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CIE AS-LEVEL PSYCHOLOGY 9990

SUMMARIZED NOTES ON THE CORE STUDIES

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1. BIOLOGICAL APPROACH

- Main assumptions of the biological approach:
  - Behaviour, cognition and emotions can be explained in terms of the working of the brain and the effect of hormones
  - Similarities and differences between people can be understood in terms of biological factors and their interaction with other factors

1.1 Canli et al. (brain scans and emotions)

- **Title**: Event-Related Activation in the Human Amygdala Associates with Later Memory for Individual Emotional Experiences
- **Year**: 2000
- **Psychology being investigated**:
  - There are two types of basic medical scans - structural and functional scans. Structural scans take detailed pictures of the structure of the brain whereas Functional scans are able to show activity levels in different areas of the brain.
  - Functional Magnetic Resonance Imaging (fMRI) is a neuroimaging procedure using MRI technology that measures brain activity by detecting changes associated with blood flow.
  - fMRI is a non-invasive brain scanning technique. It uses radio waves coupled with a strong magnetic field to create a very detailed image of the brain.
  - The scanner traces the journey of strong oxygenated blood around the brain. Areas of high activity receive more oxygenated blood. This is called the blood-oxygen-level-dependent (BOLD) signal.
  - The scanner maps all of the activity and produces a map of squares called voxels which represent thousands of neurons. The pictures are colour coded to show the intensity if activity.
  - The amygdala is an almond-shaped set of neurons located deep in the brain's medial temporal lobe and has been shown to play a key role in the processing of emotions such as pleasure, fear, and anger.
- **Background**
  - Imaging studies have shown that amygdala activation correlates with emotional memory in the intact brain.
  - These first imaging studies have identified a correlation between amygdala activation and declarative memory for emotional stimuli across different individuals. This could be for three reasons:
    1. Some individuals are more responsive to emotional experiences than others.
    2. Some individuals, during a particular scanning session, may have been in some sort of state that enhanced responsiveness to emotional experience.
    3. The amygdala is responsive in a dynamic or phasic way to moment-to-moment individual emotional experience, so that amygdala activation would reflect a flexible, rapidly changing emotional response that ought to be observable within an individual.
- **Aims**
  - To investigate whether an area of the brain called the amygdala is sensitive to different levels to emotions based on subjective emotional experiences.
  - To investigate whether the degree of emotional intensity affects the role of the amygdala in aiding memory recall of stimuli classes as being "emotional".
- **Procedure**
  - Research method: Laboratory experiment
  - Experimental design: Repeated Measures Design
  - Independent Variable (IV): Intensity rating of stimuli
  - Dependent Variable (DV): pixel count and percentage forgotten, familiar or remembered in tests
  - Sample: Ten right-handed healthy female volunteers were participants of this study. Females were chosen as the are more likely to report intense emotional experiences and show more physiological reactivity in concordance with valance judgements than men.
  - Sampling technique: Volunteer Sampling
  - The procedure for this experiment was divided into the behavioural procedure and the MRI.

Behavioural procedure:

  - During scanning, participants were shown 96 scenes through a mirror directed at a back-projection screen.
  - Each of these scenes had a normative rating for arousal and valance from the International Affective Picture System stimuli set.

- The scenes ranged from a rating of 1.17 (highly negative) to 5.44 (neutral) for valence, and, 1.97 (tranquil) to 7.63 (highly arousing) for arousal.
- The order of the scenes was randomised across participants.
- Each scene was shown for a period of 2.88 seconds. There was an interstimulus interval of 12.96 seconds during which the participants viewed a fixation cross.
- Participants were instructed to view the entire picture for the time it was shown and as soon as the cross appeared, they were to rate the scene by pressing the relevant button with their right hand. The rating scale for emotional arousal ranged from 0 = not emotionally intense at all, to 3 = extremely emotionally intense.
- Three weeks after the scan, participants were tested in an unexpected recognition test, during which they viewed all the previously seen scenes and 48 new ones (foils).
- The foils matched the valance and arousal ratings of the original scenes. The normative rating for valance ranged from as 1.31 (highly negative) to 5.78 (neutral) and the normative rating for arousal ranged from 2.74 (tranquil) to 7.22 (highly arousing).
- During the recognition test, participants were asked if they remembered the scene. If they did, they were asked whether they remembered it with certainty, coded as "remembered", or if they had a less certain feeling of familiarity, coded as "familiar".
- Forgotten, familiar and remembered trials were encoded in numerical format to construct correlational maps.

MRI:

- Data was acquired in a 1.5 T General Electric Signa MR imager, which was used to measure BOLD contrast.
- For structural images, eight slices perpendicular to the axial plane of the hippocampus were obtained.
- The anterior slice was positioned 7 mm anterior to the amygdala.
- Functional images were obtained using a two-dimensional spin echo sequence with two interleaves.
- A whole-head coil was used for all participants.
- Head movement was minimised by a bite bar using which was formed with each participant's dental imprints.
- During functional scanning, 11 frames were captured per trial.
- Individual frames in each trial were assigned to either the baseline fixation period (frames 1, 2, 10 and 11) or the activation period (frames 5-8).
- A correlational map was created to correlate brain activity with participants' arousal ratings and memory scores.

- **Results**
  - Individual's experience of emotional intensity in the present study correlated well with normative rating on emotional valance and arousal.
  - The average correlations coefficients between participants' intensity ratings and normative ratings were -0.66 and 0.68.
  - Amygdala activation was significantly, bilaterally correlated with higher ratings of individually experienced emotional intensity.
  - Participants' ratings of emotional intensity were similarly distributed across the four categories with 0 being 29%, 1 being 22%, 2 being 24% and 3 being 25%.
  - Memory recall was significantly better for those scenes rated as emotionally intense. Scenes rated 0-2 had similar distributions of percentage forgotten, familiar or remembered. However, those rated 3 were rated familiar or remembered with a higher frequency.
  - For scenes rated highly emotional, the degree of left amygdala activation predicted whether an individual stimulus would be forgotten, familiar or remembered in a later memory test. Little activation to a scene that was rated as being highly emotional was associated with forgetting that scene; intermediate activation indicated that the scene was familiar; high activation was associated by the scene being remembered.
  - When the left amygdala was analysed further, there was a significant correlation between emotional intensity and the amygdala's activation.
- **Conclusions**
  - This study found that amygdala activation is sensitive to individually experienced emotional intensity of discrete visual stimuli.
  - Additionally, it found that activity in the left amygdala during encoding is predictive of subsequent memory.
  - It was also concluded that the degree to which the amygdala activation at encoding can predict subsequent memory is a function of emotional intensity.

- **Ethical Issues**
  - Participants were exposed to emotionally charged imager which may have stressed them. There is no record of participants being exposed to "happier" imagery in order to alleviate any negative mental state they were found in.
- **Strengths**
  - This is a laboratory experiment and hence has a standardised procedure and it can easily be tested for reliability.
  - The study has many controls and hence the researchers can be more confident in establishing a causal relationship.
  - The study collects quantitative data which allows the researchers to carry out statistical and correlational analyses.
  - There are low chances of participants responding to demand characteristics increasing the validity of the data.
  - Using fMRI scanners provides objective data.
  - This was a repeated measures design hence the chances of participant variables affecting the findings is lower.
- **Weaknesses**
  - The study involves task that aren't done in daily life and hence has a low mundane realism.
  - The sample contains only females and is a small number hence has a low generalizability, reducing the validity of the study.
  - The study has only quantitative data and this does not explain the participant's reasons for choosing a particular rating.
  - The correlational analysis only suggests a relationship between the two factors and cannot establish a reliable causal relationship.
- **Issues and Debates**
  - Application to daily life: The findings may be useful for advertising agencies.
  - Nature versus Nurture: Findings of this study support the nature side of this debate, however, as experiences are not taken into account, nurture could have cause the results.

1.2 Dement and Kleitman (sleep and dreams)

- **Title**: The Relation of Eye Movements During Sleep To Dream Activity: An Objective Method for the Study of Dreaming
- **Year**: 1957
- **Psychology being investigated**:
  - Our body follows two types of sleep: REM (rapid eye movement) sleep and nREM (non-rapid eye movement) sleep.
  - nREM can be divided into 4 sleep stages.
  - In REM sleep, our eyes move rapidly under the lids.
  - Aserinsky and Klietman's (1995) study: they observed periods of rapid, conjugate eye movements during sleep and found a high incidence of dream recall in awakening participants during these periods and a low incidence when awakened at other times.
  - REM sleep is known as paradoxical sleep. It resembles wakefulness as our eyes move, we often experience vivid (bizarre) thoughts in the form of dreams and our brains are active. However, it is different from wakefulness as it is difficult to wake up, we are fairly insensitive to stimuli and paralysed.
- **Background**
  - Sleep and dreaming are clearly hard to investigate because the participant is necessarily asleep and so cannot communicate with the researcher. Even when awake, only self-report data can be obtained about dream content, which alone may be invalid as it is subjective.
  - The electro-encephalograph (EEG) monitors the electrical activity of the brain.
  - The electrooculogram (EOG) allowed the electrical recording of eye-movement patterns, their presence or absence, their size and direction (vertical or horizontal).
  - The EEG detects and records tiny electrical charges associated with nerve and muscle activity.
  - In REM sleep, EEG is relatively low voltage/amplitude and high frequency.
  - In nREM sleep, EEG has either high voltage/amplitude and slow (low frequency) waves or frequent 'sleep spindles' which are short-lived high voltage, high frequency waves.

- **Aims**
  - Overall aim: To investigate dreaming in an objective way by looking for the relationship between eye movements in sleep and the dreamer's recall.
  - Specific aims:
    - To test whether dream recall differs between REM and nREM sleep.
    - To investigate whether there is a positive correlation between subjective estimates of dream duration and the length of REM period.
    - To test whether eye-movement patterns are related to dream content. (Whether these patterns represent the visual experience of dream content or whether they are simply random movements arising from the activation of the CNS)
- **Procedure**
  - Research Method: Laboratory Experiment, Observations, interviews and correlation
  - Experimental design: Repeated Measures Design
  - Three approaches were used to test the three specific aims.

	METHOD	DESIGN
AIM 1	• Participants were woken either from REM or nREM sleep, but were not told which stage they were in. • They confirmed whether they were having a dream and if so, reported the content into a recorder.	• Natural experiment in a laboratory setting • IV: REM or nREM sleep stage • DV: whether the participants reported a dream, and if so, the details
AIM 2	• Participants were woken following 5 or 15 minutes of REM sleep. • They were asked if they thought they had been dreaming for 5 or 15 minutes. • Their dream narrative was recorder and the number of words were counted.	• The data was used in both experimental and correlational designs. • Experimental analysis: IV - waking after 5 or 15 minutes of REM sleep. DV - participant's choice • Correlational analysis: two variables were the participant's time estimate and number of words in the dream narrative
AIM 3	• Participants were woken after exhibiting a single eye-movement pattern for longer than a minute. • This was measures using electrodes and an EOG. • The dream content was recorded.	• Natural experiment in a laboratory setting. • IV: eye-movement pattern type (mainly horizontal, mainly vertical, vertical & horizontal, little or none) This could not be manipulated. • DV: report of dream content

  - Sample: seven adult males and two adult females. Five of them were studied intensively while the data gathered from the other four was minimal with the intent of confirming the results.
  - Sampling technique: Opportunity sampling
  - Participants studied in detail spent between 6-17 nights with 50-77 awakenings. The four others spent only one or two nights with a total of 4-10 awakenings.
  - Participants were identified by their initials to maintain confidentiality.
  - Participants reported to the lab a little before their usual bedtime.

- They were instructed to eat normally but to abstain from alcoholic or caffeine-containing beverages on the day of the experiment.
- Participants were fitted with electrodes on their scalp and around their eyes.
- Once they were in bed in a quiet, dark room, the wires were gathered into a "pony tail" to allow freedom of movement.
- The EEG ran continuously to monitor the participants sleep stages and to inform the researchers when they should be woken up.
- Participants were woken by a doorbell that was loud enough to rouse them from any sleep stage.
- The doorbell rung at various times during the night and the participants indicated whether they had been dreaming and described their dream into a voice recorder.
- Analysis of dream narrative: This was only considered a dream if there was a coherent, fairly detailed description of the content. Vague, fragmentary impressions were not scored as dreams.

• **Results**

Study 1:

- Participants described dreams often when woken in REM but rarely from nREM sleep.
- When awakened in nREM, they tended to describe feelings but these did not relate to specific dream content.
- The waking pattern did not affect dream recall.
- Specifically, participant WD was no less accurate despite being mislead and DN was no more accurate even though he might have guessed the pattern of awakenings. This showed that practice effect was not a factor affecting the results of the experiment.
- When woken from nREM sleep, participants returned to nREM sleep and the next REM stage was not delayed.
- When woken from REM sleep, participants generally did not dream until the next REM phase.
- Recall of dreams during nREM sleep was much more likely when the participants were woken soon after the end of an REM sleep stage.

Study 2:

- Participants' responses were 88% accurate for 5-minute REM duration and 78% accurate for 15-minute REM duration.
- Although most participants were highly accurate (with 0-3 incorrect responses), DN was not. He often found that he could only remember the end of his dream, so it seemed shorter than it actually was.
- There was a significant positive correlation between REM duration and number of words in dream narrative. The r values varied between 0.40 and 0.71 for different participants.
- Dream narratives for very long durations were not much longer than those for 15 minutes. The participants did report that they felt as though they had been dreaming for a long time, suggesting that they couldn't recall the early part of the dream.

Study 3:

- Participants could not recall the dream with such high precision.
- Three of the nine participants showed periods of vertical movements, and each was allied to a narrative about vertical movement.
- One of them dreamed of standing at bottom of a tall cliff operating a hoist. The participant reported looking up at the climbers at various levels and down at the hoist machinery.
- Another dreamed of climbing up a series of ladders and looking up and down as he climbed.
- In the third one, the dreamer was throwing basketballs in a net, first shooting them and looking up at the net, and then looking down to pick off another ball off the floor.
- Only one instance of pure horizontal movements was seen. In this the participant was watching people throwing tomatoes at each other.
- On 10 occasions, participants were awakened after little or no eye movement. Here, they reported watching something in distance or just staring fixedly at some object.
- In two of these awakenings, participants' pattern was a minute of inactivity followed by large eye movement to the left just a second or two before awakening.
- In one, the participant was driving a car and staring at the road ahead. He approached an intersection and was startled by the sudden appearance of a car speeding at him from the left as the bell rang.

- The other participant was also driving a car and staring at the road ahead. Just before awakening, he saw a man on the left side of the road and hailed him as he drove past.
- 21 awakenings followed mixed eye movements. These involved the participants looking at things close to them, objects or people. There was no recall of distant or vertical activity.

- **Conclusions**
  - *Study 1:* Dreams probably occur only during REM sleep, which occurs regularly throughout the night. Dreams reported when woken from nREM sleep are usually from previous REM episodes.
  - *Study 2:* The finding that the length of an REM period and its estimation by the participants are very similar shows that dreams are not instantaneous events but rather are experienced in "real time".
  - *Study 3:* Eye movements during REM sleep correspond to where and at what the dreamer is looking in the dream. This suggests that eye movements aren't random events caused by the activation of the central nervous system but are directly related to dream imagery.
- **Ethical Issues**
  - Confidentiality of participants was maintained as they were identified using their initials so that dream content cannot be related to any of them.
  - Protection may not have been fully provided as participants were sleeping in unnatural situation so it may have affected their sleep pattern or their ability to concentrate the next day.
- **Strengths**
  - This is a laboratory experiment and hence has a standardised procedure and it can easily be tested for reliability.
  - The study has many controls and hence the researchers can be more confident in establishing a causal relationship.
- **Weaknesses**
  - Participants had to sleep in an unusual environment hence the study lacks ecological validity.
  - Tasks performed by the participants aren't task they do in their daily life and hence this study has a low mundane realism
  - This study had a small sample size and hence may not be very generalizable.
  - All findings of this study are based on biological mechanisms and hence may be seen as reductionist.
  - Most of the data in this study has been collected via self-reports which may not be very reliable as we do not know how truthful the participants are. This could reduce the validity of the findings.
- **Issues and Debates**
  - Application to everyday life: The findings of this study could be used for treating or checking for sleep disorders.
  - Nature vs Nurture: REM and nREM sleep are universal and hence due to nature. However, the individual differences could have been due to environmental factors suggesting that they can affect sleeping patterns too.

1.3 Schatcher & Singer (two factors in emotions

- **Title:** Cognitive, Social and Physiological Determinants of Emotional State
- **Year:** 1962
- **Psychology being investigated:**
  - Two-factor theory of emotions: the person must experience physiological arousal and there must be a cognitive interpretation (label) of arousal as a specific emotion.
  - When someone experiences an emotion, physiological arousal occurs and the person uses the immediate environment to search for cues to label the physiological arousal. This can sometimes cause misinterpretations of emotions based on the physiological arousal.
  - When the brain does not know why it feels an emotion it relies on external stimulation for cues on how to label the emotion.

- **Background:**
  - James Lange Theory of emotion state: 'the same visceral changes occur in very different emotional states and in non-emotional states'
  - An event first causes physiological arousal, we then cognitively interpret thus arousal and then experience the emotion.
  - Cannon-Bard Theory of emotion state: we experience physiological arousal and emotion at the same time. One doesn't cause the other. 1. Senses relay emotion-provoking stimuli to the thalamus 2. Thalamus passes information in two directions - to the cortex for conscious experience of emotion - to internal organs producing arousal.
  - Emotions are a complex state of feeling that results in physical and psychological changes that influence thoughts and behavior.
- **Aims:**
  - To investigate the role cognitive factors have in the experience of emotion when we are in a state of physiological arousal that has no immediate explanation.
  - When we do have an appropriate explanation for feeling a certain emotion, to see whether we label it as the most appropriate emotion.
  - To see whether the person will react emotionally to a certain situation based on his or her physiology even if the cognitive elements remain the same.
- **Procedure:**
  - Research Method: Laboratory Experiment, observation and questionnaires
  - Experimental Design: Independent Measures Design
  - Independent Variable: Description of injection & physiological effects
  - Dependent Variable: Measures of pulse rate, self-ratings of side effects and behaviours seen during observation
  - Sample: 184 male students from the University of Minnesota's introductory Psychology course. Around 90% of these students volunteered to be part of studies. They received 2 extra points in their final examination for every hour they took part in an experiment.
  - All participants were cleared by the student health service to check that they would not be harmed by the injection given in this study.
  - Sampling technique: Volunteer Sampling
  - The experiment was cast in the framework of a study of the effects of vitamin supplements on vision
  - When the participant arrived, he was taken to a private room where the experimenter briefed him about the experiment and asked if he would mind receiving a Suproxin (name given to the drug) injection. [Only 1 in 185 students didn't agree]
  - After that the experimenter continued with instructions and then left. The physician entered, repeated the experimenter's instructions and then injected the participant with Suproxin.
  - There were 2 forms of suproxin - placebo or epinephrine
  - Epinephrine (adrenaline) is a sympathomimetic drug whose effects are a perfect mimicry of a discharge of the sympathetic nervous system.
  - Symptoms of epinephrine: palpitations, tremors, feeling of flushing and accelerated breathing. (The effects begin after 3 minutes and last from 10 minutes to 1 hour)
  - The placebo was a saline solution
  - The participants were then put in 1 of 4 experimental conditions:
  - *Epinephrine Informed:* Participants were told that the side effects of Suproxin are transitory (last for 15-20 minutes only). The side effects were described as hand shaking, heart pounding and face getting warm and flushed. (the true side effects)
  - *Epinephrine Ignorant:* Participants were told that there are no side effects to this drug.
  - *Epinephrine Misinformed:* Participants were told that the side effects are transitory. The side effects were described as feet feeling numb, itching sensation and slight headache. (mislead about the side effects) {*this group was introduced as a control group. as participants wouldn't have an appropriate explanation for their state, they would turn introspective.*}
  - Participants given the saline solution were treated in the same was as the Epi Ign.
  - Participants were then allocated to either the euphoria condition or anger condition

EUPHORIA

- Immediately after the drug was given, the experimenter entered with a stooge.
- The stooge was introduced and they were told that they would have to wait for 20 minutes for the suproxin to get from the injection sit into the bloodstream.
- The room was deliberately put into a state of mild disarray. the experimenter apologized for the condition and told them that they could use the stuff in the room.
- The stooge introduced himself again. He then made a series of standard icebreaker comments and launched his routine.
- This routine was standard for all participants and only variation was any activity initiated by the participant himself.
- The stooge never knew which condition the participant was in (to increase validity & reliability)
- The routine was as follows:

1. Starts doodling fish for 30 seconds
2. Says "this scrap paper isn't even good for doodling" then crumples it and throws into the bin and then turns this into a basketball game
3. If the participant has not joined, the stooge asks him to try.
4. The stooge then makes an airplane and flies it.
5. He throws it to the participant.
6. He tears off a part saying maybe this cannot fly and makes a slingshot out of the rubber band and paper.
7. He then builds a tower of the sloppy pile of folders and shoots at it
8. He plays with the hula hoop.
9. He sits with his feet on the table

ANGER

- Immediately after the drug was given, the experimenter entered with a stooge.
- The stooge was introduced and they were told that they would have to wait for 20 minutes for the suproxin to get from the injection sit into the bloodstream.
- During this time, they were asked to complete a questionnaire.
- The questionnaire starts off innocently and then grows increasingly personal and insulting.
- The stooge paces his answers based on the participants and regularly makes series of standard comments ending up in rage.
- Before answering, he says "It is unfair to give shots. They should have told us earlier. You hate to refuse once you have said a yes."
- Q 28 states "With how many me other than your father has your mother had extramarital relationships?" This leaves him extremely angry.
- Only the Epi Inf, Epi Ign and the Placebo group took part in this.

- Standardized observations took place through a one-way mirror.
- The confederate would engage in 14 standard behaviours in the euphoria condition. For each of these the behaviour of the participants was classified into four categories (1) joins in with the activity (2) initiates new activity (3) ignores the confederate (4) watches the confederate.
- There was more than one observer to test for reliability and 88 % matched in inter-rater reliability
- For anger, behaviour was coded under 6 categories (1) agrees (2) disagrees (3) neutral behaviour (4) initiates agreement or disagreement (5) watches (6) ignores
- After the session, participants had to complete a questionnaire in which they were asked: how angry they felt, how good or happy they felt; whether they had felt any side effects of the drug
- Participant's pulse rate was taken before and after injection
- Participants were fully debriefed and explained the deception element and why was it necessary. They were asked if they had been suspicious of the stooge's activity.

- **Results:**
  - 11 participants' data was eliminated because they were suspicious of the stooge
  - In all epinephrine conditions:
    - heart rate increased (as expected)
    - People experienced more palpitations & tremors
  - 5 participants were not affected by adrenaline (they were excluded from the study)
  - Participants in Epi Informed were significantly less euphoric than participants in Epi Misinformed
  - Participants in Epi Informed were significantly less euphoric than participants in Epi Ignorant
  - No difference between the placebo and Epi Misinformed groups on levels of euphoria
  - Epi Misinformed engaged in the most activities and initiated more behaviors than participants in other groups.
  - Only significant difference was in between Epi Misinformed and Informed groups
  - None of the groups significantly differed on the anger scores. Epi Informed group showed highest levels of self-reported anger.
  - Behaviorally, Epi Ignorant group showed most over anger of any group on average.
- **Conclusions:**

There are two factors involved in our experiences of emotions:

  - Our physiological arousal or state
  - The information or cognitions that help us to understand the behaviour we feel.
  - These two factors interact and make us feel different emotions.
- **Ethical Issues:**
  - Participants did not know what was being injected or tested for and hence were deceived.
  - Participants were injected, so they may have been physically hurt & since they were exposed to situations with euphoria or anger, their psychological state would have been different than the one they entered hence protection wasn't provided.
- **Strengths:**
  - High level of standardization means it is easy to replicate for reliability.
  - Many controls make the researcher more confident about the causal relationship.
  - Can be replicated to test for reliability
  - Researchers can be more confident that IV directly affects the DV.
  - High inter-rater reliability between the observers.
  - Participants were unaware of being observed hence there were no demand characteristics. This increases the reliability and validity of the study
- **Weaknesses:**
  - Lacks mundane realism and ecological validity
  - Participant variables could not have been controlled if they were 'naturally' more euphoric or angry
  - Participants were chosen via volunteering, hence they many not be representative of a wider population.
  - Use of independent groups may have introduced participant variables that might have affected the finding of this experiment.
  - Volunteer sample may not be representative of a wider population.
  - There is a low generalizability as the sample consists of males only
- **Issues and Debates:**
  - Application to everyday life: Good to know that people describe their feeling with terms from the cognition available at that time. Can be used in hospitals to see patient's behaviour or to know future side effects
  - Individual and Situational Explanation: This study supports the situational side of this debate as the situation and external triggers cause the participants' emotions.

2. COGNITIVE APPROACH

Main assumptions of the cognitive approach:

- behaviour and emotions can be explained in terms of the role of cognitive processes such as attention, language, thinking and memory
- similarities and differences between people can be understood in terms of individual patterns of cognition

2.1 Andrade (doodling)

- **Title**: What Does Doodling Do?
- **Year**: 2009
- **Psychology being investigated**:
  - People have known to daydream frequently when presented with something boring.
- **Background**
  - Prior to this study it was not known whether the act of doodling does impair attention processes by taking away resources from the primary attention task or whether it actually aids concentration towards the primary task, additionally maintaining arousal.
  - It is common in research on attention to pose the participants with dual tasks to monitor performance, and then see which cognitive processes are needed to complete these tasks.
- **Aim**
  - To test whether doodling aided concentration in a boring task
- **Procedure**
  - Research Method: Laboratory Experiment
  - Experimental Design: Independent Groups
  - IV: Doodling and Control Group
  - DV: Mean correct recall, false alarms and memory scores
  - Sample: 40 members of the MRC Applied Psychology Unit participant panel at the University of Plymouth (UK). They were aged 18-55 and paid for participating. Participants were assigned randomly to the control (20 - 18 females and 2 males) or doodling (20 - 17 females and 3 males) group.
  - Sampling Technique: Opportunity Sampling (they had volunteered for a different study and were then recruited)
  - The researcher recorded a mock telephone message using a cassette recorder.
  - A fairly monotonous voice was used.
  - Average speaking rate was 227 words per minute
  - The recording was being played at a comfortable volume for the participant to listen to.
  - The script included names of 8 people who would be attending a party alongside the names of 3 people and 1 cat who would not attend. 8 place names were also mentioned.
  - Participants were recruited just after finishing an unrelated experiment for another researcher, and were asked if they would mind spending another 5 minutes helping with research.
  - The intention was to enhance the boredom of the task by testing people who were already thinking about going home.
  - The participants were randomly assigned to the two conditions.
  - Participants were tested individually in a quiet and visually dull room.
  - They were asked to note down the names of all people attending the party and nothing else. They were also told that they do not need to remember any of it.
  - Participants in the control condition were given a piece of lined paper and a pencil.
  - Participants in the doodling group were given a piece of A4 paper with alternating rows of 10 squares and circles, 1 cm in diameter, with a 4.5 cm margin on the left-hand side where they could write any target information.
  - The doodling group was asked to shade the shapes
  - They were told that "it does not matter how neatly or quickly you do this - it is just something to help relieve the boredom."
  - Participants listened to the tape for 2.5 minutes and wrote down the information as directed.
  - As soon as the recording finished, the researcher came in and collected the sheets and talked to the participant for a minute.
  - This conversation included a debriefing and an apology for misleading them about the memory test. The participants were asked if they suspected a memory test.
  - Half the participants then recalled names of people then places and the other half the places then names. (Counterbalancing)

- **Results**
  - Participants in doodling group shaded a mean of 36.3 shapes (range 3-110). One participant did not doodle and was replaced
  - None of the participants in the control group doodled.
  - 3 participants in doodling group and 4 in control group suspected a memory test. None of them claimed that they actively tried to remember the information for the test.
  - If a response indicated a plausible mishearing it was scored as correct.
  - New names not similar to the ones given, names of people who could not attend, or responses such as "sister" were scored as false alarms.
  - MONITORING PERFORMANCE SCORE = number of correct names - number of false alarms
  - 15 Participants in doodling and 9 Participants in control group scored the maximum score.
  - Monitoring performance was significantly higher in the doodling condition (mean = 7.7; SD = 0.6) compared with the control condition (mean = 6.9; SD = 1.3)
  - Each participant generated a names score and a places score. If a plausible mishearing was presented it had to be the same in the monitoring and recall phases.
  - Those in doodling condition recalled a mean of 7.5 pieces of correct information compared to the control group (5.8).
  - Monitored names were recalled more than places.
  - Recall was significantly better for those in doodling condition
  - Memory scores were entered into a 2 (doodling, control), 2 (names, places) mixed measures ANOVA which confirmed that the monitored names were recalled better than the incidental places.
  - Removing data from participants who had suspected a test were removed from the analysis, there was still a significant difference (p=0.01)
- **Conclusions**
  - Participants who performed a shape-shading task concentrated better on a mock telephone message than those who listened with no concurrent task.
  - It is not clear whether doodling led to better recall because doodlers happened to notice more of the target info or whether it actually aided memory recall by encouraging some deeper processing of the message.
- **Ethical Issues**
  - Deception about memory test
  - Debriefing
- **Strengths**
  - Standardized procedure - easy to replicate for reliability
  - Many controls - more confident about causal relationship
- **Weaknesses**
  - Low generalizability - sample was from a volunteer participant panel, therefore they may be qualitatively different and the results may not reflect the population
  - Participant Variables might have affected the findings
  - Low mundane realism
  - Low ecological validity
  - It lacks any measure of daydreaming. A replication that included thought probes during the telephone message, or retrospective self-report of daydreaming, would test whether the effect of doodling on memory occurred via effects on daydreaming.
  - Future neuroimaging studies could test the hypothesis that doodling selectively reduces cortical activation associated with daydreaming
- **Issues and Debates**
  - Application: Useful for students while they are revising or in class
  - Individual and Situational explanation: This study supports both. Individual - participants may have used a similar strategy before or have a personality type that requires stimulation when processing info. Situational - the process of doodling could have cause the improvement in recall

2.2 Baron-Cohen et al. (eyes-test)

- **Title**: The "Reading the Mind in the Eyes" Test Revised Version: A Study with Normal Adults, and Adults with Asperger Syndrome or High-functioning Autism
- **Year**: 2001
- **Psychology being investigated**:
  - The main idea of the eyes test was to investigate the theory of mind.
  - This is the ability to attribute mental states to oneself or another person and this ability is the main way in which we make sense of or predict another person's behavior.
  - The notion is that many autistic individuals do not understand that other people have their own plans, thoughts, and points of view.
  - It appears that they have difficulty understanding other people's beliefs, attitudes, and emotions.
- **Background**
  - In 1997 the "Reading the Mind in the Eyes" test was developed to assess the theory of mind. This appeared to discriminate between adults with the Asperger syndrome (AS) or high-functioning autistic (HFA) adults from control adults.
  - The two former groups scored significantly worse. However, the researchers were not happy with elements of the original study and wanted to "upgrade" their measures to make it better.
- **Aims**
  - To test a group of adults with AS or HFA on the revised version of the eyes test. This was in order to check if the deficits in this group that had been found in the original study could be replicated.
  - To test if in a sample of normal adults, an inverse (negative) correlation would be found between performance on the (revised) Eyes Test and the Autism Spectrum Quotient (AQ).
  - To test whether females scored better on the Eyes Test than males.
- **Procedure**
  - Research Method: Natural Experiment (as the IV is naturally occurring) and Questionnaire
  - Experimental Design: Independent Groups
  - IV: Four groups of participants (naturally occurring)
  - DV: Score on Eyes Test and Autism Spectrum Quotient
  - Sample: *Group 1:* 15 male adults with AS or HFA. Recruited via adverts in the UK National Autistic Society Magazine, or equivalent support groups. They spanned an equivalent range of socioeconomic classes and educational levels as seen in group 2.

  Group 2: 122 normal adults drawn from the adult community and educational classes in Exeter, or from public library users in Cambridge. They had a broad range of occupations and educational levels.

  Group 3: 103 normal adult students (53 male; 50 female) studying for undergraduate degrees in Cambridge University (71 in sciences, 32 in other subjects). This group is not representative of the general population and can be considered to have a high IQ.

  Group 4: Randomly selected 14 adults from the general population who were matched for their IQ with group 1.
  - Sampling Technique: Opportunity and Volunteer Sampling

TOPIC	ORIGINAL PROBLEMS	NEW DESIGN ELEMENTS
CHOICE	• Forced choice between two responses meant that only a narrow range of 17-25 correct responses out of 25 would be statistically above chance. • This meant that the range of scores for which the test could reveal individual differences is only 9, which is too narrow.	• Forced choice remained but there were four response options. • There were 36 pairs of eyes used, giving a range of 13-36 correct responses. • This meant that individual differences could be examined better in terms of statistics.
EXAMPLE	• When the first version was given to parents of children with AS, they scored below the general population. However, they scored at a similar level with the AS or HFA adults even though they did not have the condition themselves. • This highlights that the test has a too narrow range of scores to distinguish between someone with the "lesser variant" or the "broader phenotype" and someone with the condition itself.	
MENTAL STATE	• There were both basic and complex mental states, and so contained some items that were easy and which therefore risked producing ceiling effects.	• In this version, only complex mental states were used so as to make the task much more challenging, and in this way increasing the likelihood of obtaining a greater range of performance in a random sample of adults.
EASE OF SOLVING	• There were some pairs of eyes which could be solves easily by looking at gaze direction of the face.	• They were excluded in the revised version.
GENDER	• More female eye pairs than males.	• An equal number was used. • This allowed a control condition - judging the gender from the eyes.
EASE OF GUESSING	• Target word and foil were always semantic opposite making it too easy to guess.	• Increased the level of difficulty by ensuring that the foil words had the same emotional valance as the target word.
EASE OF COMPREHENSION	• There may have been comprehension problems that might have contributed to an individual's score.	• A glossary with all terms was included which was available for the p's to use at all times.

- Initially, the first two authors of this study chose the "correct" word and the "foil".
- They were then piloted on 8 judges (4 m 4 f)
- For the correct word and its foil to be used, 5 out of 8 had to agree with the choice.
- No more than 2 judges should pick the foil
- Participants tested individually in a quiet room in Cambridge or Exeter.
- Participants in AS/HFA group were asked to judge the gender of each eye pair additionally.
- Groups 1, 3 and 4 completed a questionnaire to measure their AQ.
- Participants were asked to read through the glossary and ask if they are unsure of any word. They were also reassured that they could refer to the glossary at any time.

- **Results**
  - Participant in the four groups did not differ in the number of words in the glossary that they were unsure of, and in all participants, the number of words checked did not exceed two.
  - The AS/HFA group performed significantly worse than the other the groups in the eyes test.
  - In general, females scored better than males.
  - The AS/HFA group scored higher on the AQ than other groups.
  - The distribution of scored for the eyes test formed a normal bell curve.
- **Conclusions**
  - The revised version of the eyes test could still discriminate between AS/HFA adults and controls from different sections of society as it replicated previous finding. The new test appeared to overcome the initial problems.
- **Ethical Issues**
  - Protection: The tests may have caused stress in the patients that could have altered test results.
- **Strengths**
  - High Validity - all patients tested on the same scale
  - High Reliability – standardized procedures & controls
  - Could be used to improve behavior in some way - creating therapy of AS/HFA people
  - Quantitative Data - This allows for statistical analysis of results and thus comparisons between the groups to be made.
  - Natural Experiment - Allows us to study events that would be unethical or impossible to conduct using any other method.
- **Weaknesses**
  - Even with the new modifications, the stimuli are static, whereas the real world never is.
  - Whether the revised test is actually measuring the theory of mind traits or just the ability to complete the eyes test.
  - The participants had a one in four chance of guessing means lower validity
  - Low Ecological Validity
  - Quantitative Data - The reasons for particular behavior are not explored
  -
- **Issues and Debates**
  - Application: Plan support lessons or therapy for students or people with AS/HFA
  - Reductionist - doesn't take into account the full picture of understanding emotions

2.3 Laney et al. (false memory)

- **Title**: Asparagus, a Love Story. Healthier Eating Could Be Just a False Memory Away.
- **Year**: 2008
- **Psychology being investigated**:
  - People's memories of events of their own lives can be incorrect.
  - Researchers have been able to implant false details for actual events and entirely false events.
  - From all the stored information, people can reconstruct memories by filling in the gaps and using false information that gets embedded as actual information.

- **Background**
  - Human memory is subject to many types and levels of distortion.
  - Previous research has focused on negative and neutral false memories. This research focuses on implanting positive false memories.
- **Aims**

Overall Aims:

  - To investigate whether positive false memories for loving asparagus can be implanted into people and then change their childhood memories about liking asparagus.
  - To investigate the consequences of implanting positive false memories in terms of the effects it has on liking asparagus and choosing asparagus.
- *Experiment 1*
- **Aims:**
  - To investigate whether positive false memories for loving asparagus can be implanted into people and then change their childhood memories about liking asparagus.
- **Procedure**
  - Research Method: Laboratory experiment and Questionnaires
  - Experimental Design: Independent Measures Design
  - IV: love group and control group; believers and non-believers
  - DV: ratings on critical items on both questionnaires - comparing session 1 and 2
  - Sample: 128 undergraduates at the University of California from which 77% were females. The sample had a mean age of 20.8 years and were randomly assigned to the "love" or "control" group.
  - Sampling Technique: Volunteer Sampling
  - At Session 1, participants were told that they would be completing a series of questionnaires for a study of the relationship between food preferences and personality. They were not told anything about false memories in order to limit the influence of demand characteristics.
  - They completed the Food History Inventory (FHI) which consisted of 24 items including the critical item "Loved asparagus the first time you tried it" in the 16th position. Participants rated each item on a scale of *1 = definitely did not happen* and *8 = definitely did happen* before the age of 10.
  - Participants then completed the Restaurant Questionnaire (RQ) that assessed their desire to eat 32 separate dishes including the critical item "sautéed asparagus spears". This questionnaire was formatted to look like a menu with 5 categories. Participants were asked to imagine they were out on a special dinner and order each item regardless the price. They circled their ratings from *1 = definitely yes* to *8 = definitely no.*
  - Participants completed 3 additional "filler" questionnaires - a personality measure, Marlowe-Crowne Social Desirability Scale, and a questionnaire on eating habits - to disguise the true aim of the study.
  - After one week at Session 2, participants returned and were given false feedback about their responses. They were told falsely that their responses were entered into a computer which generated a food profile of their early childhood experiences with food.
  - Their profiles were presented as if they had been individually tailored to each participant.
  - A section of the profile was the same for all. "As a young child you disliked spinach, enjoyed fried foods and liked it when fellow classmates bought food to class." For the love group, the critical item "you loved to eat cooked asparagus" was added in the 3rd position.
  - To ensure that the participants processed the feedback, they all responded to brief questions about the "sweets at school" item, and the Love group also answered these about the critical item "asparagus".
  - They were asked to *"Imagine the setting. Where were you? Who was with you?"* They then rated on a scale of *1 = not at all* to *9 = very much*, how much the experience had affected their adult personality.
  - Participants completed the FHI and RQ again to assess changes from pre- to post-manipulation.
  - They additionally completed 2 new questionnaires: the Food Preferences Questionnaire (FPQ) and the Food Costs Questionnaire (FCQ).
  - FPQ: they had to rate 62 food items on a (Likert) scale of *1 = definitely don't like to eat it* to *8 = definitely like to eat.*
  - FCQ: they had to indicate whether they would buy 21 different food items and how much they would be willing to pay for it. They had to choose one of seven statements.
  - Participants additionally had to complete the Memory or Belief Questionnaire (M/B).

- Memory or Belief Questionnaire (M/B): participants responded to 3 items from the FHI including asparagus by choosing one of three options. (a) specific memory of the event (b) belief that the event had occurred (c) positive that the event had not occurred.
- Participants were fully debriefed and excused.

- **Results**
  - FHI: The results of 31 participants` were excluded as they liked asparagus before manipulation. Mean ratings of love group increased by 2.6 points and in the control group by 0.2 points.
  - M/B: In love group, 22% reported a memory, 35% reported a belief and 43% were certain that the event had not occurred. In control group, 12% reported a memory, 28% reported a belief and 61% were certain that the event had not occurred.
  - Believers versus non-believers: *Believers* were the participants who were susceptible to manipulation, while *non-believers* were those who weren't. 48% of participants were labelled as believers. FHI rating increased on an average of 4.5 points for believers and 0.9 points for non-believers. Memory increased on an average by 5.5 and belief by 3.6 points for the FHI.
  - On the RQ believers reported more desire to eat asparagus at session 2 than the control group. Believers rated asparagus more favourably than controls, and their ratings increased from pre- to post-manipulation, while those of controls did not.
  - On the FPQ believers reported liking asparagus significantly more than the control group and were willing to pay more for asparagus.
  - Believers were additionally willing to pay more for asparagus than the control group.
- **Conclusions**
  - Subjects can be lead to develop positively-framed false beliefs about experiences with foods, and these beliefs can lead to an increased liking of those foods.
  - The love group believers had a greater intention to eat asparagus in the future, they had a greater preference and were willing to pay more for asparagus.
- <u>*Experiment 2*</u>
- **Aims:**
  - To replicate and extend the findings of Experiment 1.
  - To examine possible underlying mechanisms of false memories by looking at whether the sight of asparagus is more appealing to people after the false manipulation about asparagus.
- **Procedure**
  - Research Method: Laboratory experiment and Questionnaires
  - Experimental Design: Independent Measures Design
  - IV: love group and control group; believers and non-believers
  - DV: ratings on critical items on both questionnaires - comparing session 1 and 2
  - Sample: 103 undergraduates at the University of Washington, who received course credits for their time. 62% of them were females and the participants had a mean age of 19.9. They were randomly assigned to the "love" or "control" group.
  - At Session 1, when the participants arrived, they were told that their data would be entered into a computer system that would generate a profile based on their answers. No cover story was given.
  - Participants completed the FHI, FPQ and RQ. To disguise the true aim of the study, they also completed two filler questionnaires - a personality measure and Marlowe-Crowne Social Desirability Scale.
  - One week later at Session 2, participants returned and received false feedback about their responses from Session 1.
  - This was identical to that given in Experiment 1. The critical item was "You loved asparagus the first time you ate it", again embedded in the third position.
  - Love group participants completed an elaboration exercise. They had to answer a set of questions about their memory for this event.
  - If they appeared to struggle they were asked to imagine what *might* have happened. They were also asked their age, location, what they were doing at that time and how it made them feel.
  - All participants produced qualitative data to the question "What is the most important childhood, food-related event in your life that your profile *did not* report?"
  - Participants then looked at 20 slides of common food including the critical item.
  - Each slide was shown for 30 seconds and was rated on 4 criteria:
    1. how appetising they found the picture
    2. how disgusting they fount the picture
    3. whether the photograph was taken by a novice, amateur or professional
    4. the artistic quality of the picture

- Points 1, 2 and 4 were rated on a scale of *1 = not at all* to *8 = very much*
- Participants then completed FPQ, RQ and FHI again and the M/B questionnaire.
- They were then fully debriefed and excused.

- **Results**
  - FHI: both groups appeared to rate the critical item similarly before manipulation but different afterwards. 30 participants were excluded from analysis. For the love group, mean confidence increased by 2.5 points (from 1.70 to 2.40), but only 1.07 points (from 1.45 to 2.52) for the control group.
  - M/B: In the love group, 28% of participants reported a memory, 28% a belief and 45% were certain that the event had not occurred. In the control group, 6% of participants reported a memory, 38% a belief and 56% were certain that the event had not occurred. The ratings for the critical asparagus event increased by 5.4 points in the love group compared to 3.5 for those with a belief.
  - Believers versus non-believers: In the love group, 21 participants were labelled as believers. Ratings increased dramatically from a mean of 1.95 in Session 1 to 6.48 in Session 2. For non-believers the ratings increased from 1.42 to 1.68, only 0.07 points. Males and females were equally likely to form a false memory.
  - Believers reported a higher desire to eat asparagus.
  - The ratings for neither believers nor controls changed significantly from pre- to post-manipulation on the RQ.
  - Believers rated asparagus as more appetizing than controls (5.10 versus 4.00).
  - Believers rated 1.81 on the disgusting scale for asparagus, while the controls rated it as 3.24.
  - The rating for believers and controls did not differ on dimensions of expertise.
- **Conclusions**
  - Participants can be given positive false food beliefs that have consequences.
  - Those who believed the false feedback were more likely to rate asparagus as being more appetising.
- **Ethical Issues**
  - Participants were deceived about the aim of this study.
  - Informed consent could not be obtained as the participants did not know the true aim and hence could not give full consent.
- **Strengths**
  - The study has high levels of standardization and hence a higher reliability.
  - The study has many controls and this increases its validity.
  - The use of quantitative data allows for easier statistical analyses.
- **Weaknesses**
  - The study lacks ecological validity and mundane realism.
  - The study has a low generalizability as the sample consisted of students only.
  - Most of the data was collected through self-report measure and this introduces the chances of demand characteristics hence reducing the validity of the study.
  - Ratings are subjective, again reducing the validity.
- **Issues and Debates**
  - Application to everyday life: it could be use to develop healthy eating habits in fussy eaters or cancer patients.

3. LEARNING APPROACH

- Main assumptions of the learning approach:
  - conditioning helps to explain changes in behaviour
  - social learning helps to explain changes in behaviour.

3.1 Bandura et al. (aggression)

- **Title**: Transmission of Aggression Through Imitation of Aggressive Models.
- **Year**: 1961
- **Psychology being investigated**:
  - Social Learning Theory: social behaviour is learned primarily by observing and imitating others. It is "learning by proxy". The four components to it are:
  - Attention: Observers must pay attention to behaviour of the model. The model must have some feature that attracts the observer.
  - Retention: Observers must store the behaviour in their long-term memory so that the information can be used again (when the observer wants to imitate the behaviour).
  - Reproduction: Observers must feel capable of imitating the retained, observed behaviour.

- Motivation: If observers experience vicarious reinforcement they are more likely to imitate the behaviour. This is when the model has been rewarded for performing the observed behaviour. Vicarious punishment can also happen: the role model is punished for the observed behaviour, so is less likely to imitate it.

- **Background**
  - Learning behaviour by imitating others is called observational learning.
  - Several studies had demonstrated that children are influenced by witnessing adult behaviour in the same situation and in the presence of the adult who modelled the behaviour.
  - This study is concerned with learning gender-specific behaviours.
- **Aims**
  - Overall aim: To investigate observational learning of aggression.
  - Specific aims:
  - To see whether children would reproduce aggressive behaviour when the model was no longer present.
  - To look for gender differences in the learning of aggression.
- **Procedure**
  - Research Method: Laboratory experiment and Observations
  - Experimental Design: Independent groups, Matched pairs design
  - IV: (1) behaviour of the model – aggressive or non-aggressive (2) sex of the model (3) sex of the child
  - DV: amount of behaviour observed in 8 categories
  - Sample: 72 participants; 36 boys and 36 girls from the Stanford University Nursery School. Their ages ranged from 37 months to 69 moths with a mean age of 52 months. 2 adults, a male and a female served as the role models in the experiment. One female experimenter conducted the study for all 72 participants.
  - Sampling Technique: Opportunity Sampling
  - Participants were divided into 8 experimental groups or 6 children each and one control group consisting 24 participants who watched no model.

EXPERIMENTAL GROUPS	SEX OF CHILD	SEX OF MODEL	TYPE OF BEHAVIOUR
1	Male	Male	AGGRESSIVE
2	Female	Female	AGGRESSIVE
3	Male	Female	AGGRESSIVE
4	Female	Male	AGGRESSIVE
5	Male	Male	NON-AGGRESSIVE
6	Female	Female	NON-AGGRESSIVE
7	Male	Female	NON-AGGRESSIVE
8	Female	Male	NON-AGGRESSIVE

  - Children in each condition were matched for their levels of physical aggression, verbal aggression, aggression towards inanimate objects and aggressive inhibition.
  - 51 participants were rated independently on a four five-point rating scale by the experimenter and a nursery teacher. A very good agreement of 0.89 was achieved.

Modelling the Behaviour

  - Each child was brought individually to a play room by the experimenter. She then invited the model who was outside the room.
  - The experimenter took the child to one corner of the room which was supposed to be their play area. She demonstrated how the child could design picture with potato prints and the stickers provided.
  - The experimenter then escorted the model to the opposite corner of the room which contained a small table and chair, a tinker toy set, a mallet and a 5-foot inflated Bobo doll. She explained that these were the materials provided for the model to play with and then left.
  - In the *non-aggressive condition*, the model assembled the tinker toys in a quiet subdued manner totally ignoring the Bobo doll.
  - In the *aggressive condition*, the model began assembling the tinker toys but after a minute he turned to the Bobo and played with it.
  - The model punched the Bobo, sat on it and punched it repeatedly, hit it with a mallet on the head and aggressive kicked it about in the room.

- The model also included verbal aggression such as, "sock him in the nose," "Pow," "throw him in the air" and 2 non-aggressive comments "he keeps coming back for more" and "he sure is a though fella".
- This lasted for about 10 minutes

Aggression Arousal

- This was included for two reasons: (1) observation of aggressive behaviour exhibited by others tends to reduce the probability of aggression on the part of the observer (2) in order to instigate or annoy the children.
- The participants were taken to a different room with some very attractive toys.
- The attractive toys included a fire-engine, a locomotive, a jet fighter plane, a cable car, a colourful spinning top, and a doll set complete with wardrobe, doll carriage, and baby crib.
- They were allowed to play with them for 2 minutes before the experimenter stopped them and said that they were reserved for other children.

Testing for Delayed Imitation

- Children were taking into the experimental room which contained a variety of toys including aggressive and non-aggressive toys.
- The aggressive toys were a 3-foot tall inflatable Bobo doll, a mallet and peg board, two dart guns and a tether ball with a face painted on it which hung from the ceiling.
- The non-aggressive toys included a tea set, crayons and colouring paper, a ball, two dolls, three bears, cars, trucks, and plastic farm animals.
- The toys were placed in a fixed manner.
- Children were observed playing for the next 20 minutes.
- 2 more observers (the models) watched the child play and had an inter-rater reliability of 0.90
- 3 types of aggression were recorded: (1) imitative aggression (physical and verbal) (2) non-imitative aggression (3) partially imitative aggression.

Results

- There was a significant difference in levels of imitative aggression between the group that witnessed aggressive behaviour and the other two groups.
- There was a significant difference in levels of imitative physical and verbal aggression.
- Significantly more non-aggressive play was recorded in the non-aggressive model condition.
- Children who had witnessed an aggressive model were significantly more aggressive themselves.
- Overall, very little difference was present between aggression in the control group and that in the non-aggressive modelling condition.
- Boys were significantly more likely to imitate male aggressive models.
- Boys were significantly more physically aggressive then girls. Girls were slightly more verbally aggressive.

- **Conclusions**
  - Witnessing aggression in a model can be enough to produce aggression by an observer.
  - Children selectively imitate gender-specific behaviours.
- **Ethical Issues**
  - Children were exposed to aggressive behaviour and were not protected.
  - Informed consent was taken from the nursery teacher.
- **Strengths**
  - The study has high levels of standardization and hence a higher reliability.
  - The study has many controls and this increases its validity.
  - There was a high inter-observer/ inter-rater reliability.
  - Low risk of demand characteristics.
  - Using a matched pairs design reduced the effects of participant variable.
  - Use of quantitative data allows for easier statistical analyses.
- **Weaknesses**
  - The study lacks ecological validity and mundane realism.
- **Issues and Debates**
  - Application to everyday life: can be useful to advertising agencies.
  - Individual and Situational explanation: this study supports the situational side of the debate as the situation that the children found themselves in caused the imitated aggressive behaviour.
  - Nature versus Nurture: this supports the nurture side of the debate as the environment they found themselves in caused the imitated aggressive behaviour.
  - The use of children: less susceptible to demand characteristics however could become more aggressive after this study.

3.2 Saavedra and Silverman (button phobia)

- **Title**: Case Study: Disgust and a Specific Phobia of Buttons.
- **Year**: 2002
- **Psychology being investigated**:
  - Evaluative learning is a form of classical conditioning in which a person comes to perceive or "evaluate" a previously neutral object negatively.
  - It does not depend on the individual expecting or being aware of the association between the neutral object and the negative outcome.
  - An individual may negatively evaluate a specific object or event without anticipating the threat of an objective contaminant.
  - This elicits a feeling of disgust rather than fear.
- **Background**
  - Phobia: a persistent and unreasonable fear of an object. The fear is disproportionate to the danger posed and leads to avoidance of the object.
  - Fear: an unpleasant emotion caused by an organism's defensive response to an imminent threat
  - Disgust: a feeling of revulsion or disapproval aroused by something unpleasant or offensive.
  - The role of disgust within phobias has received very little attention.
  - Disgust could interact with the fear of a phobic stimulus produces, to increase avoidance of that stimulus.
  - Disgust has been hypothesized as a concurrent emotion that in interaction with fear may result in increased avoidance behaviour.
- **Aims**
  - To investigate the cause of button phobia in a child.
  - To attempt to treat a child's phobia via targeting both disgust and fear responses.
- **Procedure**
  - Research Method: Case Study, Observations and Questionnaires
  - Quantitative data: Distress ratings and Severity ratings
  - Qualitative data: Questions about why the boy found buttons disgusting
  - Sample: A 9-year-old Hispanic American boy who was part of the Child Anxiety and Phobia Program at Florida International University. He came with an avoidance of buttons.
  - Sampling Technique: Opportunity Sampling
  - The boy and the mother gave informed consent to participate in the assessment and intervention procedures. Written content was also provided to publish this study.
  - The boy met the DSM-IV criteria for a specific phobia of buttons.
  - The phobia began when the boy was 5 years old in kindergarten, during an art project involving buttons.
  - The boy ran out of buttons so was asked to come to the front of the class and take them. When he reached the bowl, his hand slipped and the buttons in the bowl fell on him. He described this experience as distressful.
  - Duration of the phobia was 4 years.
  - He did not express significant stressors or events that could be related to the phobia's onset during this period.

Behavioural Exposures

  - The child was treated with an exposure-based treatment programme that tackled cognitions and behaviour.
  - The treatment involved the use of contingency management. The mother provided positive reinforcement if the boy successfully completed the gradual exposure to buttons.
  - Treatment sessions lasted about 30 minutes with the boy alone and 20 minutes with the boy and his mother.
  - Before the first session, the boy devised a disgust and fear hierarchy using distress ratings on a 9-point scale (from 0-8) via a feelings thermometer as shown in Table 1.
  - The most difficult were small, clear, plastic buttons.
  - He had 4 sessions of behavioural exposure to buttons using this hierarchy.

TABLE 1
Disgust/Fear Hierarchy With Child's Ratings of Distress

Stimuli	Distress Ratings (0-8)
1. Large denim jean buttons	2
2. Small denim jean buttons	3
3. Clip-on denim jean buttons	3
4. Large plastic buttons (colored)	4
5. Large plastic buttons (clear)	4
6. Hugging Mom when she wears large plastic buttons	5
7. Medium plastic buttons (colored)	5
8. Medium plastic buttons (clear)	6
9. Hugging Mom when she wears regular medium plastic buttons	7
10. Small plastic buttons (colored)	8
11. Small plastic buttons (clear)	8

Disgust Imagery and Cognitions

- After the behavioural exposure, it was planned to have 7 sessions looking into the boy's disgust imagery and cognitions with a view of helping him to change these over time.
- Further probing revealed that they boy found buttons disgusting upon contact with his body.
- He also expressed that buttons emitted unpleasant odours.
- These seven sessions involved exploring with the boy the vicarious things about buttons that he found disgusting and using specific cognitive strategies.
- He was prompted to imagine buttons falling on him and to express how they looked, felt, smelled and to elaborate on how these imagery exposures made him feel.
- Although the boy indicated that buttons were "disgusting and gross", even with intense probing it was difficult for him to describe exactly what about buttons rendered them disgusting and gross.

- **Results**
  - By session 4, the boy had successfully completed all in vivo exposure tasks up to those with the highest distress ratings.
  - Even though he could handle more and more buttons, his distress rating increased dramatically from session 2 to 3 and 3 to 4.
  - In session 4, the boy's subjective ratings that had been 6 or 7 prior to the treatment were now higher.
  - This phenomenon was consistent with evaluative learning.
  - Disgust-related imagery exposures and cognitions appeared to be successful in reducing the boy's subjective ratings of distress.
  - In the imagery sessions, he had to imagine hundreds of buttons falling on him, before the cognitive restructuring, he rated the experience as 8. This decreased to 5 midway through the session and ended up as 3.
  - In a session where he has to imagine hugging his mother while she was wearing a shirt with many buttons, the distress ratings went from 7 to 4 to 3.
  - He was followed up 6 and 12 months after treatment and he no longer met the specific phobia of buttons
- **Conclusions**
  - Disgust plays a key role in the development and maintenance of a phobia but a mixture of behavioural exposure and cognitive restructuring helped to eliminate the feelings of disgust.
- **Ethical Issues**
  - The participant was severely distressed and protection provided.
  - Informed consent was taken from the mother and the boy.
- **Strengths**
  - Qualitative and quantitative data were both acquired in this study.
  - This is a case study and is focused on one person only hence detailed data was collected.
  - The study was conducted in a therapeutic setting hence had ecological validity.
- **Weaknesses**
  - The study lacks mundane realism.
  - This was a case study and used only one participant, hence has a low generalizability.
  - The ratings are subjective and this lowers reliability.
- **Issues and Debates**
  - Application to everyday life: For treating other phobias
  - Nature versus Nurture: The process by which the phobia was acquired relates to nurture.

3.3 Pepperberg (parrot learning)

- **Title**: Acquisition of the same/different concept by an African Grey parrot (*Psittacus Erithacus*): Learning with respect to categories of colour, shape and material.
- **Year**: 1987
- **Psychology being investigated**:
  - Comprehension of same and different
- **Background**
  - To see if humans can use abstract symbolic relationships when communicating
  - Many psychologists believe that only humans posses "true language skills" alongside the ability to show a range of cognitive skills.
  - Prior to this study, Pepperberg had reported on an African Grey parrot, Alex.
  - He could categorize subjects, count up to six and use functional phrases "Come here" "I want X" "Wanna go Y" and "no". However, Pepperberg stated that these do not show whether a non-human can comprehend and use abstract symbolic relationships when communicating.
  - One cognitive skill that had been reported as being a concept not seen in non-humans is the comprehension of "same" or "different".
  - Premack noted that for a non-human to demonstrate comprehension of "same" two aspects must apply
  - They must recognize that two independent objects called A1 & A2 are both blue and this single attribute makes them "same"
  - They must also recognize that this "sameness" can be immediately extrapolated and symbolically represented not only for two other blue items, but for two novel independent items that have nothing in common with the original set of A's
  - This study was designed to test these two ways of assessing the cognitive skill of "same" or "different".
- **Aims**
  - To see if an avian subject could use vocal labels to demonstrate symbolic comprehension of the concepts of same and different.
- **Procedure**
  - Research Method: Laboratory Experiment, Case Study
  - Experimental Design: N/A
  - IV: Whether the object is familiar or novel
  - DV: Whether the parrot responds correctly to the questions
  - Sample: African Grey parrot named Alex who was the focus of Pepperberg's work since June 1977. He had free access to all parts of the lab for 8 hours/day when the trainers were present. During his "sleeping hours" he was placed in a cage with fresh water and a standard seed mix for parrots was available at all times. The trials occurred at various locations around the laboratory depending on where Alex was at that time. Other food such as fresh fruits, vegetables, nuts and toys were provided when Alex asked for them.
  - Sampling Technique: Opportunity
  - Quantitative data: % Success rate on trials was measured for familiar and novel objects
  - Alex was presented with two objects which could be differentiated based on three categories: colour, shape and material. He would then be asked either "What's same?" or "What's different?"
  - A correct response would be only recorded if Alex vocalised the appropriate category.
  - Four processes Alex had to go through to get a correct response
  - Attend to multiple features of two different objects
  - From the vocal question, determine whether the response is based on sameness or difference
  - Work out what is same or different
  - Vocally produce a category response
  - To complete these, Alex had to perform the cognitive skill of feature analysis on the objects
  - He had already been learning "language" and concepts for around 9 years prior to this study hence he could already produce vocal labels in English.
  - During the course of the study Alex acquired labels for orange, purple and six-cornered objects.
  - Training sessions occurred 2-4 times per week and lasted between 5 minutes to 1 hours.

Training (general):

  - MODEL/RIVAL technique - primary technique used by Pepperberg; it is based on the principles of social learning theory
  - This demonstrates to the parrot types of interactive responses in the study.
  - One person acts as a trainer to the second human. The trainer asks questions about the object and gives praise and rewards for the correct answer but shows disapproval for the incorrect answer.
  - The second human acts as a model for Alex but also as a rival for the trainer's attention.

- The roles of model/rival (M/R) and trainer were frequently reversed and Alex was often given the opportunity to participate in these sessions.
- During any training where the purpose was to acquire a correct label, each correct response was rewarded with the object itself.
- To keep Alex's motivation high, he could ask for any reward if he answered correctly.

Training (same/different):

- A trainer would hold up two objects in front of the model/rival and ask "What's same?" or "What's different?"
- Both types of questions and training objects were mixed within each session.
- Objects were always red, green or blue; triangular or square; rawhide or wood.
- M/R would respond with the correct category label and was given a reward.
- If the M/R gave an incorrect response, the trainer scolded the person.
- When an error was presented, the objects were removed from sight, and then presented again with the same question asked.
- The role of M/R was then reversed.
- Initial training contrasted just the categories of colour and shape Alex had already learnt. He was then trained on a third category "mah-mah" (matter).
- To prevent boredom of repetitive tasks he was also being trained on number concepts, new labels for other objects, recognition of photographs and object permanence.
- Formal testing was only started after he acquired the label "mah-mah".

General Training:

- A secondary trainer who had never trained him earlier carried out trials. This was done to reduce any effect of cuing from the original trainers.
- The questioning was incorporated into other test sessions that were being conducted on Alex.
- On a previous day, the principal trainer would list all possible objects that could be used for testing. A student who was not involved in any training would then choose the question and randomly order them.
- In a week, "same" or "different" questions were asked 1-4 times.
- Testing took place over 26 months (2 years 2 months)
- Principal trainer was present wherever the trail took place but she sat with her back facing Alex and did not look at him during the presentation of the objects.
- She never knew what was being presented and would repeat out what she though Alex had said.
- If it was correct Alex was given that object as a reward and praised.
- If not, the examiner removed the object and emphatically said, "NO!" When this happened, a correction procedure was used in which the object was presented until the correct response was given.
- The same materials were never presented again so there was a sings fist-trial response.
- An overall test score was produced. First-trial results were also calculated.
- *Tests on objects who are familiar*:
- Object pairs were presented to Alex.
- They were similar pairings to the ones used in the training phase but never the same.
- Individual objects were obviously used in more than one trial but the pairing were always novel and a specific pair would only ever be presented again if Alex gave an incorrect label (or erred).
- *Transfer tests using novel objects*:
- Alex was presented with pairs of objects that combined several attributes that had never been used in the training phase or in previous questioning.
- Alex was presented with totally novel objects that might not have even had a label.
- He was exposed to objects that did not have a label for and objects that he has no experience of.
- Any completely new object was within the environment of Alex for several days prior to being used so that Alex got used to seeing it and to reduce fear responses.

The use of probes:

- One concern was that in formulating his answers, Alex might not be attending to the questions, but merely responding to the physical characteristics of the objects.
- Thus, at random intervals probes were administered in which he was asked questions for which two category labels could be the correct response.
- If he were ignoring the content of the question and answering on the basis of attributes, he would have responded with an incorrect answer.

- **Results**
  - The training for Alex to acquire "colour" and "shape" as labels took 4 moths and for "mah-mah" it took 9 months.
  - The length of each session was dictated by Alex's willingness to attend.

  Familiar objects:
  - 99 out 129 (76.7%) correct responses overall
  - 69 out of 99 (69.7%) on first-trail only performance
  - Based on chance, he should have scored 33.3%
  - His performance on pairs made of objects that were no longer novel but contained a colour, shape or material he could not yet label was 13 out of 17 and 10 out of 13 for first-trials.

  Transfer tests with novel objects:
  - 96 out of 113 (85%) correct overall
  - 79 out of 96 (82.3%) on first trials
  - When there was a novel object in a pair his score was 86% and when both objects were novel it was 83%

  Probes:
  - 55 out of 91 (90.2%) correct overall
  - 49 out of 55 (89.1%) on fist trails
  - This demonstrates he was processing the questions rather than simply the attributes of the objects
- **Conclusions**
  - The data indicates that at least one avian subject shows symbolic comprehension of the concept same/different.
  - Alex's scores on all tests were significantly above chance, suggesting that he understood what the questions were asking.
  - It would therefore appear that symbolic representation of same/different is not exclusive to primates.
- **Ethical Issues**
  - Strong animal ethics - Number (only one), rewards given, no deprivation and appropriate caging.
- **Strengths**
  - Case study – focused on one subject
  - High standardisation – higher reliability
  - High validity
- **Weaknesses**
  - Lacks mundane realism
  - Low generalizability – due to case study
- **Issues and Debates**
  - Application: for training animals
  - Nature versus nurture: supports nurture. He was learning through both operant conditioning and social learning.

4. SOCIAL APPROACH

Main assumptions of the social approach:

- behaviour, cognitions and emotions can be influenced by other individuals
- behaviour, cognitions and emotions can be influenced by groups or social contexts

4.1 Milgram (obedience)

- **Title**: Behavioural Study of Obedience
- **Year**: 1963
- **Psychology being investigated**:
  - In this study, Milgram was testing the situational hypothesis.
  - Agency theory:
  - Agentic state: people see themselves as agent of another and will blindly accept orders because they are not personally responsible for their actions. Arises from fact that obedience is rewarded and disobedience punished. We give up our free will.
  - Autonomous state: Behavior is voluntary; people are aware of their decisions and consequences of those decisions. We choose to be obedient.
  - Moral strain: we experience this in the agentic stage when we go along with the demands of the authority even though we know it is wrong and do not agree with it.
- **Background**
  - Destructive obedience: when people obey orders which cause harm or distress to another person
  - Early psychological research into the Holocaust focused on the idea that something distinctive about German culture or personality leads to the high levels of conformity for the genocide to take place. This is known as the dispositional hypothesis.

- Milgram set out to question this dispositional attribution of the Germans. He believed that the situation had led to the inhumane behavior of the Nazis and therefore that anybody in the same situation as those committing such atrocities would have done the same in the same circumstances. Milgram argued that people would commit atrocities if required to do so by an authority figure. This argument is an example of a situational attribution as it is arguing that the behavior resulted from the situation a person was in.

- **Aims**
  - Overall aim: To investigate how obedient people would be to orders from a person in authority that would result in pain and harm to another person.
  - Specific aim: To see how large an electric shock participants would give to a helpless man when ordered to.
- **Procedure**
  - Research Method: Lab Experiment. However, as there is no control condition (i.e. all of the participants took place in all of the same experimental procedure) it is not strictly speaking an experiment. (more accurately it is a controlled observation)
  - Experimental Design: N/A
  - IV: 'Prods' given
  - DV: Degree of obedience (how high voltage did participants go to)
  - Sample: 40 males between the ages of 20 - 50 were drawn from the New Haven district of Connecticut, USA. They were recruited by means of a newspaper advertisement, which promised $4.50 for their time if they turned up to participated in the study and that the money was theirs no matter what happened after they arrived. Participants believed that they were to participate in a study of memory and learning at Yale University. Participants were from a range of backgrounds: 37.5% were manual laborers, 40% were white-collar workers and 22.5% were professionals.
  - Sampling Technique: Volunteering
  - Milgram created a phoney 'shock generator' which in the 1960s looked very impressive and realistic. The phoney shock generator had 30 switches marked clearly in 15-volt increments from 15 to 450 volts. It also had buzzers, flashing lights and moving dials.
  - When the participants arrived at the psychology laboratory, they were given an introduction on the relationship between punishment and learning.
  - They were introduced to the experimenter who was played by a 31-year-old Biology teacher, who introduced himself as Jack Williams. He wore a grey technicians coat and appeared stern and emotionless throughout the experiment.
  - They were introduced to Mr. Wallace and made to believe that he was another participant. Mr. Wallace was a confederate, a 47 year-old Irish-American accountant.
  - They drew slips of paper for knowing who play the role of the learner of victim. This was rigged so that Mr. Wallace was always the victim.
  - The learner sat in an 'electric chair' with straps to "prevent excessive movement" during electric shocks that would be given from a shock generator.
  - An electrode was attached to the learner's wrist and electrode paste was applied to "avoid blisters and burns".
  - The learner was told that, "Although the shocks can be extremely painful, they cause no tissue damage".
  - All these tricks basically made the experiment seem much more real to the participant. The final trick was to give the participant a sample shock of 45 volts (from an external battery, since the shock-generator wasn't actually supposed to work).
  - The participant was then seated in an adjacent room and asked to read word pairs to the learner. The learner had to memorize the pairs.
  - The teacher then tested the learner by giving him one of the words in a pair with four other words. The learner had to choose the word that was previously paired with the first word. If his answer was correct, the next word on the list was read. If it was incorrect, the teacher had to state the correct answer and administer an electric shock (starting from 15 volts).
  - For every wrong answer, the shock level would increase by 15 volts (15, 30, 45… you do the math). The learner actually gave a predetermined set of answers with about three wrong answers for every right answer.
  - At 300 volts, the learner would start hitting the wall and shouting. He stopped answering questions. Here, the participant usually looked at the experimenter for guidance. They were told to interpret no answer as a wrong answer, meaning that the learner would have to be shocked again.

- The learner's pounding continued after 315 volts, after which the learner went completely silent.
- If the participant again asked for advice, he would be met with a sequence of firm standardised 'prods':
- "Please continue" or "Please go on" (1)
- "The experiment requires you to continue" (2)
- "It is absolutely essential that you continue" (3)
- "You have no choice, you must go on" (4)
- If the participant asked about permanent physical injuries, a different prod was used: "Although the shocks may be painful, there is no permanent tissue damage, so please go on." If the participant said that the learner did not want to continue, another prod was used: "Whether the learner likes it or not, you must go on until he has learned all the word pairs correctly, so please go on."
- The experiment ended if the participant refused to continue after the four official prods, or if 450 volts were administered.
- A participant who stopped before reaching 450 volts was classed as a "**defiant participant"** while those who went up to 450 volts were classed as an "**obedient participant".** The experiment was filmed and observers watched through a one-way mirror.
- Participants were then interviewed during which they rated how painful they thought the last few shocks were on a scale from 0 to 14. Projective measures and attitude scales were employed too.
- After the experiment, the participants were debriefed and an open-ended questionnaire was given. Some psychometric tests were taken to make sure there was no emotional harm.
- The teacher and learner were reunited in order to prove that the learner was an actor who was not really in danger.
- The participants were told that their reaction was normal, another measure taken to ensure they left the experiment without mental discomfort.
- **Note**: Before the study was conducted, Milgram asked 14 Yale University psychology students to read a description of the study and estimate what % of participants would give 450-volt shock. The students estimated 0-3%.

- **Results**
  - 26 participants were obedient and administered a complete round of electric shocks, while only 14 were defiant. So 65% obeyed and 35% terminated the experiment before reaching 450 volts.
  - When the experimenter was the one to end the experiment (at 450 volts), many of the participants sighed in relief or shook their heads in what seemed like regret.
  - Most of the men were sweating, shaking, stuttering or fidgeting during the study.
  - 14 participants giggled nervously. The participants who had nervous laughter fits were keen to point out that they weren't sadistic and that their laughter wasn't a sign that they enjoyed shocking the learner.
  - 3 had seizures and the procedure was stopped for one of them.
  - Average rating of how painful the shocks were was 13.42 out of a maximum of 14.
- **Conclusions**
  - People are much more obedient to destructive orders than we think.
  - They find this process highly stressful despite obeying them.
  - Results supported the situational hypothesis rather than the dispositional hypothesis.
- **Ethical Issues**
  - Many ethical issues including:
  - Deception in terms of what the study was about and whether the shocks were real.
  - Protection of the participant's state of mind and they would not exit the study in the same mental state they entered in.
  - Right to withdraw might not have been there as prods were used.
- **Strengths**
  - High levels of control increases the validity
  - High levels of standardizations increases the reliability
- **Weaknesses**
  - Bad ethics
  - Unrepresentative sample because it was only male
  - Ethnocentric bias because he used only American men
  - Low ecological validity because of the artificial setting.

- **Issues and Debates**
  - Application: explain why humans engage in destructive obedience.
  - Individual and situational explanations: This study supports situational explanations.

4.2 Pilivan et al. (subway Samaritans)

- **Title**: Good Samaritanism: An Underground Phenomenon?
- **Year**: 1969
- **Psychology being investigated**:
  - Bystander Apathy: the phenomenon of when observers of an emergency situation do not intervene.
  - Diffusion of responsibility (Latané and Darley): is a sociopsychological phenomenon whereby people are less likely to offer help if other people are present because they feel that the whole group is equally responsible, thus making themselves less personally responsible.
- **Background**
  - Murder of Kitty Genovese
  - Bystander behaviour
- **Aims**
  - To study bystander behaviour outside the laboratory, in a realistic setting where participants would have a clear view of the victim.
  - To see whether helping behaviour was affected by four variables: the victim's responsibility of being in a situation where they need help, the race of the victim, the effect of modelling helping behaviour and the size of the group.
- **Procedure**
  - Research Method: Field Experiment and Observations
  - Experimental Design: Independent groups
  - IV: There were four IVs.
    (1) Victim's responsibility - operationalised as carrying a cane = ill (low responsibility) or smelling of alcohol carrying a bottle wrapped in a paper bag = drunk (high responsibility)
    (2) Victim's race
    (3) Presence of a model - operationalised as whether a male confederate either close to or distant from the victim helped after 70 or 150 seconds
    (4) Number of bystanders
  - DV: the amount of people who helped; the speed it took for them to help the victim
  - Sample: An estimated total of around 4450 people were unsolicited participants of this study with a racial mix of 55% white and 45% black.
  - Sampling Technique: Opportunity Sampling
  - The experiment was conducted during the period from April 15 to June 26, 1968.
  - The trains A and D of the 8th Avenue IND were selected because they make no stops between the 59th and 125th street. Thus, the trails lasted during the 7.5-minute journey between these two stops.
  - There was a mean of 43 people in each car and 8.5 in the critical area.
  - On each trial, a team of four students, (two males and two females), boarded the train using different doors. Four different teams, whose members always worked together, collected data for 103 trials.
  - Each team varied the location of the experimental compartment from trial to trial.
  - The female confederates sat outside the critical area and recorded data as unobtrusively as possible during the journey, while the male model and victim remained standing. The victim always stood next to a pole in the centre of the critical area.
  - As the train passed the first station (approximately 70 seconds after departing), the victim staggered forward and collapsed.
  - Until receiving help, he remained motionless on the floor, looking at the ceiling.
  - If he received no help by the time the train slowed to a stop, the model helped him to his feet.
  - At the stop, the team got off and waited separately until other passengers had left the station before proceeding to another platform to board a train going in the opposite direction for the next trial.
  - 6-8 trials were run on any given day and all trials on a given day were in the same 'victim condition'.
  - The four victims (one from each team) were males, aged between 26 and 35, three white, one black, all identically dressed in Eisenhower jackets, old slacks and no tie.
  - On 38 trials the victims smelled of alcohol and carried a bottle of alcohol wrapped in a brown bag (drunk condition).
  - 65 trials they appeared sober and carried a black cane (cane condition).

- In all other aspects, victims behaved identically in the two conditions, and each victim participated in drunk and cane trials. (There were more cane than drunk trials because one of the teams of students 'didn't like' playing the drunk victim).
- The models (white males aged 24 to 29) were all casually, but not identically, dressed.
- There were four different model conditions used across both drunk and cane victim conditions:
  1. **Critical area - early**: the model stood in the critical area and waited until passing the fourth station before helping the victim (approximately **70 seconds** after the collapse).
  2. **Critical area - late**: the model stood in the critical area and waited until passing the sixth station before helping the victim (approximately **150 seconds** after the collapse).
  3. **Adjacent area - early**: the model stood in the adjacent area and waited until passing the fourth station before helping the victim. (approximately **70 seconds** after the collapse)**.**
  4. **Adjacent area - late**: the model stood in the adjacent area and waited until passing the sixth station before helping the victim. (approximately **150 seconds** after the collapse).
- When the model intervened, he helped the victim to a sitting position and stayed with him for the remainder of the trial.
- There were two observers who recorded a variety of observations.
- <u>Observer One:</u>
- Race, sex, location of every rider seated or standing in the critical area.
- Total number of people in the carriage.
- Total number of people who came to assist the victim.
- Race, sex and location of every helper.
- <u>Observer Two:</u>
- Race, sex and location of every passenger in the adjacent area.
- Time when help was first offered.
- Both observers noted any comments made by nearby passengers and also tried to elicit comments from a passenger sitting next to them.

- **Results**
  - Passengers gave 78% of the victims spontaneous help and in 60% of the cases, victim was helped by more than one person.
  - The cane victim was helped on 62 out of 65 trials (95%)
  - The drunk victim was helped on 19 out of 38 trials (50%)
  - 90% of passengers who helped the victim were male
  - On 60% of the total trials where help was given (i.e. 81 trials), more than one person offered help.
  - Race made no significant difference to the helping behaviour but there was a slight tendency for same-race helpers in the drunk condition
  - 64% of the helpers were White
  - The quickest help came from larger groups. This showed no diffusion of responsibility.
  - In 21 trials out of the grand total of 103, a total of 34 people left the critical area, mostly when the victim was drunk.
  - The model intervening at 70 seconds was more likely to lead to help from other passengers than when the model intervened after 150 seconds.
  - Number of bystanders provided no evidence for diffusion of responsibility.
  - Some passengers moved away from critical area (21/103)
  - More comments made in drunk trail.
- **Conclusions**
  - An ill person is more likely to receive help than a drunk person.
  - Men are more likely to help another man than women are.
  - People are slightly more likely to help someone of their own ethnic group, especially when victim appears to be drunk.
  - No strong relationship was found between size of group and likelihood of helping.
  - Piliavin et al proposed a Cost-Reward Model to explain people's responses to an emergency situation.
  - He suggested that helping is motivated by a selfish desire to rid oneself of an unpleasant emotional state rather than being a positive altruistic model of helping.
  - Helping a victim is based on the level of emotional arousal and the result of a cost/benefit analysis.

- **Ethical Issues**
  - Informed consent wasn't taken as the participants did not know they were part of a study.
  - Participants were deceived and could not be debriefed.
  - Their right to withdraw was invalidated as it was a field experiment.
  - Emotional harm may have taken place as they must have felt hurt about the victim's condition.
- **Strengths**
  - This study was a field experiment and hence has a high ecological validity.
  - The sample size was large and hence has a high generalizability.
  - Behaviour was not artificial as it is in a natural environment and increases validity and had no demand characteristics.
  - Both qualitative and quantitative data was acquired.
- **Weaknesses**
  - The study lacked controls hence had a low reliability, making it hard to replicate.
  - For this reason, a causal relationship could not be established.
- **Issues and Debates**
  - Application to everyday life: to educate people about bystanders' intervention
  - Individual and situational explanation: This study supports the situational side of the debate.
  - Cultural biased

4.3 Yamamoto et al. (chimpanzee helping)

- **Title**: Chimpanzees' flexible targeted helping based on an understanding of conspecifics' goals.
- **Year**: 2012
- **Psychology being investigated**:
  - Altruism: willingness to do certain things to others even though it has a disadvantage to yourself
  - Pro-social behavior: any action or behavior that has the intention of helping others
  - Instrumental helping: help and care based on the cognitive appreciation of the need or situation of others
- **Background**
  - Humans extensively help others altruistically, which plays an important role in maintaining society.
  - Other animals engage in helping, but more often at the request of other conspecific.
  - The ability to offer targeted help to members of our own species relies on the 'theory of mind' ability.
  - Some recent studies show that some primates (other than humans) have the capacity for helping and food sharing without direct benefit to them.
- **Aims**
  - To investigate whether chimpanzees have the ability and flexibility to help another chimpanzee depending on its specific needs.
  - The research team had noted that the chimpanzees seldom help others without being asked and the team, wanted to investigate this too.
- **Procedure**
  - Research Method: Laboratory experiment.
  - Experimental Design: Repeated measures.
  - IV: 'Can see' and 'cannot see' conditions.
  - DV: Results of can see and cannot see conditions & proportion of trial where the stick or straw was given or not given
  - Sample: 5 Chimpanzees named Ai, Cleo, Pal, Ayumu and Pan. They were socially housed at the Primate Research Institute at Kyoto University. They were paired wit a kin: Ai (mother) and Ayumu (juvenile); Pan and Pal; Chloe (not tested in experimental condition) and Cleo. All pairs had shown tool-giving interactions in previous research and were labeled as experts at the tool-use tasks used in this study
  - Sampling Technique: Opportunity
  - In the first condition, the potential helper chimpanzee was able to see the other's tool-use situation, in the second situation, they could not see.
  - The chimpanzees were recorded on video camera and this was used to produce quantitative data - the number of correctly targeted offers per condition. The video also captured the behavior of the chimpanzees.
  - Study approved by Animal Care Committee at Kyoto University
  - Paired chimps were tested in adjacent experimental booths measuring 136 x 142 cm and 155 x 142 cm; both 200 cm high
  - A hole measuring 12.5 x 35 cm and 1 m above the floor was in the panel wall

- Experiment was designed so that it required the chimp to select and transfer an appropriate tool to a conspecific partner so that the partner could solve a task and obtain a drink of juice as a reward.
- Recipient chimp could not reach any of the tools in the adjoining booth
- They could show that they wanted a tool by poking their arm through the hole
- Helper chimp has to select a too form a box of 7 (straw, stick, hose, chain, rope, brush and belt) to help their partner complete the task
- Before the experiment phase of the study, there were 8, 5-minute trials (one per day) that allowed the chimps to explore the 7 items
- They were all trained to solve the problem presented but no other training or shaping of behavior had been conducted on them
- Chimpanzees were allowed to communicate "naturally" without symbols or any form of artificial communication techniques

First "Can See" Condition:

- One chimp placed in a booth with a box of 7 objects
- The other pair was placed in an adjacent booth and could be seen
- This chimpanzee needed to be given to obtain some juice that was out of reach
- There was a hole in the wall and the box was out of reach for the other chimp but could put its arm through and request for a tool
- This chimp needed the stick first so that it could reach the juice and then the straw so that it could drink it

Cannot See" Condition:

- Same set-up but wall was opaque
- The chimp could stand up and see what the other one required

Second "Can See" Condition:

- Repeat of the first one
- To see whether the experimental order was having an effect on object choice (not an order effect)
- For the task to be solved either the straw or stick had to be given
- They could communicate freely during the task (earlier studies had shown that they communicate using artificial symbols called lexigrams)
- Before the experiments there were 8, 5-minute trials that allowed them to explore the 7 items freely. In 5% of these the chimp passed a tool through the hole.
- A total of 48 trials for the "Can See" Condition and another 48 for the "Can not See" Condition
- The trial would begin when the chimp had the box of tools and end either when the juice was obtained or after 5 minutes if it wasn't
- 2/3/4 trials per day all recorded on video cameras
- An offer of a tool was counted when the helper chimpanzee held out a tool toward the recipient chimp (did not exchange the tool)
- Only the first tool offer was used in analysis
- Object offered was categorized in two ways: upon request or voluntary
- If the recipient took a tool without the helper knowing, it was recorded as "no offer".

- **Results**

First "Can See" Condition:

- 90.8% of trials something from the box was offered
- From these 90% came after the other chimp had requested help
- 4 offered the straw or stick first (Ai in 87.5% ; Cleo in 97.4% ; Pal in 93.5% ; Ayumu 78%)
- Pan offered a brush first on 79.5% of her trials
- This would show that they could distinguish between potential tools and useless objects
- When a stick was needed, stick was offered first
- When a straw was needed, straw was offered first

"Cannot See" Condition:

- 95.8% of trials something from the box was offered
- From these 71.7% came after the other chimp had requested help
- 4 offered the straw or stick first (Ai in 89.4%; Cleo in 88.9%; Pal in 100%; Ayumu 93%)
- Pan offered a brush first on 55.3% of her trials
- Ayumu was the only chimpanzee to look through the hole
- In terms of offering the stick when the stick was needed and the straw when the straw was need, it was 50/50 split

Second "Can See" Condition:

- Only 3 chimps were tested (Ai, Cleo and Pal)
- 97.4% of trials something from the box was offered
- From these 79.4% came after the other chimp had requested help
- Stick or straw was most frequently offered first (Ai in 81.3% ; Cleo in 95.7% ; Pal in 100%)
- They also gave the correct tool most often first.

- **Conclusions**
  - This study provides evidence for the chimpanzees' flexible targeted helping based on an understanding of the needs or goals of another chimpanzee.
  - When they could see what was needed they tended to select the most appropriate tool.
  - They still seldom helped without a direct request.
- **Ethical Issues**
  - Small number of animals
  - Appropriate housing
  - No deprivation
  - No aversive stimuli
- **Strengths**
  - High levels of standardizations increases it's reliability
  - High number of controls means high validity
  - Repeated measures design ensures no effects of participant variables on the study
- **Weaknesses**
  - Low ecological validity because this situation would not be feasible in real life
  - Lacks mundane realism
  - Low generalizability to other animals and animals in the wild
- **Issues and Debates**
  - Application: Generalizable to children in terms of development and education about helping others.
  - Nature vs. Nurture: Supports the Nature side.

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