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

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 . . .
Evidence

Amygdala supports several basic affect-cognition processes

Amygdala activates to basic affective stimuli
- Faces, even subliminal
- Words, even subliminal (intercranial)

DeGelder, Naccache, Morris, Öhman, & 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.

Insula supports conscious feelings and introspective access

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

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

facial expressions!
Affective regulation of behavior

Unconscious affect should guide behavior towards consumption stimuli
No effects on consciously reported mood

Panas (Positive Affect/ Negative Affect schedule)
- 20 adjectives
To what extend 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
Consumption Behavior
Subjective Experience

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
Drink Evaluation
Subjective Experience

Willingness to Pay Wanting for more drink Mood
But is there affect in there?

\[ \text{Kool-aid in physio lab} \]

Psychophysiological Measures

- Frowning
- Smiling
- Defensive reflex (eye)
- Appetitive reflex (ear)

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Fixation</td>
</tr>
<tr>
<td>2</td>
<td>Forward Mask</td>
</tr>
<tr>
<td>3</td>
<td>Prime</td>
</tr>
<tr>
<td>4</td>
<td>Backward Mask</td>
</tr>
<tr>
<td>5</td>
<td>Judgment</td>
</tr>
<tr>
<td>6</td>
<td>Startle (75% of trials)</td>
</tr>
<tr>
<td>7</td>
<td>Interval</td>
</tr>
</tbody>
</table>

Affective Priming Task

Male or Female?

Physiological Response to Affective Primes

APPETITIVE REFLEX
Post Auricular Muscle Response (PAMR)

<table>
<thead>
<tr>
<th>Valence</th>
<th>Zygomaticus - Within Subjects (n=6) Mean Response 1s Post Stimulus Onset</th>
</tr>
</thead>
<tbody>
<tr>
<td>Happy</td>
<td><img src="image" alt="Graph showing response to valence" /></td>
</tr>
<tr>
<td>Neutral</td>
<td><img src="image" alt="Graph showing response to valence" /></td>
</tr>
<tr>
<td>Angry</td>
<td><img src="image" alt="Graph showing response to valence" /></td>
</tr>
</tbody>
</table>

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)
3-Cards Trial

<table>
<thead>
<tr>
<th>Gender Classification</th>
<th>Blank</th>
<th>Gambling Decision/Feedback</th>
<th>ITI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Angry, Fearful, Neutral, Happy)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

10/40

You Win

40

You Lose

40

+/- (positive/negative)

Specific:

- Happy
- Angry
- Fear
- Sad
- Disgust

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

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).

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

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.

Thanks To:

- Kent Berridge
- Brian Knutson
- Martin Paulus
- Norbert Schwarz
- Mark Starr
- Jenny Trujillo
- Julie Wilbarger
- Bob Zajonc
- NSF