

Emotion Function and Dysfunction:  
Applications to Psychopathology

Structure and Function of Emotions

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**What is an Emotion?**

- Folk definitions...perception of event and physiological changes, anticipation, cognitive association with stimuli and appraisal of it based on past, uncontrollability, unexpected, behaviors, emotions influence thought, coordination of different systems, preparation for action, emotions can be good and adaptive, emotions can be distinct and converge or diverge, progression,
- 1) perception, 2) physiology, 3) cognitive labeling, 4) mood -bias of perception

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**Definitions of Emotion**

“prepare an organism to act in response to environmental stimuli” (Philippot, 2004)

“cues for readiness for action or “action tendencies” that work to establish, maintain, or disrupt a relationship with particular internal and external environments that signify importance to the person.” (Frijda, 1986)

“a kind of radar and rapid response system, constructing and carrying meaning across the flow of experience. Emotions are the tools by which we appraise experience and prepare to act on situations (Cole, Martin, & Dennis, 2004)

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### Definitions of Emotion

“adaptive behavioral and physiological response tendencies that are called forth directly by evolutionarily significant situations” (William James, 1884)

“episodic, relatively short-term, biologically based patterns of perception, experience, physiology, action, and communication that occur in response to specific physical and social challenges and opportunities” (Keltner & Gross, 1999)

“fundamental building blocks of personal health and social communication. From infancy through adulthood, emotions consistently contribute to the quality of one’s personal well-being and the nature of one’s social interactions. Emotions allow one to respond to challenges and problems in one’s environment, organize one’s thoughts and actions, and guide one’s behavior” (Kring & Werner, 2004)

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### Structure

- **Subjective Experience**
  - Feelings
  - Appraisals
- **Behavioral Expression (Actions)**
  - Motoric behavior
  - Facial expressions
- **Biological**
  - Physiological
  - Neurobiological
- **Motivational programs**
  - Emotions co-ordinate responses to solve specific adaptive problems

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### Function

- **Motivational (“Action Tendencies”)**
  - Disgust: avoid this food
  - Anger/fear: fight/flight
- **Enhance communication/social interaction**
- **Cognitive/informational role**

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### Differentiating Emotions from Other Terms

- **Moods**
  1. Greater duration
  2. More constancy
  3. Less event dependent
  4. Less tied directly to motivation
  5. Great causal knowledge
  6. Not physiologically characteristic
  6. Not usually expressively characteristic
  7. Less subjective intensity
  8. Greater relation to cognition
- **Affect, Affective Style, and Temperament**

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### Unresolved Questions

- What constitutes an emotional event?
- Are emotions universal?
- Are they innate or learned?
- How should emotions be classified?
- Do emotions serve survival or societal functions?
- When are emotions adaptive and non-adaptive?

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### Theories of emotion

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## Emotional Occurrence

- How do we know when we are having an emotion?
- What occurs and in what progression?

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## James-Lange Theory of Emotion

- William James & Carl Lange (1887)
- We experience emotion by interpreting body response
- James - "We feel sorry because we cry, angry because we strike"

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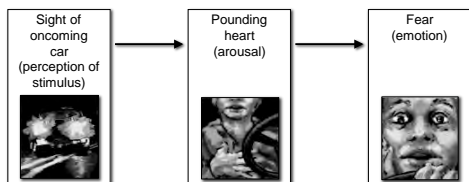
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## James-Lange Theory of Emotion

- Experience of emotion is awareness of physiological responses to emotion-arousing stimuli



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### James-Lange Theory of Emotion

- Evidence
  - Pencil in teeth activates smile muscles
  - Affect rating of amusement at cartoons

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### James-Lange Theory of Emotion



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### James-Lange Theory of Emotion

- "Far Side" cartoon study
  - Subjects held pen between teeth or lips
  - Cartoons rated as funnier when pen held between teeth
- Facial muscles studies
  - Subjects told which muscles to contract without identifying emotion
  - Subjects reported feeling the expected emotions
  - Some evidence for different types of physiological activation
- "Facial Feedback" Hypothesis



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## James-Lange Theory of Emotion

### Criticisms of The Facial Feedback Hypothesis

- How can facial feedback be differentiated from corresponding visceral feedback?
- Could demand characteristics of the study account for effect?
- Is this merely a learned response?
- Does facial feedback truly generate emotion or merely influence current mood?

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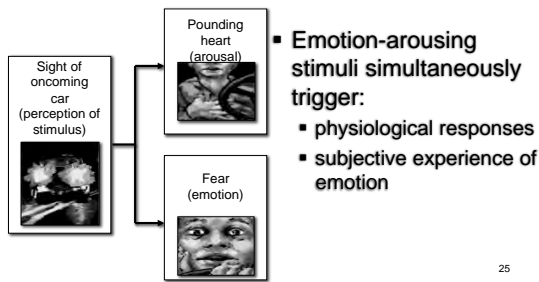
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## Cannon-Bard Theory of Emotion



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## Cannon-Bard Theory of Emotion

### Criticisms of James-Lange

- Total separation of the viscera from the central nervous system does not alter emotional behavior
- The same visceral changes occur in very different emotional states and in non-emotional states
- The viscera are relatively insensitive structures
- Visceral changes are too slow to be a source of emotional feeling
- Artificial induction of the visceral changes typical of strong emotions does not produce them

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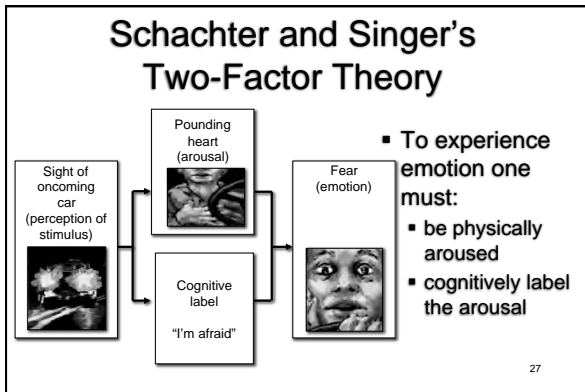
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### Schachter and Singer's Theory of Emotion

- AROUSAL + COGNITION = EMOTION
- "Evaluative needs" - the need to explain one's bodily state will lead to a search for an appropriate explanation for one's arousal
- "Misattribution" - occasions in which we misidentify the sources of our emotional arousal

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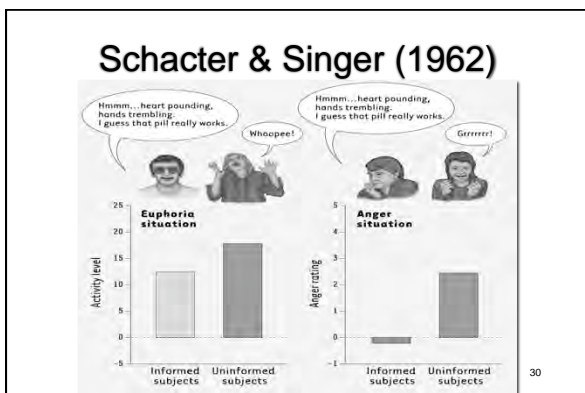
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## Schachter & Singer Emotion Theory

### Criticisms and Replication Failures

- **Problems with Schachter & Singer (1962)**
  - Difficult to determine ability of epinephrine injections to increase arousal given poor measure reliability
  - No true differences between those who took epinephrine versus saline in arousal
  - Difficult to make conclusions about autonomic specificity based on the finding that epinephrine produced similar joy and anger responses
- **Replication Failures**
  - Found that epinephrine produced negative affect regardless of attributional information provided

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## Schachter & Singer Emotion Theory

### Support from Misattribution Studies

- **Nisbett & Schachter (1966)**
  - Participants given a pill described as having physiological effects similar to anxiety tolerated higher levels of a subsequent shock presumably due to attributions about the pill rather than the shock
- **Zillman & Bryant (1974)**
  - "excitation transfer"-participants who had been aroused through exercise were more likely to get aggressive with an insulting confederate than those who weren't first aroused
- **Dutton & Aron (1974)**
  - Participants who met an attractive confederate on an unsafe bridge were more likely to attribute arousal to attraction than to fear compared to those participants who met the attractive woman on a safe bridge

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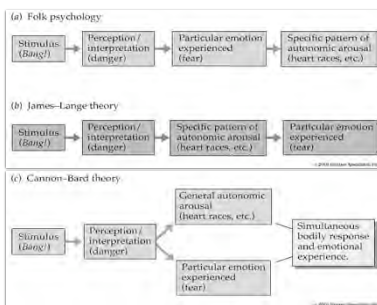
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## Theories of Emotion



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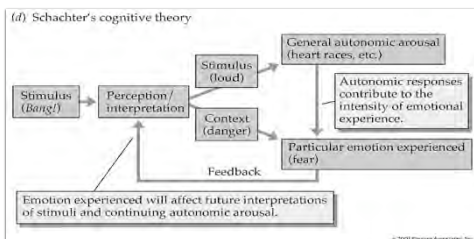
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## Theories of Emotion



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## Balanced Perspective

### Neo-Jamesian Approaches

- Some evidence for autonomic specificity
- Phineas Gage and Damasio's Somatic Marker Hypothesis
  - Ventromedial prefrontal cortex and input from the periphery
- LeDoux's high and low roads of emotional activation
  - Both higher and lower order sensory pathways are crucial to emotions
- Coherence of emotional components
  - Different emotional experiences may call for differing patterns in coherence of emotion components



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## Name that Emotion!

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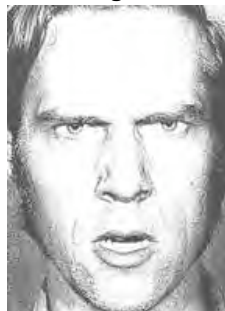
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**Anger**



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**Fear**



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**Joy**



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**Sadness**



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**Fear**



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**Surprise**



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**Sadness**



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**Disgust**



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**Surprise**



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**Anger**



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**Disgust**



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**Joy**



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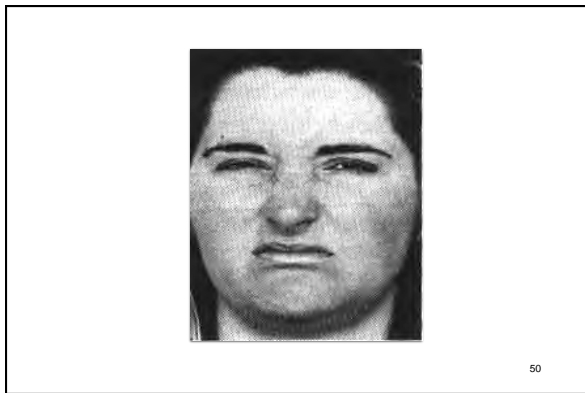
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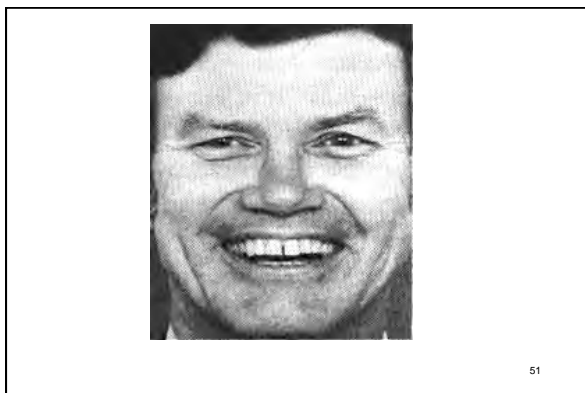
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### Are there basic emotions?

- Basic emotions are primary, core, and innately organized
- What emotions do you think should be categorized as basic?

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### Universal Emotions

- Hindu Philosophers (3rd-11th c.) translated as: 1) sexual passion, love or delight; 2) amusement, laughter, or humor; 3) sorrow; 4) anger; 5) fear or terror; 6) perseverance; 7) disgust; 8) amazement
- Descarte (1596-1650)-passions: love, hatred, desire, joy, sadness, admiration
- Spinoza (1632-1677) three primary affects: joy, sorrow, desire
- Hobbes (1588-1679) seven passion: appetite, desire, love, aversion, hate, joy, grief
- McDougall (1921): fear, disgust, wonder, anger, subjection, elation, tenderness
- Tompkins (1962): fear, anger, enjoyment, interest, disgust, surprise, shame, contempt, distress
- Izard (1972, 1977): fear, anger, enjoyment, interest, disgust, surprise, shame/shyness, contempt, distress, guilt

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### Six basic universal emotions

- Anger
- Fear
- Surprise
- Disgust
- Happiness
- Sadness



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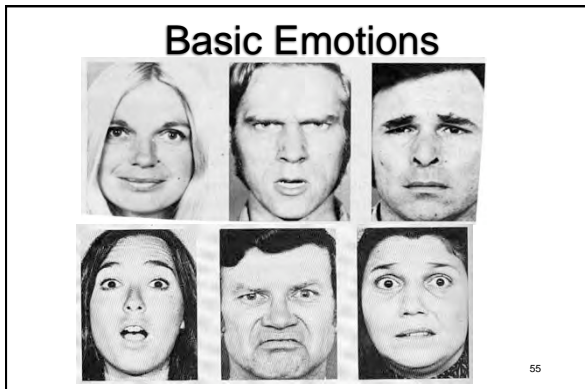
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### Culturally-Bound Emotion Terms

- *Schadenfreude* (German)
- *Amae* (Japanese)
- *Fago* (Ifaluk)
  
- No word for worry (Moken)

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### Are there basic emotions?

- **Evolutionary Viewpoint**
  - Everyone experiences emotions in a similar way
  - Emotion is an evolved characteristic based on survival potential
  - Emotional characteristics should be the same across cultures
- **Social-Constructivist Viewpoint**
  - Emotions are based on cultural narratives
  - Emotion words represent arbitrary categories of experience, rather than real ones
  - Emotional characteristics should significantly vary across cultures

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## Basic Emotion Support

- Quick onset
- Brief duration
- Automatic appraisal
- Unbidden occurrence
- Evident early in life
- Coherence among emotional response
- Distinctive physiology
- Distinctive universals in antecedent events
- Presence in other primates
- Distinctive universal signals

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## Darwin (1872)

*The expression of the emotions in man and animals*



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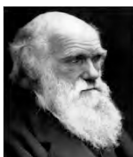
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## Darwin (1872)

“Vestiges plus Secondary Communicative Function”

- Emotions evolved to aid in generating appropriate action in emergency events
- Facial expression of emotion communicates this information to others



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### Intention Movements



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### Weeping and Associated Habits



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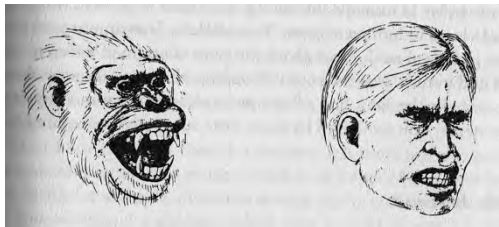
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### Expression of emotion across species



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### Expression of emotion across species



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### Universal Expressions?

Ekman & Friesen (1971) Papua New Guinea



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### Ekman and Friesen (1971)

- Fore Language group in New Guinea
  - No Western Movies or Magazines
  - No habitation in West
  - No knowledge of English
- Show three photographs of faces and tell a story
  - High levels of agreement between experimenter assessments and experimental subjects

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## Ekman and Friesen (1971)

Happiness: His (her) friends have come, and he (she) is happy  
 Sad: His (her) child (mother) has died, and he (she) feels very sad  
 Anger: He (she) is angry; or he (she) is angry, about to fight  
 Surprise: He (she) is just now looking at something new and unexpected  
 Disgust: He (she) is looking at something he (she) dislikes; or he (she) is looking at something that smells bad  
 Fear: He (she) is sitting in his (her) house all alone with [no one around and no weapons nearby. A wild pig is standing in the door of the house and the pig is not moving. The man (woman) is looking at the pig very afraid of it...]

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## Ekman and Friesen (1971) Replications

TABLE 2.1. The percentage of Ekman et al.'s subjects in each culture who correctly identified the predicted emotion.

Culture	Happiness	Surprise	Sadness	Fear	Disgust	Anger
British	90	94	86	91	71	67
Japanese	93	87	83	86	61	71
German	93	91	80	74	77	77
Hong Kong	92	91	91	84	65	73
Italy	97	92	81	82	89	72
Spain	90	94	87	85	60	67
Swedish	98	88	86	86	79	84
Switzerland	69	78	91	70	70	70
Taiwan	87	90	76	76	74	79
United States	95	92	92	84	86	81

Source: Ekman et al., 1987, p. 714. Copyright © 1987 by the American Psychological Association. Reprinted with permission of the author and the publisher.

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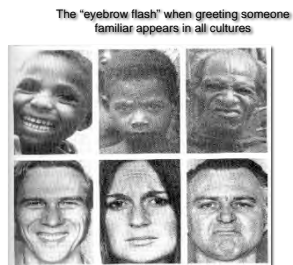
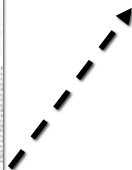
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## Facial expressions have the same meaning in all cultures



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### Social versus Real Smiles

Paul Ekman



Fake Smile      Real Duchenne smile      Fake

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### Duchenne (stimulating zygomatic muscles)



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### Emotion Function

Some Functions

- determine personal viability
- prepare us for action
- shape our behavior (emotions are reinforcing)
- regulate social interaction
- facilitate communication nonverbally
- facilitate adult-child relations and thus development
- make life worth living by adding value to experience
- allow us to respond flexibly to our environment (approaching good, avoiding bad)

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### Prototypical Motivational Patterns

- incorporation (ingestion of or acceptance of beneficial stimuli)
- rejection (expel something undesirable)
- protection (avoid danger)
- destruction (destroying barriers to the fulfillment of important needs)
- reproduction (maintenance of contact tendencies)
- reintegration (reaction to loss)
- exploration (mapping new environments)

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### Prototypical Motivational Patterns (Levenson)

- Loss→Sadness
- Gain→Happiness
- Satiation→Contentment
- Cheating/Harm inflicted→Anger
- Decay→Disgust
- Danger/Threat→Fear

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### Functional Approach to Emotions

- Function refers to a sort of consequence of goal directed action
  - when something is functional, it serves a purpose
- Emotions serve important functions from the past and in the present
  - Functional approaches focus on why emotions have the structure they do rather than just what is that structure
  - Emotions are solutions to problems of survival or adjustment
  - Emotions involve systems of interrelated components that function together to serve this functional purpose
  - Emotions are designed to serve beneficial consequences but may not always produce this outcome

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**Processes Mobilized by Emotions**

(abbreviated list):

- Goals and Motivation
- Perceptual Mechanisms
- Memory
- Attention
- Behavior
- Learning
- Energy Level

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**Criticism Of Evolutionary Approach**

- Averill (1994) and Social Constructivists
  - Intended versus Unintended Consequences
  - Short Term versus Long Term Consequences
  - Singular versus Group Consequences
- Adaptive versus Functional

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**Social Functionalist Approach**

**Dacher Keltner:**

- Social living presents problems whose solutions are critical for individual survival
- Emotions have been designed in the course of evolution to solve these problems
- In humans, cultures find new ways to solve the problems for which emotions evolved, and culture finds new ways of using emotions
- Function at 3 levels: Individual, Dyadic, Group

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## Social Functionalist Approach

### Keltner:

- Individual Level of Function
- Problems of Physical Survival
  - predation involves fight-flight (fear)
  - disease involves food selection (disgust)
    - e.g., Disgust as signal for food protection

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## Social Functionalist Approach

### Keltner:

- Dyadic Level of Function
- Problems of Problems of Reproduction
  - finding a mate involves attachment (desire, sadness)
    - e.g., Desire as signal for need of mate
  - keeping a mate involves protection (jealousy)
  - protecting vulnerable children involves caregiving (love)

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## Social Functionalist Approach

### Keltner:

- Micro- or Macro (Cultural) Group Level of Function
- Problems of Group Governance
- Cooperation and defection involves reciprocal altruism (guilt, moral anger, gratitude, envy)
  - e.g., Guilt as signal for need of cooperation
- Group organization involves domination/submissiveness (shame, embarrassment, contempt, awe)

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