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Cognition and Emotion

Lecture 7: Psychological Explanations of Emotion

DR KATE WILLIAMS

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Lecture Overview

- ▶ **Non-verbal Behaviour**
- ▶ **Facial Expressions**
- ▶ **The Universality of emotions**
- ▶ **Issues with the Universality account**
 - ▶ Disagreement on emotions, methodological issues, neuropsychological issues, evidence from in-group & cross cultural differences
- ▶ **Other theories of emotion expression**

Psychological Theories of Emotion

- Difficult to measure as a purely psychological construct
 - Behaviourist argument has some merit here
- Often examined via other means
 - Theoretical connectionist models
 - Emotion perception
 - Emotion disorders



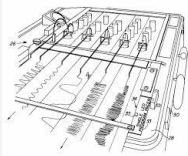
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Emotion and the Automatic Nervous System (ANS)

- Two important questions:
 1. Are patterns of ANS activity associated with specific emotions?
 - Experimental evidence suggests there is **not** a separate ANS profile for each emotion.
 2. Are ANS measures effective on polygraph ("lie detector")?

Polygraphy

- Lie detection is really emotion detection
- Control-question technique
 - Physiological response to a target question compared with response to control question
 - Success rate in studies is about 80%
 - Issue: emotional reaction even if innocent, so...
- Guilty knowledge technique
 - Ask question only culprit would know answer
 - Success rate in distinguishing guilty vs. innocent is ~88%



Nonverbal behaviour

- Argyle (1988): Primary functions of nonverbal behaviour
 - Expressing emotion
 - Conveying attitudes (likes/dislikes, dominance/submission)
 - Presenting personality traits to others
 - Complement speech in issues such as turn-taking, feedback, attention

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Sham Rage

- Bard found that Decorticated cats exhibited extreme and unfocused aggressive responses
- But this response would not happen if the hypothalamus was also removed.
- So, the hypothalamus must be critical for the expression of aggressive responses and the cortex functions to inhibit or direct the aggressive responses

Facial Expressions

- Duchenne du Boulogne
 - Physiology: our facial musculature system is designed to display facial expressions in the same way across all people.
- Darwin
 - “That the chief expressive actions, exhibited by man and by the lower animals, are now innate or inherited – that is, have not been learnt by the individual, - is admitted by everyone. So little has learning or imitation to do with several of them that they are from the earliest days and throughout life quite beyond our control” (Darwin, 1890, p.371).

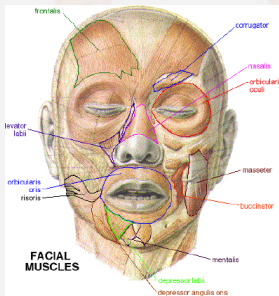
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Duchenne (1862)

- Modern neurology thought to be developed from Duchenne's work on neural pathways.
- His diagnostic innovations to understand facial expressions including deep tissue biopsy, nerve conduction tests, and clinical photography.
- He would trigger muscular contractions with electrical probes and record resulting expressions by taking a photograph.



Duchenne (1862)



- He believed that expressions could reveal an “accurate rendering of the soul’s emotions”
- Typically we feel an emotion and then our face shows this through the contraction of specific facial muscles.

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Reference	Fundamental emotion	Basis for inclusion
Arnold (1960)	Anger, aversion, courage, dejection, desire, despair, fear, hate, hope, love, sadness.	Relation to action tendencies
Ekman, Friesen and Ellsworth (1982)	Anger, disgust, fear, joy, sadness, surprise.	Universal facial expressions
Frijda (personal Sept 8, 1986).	Desire, happiness, interest, surprise, wonder, communication, sorrow.	Forms of action readiness
Gray (1982)	Rage and terror, anxiety, joy.	Hardwired
Izard (1971)	Anger, contempt, disgust, distress, fear, guilt, interest, joy, shame, surprise.	Hardwired
James (1884)	Fear, grief, love, rage.	Bodily involvement
McDougall (1926)	Anger, disgust, elation, fear, subjection, tender-motion, wonder.	Relation to instincts
Mowrer (1960)	Pain, pleasure.	Unlearned emotional states
Oatley and Johnson-Laird (1987)	Anger, disgust, anxiety, happiness, sadness.	Do not require propositional content
Panksepp (1982)	Expectancy, fear, rage, panic.	Hardwired
Plutchik (1980)	Acceptance, anger, anticipation, disgust, joy, fear, sadness, surprise.	Relation to adaptive biological processes
Tomkins (1984)	Anger, interest, contempt, disgust, distress, fear, joy, shame, surprise.	Density of neural firing
Watson (1930)	Fear, love, rage.	Hardwired
Winer and Graham (1984)	Happiness, sadness.	Attribution dependent

Basic Emotions?

Source: Power & Dalgleish (2015), based on Ortony and Turner (1990)

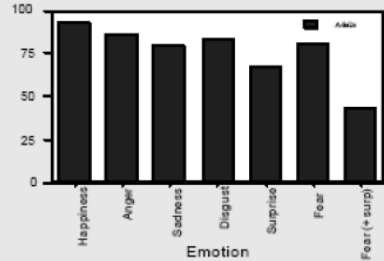
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- Birdwhistell (1970): Anthropologist
“There are no universal gestures. As far as we know, there is no single facial expression, stance, or body position which conveys the same meaning in all societies” (p.89)
- Ekman et al. (1969)
Studied emotion recognition across literate and preliterate cultures (Samoa, New Guinea, USA, Australia etc.)
- Displayed photos of emotion expression and gained forced-choice responses from Ps

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Ekman & Friesen's (1971) results (adults)

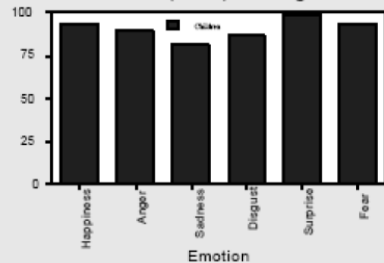
Ekman & Friesen (1971) Findings



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Ekman & Friesen's (1971) results (children)

Ekman & Friesen (1971) Findings



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What emotion is this face displaying?



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What emotion is this face displaying?



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What emotion is this face displaying?



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What emotion is this face displaying?



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What emotion is this face displaying?



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What emotion is this face displaying?



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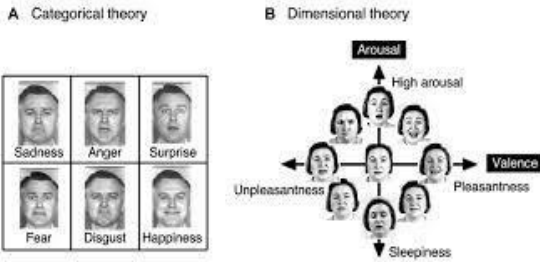
The 'Universal' emotions



(Ekman et al., 1969)

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Categorical versus Dimensional/Continuum Theory



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Further evidence for universal emotion displays

- Eibl-Eibesfeldt (1975)
 - Blind/deaf children show similar facial patterns of emotion to the universal emotions

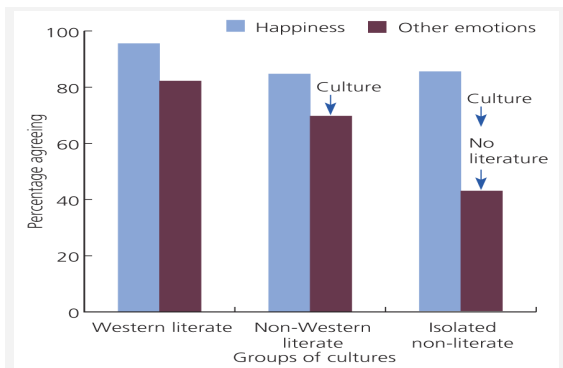


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Universality has a number of issues:

1. The problem of 'surprise'
 - Can be surprised without invoking emotion.
 - It is a cognitive component that could be present with any emotion and not unique as an emotion itself (Oatley & Johnson-Laird, 1987, Power & Dalgleish, 2015)
2. Methodology (Russell, 1994)
 - Issues with ecological, convergent, & internal validity.
 - Issues with forced-choice response format, within-subjects design, preselected photos of posed expressions
 - 1994 exchange between Ekman & Russell is informative

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Cross-cultural success at matching facial expressions of primary emotions

Source: Based on data from Russell (1994)

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Universality has a number of issues:

3. Neuropsychological issues

- Differential recognition of emotion (McAndrew, 1986)
 - Happiness = 25ms
 - Fear = 300ms
- More thorough processing of negative information?
 - Baumeister et al. (2001)
- Impairment in emotion processing
 - Autism (Baron-Cohen, 1991; Collins & Nowicki, 2001)
 - Schizophrenia; Depression; Bipolar Disorders (Habel et al., 2000; Sergeant et al., 1994; Young et al., 1996)

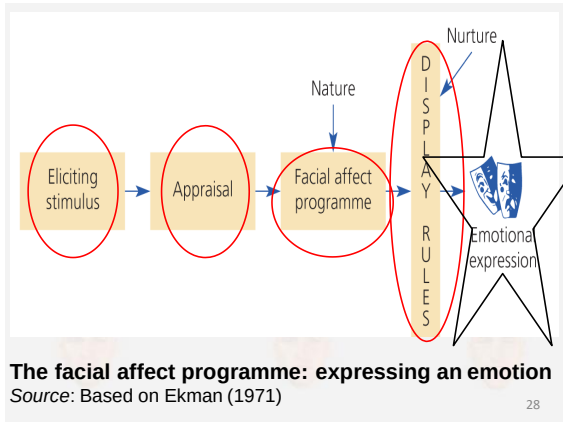
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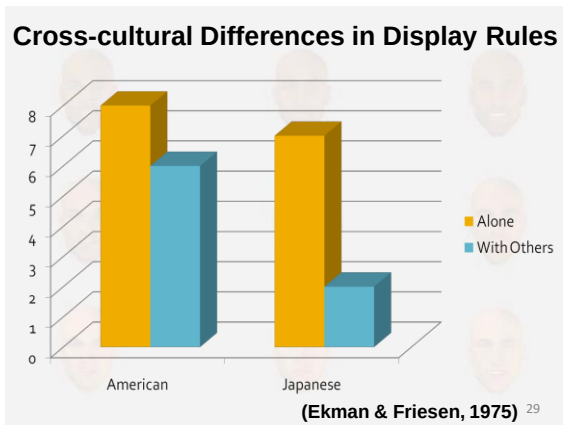
Universality has a number of issues:

4. In-Group Advantage

- We are better at recognising displays of emotion when interacting with our own race than with other races (Elfenbein & Ambady, 2002; Hutchings, 2004)
- A 'dialect theory of emotion'
 - As different cultures and regions have subtle differences in accent, so emotion expressions may differ in a similar way
 - Immersion in culture will lead to greater knowledge of that culture's display rules (Elfenbein & Ambady, 2003; Hutchings, 2004).

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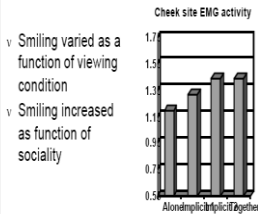


- Individual differences in prejudice type influence the perception of racial out-group emotion, particularly anger
 - (Hugenberg & Bodenhausen, 2003, 2004; Hutchings & Haddock, 2008)
 - Suggests cognitive process in production *and* interpretation of display rules
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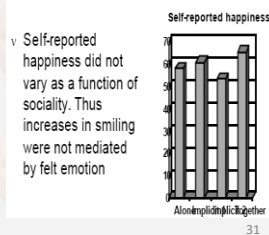
Other theories of emotion expression

• Fridlund – Social intention

Fridlund (1991): Results 1

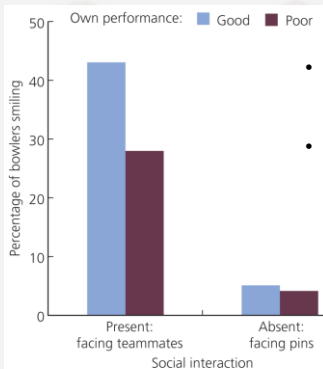


Fridlund (1991): Results 2



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Kraut and Johnson (1979) – ‘Bowling study’



- Ps viewed ten-pin bowlers as they played
- Found displays of emotion were linked to social responses to other players, not the emotion of good/bad scores when bowling

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Control of Expression?

- Jakobs et al. (1999); Zaalberg et al. (2004)
- “a combination of physiological emotion and knowledge of cultural display rules producing facial displays that are related to the internal emotion but which can be controlled to a certain extent” (Hutchings, 2010, p15).
- DePaulo and Friedman (1998)
 - We have the ability to deceive others
 - Not accounted for in Darwin’s theory
- Because we can control our facial muscles, we could use our facial expressions to hide our true feelings about something.
- However, Ekman proposed two ways to distinguish between real and fake expressions.....



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Control of Expression?

1. Micro-expressions of real emotion break through face
2. Often difference between genuine & fake expressions.

- Most widely studied of these is the smile...
- Two facial muscles contract during a genuine smile

- Around eyes & side of lips
- But with a fake smile only muscles around side of lips move
- Known as the Deuchenne smile.



Picture sourced from Bogodistov Y and Dost F (2017) Proximity Begins with a Smile, But Which One? Associating Non-duchenne Smiles with Higher Psychological Distance. *Front. Psychol.* 8:1374. doi: 10.3389/fpsyg.2017.01374

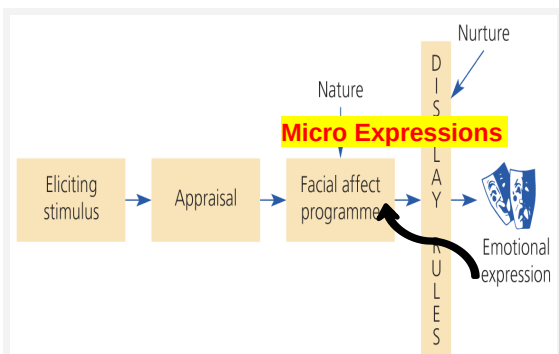
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Control of Expression?

- Current perspective suggests Ekman's original six expressions do not always happen in a pure form.
- Ekman himself also recognizes that contempt and embarrassment need to be added to the primary list.



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The facial affect programme: expressing an emotion

Source: Based on Ekman (1971)

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• Facial Feedback Hypothesis

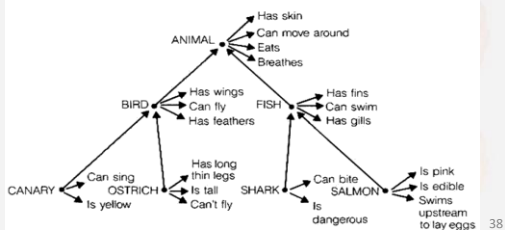
- Display of emotion can influence actual emotions
 - Neidenthal et al. (1997); Strack et al. (1988)
- We may mimic people we see/are with
 - Emotion contagion
- Highly contentious
 - Autonomic Nervous System and neural system do not appear to be set up for this
 - See Nosek/Centre for Replication on latest findings

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Network Theories

- Nodes of activation

Hierarchical Model Collins & Quillian, 1969



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Network Theories

- Nodes of activation
 - Bower (1981)

Example of a Semantic Network

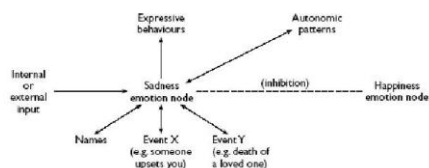


Figure 13.10 An example semantic network theory of emotion
Source: Power and Dalgleish, 1997, Figure 3.2, p.71

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Problems with network theory

- Weighting
 - Different emotions appear to carry different emotional valance weights
 - Anxiety weighted more to attention-related info
 - Depression weighted more to memory-related info
- Development of further models to cope
 - Affect Infusion Model (Bower & Forgas, 2000)
 - Propositional network (Lang, 1979)

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Lecture Summary

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- ▶ Understanding emotion extends beyond internal felt experiences
 - ▶ Need to consider expression of emotion
- ▶ Theory developed regarding universality of emotional expression.
 - ▶ But, disagreement on which emotions should be included, methodological issues, neuropsychological issues, and evidence from in-group, cross cultural differences, and ability to control expressions casts doubt on universality
- ▶ Alternative theories, such as, social intention, facial feedback and network theories put forward
