

THE COGNITIVE APPROACH

The cognitive perspective posits the following:

1. Behaviour and emotions can be elucidated by cognitive processes, including language, thought, and memory.
2. Variations and disparities among individuals can be comprehended through the lens of individual cognitive faculties.

The cognitive approach views brain functioning to be very similar to computer processing, with the functions of the brain being categorised into three steps: input, processing, and output. The cognitive approach uses scientific, quantitative methods to investigate behaviours.

CORE STUDY #1: ANDRADE 2010 (DOODLING)

Aim

The objective of this study was to investigate whether doodling improves information processing by enhancing attentiveness or memory.

Background

Research indicates that divided attention hinders performance, but there is a suggestion that doodling could aid concentration. Wilson and Korn (2007) propose that doodling maintains arousal as it combines physical activity with thought. Andrade defines doodling as creating unrelated patterns or figures during a primary task.

Method

Participants

- The sample consisted of 40 participants from the Medical Research Council of the Applied Psychology Unit
- Opportunity sampling
- Mostly women
- Aged 18-55
- Received monetary compensation for their participation
- Each experimental condition included 20 participants, who were approached after completing a prior study and asked to spare 5 minutes for this one

Design

- Laboratory experiment
- Independent measures design
- Participants were randomly assigned to either the doodling or control group

Procedure

- All participants listened to a 2.5-minute monotonous telephone call about a party at a rate of 227 words per minute.
 - ↳ The independent variable was the presence or absence of doodling, and the dependent variable was performance in two recall tasks.
- Participants were situated in a quiet room during the study.
- Participants were informed that they would be tested on two tasks: the Monitoring task (names of partygoers) and the Recall task (names of places mentioned), with the test order counterbalanced.
- Correct responses included plausible mishearings, while entirely incorrect names were counted as false alarms.
- The final score was calculated as the number of correct names minus the number of false alarms.
- The phone call included 8 partygoer names and 8 mentioned places.
- Participants in the doodle group were provided with A4 sheets featuring alternating rows of squares and circles for shading while listening.
- Control group participants received lined paper.
- All participants listened at a comfortable volume, and a surprise recall task was conducted immediately after the call.

Results

- In the doodle group, participants shaded an average of 36.3 shapes, with a range of 3-110, while no control group participants spontaneously doodled. The average false alarm rate in the Recall task was 0.3 for both groups.

Monitoring Task Results

- ↳ Control group participants recalled an average of 7.1 names, with 5 false alarms.
- ↳ Doodle group participants recalled an average of 7.8 names, with 1 false alarm.

Overall Results

- ↳ Doodling participants recalled an average of 7.5 names and places, 29% more than the control group's mean (5.8). Even when excluding participants suspected of demand characteristics, doodlers had better recall.

Conclusions

- Doodling enhances concentration on the primary task, as doodling participants outperformed those solely listening. Doodlers excelled in both tasks, and two potential explanations exist: 1) doodling affects attention, or 2) doodling improves memory by encouraging deeper information processing. However, without a measure of daydreaming, distinguishing between these explanations is challenging. Measuring daydreaming could involve self-reports or brain scans to identify reduced cortex activation, associated with daydreaming.

Evaluation

A strength of this study is that it is highly replicable. This is because it was conducted in a controlled laboratory environment with standardized procedures such as using the same telephone recording and doodle sheet for each participant and conducting the experiment in the same dull room. This means another researcher can simply get another group of participants, repeat the procedure exactly and compare and test the results for accuracy. This allows the findings of the study to be tested, therefore increasing the validity of the study.

Another strength of this study is that it is highly reliable. This is because the study was done with a standardized procedure which reduced boredom-induced daydreaming which increased the reliability of the study. The dependent variable was also operationalised. This increases the validity of the results of the study.

A weakness of this study is that it was subject to demand characteristics. This is because the study was conducted on participants who were from a psychology panel and therefore had knowledge of the experiment being conducted (not to mention that they had been recruited while they were leaving a similar experiment). Thus, it would have been easy for them to decipher the aim of the study and change their behaviour, reducing the validity of the study.

Another weakness of this study is that it had a limited sample. This is because it was done on people from a psychology panel of participants who were mainly women. This makes it difficult for the results to be generalised to other populations of people, reducing their validity.

Ethical Concerns:

Participants did not provide full informed consent for the recall task, which may have caused psychological distress. However, participants were debriefed and apologized to by the researchers.

Issues and Debates

- **Application to Everyday Life:** doodling may be beneficial when listening to lectures, as it appears to enhance attentiveness. Nonetheless, deliberate drawing during such situations may prove counterproductive.
- **Individual vs. Situational:** doodling's impact on recall suggests a situational influence on information processing. However, the variability in individual doodling styles highlights individual differences in doodling behaviour.

CORE STUDY #2: BARON-COHEN ET AL. 2001 (READING THE MIND IN THE EYES TEST)

- **Autism Spectrum Disorder (ASD) - A neurodevelopmental disorder impairing a child's ability to communicate and interact. Symptoms: repetitive behaviour, little or no eye contact and can't recognise facial expressions. High Functioning Autism is HFA.**
- **Aspergers Syndrome (AS) - Autism spectrum disorder that affects language and communication skills. Symptoms: restricted & repetitive behaviours and trouble identifying facial expressions.**
- **Autism Spectrum Quotient Test (AQ) - self-report questionnaire with scores ranging from 0 to 50. A high score suggests that the person has more autistic traits.**
- **Theory of Mind (ToM) - the ability to understand the view of another.**

Aim

- To assess the effectiveness of the modified 'Reading the Mind in the Eyes' (RET) test in distinguishing participants with High Functioning Autism (HFA) or Asperger's Syndrome (AS) from the general population.
- To explore the potential negative correlation between RET scores and Autism Quotient (AQ) in a sample of typically developing adults.
- To investigate gender-based variations in RET performance among typically developing adults.

Hypotheses

- 1) Participants with autism (AS/HFA) would exhibit significantly lower RET scores compared to the control group.
- 2) Participants with autism would achieve significantly higher scores on the AQ test.
- 3) Within the 'normal' group (comprising Groups 2 & 3), females would score higher on the RET than males in those groups.
- 4) Males in the 'normal' group would score higher on the AQ measure than females.
- 5) There would be a significant negative correlation between AQ and RET scores.

Background

According to Baron-Cohen's theory, individuals with autism may possess an underdeveloped Theory of Mind (ToM). To evaluate ToM in individuals, Baron-Cohen devised the 'Reading the Mind in the Eyes' task, where participants' ability to identify others' emotions based on photographs of their eye expressions is assessed.

Method

Participants

- Group 1:
 - └ Comprised 15 adult males with AS/HFA who were recruited via self-selection from the UK National Autistic Society through a magazine advertisement.
 - └ The group had an average IQ of 115 and represented various socio-economic and educational backgrounds.
- Group 2:
 - └ Consisted of a comparative control group of 122 adults drawn from the adult community, educational classes in Exeter, and public library users in Cambridge.
 - └ This group comprised 55 males and 67 females, with diverse occupations and educational backgrounds.
- Group 3:
 - └ Another comparative control group included 103 undergraduate students from Cambridge, comprising 53 males and 50 females.
 - └ Assumed to have a higher average IQ.
- Group 4:
 - └ Comprised IQ-matched control individuals, randomly selected, with an average IQ of 116, matching that of Group 1.

Design

- Quasi-experimental design with independent groups.
- Independent Variables: The key independent variables included the presence of AS/HFA or being typically developing and gender.
- Dependent Variables: The primary dependent variables consisted of RET score, AQ score, and gender identification for Group 1.

Procedure

- Development of the Revised Eye Test (RET):
 - └ The RET was developed by Baron-Cohen and Wheelwright, involving the creation of target words and foils for 36 photos.
 - └ A pilot study included 8 judges (4 males and 4 females), requiring agreement from at least 5 judges on the target word and limitations on the selection of foil words.
 - └ If necessary, target words and foils were retested until the criteria were met.
- In pilot tests, Groups 2 and 3 demonstrated a 100% success rate in gender identification. The control group was tested with 40 photos, but 4 were excluded, resulting in a set of 36 items.
- Test Implementation:
 - └ Each participant underwent individual testing in a quiet environment at either Cambridge or Exeter.
 - └ No time limits were imposed. Participants received a practice test and then evaluated 36 sets of eyes with four potential target words.
 - └ Group 1 judged the gender of each photo as a control task.
 - └ Participants in Groups 1, 3, and 4 completed the AQ test.
 - └ They were given access to a glossary of terms and encouraged to seek clarifications, with the glossary available during the test.

Results

- Scores on the RET ranged from 17 to 35, with a mode of 24.
- Adults with AS/HFA exhibited significantly lower performance on the RET compared to other groups, supporting Hypothesis 1 (H1).
- Adults with AS/HFA scored significantly higher on the AQ test, confirming Hypothesis 2 (H2).
- Female participants achieved higher scores on the RET, supporting Hypothesis 3 (H3).
- A significant negative correlation of -0.53 was observed between AQ and RET scores, aligning with Hypothesis 5 (H5).

Group	Average Scores		
	Number of Participants	RET Score	AQ Test Score
1	15	21.9	34.4
2	122	26.2	-
3	103	28.0	18.3
4	14	30.9	18.9

Conclusions

- AS/HFA adults exhibit significant challenges in recognizing the emotions of others, and they tend to score notably higher on the AQ test compared to the general population.
- Gender disparities were observed in the Revised Eye Test, with females outperforming males. However, this trend could gain greater significance with a larger sample size.
 - ↳ The Revised Eye Test emerged as a more sensitive gauge of adult social intelligence.

Evaluation

A strength of this study is that it is highly replicable. This is because it was conducted in a controlled laboratory environment with standardized procedures such as using the same sets of eyes and AQ tests for each participant. This means another researcher can simply get another group of participants, repeat the procedure exactly and compare and test the results for accuracy. This allows the findings of the study to be tested, therefore increasing the validity of the study.

Another strength of this study is that it is reliable. This is because the study was done with a standardized procedure which reduced demand characteristics which increased the reliability of the study. The Reading the Mind in the Eyes test was also standardized and improved for reliability. This increases the validity of the results of the study.

A weakness of this study is that it lacks ecological validity. This is because the study was conducted in a laboratory environment with a standardized procedure. In the RET, the participants only focused on the eyes when in real-life situations they had to take into account other factors like body language, facial expressions, and voice tone. This therefore reduces the extent to which the results can be applied to reality, reducing the validity.

Another weakness of this study is that it breaches the ethical guidelines of protection. This is because for the participants with AS/HFA, getting questions wrong on the RET test may have caused high levels of stress, which breaches the ethical guideline of protection from physical and psychological protection which states that the study must not place the participants under emotional stress, and must return them to their original state after the experiment. This therefore reduces the credibility of the study.

Issues and Debates

- **Application to Everyday Life:** there is potential for the development of programs aimed at assisting individuals with AS/HFA in honing their abilities to interpret emotions. Additionally, enhancements to the eyes test could contribute to the early diagnosis of underlying autistic disorders in individuals.
- **Individual vs. Situational:** the AS/HFA group exhibited significantly poorer performance on the Revised Eye Test compared to the 'normal' group, suggesting that the capacity to identify mental states is an individual skill developed independently of environmental factors, given the standardized testing conditions (supporting the individual explanation).

CORE STUDY #3: LANEY ET AL. 2008 (FALSE MEMORY)

Background

In a study by Braun et al. (2002), it was revealed that implanting false memories could be achieved by convincing individuals that they had encountered Bugs Bunny at Disneyland. Additionally, Bernstein et al. (2005) demonstrated the repercussions of memory alteration through the implantation of false memories related to participants falling ill after consuming pickles or eggs, which influenced their future food preferences. Laney et al. aimed to explore whether implanting positive memories could yield positive outcomes.

Questionnaires

1. **Food History Inventory (FHI):** Participants rated 24 items on a scale from 1 to 8, reflecting their confidence in the occurrence of specific events, such as their initial enjoyment of asparagus. (1 = definitely did not happen; 8 = definitely did happen).
2. **Restaurant Questionnaire (RQ):** Participants evaluated 32 dishes presented in a menu-like format across five courses, indicating their likelihood to order each dish for dinner, irrespective of price.
3. **Food Preference Questionnaire (FPQ):** Participants rated 62 items based on their preference for consuming each item.
4. **Food Cost Questionnaire (FCQ):** Participants specified their readiness to pay from multiple pricing options or selected 'would never buy.'
5. **Memory or Belief Questionnaire (MBQ):** Participants indicated, for three items from the FHI, whether they had a memory or experience and described it as a detailed memory, vague belief, or confirmed non-occurrence.

Experiment 1

Aim

- To assess whether providing participants with false feedback about their childhood love for eating asparagus would lead to the formation of false memories or beliefs.

Method

Participants

- A total of 128 participants (99 females, 29 males) were recruited through volunteer sampling from the University of California
- The average age of participants was 20.8
- They received course credit for their participation

Design

- Laboratory experiment
- Featured a restaurant questionnaire formatted like a menu to mimic real-life decision-making scenarios
- Independent measures design
- Participants placed into either the 'love' or 'control' condition
- Independent variable: whether participants acquired a false belief regarding eat asparagus after receiving false feedback
- Dependent variable: responses to the self-report questionnaires

Procedure

- Week One:
 - └ Participants were grouped in eights and led to believe they were part of a study on 'food preferences and personality' to minimize potential demand characteristics and social desirability bias.
 - └ During this initial week, five questionnaires were administered, which included the Food History Inventory (FHI), Restaurant Questionnaire (RQ), Personality measure, Social desirability, and Eating Habits.
 - └ The last three questionnaires were used as distractors to conceal the true aim of the study.
- Week Two:
 - └ Participants were randomly assigned to either the 'love' or 'control' conditions.
 - └ Participants received reports detailing their childhood experiences based on their responses to the initial questionnaires.
 - └ Those in the 'love' condition received a critical statement in their report, asserting that 'you loved to eat cooked asparagus,' while the control group received three non-crucial filler items in their reports.
 - └ Subsequently, participants were probed regarding the content of these profiles to ensure they had absorbed the feedback.
 - └ Following this confirmation, participants completed the Food History Inventory (FHI) and Restaurant Questionnaire (RQ) to assess changes in their responses.
 - └ In addition to these questionnaires, participants also completed the Food Preference Questionnaire (FPQ), Food Cost Questionnaire (FCQ), and Memory or Belief Questionnaire (MBQ).

Results

1. Whether false beliefs related to asparagus consumption were established.
 2. Whether these beliefs had discernible consequences.
- For the 'love' group (n=46), FHI responses saw an average increase of 2.6 points, whereas the control group's responses (n=51) experienced a marginal rise of 0.2 points.
 - 31 participants were excluded from the results as they believed they loved asparagus and rated it 5 or higher on the FHI.
 - Distinguishing between memory (the ability to recall specific events in detail) and belief (a less detailed retrieval of an event), it was evident that the 'Love' group had a higher likelihood of generating false memories or beliefs. Among believers, there was a consistent pattern:
 - └ Low initial FHI rating for loving asparagus in week one.
 - └ A substantial increase in the FHI rating in week two.
 - └ A positive 'memory' or 'belief' reported on the MBQ.
 - 48% of participants in the 'love' condition were identified as believers (22 participants), with an average FHI increase of 4.5 points from week 1 to week 2. 10 of these participants had a memory, while twelve had a belief.

Experiment 1 Food History Inventory		
	Week 1	Week 2
Love (46)	1.5	4.1
Control (51)	1.5	1.7

Experiment 1 Memory or Belief Questionnaire				
	Memory or belief			Not the case
	Memory (M)	Belief (B)	M or B	
Love (46)	22% (10)	35% (16)	57% (26)	43% (20)
Control (51)	12% (6)	27% (14)	39% (20)	61% (31)

Conclusions

- Positive false memories could indeed be implanted, and these false beliefs could exert a considerable influence on behaviour and food preferences. The effects of false beliefs included heightened ratings for loving asparagus, increased willingness to spend on asparagus, intent to consume it in the future, and a stronger preference for asparagus.

Experiment 2

Aim

- To investigate the potential underlying mechanisms of false memory consequences and to replicate the findings of the first experiment for reliability.

Method

Participants

- 103 undergraduate students from the University of Washington who received course credit.
- 64 were females, and 39 were males
- Average age of 19.9.
- The 'love' group comprised 58 participants
- The 'control' group had 45 participants

Design

- Laboratory experiment
- Independent measures design
- Independent variable: whether participants held a false belief
- Dependent variable: responses to four questionnaires and a slideshow

Procedure

Unlike Experiment 1, no deception or cover story was utilized in Experiment 2.

- Week One:
 - └ Participants completed the FHI, RQ, FPQ, PM, and SDS, largely mirroring the procedure of the initial experiment.
- Week Two:
 - └ Participants were randomly assigned to the 'love' or 'control' condition.
 - └ The 'Love' group received feedback stating, "You loved asparagus the first time you ate it."
 - └ 'Love' group participants were prompted to provide details about their memory of eating asparagus. Those who couldn't recall were asked to speculate.
 - └ The control group did not engage in the memory recall process.
 - └ All participants were questioned about their most significant food-related childhood event, not covered in the food profile.
- Additionally, participants:
 - └ Viewed a slideshow with 20 photos, each displayed for 30 seconds.
 - └ Rated photos on a scale of 1 to 8, considering factors like appetizing or disgusting qualities, artistic quality, and photographer expertise.
 - └ Following the slideshow, participants completed the FHI, RQ, FPQ, and MBQ.
 - └ Received a full debriefing.

Results

In the 'love' group (n=40), FHI responses experienced an average increase of 2.5 points, while the control group (n=33) exhibited a smaller increase of 1.0 points. Thirty participants were excluded from the analysis.

Similar to Experiment 1, participants informed that they loved asparagus had a higher likelihood of generating false memories or beliefs, with 40 participants identified as believers. However, on the RQ, neither believers nor non-believers displayed an increased desire to consume asparagus. On the FPQ, believers expressed a greater inclination to consume asparagus. In the photo ratings, believers assessed asparagus as more appetizing and less repulsive than non-believers.

These findings provide additional insight into the mechanisms of false memory consequences and the impact on food preferences.

Experiment 2 Food History Inventory		
	Week 1	Week 2
Love (40)	1.7	4.2
Control (33)	1.5	2.5

Experiment 2 Memory or Belief Questionnaire				
	Memory or belief			Not the case
	Memory (M)	Belief (B)	M or B	
Love (40)	28% (11)	28% (11)	57% (22)	45% (18)
Control (32)	6% (2)	38% (12)	39% (14)	56% (18)

Conclusions

- False positive food beliefs can be imparted to participants, and these convictions yield repercussions on their conduct, culinary inclinations, and recollections concerning food. Those who hold these beliefs exhibit a greater tendency to rate asparagus as more appealing and less repugnant.
- The cognitive process of forming false memories among participants was the pivotal factor behind their more favourable assessment of the depicted images, primarily attributable to familiarity or heightened fluency.

Evaluation

A strength of this study is that it is highly replicable. This is because it was conducted in a controlled laboratory environment with standardized procedures such as using the same questionnaires and test schedule for each participant. This means another researcher can simply get another group of participants, repeat the procedure exactly and compare and test the results for accuracy. This allows the findings of the study to be tested, therefore increasing the validity of the study.

Another strength of this study is that it is reliable. This is because the study was done with a standardized procedure which decreased demand characteristics which increased the reliability of the study. In Experiment 1, filler questionnaires like the personality measure and social desirability questionnaires were used to hide the true aim of the study. This increases the validity of the study.

A weakness of this study is that it lacks ecological validity. This is because the study was conducted in a laboratory environment with a standardized procedure. Even though the questionnaire was formatted in the same way as a restaurant menu, ordering in a restaurant and completing a questionnaire are very different, therefore the study lacks ecological validity. This reduces the overall validity of the experiment.

Another weakness of this study is that it is a snapshot study as opposed to a longitudinal study. This is because it assesses the formation of false memories and their persistence for up to two weeks, but it does not follow the participants over time to see how long these false memories last and whether or not they change over time.

Issues and Debates

- **Application to Daily Life:** Laney and his team demonstrated the potential to influence people's perceptions of asparagus through the dissemination of inaccurate information. This manipulation can serve as a valuable tool for facilitating dietary changes and promoting healthier eating habits. This research has been instrumental in assisting parents in cultivating new eating habits in their selective-eating children by reminiscing about their prior enjoyment of the disliked food.
- **Individual vs. Situational:** The environmental impact of Laney's disclosure to the experimental group, where they supposedly adored asparagus in childhood, can lead individuals to form the belief that they did indeed have an affection for the vegetable. This underscores the substantial influence of situational information on subsequent behaviour. However, individual variations were evident, as some participants in the control group exhibited a liking for asparagus, while certain individuals in the 'love' condition remained unconvinced about their childhood fondness for asparagus.