Emotions sample

Wednesday, 8 March 2017 8:27 PM

What is an emotion?

- 550 words describe them
- Simplified into 3 components
  - Cognitive
    - Subjective conscious experience
      - Your cognitive interpretation of how you're feeling
      - E.g. Not being scared of spiders, so not feeling fear
  - Physiological
    - Different emotions correlate with different bodily arousals
      - E.g. Increase in body temperature
  - Behavioural
    - Overt expression of an emotion
      - E.g. Facial expression or movement
- How are they studied
  - Individual components
  - Combination of components
  - Predominantly focus on behavioural component
    - Have primarily looked at facial expressions in assessing emotions
      - Due to a lack of technology to examine other aspects
- Different types of theories
  - Common-sense
    - Early days
    - "I tremble because I feel afraid"
    i. Stimulus
    ii. Conscious feeling
    iii. Autonomic arousal
      - Automatic changes to the body by the sympathetic nervous system
  - James and Lange
    - 1885
    - Theorised separately but at the same time
    - "I feel afraid because I tremble"
    i. Stimulus
    ii. Autonomic arousal
    iii. Conscious feeling
      - Body attributes a feeling toward the body's response
      - Would assume that there are arousal types in order to pair an emotion with the arousal profile
  - Cannon and built on by Bard
    - 1937
    - Criticised James-Lange
      - Too difficult for subjects to interpret changes in their body and attribute emotions to them
      - Doesn't account for arousal without emotion
        - E.g. Exercise
        - While the arousal proposal is similar to anger, subjects don't feel anger
    - "The dog makes me tremble and feel afraid"
    i. Stimulus
    ii. Subcortical brain activity
      - Automatic appraisal of the stimulus in the subcortical brain region
        - Theory proposed incorrect region
        - Recognises stimulus
        - Accordingly stimulates:
          i) Conscious feeling
          ii) Autonomic arousal
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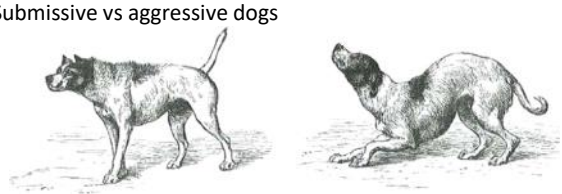
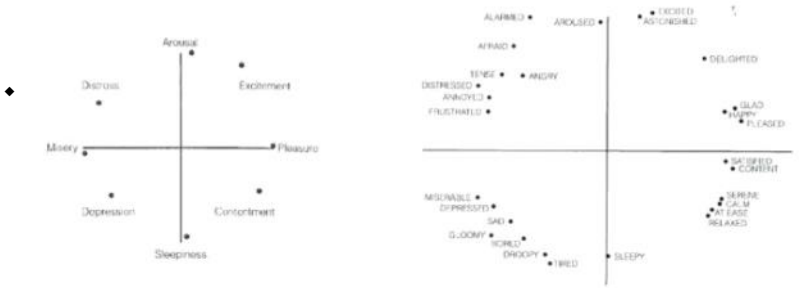
Built for emotion: Evolutionary and neurological (biological) perspectives on emotions in psychology

- Evolutionary
  - Primary idea
    - National selection
      - Charles Darwin
        - One of or the most influential people in psychology?
        - Controversial ideas of evolution by natural selection
          - Prevailing view was that humans were individually created by God
        - Emphasised continuities between human beings and non-human primates
      - Ontogeny
        - Evolution of an individual organism
        - How they need to adapt to the environment as they go through their life
      - Phylogeny
        - Evolution of a species
        - Over 1000s of years
        - Largely based off assumptions to undocumented history
        - Process
          - Specific feature will enhance your chances of survival and will thus be passed on to your offspring
          - So long as they give that animal an adaptive advantage over other animals of the species who don't have that feature
          - In time (over generations), that feature will proliferate
        - Darwin extended theories of physical evolution to the area of emotions
          - Natural selection equips humans with innate emotions because of their adaptive value
            - I.e. They give animals an advantage by promoting survival and reproduction
            - Innate/basic emotions
              - Innate reactions to specific stimuli
                - "The young and the old of widely different races, both with man and animals, express the same state of mind by the same movements."
                - Produced automatically
                - Young babies can use emotions to communicate with their carers when they are distressed
                - Parents can comfort babies with expression
                - Recognised automatically
                - Makes sense from an evolutionary perspective
                - If you see someone who is scared, you would assess the environment and prepare to flee
                - Facial expressions can help you discover someone's trustworthiness based off of their state of mind
                - As shown through the expression
                - Feeling an emotions goes hand-in-hand with expressing it
                - Darwin emphasised this connection
                - Emotions are an expression of your state of mind
                - Darwin emphasised this connection with his theory of emotion
                - General principles of expression
                - Serviceable associated habits
                - If you feel a certain way, you'll show it
                - Antithesis
                - When an opposite behaviour is induced, there will be a directly opposite expression
                - Evolutionary purpose is to not confuse/alarm other animals
                - E.g. Babies expressing opposing emotions differently
                - 
                - E.g. Submissive vs aggressive dogs
                - 

- Emotions have an effect on the nervous system
  - A strong sensory experience will activate the nervous system
  - Activation produces specific physiological behaviours or actions
    - E.g. Sweating
- Shared due to species evolution
  - Darwin pioneered studying facial expressions with emotion
    - Looked at different countries but not isolated cultures
    - If emotions were determined by culture, the following groups wouldn't show the same emotions as other people
      - Human infants
        - When infants cry:
          - Eyes are always closed
          - Mouth is always widely open
        - Children in different environments showed the same expression under the same emotional circumstances
          - Innate across human
      - Blind children

There are two dimensions:
1. arousal—sleepiness
2. pleasure—misery



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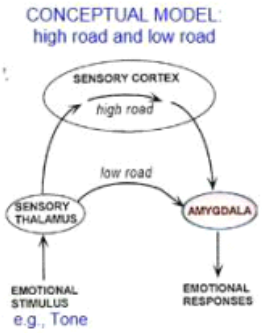
  - Facial Feedback Hypothesis
    - Ekman (1984) Expression and the nature of emotion. In Scherer & Ekman (Eds.), Approaches to emotion.
    - Erlbaum McIntosh, D N (1996). Facial Feedback Hypothesis: Evidence, implications, and directions. Motivation and Emotion, 20(2)
    - What role do facial expressions play within emotions?
      - Internal states (physiological/emotions) and facial expressions:
        - Are intimately linked
          - Not a causal relationship
          - I.e. When one changes, so does another
            - Also proposed by Darwin
              - Part of being angry, is showing that you're angry



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- Hippocampus
  - Context fear associations can impact whether a fearful response is elicited alongside the specific features of the stimuli
    - E.g. A bear in the woods vs in the zoo
    - E.g. A rat develops fear to the CS but also the chamber in which it hears the CS
      - LeDoux & Phelps 2000
    - These associations depend on the hippocampus
      - Lesions to the hippocampus's of rats:
        - From the above study
        - Before:
          - Never becomes fearful of the box (context)
          - Still fears the buzzer
        - After training:
          - Loses fear of the context
      - Activity of amygdala and hippocampus are correlated
        - More activity of amygdala = more activity of hippocampus
      - Can also operate independently
      - Top-down activation of the amygdala
        - Hippocampus dependent representations
        - Caused by expectations of an event
        - Primes amygdala rather than the other way around
        - E.g. Entering exam situation

The emotional repertoire and experience of the human infant

- Operates on the idea that if emotions have an evolutionary purpose (and are thus innate), they would be common across infants
- Cognitive and emotional capabilities of infants and toddlers
  - Enable babies to communicate and adapt
  - Methodology
    - Preferential looking paradigm
      - Presenting it with two stimuli
        - Preference is determined by time spent looking at one stimuli
      - Habituated to one stimuli
        - I.e. Repeated exposure
          - E.g. Happy face
        - Shown a slightly different stimulus once habituated
          - E.g. Scare face
        - Attentional recovery is measured
          - Does it notice the difference and does the stimuli recapture the infant's attention

- Assesses:
  - What do they prefer to see
  - What is different enough to recapture their attention
  - What did they anticipate
- Not: Their ability to discriminate

- Signalling
  - Using emotions to signal what they need
  - Automatically recognised
    - Distress
      - Caregiver understands that they need to attend to the baby
    - Happy
      - Caregiver also becomes happy
        - Develops a bond
        - Facilitates attachment
- Person perception
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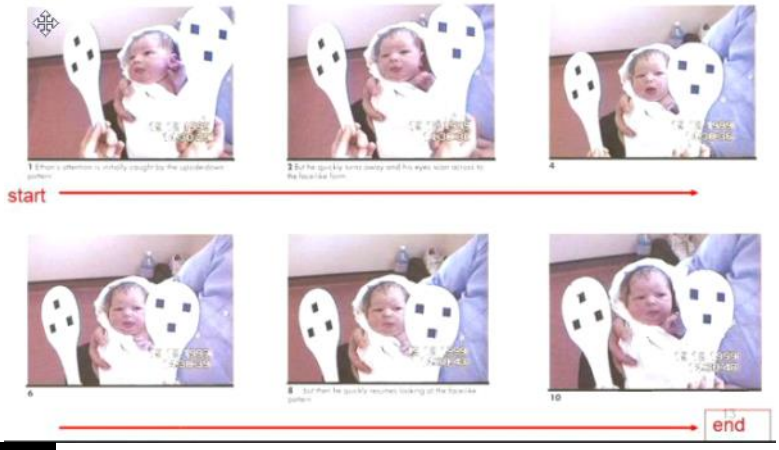

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- Imitation
  - Piagetian framework
    - "The child learns to imitate…" (Piaget, 1951; p. 78)
      - Need to master the skill:
        - Have full muscle control
        - Understand that you're a separate entity
        - See themselves in the imitation
        - Translate what another person is doing and mirror it yourself
  - Meltzoff & Moore (1977)
    - Babies have an innate repertoire of facial expressions which are reflexively reproduced after seeing certain stimuli
    - An ability lost after several months
    - Evolutionary explanation for this
      - Facilitates/encourages/reinforces caregiver-baby engagement for attachment
      - Monkeys do the same
        - Will imitate mouth opening and tongue protrusion

  - Assists with face-to-face communication
- Turn-taking and reciprocity
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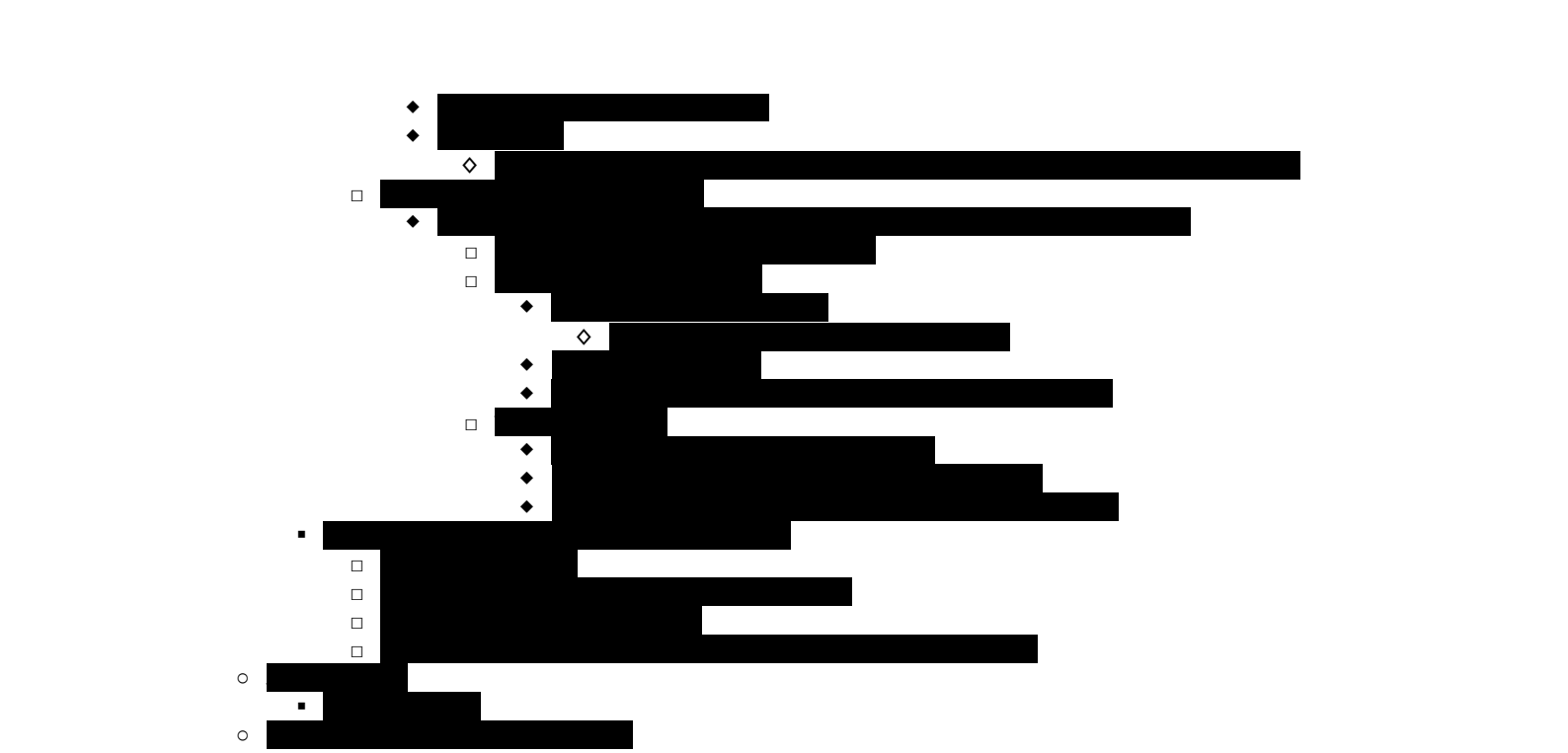
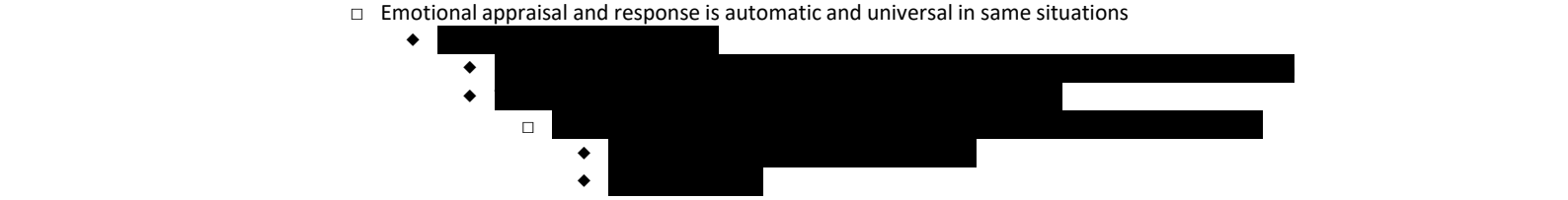


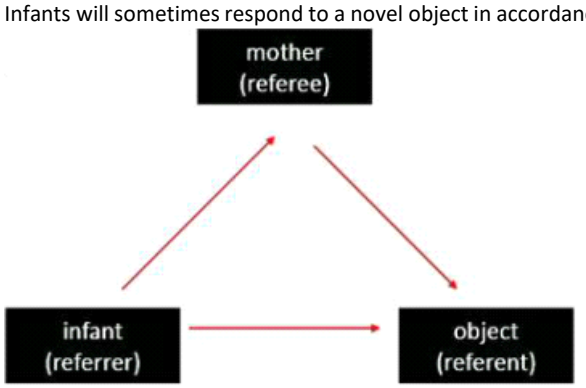
- Infants are emotionally prepared and sensitive in social contexts, with set/structured skills
  - Rather than by chance
  - Supports automatic production and recognition
  - Women found this in orphans after WWII
  - "Perception of emotion appears to be unique in giving direct access to the states of mind of others"
    - Bremmer, 1988, p. 166
  - Emotions are a powerful driving force

  - Emotional appraisal and response is automatic and universal in same situations



      - And researchers pin-pointed the emotions of the children based off their expressions
    - Consistently elicited anger in infants in these experiments:
      - Campos & Emde (1983)
        - Removed biscuit from 7 month
      - Stenberg (1982)
        - Infants arms restrained at 1 month
    - Such responses make sense within our 'adult' framework
      - I.e. Situations which make them angry also make us angry
  - Infants have emotional sensitivity/recognition
    - Caron, Caron & Myers (1983)
      - Used preferential looking paradigm
      - Habituated infants to one emotional expression (e.g. happiness)
      - Found that infants were sensitive to a new emotional expression when shown it (e.g. surprise)
- Empathy
  - Distinction between emotions doesn't necessarily mean:
  - Understanding what a person is feeling internally based off their overt behaviour
    - Empathic arousal
      - Emotional contagion
        - Infants cry in response to the cries of other infants

- Indicating that the environment has a role in determining what you feel
- Also seen in adults (e.g. crying at a sad scene in a movie)
- Is it a process or is there real interpretation in infants?
- Haviland & Lelwica (1987)
- 10-week-old infants and mother
- Face-to-face paradigm
- Maternal carer displays happy, sad and angry expressions
- Infants responded appropriately to each display
- Able to infer the internal state of their mother
- Socially aware emotional agents
- Supports Darwin's idea
- "An infant understands to a certain extent, and as I believe at a very early period, the meaning of feelings of those who tend them, by the expression of their features"
- I.e. The perception of emotions is direct and not mediated by learning processes
- Not just affective mirrors
- With a role of the environment as well
- See above
- But not identically
- Babies didn't mimic
- But responded in a way that fit with their expression
- E.g. If mother is angry, it becomes scared
- E.g. Baby shows signs of happiness if mother is show to be happy

- Social referencing
  - Cognition and emotion merge
  - Baldwin & Moses, 1996
    - At 12 months old
    - Infants will sometimes respond to a novel object in accordance with the affect displayed by their parent
    - 

    - Gives infant an insight into someone else's knowledge
      - And the ability to use it in unfamiliar situations
    - Infants appreciate that parents can supply information - in the form of an emotional appraisal - about novel objects
      - E.g. A person, thing or situation
      - At 9 moths they seek information to resolve uncertainty and guide their actions
        - From e.g. parent or experimental confederate
    - Pre-requisites
      - Infants need to be able to decode signal
      - Infant must understand referential quality of information
        - Must recognise that the information is referring to and elicited by the situation, person etc.
      - Infant must appreciate the potential for social communication of information
        - Recognition that the adult has a different state of mind and additional informational
        - Must have skills to elicit information
    - Examples
      - E.g. Looking at fire, referring to mother, reacting scared towards it
      - E.g. Sorce, Emde, Campos & Klinnert (1985)
        - Visual cliff apparatus (Gibson and Walk, 1960)

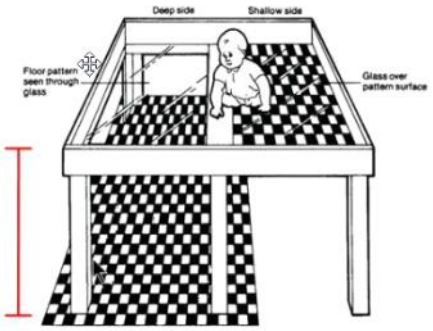


Figure 3.6 Gibson and Walk's (1960) visual cliff apparatus

- Place child in uncertain situation
- Place mother on other side, in clear view of the child
- Adjust height to maximise uncertainty
- Have mother show happy/scared face
  - When the mother looked happy, 74% of babies would crawl on the glass plate
  - None of the babies crawled on it when the mother looked fearful

- Follow up studies
  - Infant never played with toy that their mother looked at with disgust
    - After she left
- Kids of mothers who had social anxiety would not engage with other children when together

- Piaget
  - Social referencing should only occur later on

- Primary attachment relationship and its role in emotional regulation
  - 12 months of age
  - Specific relationship between the child and their primary caregiver
  - Built on a history of previous interaction
  - Evolutionary explanation
    - Universal aspects of human adaptation
      - Behavioural dispositions
        - Determinations to develop certain skills
        - Inherited from ancestors
        - Prominent adaptations because they improved the species' changes of survival
          - E.g. Initial reflex to physically cling on to things
            - Seen in primates
              - Cling on to caregivers for protection, food
          - E.g. Theorists who agreed with this and proposed the social nature of human existence
            - Darwin
            - Bowlby
              - [redacted]
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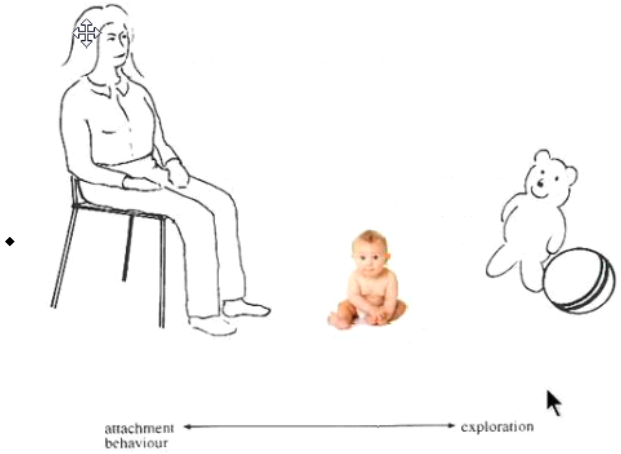
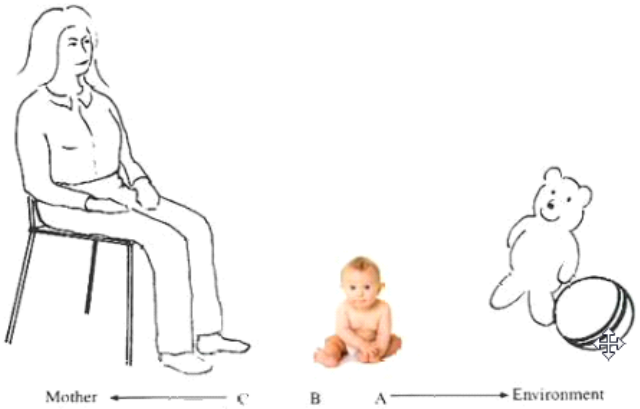
        - Attachment behavioural system
          - Promotes the protection and survival of the infant and species
          - In the environment of evolutionary adaptedness
          - Provides a foundation for flexible responses to the environment that is intertwined with the emotional capacities of the infant and his/her emotional development
          - What drives attachment?
            - Cybernetics as an influence on his study
              - The idea that organisms base their decisions on environmental conditions
              - Goal is homeostasis
                - Self-regulated/internal balance between dual needs:
                  - Protection
                  - Exploration

- E.g. Fed, rested, hungry and so it will explore
- Attachment is the balance of behaviour directed towards the mother and the environment



- Fearful external stimuli will disturb/upset the homeostasis
  - It will seek the attachment figure to return to state of homeostasis
    - Via the maintenance of proximity with a primary caregiver at times of distress or danger
    - With:
      - Maintaining contact between infant and caregiver
        - Crying and smiling
      - Bringing the infant in contact with the caregiver
        - Clinging and locomotion
    - Assists in emotion regulation
      - So the emotion regulation is construed as relational
      - Person we seek out to relieve emotional tension is the person we are attached to
        - E.g. Monkeys cannot sooth themselves so they look to an attachment figure
          - Runs to its 'mother' (cloth) when confronted with fearful stimulus
      - The primary caregiver can serve, control and moderate the infant's emotions
    - This leaves an emotional blueprint as it occurs over time
      - I.e. Feedback grows expectation that caregiver will care for it
        - Self-reinforcing the attachment
          - Hence it is emotionally driven
  - Attachment relationship is dynamic
    - Infant adapts to the mother
    - Mother adapts to the infant and is responsive to its needs
- Attachment in the first 12 months can determine how you respond to emotional situations later in life
  - Variation in attachment styles can constrain subsequent emotional development
    - E.g. If you have an unreliable/untrustworthy caregiver you may be untrusting in future situations
  - It is needed
    - "What is believed to be essential for mental health is that the infant and young child should experience a warm, intimate, and continuous relationship with his mother" (1953; p. 13)
      - E.g. Orphans are taken away from their primary caregiver
  - By 12 months
    - Organised set of responses to separations from their primary caregivers
      - Structured and predictable
      - Represent a crucial form of emotional regulation for the infant
      - Strange Situation procedure assesses the regular development of these
        - Ainsworth and colleagues
        - Put child in stressful situation and assess its behaviour during reunion

Episode	Person present	time
1	Mother, Infant & Observer	30 sec
2	Mother & Infant	3 min
3	Stranger, Mother & Infant	3 min
4	Stranger & Infant	~ 3 min
5	Mother & Infant	~ 3 min
6	Infant alone	~ 3 min
7	Stranger & Infant	~ 3 min
8	Mother & Infant	3 min



- Attachment style/behaviours
  - Linked to future relationships
    - Minnesota longitudinal cohort study found correlations
      - See below
  - Not linked to personality
  - Types
    - Securely attached
      - Flexible, secure base behaviour
      - Stays in proximity until reassured and then return to exploration
      - Minnesota
        - More competent with peers
        - More positive, less negative responses
        - Deeper relationships
        - Resilience
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    - Emotional development
      - Scroufe (1996)
        - Can be viewed as a movement from:
          - Dyadic regulation; to
            - From the caregiver
          - Self-regulation
            - Learned from the caregiver
    - Other links to emotions
      - Attachment is driven by the emotions we feel
      - Is a figure referenced by the infant in a social referencing situation

Applications of emotion and memory research

- Physical evidence
  - Memory and identification
  - Caution is shown
    - Collected, preserved and interpreted by forensic scientists

        - Avoid contamination
    - Circumstantial
        - Placement at a scene doesn't prove involvement
- Forensic investigations
    - An attempt to reconstruct a past event
    - Include:
        - Physical memory
            - Hair
            - Fibres
            - DNA
        - Eye witness memory
            - Flawed
                - Not a veridical record of an event
                    - It's reconstructive
                        - Affected by many factors
                            - E.g. Mood
            - Less cautiously used
                - Collected by people who don't specialise in human memory
                    - E.g. Police officers
                - Protocols for collecting, preserving and interpreting don't incorporate as much scientific psychological research as possible
                    - Memory isn't perfect
                        - Affected by many factors during the process of memory retention and recollection, which can distort it
                    - Despite this
                        - Can be critical
                        - Influential
                        - Vulnerable to psychological contamination
            - Stages of memory
                - Acquisition/encoding
                    - Witness's perceptions at the time of the event
                    - Affected by factors during this
                        - E.g. If it is dark
                - Storage
                    - Witness stores memory to avoid forgetting
                    - Memory decays over time
                - Retrieval
                    - Witness retrieves information from storage when it is needed
                    - Also affected by factors
                        - E.g. How a question is asked
            - Case studies of how arousal/stress during encoding can impact memory
                - E.g.
                    - Assassination of President Kennedy
                        - [redacted]
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                        - [redacted]
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                        - [redacted]
                        - Forgetting due to emotional arousal?
                - So memory errors in cases *suggest* that emotional arousal is detrimental to/impairs memory
                    - Experimental considerations
                        - Ecological validity
                            - Ethical considerations mean that research settings are not similar to real life situations
                            - Problems with manipulation emotions in the laboratory
                                - Research findings (below) are based off of large, artificial and safe, discrete test items
                                    - Contrasts with highly complex and dynamic emotionally arousing events that contradict these findings
                        - Issues with defining terms
                            - Stress/arousal elicited while viewing pictures might not compare to trauma from witnessing a crime
                        - Subjective qualities

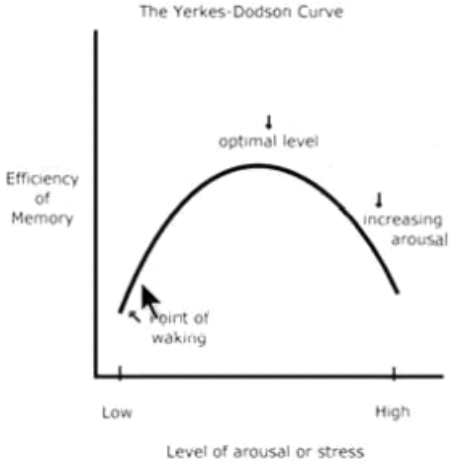
- E.g.
  - How you were feeling at the time
  - Whether the situation is threatening and has consequences
  - Bodily reactions
- Lab based experiments
  - Pros
    - High control of all variables
  - Cons
    - Relatively artificial
- Field based experiments
  - Pros
    - More ecologically valid
    - Reasonable control
  - Cons
    - Often doesn't allow full control over all variables
  - Example
    - Valentine (2006)
      - Field-based
      - Assess the effect of high stress
      - Labyrinth
      - Experimental design
        - IV
          - State anxiety
            - With a 'zombie' closely encountering (some?)
          - Trait-anxiety
          - Gender
      - Labyrinth induced increased heart rate (and thus state-anxiety score)
      - People who experienced more anxiety recalled more incorrect details and fewer correct details
      - No effect of train anxiety or gender
- Archival data collection and analysis
  - Pros
    - Real life data
  - Cons
    - No control over confounding variables
- Supported by some earlier research
  - Clifford & colleagues, 1978; 1981
  - Loftus & Burns, 1982

- Some research suggests that memory for emotionally arousing events should be enhanced
  - Emotional arousal
    - Transient state
      - Lasting only seconds/minutes
      - Rather than 'moods' or 'disorders'
    - The stimulation of an acute state of emotion (positive or negative)
      - Which is induced by exposure to a specific current event
    - Involves the three components
      - See above
      - Physiological activity
      - Behavioural
      - Cognitive appraisal
        - Thoughts and evaluations regarding the situation
        - Differences across:
          - Different people
          - Different situations
        - Promoted by some researchers as being a crucial factor in the experiencing of emotion
          - Improved attention/memory towards arousing stimuli helps people adapt to their environment
            - Evolutionary function
              - Enable individuals to detect and engage with beneficial stimuli
              - And remember emotion-eliciting events and to avoid harmful stimuli
                - Allow you to respond to them (e.g. dangerous situations) faster next time you encounter them
            - Examples of selective attention (thus improved encoding?) towards emotional stimuli
              - EEG data showed that participants' visual attention was captured for emotionally arousing images shown for 120ms, but not for neutral images
                - Schupp et al., 2004
              - Images of phobia-related items are detected faster than non-emotional stimuli (e.g. flowers) in a visual search task
                - Ohman et al. 2001a, 2001b
                - Need to notice the dangerous stimuli first

- Eye tracking data indicated a bias to look at left-hand images first when presented with pairs, unless there was an emotionally arousing image to the right
  - LaBar et al. 2000
- When attention is drawn towards emotional stimuli, it appears to become fixated
  - Found in study similar to LaBar
  - Calvo & Lang, 2004
- Emotional stimuli receive an attentional advantage as blinking is not observed
  - Levenston et al., 2000
  - When shown starting audio tone while viewing emotional pictures
  - But was observed for neutral pictures

- Research on recalling emotionally arousing events
  - Yuille & Cutshall (1986)
    - Archival data
    - 13 witnesses of street shooting were interviewed by police
    - And by a researcher month later
    - Witnesses provided a stress rating on a 7 point scale
      - Recall accuracy was greatest for witnesses who reported having experienced the greatest degree of stress (negative emotional arousal) during the crime
      - However, the people with more stress were more directly involved
        - Potential confounding variable

- More recent, dominant body of research suggests that emotional arousal from the same event can both impair and enhance memory
  - Yerkes-Dodson law
    - Memory is best at the optimum level of arousal
      - Not too high, not too low



  - Easterbrook hypothesis
    - More dominant recently
    - Highly aroused witnesses have better memory for central details over peripheral details
      - As arousal increases, perceptual range reduces and attention narrows, so we attend to only central details in the environment
        - Concept of 'central' can differ from person-to-person
      - Supported by understanding of physiological, evolutionary and psychological functions of emotional arousal
        - E.g. Amygdala and prefrontal cortex processing
      - Better explains recall accuracy and memory failures
        - Witnesses weren't as focused on the peripheral details
    - Supported by theories with different methodologies:
      - Christianson & Loftus (1991)
        - Pps viewed slides showing a boy on an outing with his mother
          - Boy walking past a car (neutral condition)
          - Boy on bonnet, bleeding, with one eye hanging out (emotional condition)
        - Findings for the emotional condition group:
          - Memory enhancement for central details
          - Memory impairment for peripheral details
            - The rest of the slides
      - Steblay (1992)
        - Presence of a weapon draws attention away from the culprit's face
        - Impaires the witness' ability to identify them
      - Morgan et al. (2004)
        - [redacted]
        - [redacted]

- Hulse & Memon (2006)
  - 70 firearms police officers
  - Conditions
    - Weapon present in simulation (shoot)
    - Weapon absent in simulation
  - WP (more aroused) recalled fewer details but these details were more accurate
    - Than those recalled by WA condition
    - E.g. Details about the gun
- Sporer (1992)
  - Only 30% of witnesses described the face of the perpetrator

– Not supported by Behrman & Davey (2001); Valentine et al. (2003)
  – Examined line-up decisions of witness to gun-related vs. non gun-related crimes
  – Found no support for weapon focus effects

- Lie detection
  - Deception
    - Definition according to Vrij (2000)
      - 
    - Detecting
      - Polygraph
        - Timeline
          - 19th century
            - Lombroso (Italian criminologist)
              – Proposed there was a way to detect deception
          - Early 20th century
            - Polygraph machine first used
            - 1917
              – William Marston
                - Systolic blood pressure
                  - First form
                  - Conceptualised by his wife from the redness of increased blood pressure when angry
            - 1932
              – John A. Larson
                - Forerunner of modern polygraph
                  - Extended to also include pulse rates and respiratory changes
        - Assess physiological change, not lies
        - Assumes that telling a lie is more stressful than telling the truth
          - Assess physiological responses which are indicative of stress, which is indicative of deception, not lies
            - This is a supposition
              – Many emotions give rise to the same physiological change
                - E.g. If you're innocent but angry or don't want to be falsely accused
            - Including:
              – Blood pressure
              – Heart rate
              – Respiration
              – Sweating (GSR)
        - Use
          - Entertainment
          - Criminal investigations
            - Not admissible in court in most Western countries
              – Juries don't understand it
              – Not accurate as a measure of deception
            - Verify whether or not a crime occurred by assessing witnesses
            - Verify suspicions about someone's involvement
              – With further evidence needed
          - Pre-employment screening
            - E.g. Government

- Types of polygraph tests
  - [redacted]
    - [redacted]
    - [redacted]
    - [redacted]
      - [redacted]
    - [redacted]
  - Control question test
    - Procedure
      - Phase 1
        - Pre-test interview
        - Yes/No questions are formulated and discussed with the suspect
        - Asks three types:
          - Irrelevant
            - No arousal
            - E.g. Yes/No, "Are you left handed?"
          - Relevant
            - Discussed until they agree that they are unambiguous
            - Stress-inducing for guilty but not innocent
            - E.g. Did you assault Sam Smith the evening of Nov 11th?"
          - Control
            - Stress-inducing for innocent people but not guilty people
            - General, vague and cover long periods time
            - Embarrass both innocent and guilty
            - Require an honest 'yes' but suspect is told they must lie and that the polygraph will detect it
            - E.g. "Before age 25, did you ever verbally threaten to hurt anyone?"
      - Phase 2
        - Have to convince participants that it works in detecting lies
          - Guilty becomes more fearful
            - Greater physiological exacerbation to relevant questions
          - Innocent becomes less fearful
          - E.g. Card trick
            - Pinpoint when they are lying about a card being theirs
      - Phase 3
        - All types of questions are repeated
      - Phase 4
        - Scoring
          - Global approach
            - Subjective impression of peaks and moderate patterns
          - Numerical scoring
            - If relevant > control = negative score
            - If control > relevant = positive score
            - Comparisons are summed to give a total score
              - Often:
                - +5 = truth
                - -5 = deceptive
                - In between = inconclusive
      - Phase 5
        - Tell the suspect the result in the hopes of a confession
          - Because the polygraph itself is not admissible while a confession is
    - Criticisms
      - [redacted]
      - [redacted]
      - [redacted]
      - [redacted]
        - [redacted]
      - [redacted]
      - [redacted]
        - [redacted]
        - [redacted]
    - Accuracy
      - [redacted]
        - [redacted]
      - [redacted]
        - [redacted]
        - [redacted]
      - [redacted]
        - [redacted]
        - [redacted]

- [redacted]
- More widely used in the USA
  - I.e. More likely to have innocent person be found guilty than a guilty person be found innocent
- Guilty Knowledge Test
  - Lykken (1959-1998)
  - Takes out the conscious lying aspect
  - If you are the perpetrator, you would have specific knowledge that innocent people would not
    - Asks multiple choice questions
      - One option is correct
    - Assumes that if the suspect is guilty, they would have a stronger (more aroused) response to correct information
    - E.g. O.J. Simpson:
      - "Was she drowned, hit on the head, shot, beaten, stabbed or strangled?"
      - "Where was her body found? X, y, etc."
  - An innocent person would not have specific knowledge
    - 1/6 chance of responding to correct info
      - More questions = better odds
  - Precautions
    - Examiner should be unaware of correct answer
      - They might detect the correct answer from the examiner
    - Need to check that alternatives are equally arousing for innocent people
  - Criticisms
    - Applicability
      - Can only be used if lots of details are known to the perpetrator
        - Uncommon now, with most events reported widely
          - 9% of cases could have been used according to FBI
      - Assumes that perpetrator knew or remembered details
        - Their response might not be true
  - Accuracy
    - Very accurate at identifying innocent participants
      - 95%
    - False negatives
      - Less accurate with identifying guilty participants
      - 85%
    - Ginton et al. (1982)
      - Ecologically valid attempt at testing success
        - 21 Israeli policemen (a lot at stake) were given the opportunity to cheat but all instances of cheating were found
        - All were told to participate in polygraph
        - CQT was used
        - Guilty officers were detected as guilty
        - 2 innocents were detected as lying
    - Only two studies of GKT
      - 94% and 98% accuracy for truths
      - 24% and 58% accuracy for lies
      - High false negatives
  - More widely used in Israel and Japan
    - I.e. Rather than minimal chance of innocent person going to jail and a guilty person being free
- General criticisms
  - Detect any arousal, not just a give-away cue of lying
  - Othello Error
    - Innocent people may show similar signs of arousal to liars because they:
      - May experience emotions
      - May have to think hard
      - May have to control themselves
  - Ecological validity issues
    - Deception research is conducted in labs and the stakes might not be high enough
  - Difficult to know the real 'ground' truth in field studies
    - Some people maybe have been falsely convicted and appeared as a false positive
  - Adequate comparisons between truth-telling ('baseline') and lie-telling are not made
    - Need a better baseline
  - Observers seem to have incorrect beliefs about how liars behave
    - People, including investigators, are taught wrong cues
  - Brokaw hazard
    - Individual differences in characteristics of:
      - Emotional expression
      - Vocal
      - Body movement
    - E.g. Psychopaths respond differently due to lack of emotional arousal
  - Liars can use countermeasures
    - E.g. Can train themselves to increase arousal at baseline questions

- ◇ Cultural differences in non-verbal behaviour
- How to pass
  - ◇ Lower your arousal levels for relevant questions
    - Harder to do
    - Easier for psychopaths who have minimal emotive response to situations
  - ◇ Easier to increase your arousal for control questions
    - E.g. Prick yourself or bite your tongue
  - ◇ Floyd Fay became a polygraph expert in prison after being falsely convicted of murder
    - Recruited 27 inmates who confessed their guilty
    - After 20 minutes of coaching, 23 passed a CQT exam
      - Kleinmuntz & Szucko, 1984
- Scientific/expert support
  - ◇

Question	% agree
CQT is scientifically sound	36
GKT is scientifically sound	77
Would advocate admitting a failed CQT as evidence in court	24
Conclude that an individual who fails 8/19 GKT items has guilty knowledge	72
CQT can be beaten by increased response to control questions	99

  - □ Non-verbal
  - □ Content of what they say
- Current directions
  - [redacted]
    - □ [redacted]
    - □ [redacted]
    - □ [redacted]
      - [redacted]
      - [redacted]
      - [redacted]
        - ◇ [redacted]
    - □ [redacted]
      - [redacted]
        - ◇ [redacted]
  - [redacted]
    - □ [redacted]
    - □ [redacted]
      - [redacted]
- Difficulties in the detection of deception

How should we think about emotions in the study of human psychology?