

### Aims of my talk (1):

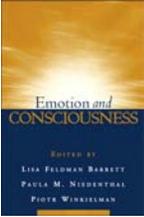
- ◆ Show how affect guides:
  - Judgments and decision
  - Behavior





### 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~~



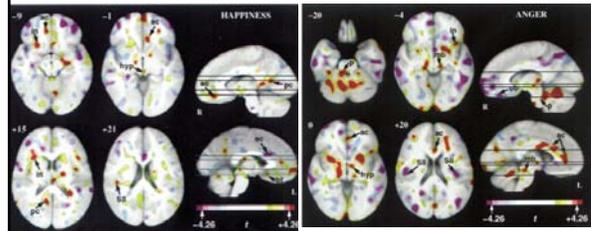
Berridge & Winkelman, 2005, Winkelman & Berridge, 2006, Winkelman, Berridge, & Wilbarger, 2006

Clues from social and cognitive psychology . . . .

◆ People in this room!

Clues from neuroscience . . .

Typically, emotion is represented across the whole brain

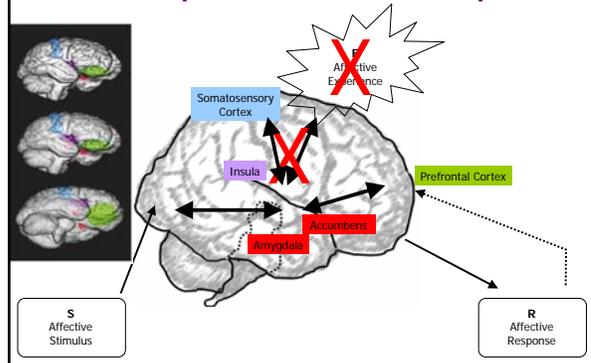


Subcortical and cortical brain activity during the feeling of self-generated emotions

Damasio et al. 2000

But . . .

Regions contribute differently to affective response and affective experience



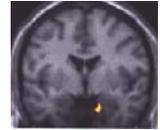
## Evidence

## 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*



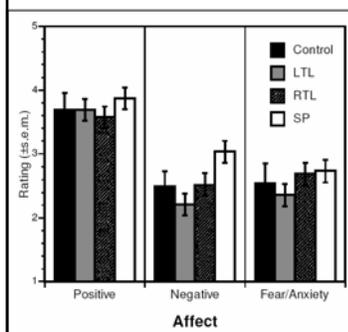
### Amygdala damage impairs affective modulation of:

- 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.



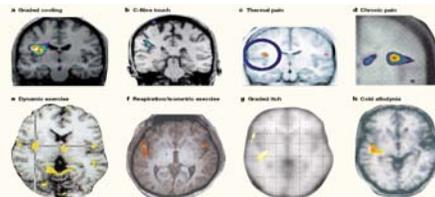
**Procedure:** PANAS. Participants rate on a scale: 1 = "very slightly or not at all"; 5 = "extremely" the extent of experienced positive-, negative-, and anxiety/fear-related affect during the past week/month/year.

**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*)



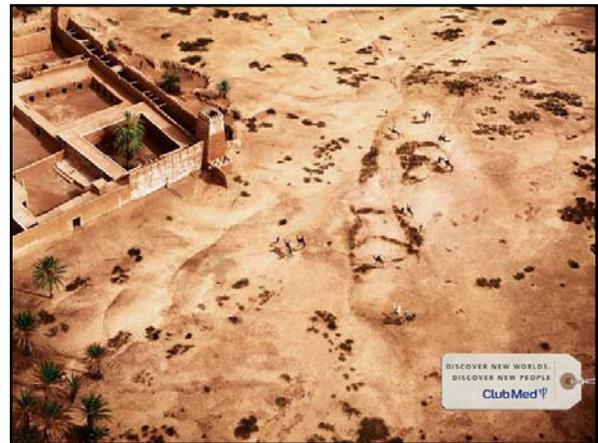
**Figure 4** Activation of the interoceptive cortex in the dorsal posterior insula by various modalities. a) Tasted cooling experience, with participants from 800 to 2000. b) Mouth-to-mouth contact, with participants from 800 to 2000. c) Mouth-to-mouth contact with a partner, with participants from 800 to 2000. d) Mouth-to-mouth contact with a partner, with participants from 800 to 2000. e) Mouth-to-mouth contact with a partner, with participants from 800 to 2000. f) Mouth-to-mouth contact with a partner, with participants from 800 to 2000. g) Mouth-to-mouth contact with a partner, with participants from 800 to 2000. h) Mouth-to-mouth contact with a partner, with participants from 800 to 2000. i) Mouth-to-mouth contact with a partner, with participants from 800 to 2000. j) Mouth-to-mouth contact with a partner, with participants from 800 to 2000. k) Mouth-to-mouth contact with a partner, with participants from 800 to 2000. l) Mouth-to-mouth contact with a partner, with participants from 800 to 2000. m) Mouth-to-mouth contact with a partner, with participants from 800 to 2000. n) Mouth-to-mouth contact with a partner, with participants from 800 to 2000. o) Mouth-to-mouth contact with a partner, with participants from 800 to 2000. p) Mouth-to-mouth contact with a partner, with participants from 800 to 2000. q) Mouth-to-mouth contact with a partner, with participants from 800 to 2000. r) Mouth-to-mouth contact with a partner, with participants from 800 to 2000. s) Mouth-to-mouth contact with a partner, with participants from 800 to 2000. t) Mouth-to-mouth contact with a partner, with participants from 800 to 2000. u) Mouth-to-mouth contact with a partner, with participants from 800 to 2000. v) Mouth-to-mouth contact with a partner, with participants from 800 to 2000. w) Mouth-to-mouth contact with a partner, with participants from 800 to 2000. x) Mouth-to-mouth contact with a partner, with participants from 800 to 2000. y) Mouth-to-mouth contact with a partner, with participants from 800 to 2000. z) Mouth-to-mouth contact with a partner, with participants from 800 to 2000.

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



facial expressions!





**Affective regulation of behavior**

Source: J.F., Enns, R.N., Campbell, J., & Kibbert, M. (1982) Maternal emotional signaling: Its effect on the visual cliff behaviour of 1-year-olds. Developmental Psychology, 21(2) 195-200

Unconscious affect should guide behavior towards consumption stimuli

## No effects on consciously reported mood

Panas (Positive Affect/Negative Affect schedule)

• 20 adjectives

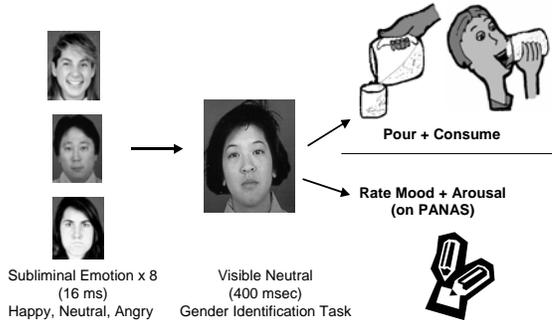
To what extent you feel .....

Right now, how positive-negative do you feel?

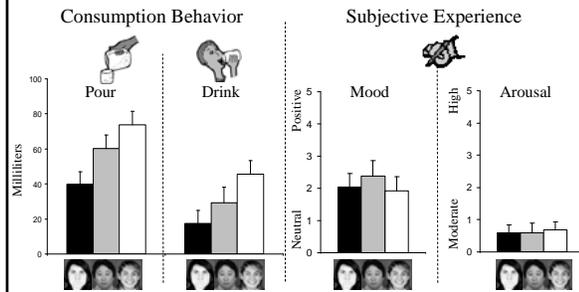


## Procedure of Study 1 – Pour and Consume

PRE-EXPERIMENTAL MEASURE – How thirsty are you?

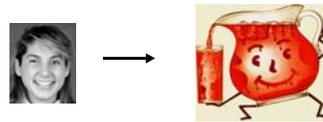


## Results of Study 1



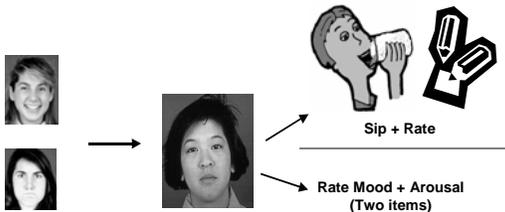
**How does it work?**  
Affect changes perception of value and desirability of the drink attributes

◆ A bump in valence and salience landscape



## Procedure of Study 2 – Sip and Rate

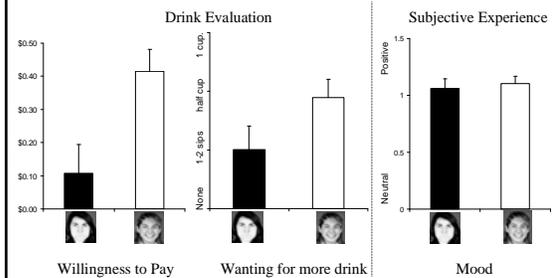
PRE-EXPERIMENTAL MEASURE – How thirsty are you?



Subliminal Emotion x 8 (16 ms)  
Happy, Angry

Visible Neutral (400 msec)  
Gender Identification Task

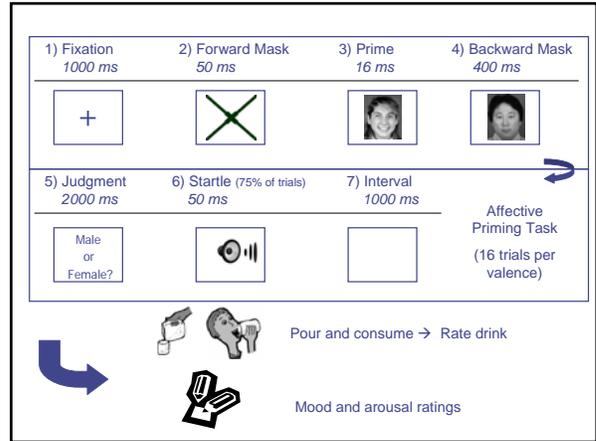
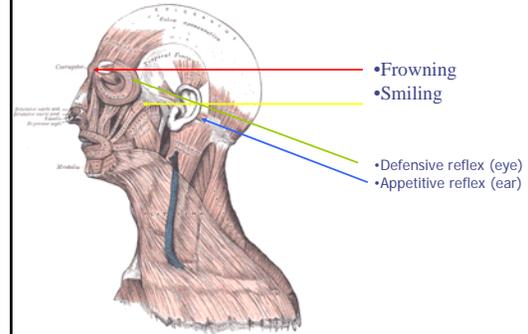
## Results of Study 2



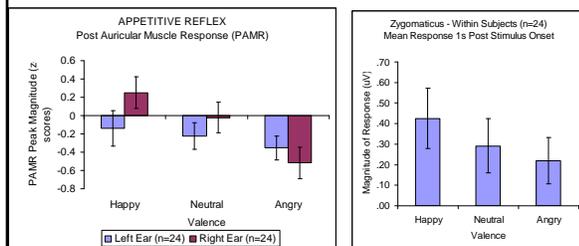
But is there affect in there?

◆Kool-aid in physio lab

### Psychophysiological Measures



### Physiological Response to Affective Primes



### Faces and gambles

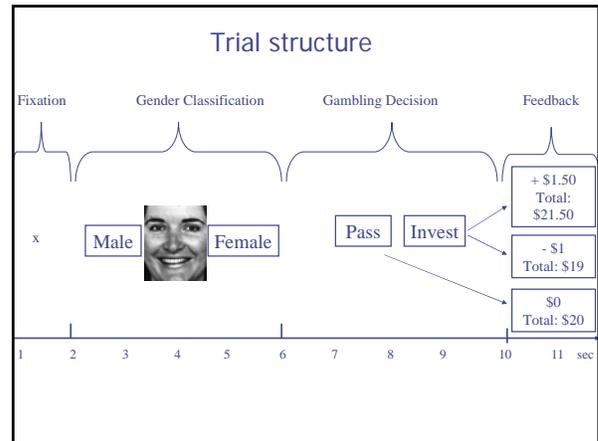
◆Going beyond simple biological behaviors (consumption).



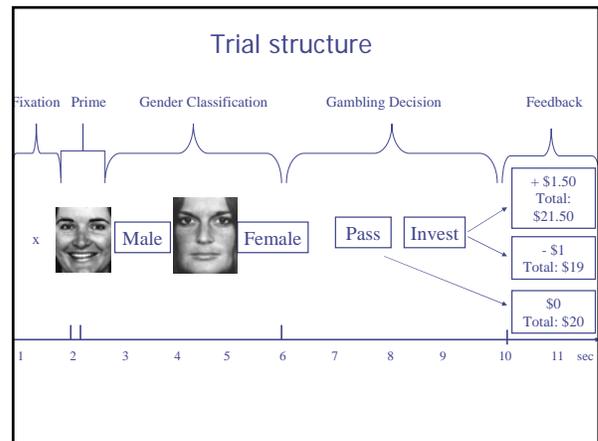
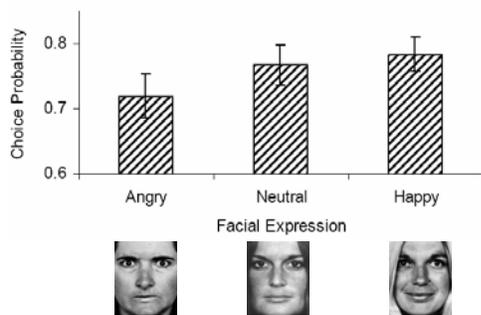
Subliminal gamble movie from Canada

## Affective Priming Meets Myopic Gambling

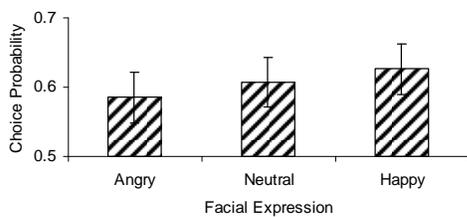
- ◆ Gender judgment on supraliminal but unobtrusive emotional face (angry, neutral, happy).
- ◆ Participant decides whether to gamble \$1.00 from his/her bank account (starting at \$20).
  - If pass, account stays the same.
  - If gamble, a 50% chance of winning additional \$1.50, a 50% chance of losing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



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

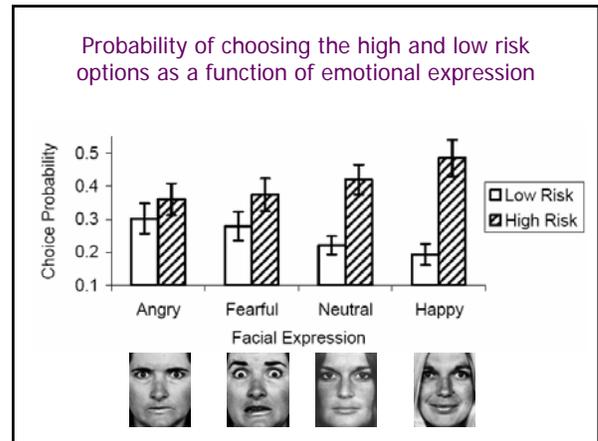
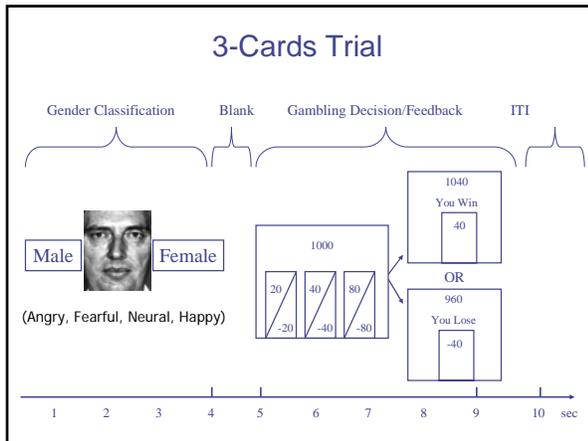


## Probability of choosing the risky option as a function of subliminal facial expression



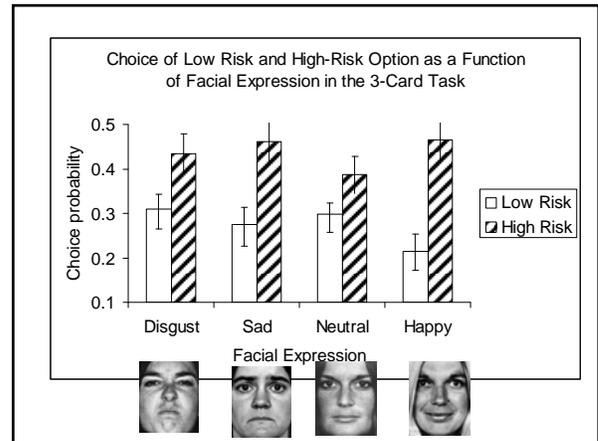
## Do positive expression just make you "do" something?

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



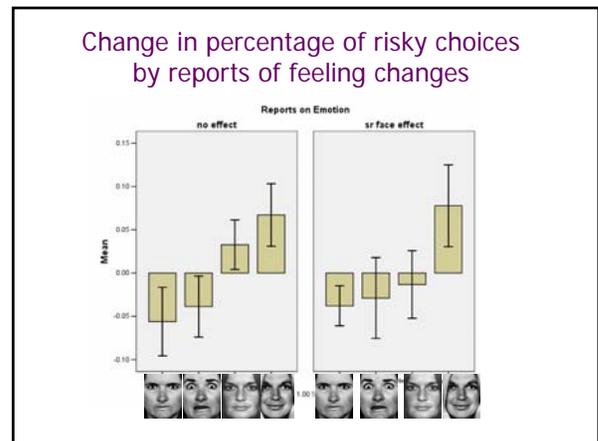
### Is this about “valence” effect or meaning of specific emotion?

- ◆ +/- (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:

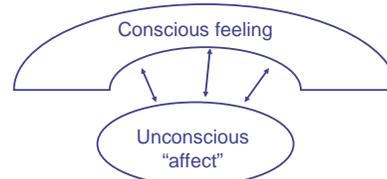
- ♦ “Conscious feelings are like icing on the affective cake – nice, but not necessary” (LeDoux)

#### ■ 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:

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