Human Emotion

Psychology 3131
Professor June Gruber
Thought Exercise
Human Emotion

Emotion Elicitation & Measurement
What Makes us Emotional?
Roadmap

Course Logistics

Triggering Emotions

Measuring Emotions

Expert Interview
Logistics

Course Email Reminder
june.gruber@colorado.edu “PSYC 3131” subject line

Office Hours
Notify 24 hrs in advance if planning to attend so can reserve spot

Reading Responses (Example on Website)
Respond to all required readings (1 page max across readings)
Roadmap

Course Logistics

Triggering Emotions

Measuring Emotions

Expert Interview
Reactivity

The type, magnitude and duration of responses in response to internal and external environment and have significance for personal goals (Levenson, 2007).
<table>
<thead>
<tr>
<th>Reactivity</th>
<th>Regulation</th>
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<td>The processes by which individuals influence which emotions they have, when they have them, and how they experience and express these emotions (Gross, 1998).</td>
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<th>Film Clips</th>
<th>Static Photos</th>
<th>Relived Emotions</th>
<th>Dyadic Interactions</th>
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<tr>
<td>Music &amp; Singing</td>
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Directed Facial Action Task

Music & Singing

Acoustic Startle Reflex

Startle Eyeblink Modulation

Dyadic Interactions

Relived Emotions

Static Photos

Film Clips

Relived Emotions

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Static Photos

Film Clips
Film Clips

Positive Film

Negative Film

Neutral Film
Film Clips

HAP

Courtesy: Sarah Hughes (USA) - 2002 Salt Lake City, Figure Skating, Ladies' Free Skate. Originally aired by NBC Sports 2002. Clip appearing on YouTube.
Film Clips

HAP

Courtesy: Andy Roddick, US Open
Film Clips

Courtesy: I Love Lucy
Film Clips

LAN

Film Clips
NEU

Courtesy: Sticks Screensaver
## Film Clips Summary

<table>
<thead>
<tr>
<th>Emotion Processes</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reactivity</td>
<td>Good ecological validity (dynamic, socially embedded)</td>
<td>High cognitive demands (thematically complex)</td>
</tr>
<tr>
<td>Regulation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Understanding</td>
<td></td>
<td>Cannot elicit all emotions (e.g., anger)</td>
</tr>
</tbody>
</table>

Levenson, 2007; Rottenberg, Ray & Gross, 2007
Static Photos
International Affective Picture System
Static Photos

Emotional Faces
# Static Photos Summary

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<tr>
<th>Emotion Processes</th>
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<tbody>
<tr>
<td>Reactivity</td>
<td>Low Cognitive Demand</td>
<td>Limited range of emotions (e.g., IAPS biased towards disgust, amusement, sexual arousal)</td>
</tr>
<tr>
<td>Regulation</td>
<td>Low Language Demand</td>
<td>Human facial expressions can be exaggerated</td>
</tr>
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<td>Understanding</td>
<td></td>
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</table>
Relived Emotions
Relived Emotions

Autobiographical Memories

Shared Memories
Relived Emotions

“Please go back to the time and place of the same happy event you recalled earlier and see the scene in your mind’s eye. Take a few steps back, move away from the situation to a point where you can now watch the event from a distance. As you do this, focus on what has now become the distant you...”
Relived Emotions

“...As you continue to watch the distant you, try to understand the emotions that the distant you experienced as the event unfolded. Why did he or she have those feelings? What were the underlying causes and reasons?”
Relived Emotions Summary

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<tr>
<td>Reactivity</td>
<td>Personally relevant &amp; engaging</td>
<td>Idiographic stimuli (not standardized across participants)</td>
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<tr>
<td>Regulation</td>
<td>Good ecological validity</td>
<td>High memory demand</td>
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Levenson, 2007; Rottenberg, Ray & Gross, 2007
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Dyadic Interaction

How do you think your partner is feeling right now?
Dyadic Interactions Summary

Emotion Processes
- Reactivity
- Regulation
- Understanding

Advantages
- Good ecological validity
- Naturalistic social contexts

Disadvantages
- Somewhat Idiographic (not easy to standardize across dyads)
- Emotion responses influenced by both members of dyad
QUESTIONS?
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Music & Singing

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Dyadic Interactions

Film Clips

Static Photos

Relived Emotions

Film Clips

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Music
Remain seated quietly → SING → WATCH → Emotion Experience
PART I: CONTROL KARAOKE
# Music & Singing Summary

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<tr>
<td>Reactivity</td>
<td>Simple</td>
<td>Matching musical tastes to participant</td>
</tr>
<tr>
<td></td>
<td>Effective &amp; Engaging</td>
<td>Participant discomfort (singing)</td>
</tr>
</tbody>
</table>

Eich et al., 2007; Levenson, 2007; Sturm et al., 2008
Directed Facial Action Task

Music & Singing

Acoustic Startle Reflex

Startle Eyeblink Modulation

Directed Facial Action Task
Acoustic Startle Reflex

- **Stimulus**
- **Initial Response**
  - 500ms
  - Somatic & muscular actions
- **Secondary Response**
  - Emotional
  - Varies across individuals

Ecman et al., 1985; Soto, Levenson, & Ebling, 2005
### Acoustic Startle Reflex Summary

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<tr>
<td>Reactivity</td>
<td>Simple</td>
<td>Often limited to measuring general defensive response (vs. more specific emotions)</td>
</tr>
<tr>
<td></td>
<td>Unobtrusive</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Primary and secondary emotion responses</td>
<td></td>
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Directed Facial Action Task

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Film Clips

Static Photos

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Startle Eyeblink Modulation

Directed Facial Action Task
Startle Eyeblink Modulation

Startle reflex automatic
Measure via amplitude of eyeblink
Larger eyeblink = Negative emotion
Smaller eyeblink = Positive emotion
### Startle Eyeblink Modulation Summary

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</thead>
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<td>Reactivity</td>
<td>Simple</td>
<td>Less rich repertoire of emotional behavior</td>
</tr>
<tr>
<td></td>
<td>Unobtrusive</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Less subject to demand characteristics</td>
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</table>
Directed Facial Action Task

Get out a sheet of paper and a pen

Follow my instructions
Directed Facial Action Task

Take 1
**Directed Facial Action Task**

<table>
<thead>
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<th>Task</th>
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<tbody>
<tr>
<td>Pull corners of your mouth downward</td>
</tr>
<tr>
<td>Raise eyebrows up and together</td>
</tr>
<tr>
<td>Squint your eyes slightly</td>
</tr>
<tr>
<td>Hold for 10 seconds</td>
</tr>
</tbody>
</table>
Directed Facial Action Task

Write down: How do you feel?

-4  -3  -2  -1  0   1   2   3   4

Negative  Neutral  Positive
Directed Facial Action Task

Take 2
Directed Facial Action Task

- Pull your eyebrows together
- Widen your eyes by pulling your upper eyelid up
- Press your lips together
- Tighten your lips and raise them
- Hold for 10 seconds
Directed Facial Action Task

Write down: How do you feel?

-4  -3  -2  -1  0   1   2   3   4

Negative  Neutral  Positive
Directed Facial Action Task

Take 3
Directed Facial Action Task

- Pull corners of your mouth upward
- Now, pull corners of mouth outward to maximum
- Squint your eyes slightly
- Hold for 10 seconds
Directed Facial Action Task

Write down: How do you feel?

-4  -3  -2  -1  0   1   2   3   4

Negative  Neutral  Positive
Directed Facial Action Task

Take 1: Sadness

Take 2: Anger

Take 3: Joy
Directed Facial Action Task

**Explicit**
Instruct to move specific facial muscles

**Implicit**
Move facial muscles for a different task
# Directed Facial Action Task Summary

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<td>Simple</td>
<td>Cannot assess reactivity to external stimuli</td>
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<tr>
<td></td>
<td>Unobtrusive</td>
<td></td>
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<tr>
<td></td>
<td>Less subject to demand characteristics</td>
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QUESTIONS?
Roadmap

Course Logistics

Triggering Emotions

Measuring Emotions

Expert Interview
Electric Meter Tests Skin to Gauge Emotion

Call it an emotion meter, lie detector or what you will, an electric device contrived by Dr. D. Urich Greenwald at the University of Iowa draws a curve of your emotions as they run the gamut of joy, horror, fear, surprise, love. As you react to some stimulus that "gets under your skin," the electric needle reacts to emotional changes in resistance in your skin. Used by Dr. Christian A. Rueckmick in studies of emotion, this instrument is called a dermohmograph; derm for skin, ohm for electrical resistance, graph for its record on photographic paper. The scientists theorize that human emotion causes a piling up of positive and negative ions on the walls of skin cells, affecting resistance of the skin to passage of electricity. Essentially the emotion meter consists of dry cells, electrodes, fixed and variable resistances and a galvanometer. By reading the galvanometer while the subject watches a motion picture or reads a letter, his emotional reaction can be seen. For recording purposes, the deflection of the galvanometer guides a beam of light striking a moving roll of sensitized paper.

Emotions shown on faces in background are recorded by instrument sensitive to electric resistance of skin. Scientist is testing young woman.
Subjective Measures

- Questionnaires
- Rating Dials
- Experience Sampling
Positive & Negative Affect Schedule (PANAS)

Nervous  Guilty  Irritable  Determined
Distressed  Scared  Alert  Attentive
Excited  Hostile  Ashamed  Jittery
Upset  Enthusiastic  Inspired  Active
Strong  Proud  Nervous  Afraid

Very  Slightly or Not at All  A Little  Moderately  Quite a Bit  Extremely

Watson, Clark, & Tellegen, 1988
# Modified Differential Emotion Scale (mDES)

<table>
<thead>
<tr>
<th>Amused</th>
<th>Interested</th>
<th>Awe</th>
<th>Hopeful</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fun-loving</td>
<td>Alert</td>
<td>Wonder</td>
<td>Optimistic</td>
</tr>
<tr>
<td>Silly</td>
<td>Curious</td>
<td>Amazement</td>
<td>Encouraged</td>
</tr>
<tr>
<td>Content</td>
<td>Grateful</td>
<td>Glad</td>
<td>Love</td>
</tr>
<tr>
<td>Serene</td>
<td>Appreciative</td>
<td>Happy</td>
<td>Closeness</td>
</tr>
<tr>
<td>Peaceful</td>
<td>Thankful</td>
<td>Joyful</td>
<td>Trust</td>
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Fredrickson et al. (2003)
Stress Appraisal Measure (SAM)

Peacock & Wong, 2006
Paper & Pencil Methods
Online Survey Methods
Online Survey
Methods

What is... Amazon's Mechanical Turk?
Very Negative

Very Positive
Experience Sampling Methods

Data collection in which participants respond to repeated assessments at moments over the course of time, while functioning and living within their natural life settings.
Experience Sampling Methods

1. Understand behavior contingencies (relationship between experience and situations)
2. Ecological validity (get outside of lab, more naturalistic)
3. Investigate intra-individual processes (within-person processes, such as differences within a person that change over time or across situations)
Related Methods

Thought sampling

Focuses on inner thoughts, less concerned about external events
(e.g., Hurlburt, 1997; Klinger 1978).

Ecological momentary assessment (EMA)

Concerned also with elements of environment that give rise to subjective experience
(e.g., Stone et al., 1999)

Daily Reconstruction Method (DRM)

Participant reconstructs activities and experiences of the preceding day. List episodes of day in sequence, describe and answer questions about each episode. Get assessment of contiguous daily episodes.
(Kahneman et al., 2004)
Narrative Methods
“Putting events in a temporal sequence not only orders them with respect to each other; it creates an overarching interpretive frame. Just as a succession of notes does not necessarily constitute a melodic phrase, so events that are randomly recounted do not make a story. Like notes, the narrated events need to be cast as members of an ordered set. Like a melodic phrase, such a set constitutes a coherent narrative unit called an episode (p. 169).”
Narrative Methods

Dr. Pennebaker's Basic Writing Assignment

Over the next four days, write about your deepest emotions and thoughts about the emotional upheaval that has been influencing your life the most. In your writing, really let go and explore the event and how it has affected you. You might tie this experience to your childhood, your relationship with your parents, people you have loved or love now, or even your career. Write continuously for 20 minutes.
Behavioral Measures

FACS
SPAFF

BEHAVIORAL
Developed Ekman & Friesen 1970’s

Categorize facial behaviors based on muscles that produce them

Unit of measurement = Action Unit (AU’s)

Specific AU combinations reflect emotions

Takes 80-100 hours to train on
Facial Action Coding System (FACS)

1C Inner Brow Rise
2C Outer Brow Rise
5D Upper Lid Raise
4B Brow Lower
20B Lip Stretch
7B Lower Lid Tighten
26B Jaw Drop
Facial Action Coding System (FACS)

Genuine “Duchenne” Smile

- AU6 Cheek Raiser
- AU12 Lip Corner Puller
Facial Action Coding System (FACS)

Fake “Non-Duchenne” Smile

AU12 Lip Corner Puller
Specific Affect Coding System (SPAFF)

ADDITIONAL CODES:

- Sit up/forward
- Increase in vocal pitch & volume
- Laughter

Coan & Gottman (2007)
Autonomic Nervous System (ANS)

“No shade of emotion should be without a bodily reverberation...”

William James (1898)
Autonomic Nervous System (ANS)
Autonomic Nervous System (ANS)
<table>
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<tr>
<th>Emotion</th>
<th>ANS Basis</th>
<th>Change</th>
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<tbody>
<tr>
<td>Anger</td>
<td>Vasodilation Pupils</td>
<td>Reddening in skin, Blood vessels bulge, Constriction</td>
</tr>
<tr>
<td>Fear</td>
<td>Vasoconstriction Sweat Glands</td>
<td>Pale/blanching, Sweaty, Clammy palms, Higher skin conductance</td>
</tr>
<tr>
<td>Sad</td>
<td>Lacrimal Glands</td>
<td>Tearing, Crying</td>
</tr>
<tr>
<td>Disgust</td>
<td>Salivary Glands</td>
<td>Salivate, Drool</td>
</tr>
<tr>
<td>Happiness</td>
<td>Vagus Nerve</td>
<td>Tightness in chest, Goosebumps</td>
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Central Nervous System (CNS)
Central Nervous System (CNS)

Naturally occurring lesions  
(e.g., orbitofrontal cortex - Phineas Gage)

Areas of damage  
(e.g., left temporal lobe aneurysm)

Areas of disease  
(e.g., Frontotemporal Dementia)
Caveats

The effectiveness of measurement and manipulation is what our scientific results and discoveries rest on.

Use of empirical techniques often varies with:

- Goals of study
- Realistic constraints (funding, time, equipment)
- Theoretical background of experimenters
QUESTIONS?
Roadmap

Course Logistics
Triggering Emotions
Measuring Emotions
Expert Interview
Experts In Emotion

*EXTRA CREDIT OPPORTUNITY*
Experts In Emotion Interviews

Dr. Jim Coan
Associate Professor of Psychology
University of Virginia

Social Regulation of Emotion
Experts In Emotion Interviews

Dr. Iris Mauss
Associate Professor of Psychology
University of California, Berkeley

Measuring Emotion
Experts In Emotion Interview

Dr. John J.B. Allen

Distinguished Professor of Psychology, Cognitive Science, and Neuroscience
University of Arizona

Emotion Elicitation
Experts In Emotion
Interview

Dr. Greg Siegle
Associate Professor of Psychiatry
University of Pittsburgh School of Medicine

Emotion Elicitation
Thank You!

Psychology 3131
Professor June Gruber