posterior (AP) axis. u) Thermal pain for 10-second experiment, with participants from 800 to 2000 Millikan-Magnum (M.M.) in control (n=4) and with insularity (n=4) in the anterior-posterior (AP) axis. v) Thermal pain for 10-second experiment, with participants from 800 to 2000 Millikan-Magnum (M.M.) in control (n=4) and with insularity (n=4) in the anterior-posterior (AP) axis. w) Thermal pain for 10-second experiment, with participants from 800 to 2000 Millikan-Magnum (M.M.) in control (n=4) and with insularity (n=4) in the anterior-posterior (AP) axis. x) Thermal pain for 10-second experiment, with participants from 800 to 2000 Millikan-Magnum (M.M.) in control (n=4) and with insularity (n=4) in the anterior-posterior (AP) axis. y) Thermal pain for 10-second experiment, with participants from 800 to 2000 Millikan-Magnum (M.M.) in control (n=4) and with insularity (n=4) in the anterior-posterior (AP) axis. z) Thermal pain for 10-second experiment, with participants from 800 to 2000 Millikan-Magnum (M.M.) in control (n=4) and with insularity (n=4) in the anterior-posterior (AP) axis.

Can we dissociate "affective reaction" and "conscious experience" in typical participants?



facial expressions!





Affective regulation of behavior

Sroufe, L.A., Enns, B.N., Campbell, J., & Kitzmann, M. (1982) Maternal emotional signaling: Its effect on the visual cliff behaviour of 1-year-olds. *Developmental Psychology*, 21(1) 195-200.

Unconscious affect should guide behavior towards consumption stimuli

No effects on consciously reported mood

Panas (Positive Affect/Negative Affect schedule)

• 20 adjectives

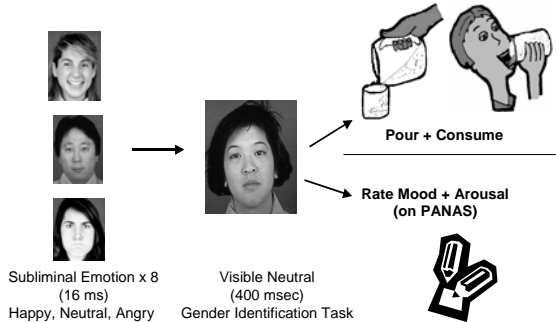
To what extent you feel

Right now, how positive-negative do you feel?

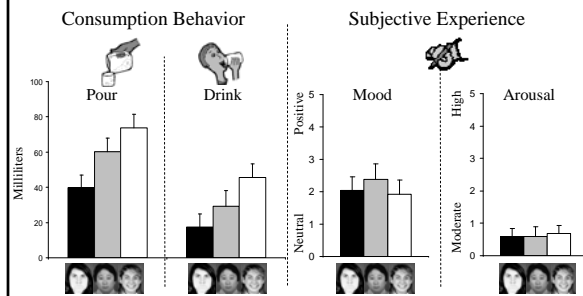


Procedure of Study 1 – Pour and Consume

PRE-EXPERIMENTAL MEASURE – How thirsty are you?

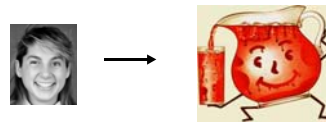


Results of Study 1



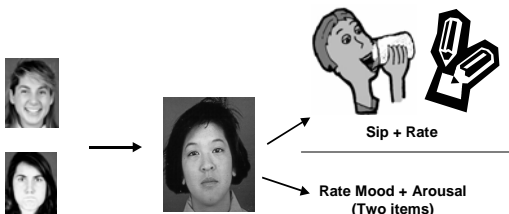
How does it work? Affect changes perception of value and desirability of the drink attributes

◆ A bump in valence and salience landscape

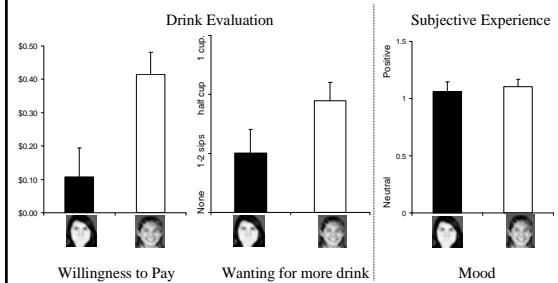


Procedure of Study 2 – Sip and Rate

PRE-EXPERIMENTAL MEASURE – How thirsty are you?



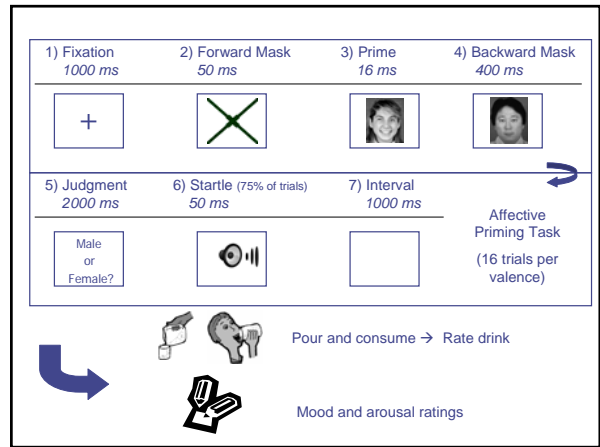
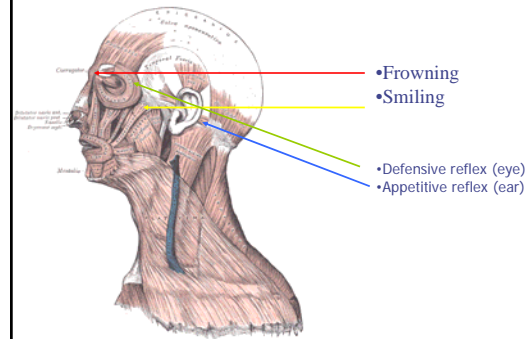
Results of Study 2



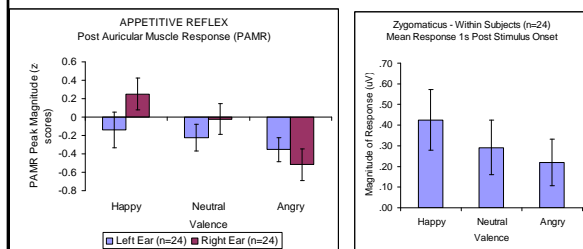
But is there affect in there?

◆ Kool-aid in physio lab

Psychophysiological Measures



Physiological Response to Affective Primes



Faces and gambles

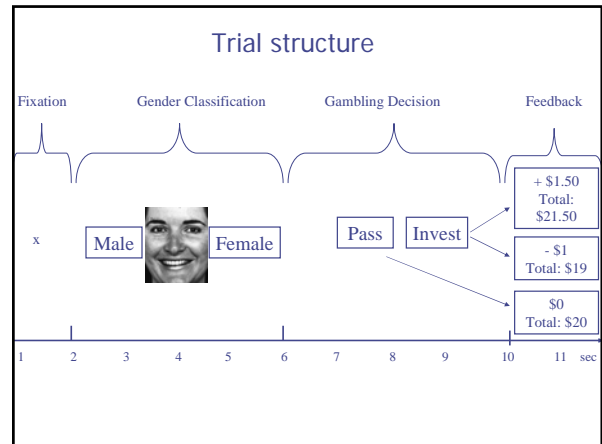
◆ Going beyond simple biological behaviors (consumption).



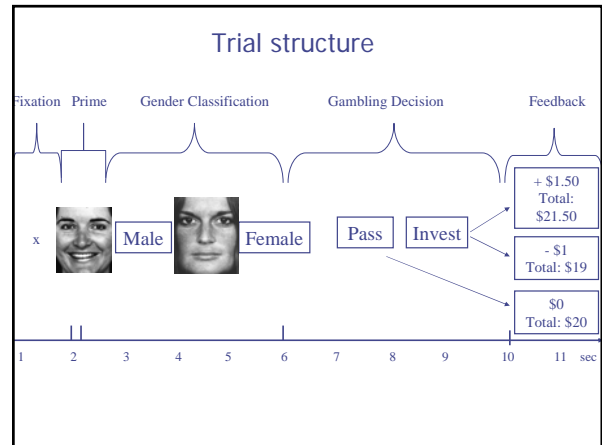
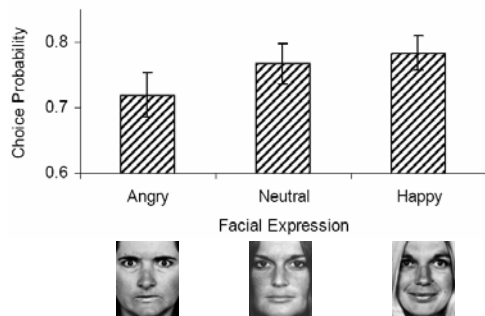
Subliminal gamble movie from Canada

Affective Priming Meets Myopic Gambling

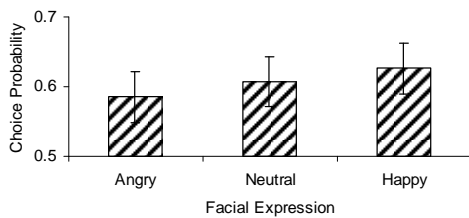
- ◆ Gender judgment on supraliminal but unobtrusive emotional face (angry, neutral, happy).
- ◆ Participant decides whether to gamble \$1.00 from his/her bank account (starting at \$20).
 - If pass, account stays the same.
 - If gamble, a 50% chance of winning additional \$1.50, a 50% chance of losing \$1.00.



Probability of choosing the risky option as a function of supraliminal facial expression

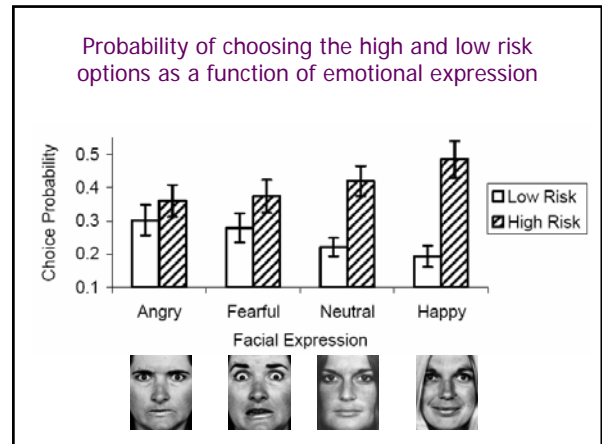
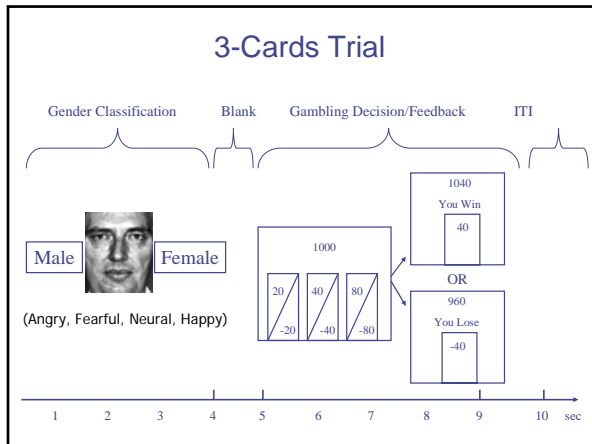


Probability of choosing the risky option as a function of subliminal facial expression



Do positive expression just make you "do" something?

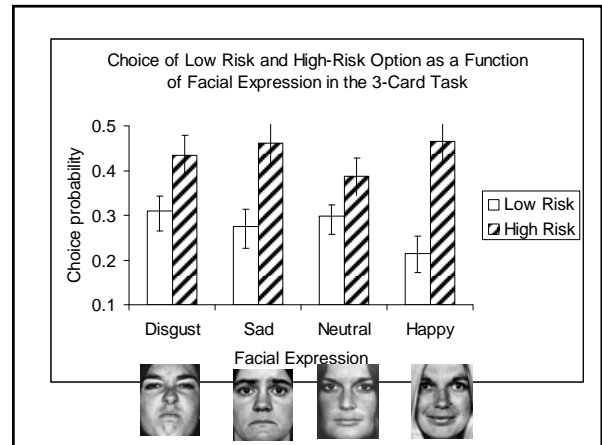
- ◆ Positive affect -> Action (invest)
- ◆ Negative affect -> Inaction (pass)



Is this about "valence" effect or meaning of specific emotion?

- ◆ +/- (positive/negative)
- ◆ Specific:
 - Happy
 - Angry
 - Fear

 - Sad
 - Disgust



Self-reported mood changes

- ◆ Did the faces you were presented with have any influence on your feelings?
 - NO -- the faces did not make me feel any differently
 - YES -- they did make me feel differently.



What is the role of conscious feelings?

■ Extreme position:

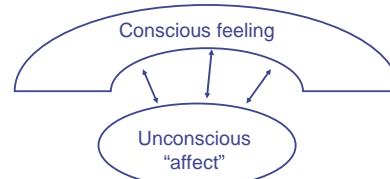
- ♦ “Conscious feelings are like icing on the affective cake – nice, but not necessary” (LeDoux)

■ Moderate position:

- ♦ Conscious feelings are like a human pilot on a modern airplane – useful, fun, and sometimes indispensable (communication, regulation, control, monitoring etc).

Affective Brain is Interactive

- ◆ Unconscious and conscious affective processes typically interact in triggering, experience, expression and regulation of affect. On some occasions, they can be dissociated.



Summary

- ◆ Affective reactions can have unconscious causes
- ◆ Affective reaction itself can be unconscious (yet drive consequential behavior).
- ◆ Conscious vs. unconscious affect can dissociate in typical participants.
- ◆ Impact ranges from basic judgments to consumptive behavior and financial judgments

Thanks To:

- Kent Berridge
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