Cognitive Approach
What assumptions do cognitive psychologists make?

Cognitive psychologists assume that behaviour is the result of information processing. By describing thinking as information processing, cognitive psychologists are making a comparison between minds and computers (i.e. they are adopting a computer metaphor for the mind). This is useful because minds and computers have some attractive similarities: both have inputs, outputs, memory stores and a limited capacity for how much information they can process at any one time. Just as a computer’s behaviour is determined by what information it is given and how it has been programmed, so a person’s behaviour is determined by (1) the information available in their environment; (2) the ways they have learned to manipulate (process) information; and (3) the capacities for information processing inherent in the types of brain people have.

How do cognitive psychologists explain human behaviour?

Central to the cognitive view of people is the idea that they actively try to make sense of their environment by imposing order and meaning on the things they encounter. Cognitive explanations of behaviour are based around the ways in which people organise and process information relevant to particular ways of acting. For example, in attempting to explain atypical behaviours like phobias, a cognitive psychologist would start from the assumption that the atypical feelings (anxiety) and behaviour (avoidance) reflect atypical or faulty processing of information about threats. A person with arachnophobia, in this view, processes information about spiders as threatening even when they pose no threat. A cognitive psychologist might explain this in terms of schema driven processing. Schemas are ways of organizing knowledge and experience of the world into generic ‘templates’ that are used to make sense of objects, situations and people we encounter. It might be that an arachnophobe’s schema for spiders contains the information that they are dangerous and to be avoided. As a result, whenever they encounter a stimulus that looks like a spider, they will react with alarm.

Cognitive psychologists try to build up cognitive models of the information processing that goes on inside people’s minds. Here, too, they are guided by the computer metaphor such that the mind is assumed to be organised into modules, each of which has a particular function and its own ways of processing information. A cognitive model of the memory system would suggest that it has two main components, one for dealing with the information that we need to process now (working memory), and another for storing all the information we have acquired in the past and might need again in the future (long term memory). These components are assumed to be interconnected, because current information processing may need to draw on past experience and because the outcome of current information processing might need to be stored for future reference. The memory system would be connected to other information processing systems, for example those for making sense of incoming information and planning speech and behaviour. One of the aims of
cognitive psychology is to clearly specify all the different information processing modules in the human mind in terms of their features and relationships with each other.

**How do cognitive psychologists study human behaviour?**

Cognitive psychologists follow the example of the behaviourists in preferring objective, controlled, scientific methods for investigating behaviour. They use the results of their investigations as the basis for making inferences about mental processes. One strand of cognitive research involves conducting case studies of people with brain damage. Comparing their performance on mental tasks with that of uninjured people can help psychologists understand which parts of the brain are used to process which sorts of information. Other cognitive research may involve manipulating either the information available to people (inputs) or the ways they process it (processes) and seeing what effect this has on some aspect of behaviour (outputs). Laboratory experiments are often used for this as the laboratory situation gives better opportunities than field settings for careful manipulation and control of information processing and precise measurement of cognitive performance.

An example of this type of research is the experiment into levels of processing carried out by Craik and Tulving (1975). They presented participants with a series of words on a screen and manipulated the way the words were processed by asking questions about their appearance, sound or meaning. They found that PPs recognized more of the words they had processed the meaning of than those they had processed the appearance of, suggesting that deeper processing of information leads to more durable memory traces than shallow processing does.

**Evaluation of the cognitive approach**

Cognitive psychologists’ emphasis on scientific methods is a strength of their approach, although some would question the value of their experimental research, which often makes use of very contrived and unrealistic tasks and measures which may not adequately reflect real-world psychological and behavioural processes. The approach addresses some of the shortcomings of the behaviourist and social learning approaches by offering a much better developed account of the internal processes that shape behaviour, thanks to the use of the computer metaphor. However, some critics would argue that over-reliance on the computer metaphor has led cognitive psychologists to neglect the influence of emotions, which computers lack, on thinking and behaviour. It could also be suggested that the idealized descriptions of information processing produced by cognitive psychologists ignore the huge variations between people in how they think and act, as well as often failing to reflect things we know about brain functioning and the influence of genes on behaviour. However, on a practical level the cognitive approach has led to the development of useful ways of understanding and treating psychological disorders. Cognitive therapies are amongst the most effective ways of treating problems like depression and avoid many drawbacks of other therapies, being relatively fast acting and free from side effects.
Assumptions of the Cognitive Approach ... how does this approach see our behaviour?

Cognitive psychologists assume that our behaviour is determined by inner mental processes such as ...

Cognitive psychologists believe that the mind works like a computer, we input, store & retrieve data ... are we like computers?

Cognitive psychologists study invisible mental processes, by looking at our behaviour and making deductions about our thinking. what might be a problem with this approach?

Loftus & Palmer

Savage-Rumbaugh

Baron Cohen

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Evaluation of the Cognitive approach...

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<tr>
<th>Strengths</th>
<th>Weaknesses</th>
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Mrs R. 2013
Introduction / Background

Memory is not like a camera and Elizabeth Loftus has conducted numerous studies investigating the accuracy of eyewitness testimony. She has been asked on many occasions to testify in court about the factors that affect eyewitness testimony, the intention being to make jurors question the accuracy of an eyewitness account.

This aim of these two experiments was to investigate the effect of leading questions on eyewitness accounts and also the effect that leading questions might have on later memory for what happened. One leading question asked was ‘How fast were the cars going when they smashed into each other?’ The reason this is a leading question is because the verb ‘smashed’ suggests that the cars were travelling quite fast, whereas the verb ‘contacted’ suggests a slower speed.

Research Question:
Do leading questions distort (change) an eyewitness memory of an event?

Hypothesis: That the strength of the verb used in the leading question (contacted, hit, bumped, collided, smashed) will have a significant effect on participant reports of the speed of the crash.

Experiment 1

Method: A laboratory experiment.

Procedure: 45 student participants watched a video of a car accident (the video was part of a driver safety film). Afterwards the participants were asked to write an account of what they had seen, and then given a questionnaire which included the critical leading question. The participants were divided into 5 groups and each group received a slightly different version of the critical question, either containing the verb ‘smashed’, ‘collided’, ‘bumped’, ‘hit’ or ‘contacted’.

Findings: As shown in the bar chart, the leading question did affect participants’ perception of speed.

Experiment 2

The first experiment found that leading questions do affect eyewitness reports, but do they also affect the way the information is stored in memory and later retrieved?

In another laboratory experiment, 150 student participants, in three groups of 50, were shown a film of car accident and were given a questionnaire. Group 1 were asked the leading question containing the word ‘hit’, group 2 were asked it with the word ‘smashed’ and group 3 (the control group) were not asked a leading question. A week later the participants returned and were asked some further questions, including the critical question ‘Did you see any broken glass?’ (there had been no broken glass in the film).

Findings: Those participants who thought the car was travelling faster (the ‘smashed’ group) were more likely than the others to produce a false memory of seeing broken glass. This suggests that their memory of what they had seen was changed by the way they had been questioned.

Conclusion

Loftus & Palmer concluded that the meaning of the verb used in the leading question (the semantics of the question) had become integrated with the memory of the event; thus changing the memory and causing a false memory to be constructed. We can also conclude that what happens after we have witnessed an event can alter our memory of the event.
Loftus & Palmer

‘Reconstruction of Automobile Destruction: An example of the interaction between language and memory’

‘How accurately do we remember the details of a complex event like a traffic accident that has happened in our presence? More specifically how well do we do when asked to estimate some numerical quantity such as how long the accident took, how fast the cars were travelling or how much time elapsed between the sounding of a horn and the moment of collision?’

**EXPERIMENT 1: Speed of Cars**

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<thead>
<tr>
<th>How many participants?</th>
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<th>What design was used?</th>
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<th>What was independent variable?</th>
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<th>What was dependant variable?</th>
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<th>What was the procedure?</th>
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<tr>
<th>Any controls?</th>
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<tr>
<th>Results:</th>
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Conclusions from Experiment 1...

The results show...

Meaning...
## Experiment 2: Broken Glass

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<thead>
<tr>
<th>Question</th>
<th>Answer</th>
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<tbody>
<tr>
<td>How many participants?</td>
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<td>What design was used?</td>
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<td>What was independent variable?</td>
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<td>What was the procedure?</td>
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<td>Any controls?</td>
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<td>Results:</td>
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</table>
Conclusions from Experiment 2...

The results show...

Meaning...
Evaluate....

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<th>ISSUE</th>
<th>COMMENT</th>
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The study by Loftus and Palmer is an example of the Cognitive approach to Psychology because...

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<th>Strengths</th>
<th>Weaknesses</th>
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Test your knowledge

Answer the multiple choice questions below by ticking the correct answer(s) to test your knowledge of the study. You will find the answers at the bottom of the page.

1. Which of the following was the Independent Variable in Study 1?
   a) □ the speed estimate
   b) □ the verb used in the question
   c) □ whether the question was leading or not
   d) □ whether the participant was a student or not

2. How many participants took part in Study 1?
   a) □ 45
   b) □ 9
   c) □ 150
   d) □ 25

3. How many verb conditions were there in Study 1?
   a) □ 6
   b) □ 5
   c) □ 4
   d) □ 3

4. Which of the following best describes the results of Study 1?
   a) □ people are not very good at estimating speed
   b) □ the less severe the verb sounded, the higher the estimate of speed
   c) □ the more severe the verb sounded, the higher the estimate of speed
   d) □ people were not influenced by the verbs used

5. How many participants took part in Study 2?
   a) □ 150
   b) □ 50
   c) □ 200
   d) □ 45

6. How many groups were there in Study 2?
   a) □ 3
   b) □ 4
   c) □ 5
   d) □ 6

7. Which group was more likely to say that they had seen broken glass?
   a) □ 'smashed'
   b) □ 'hit'
   c) □ control
   d) □ none of them

8. Loftus and Palmer conclude that there are two types of information that make our memory of an event. Which are they?
   a) □ information from directly perceiving the event
   b) □ information received after the event
   c) □ information from the other participants
   d) □ information received before the event

What do you think?

It has been suggested that this study has low ecological validity as it was conducted in a laboratory environment and the car accident was on film. Think about all the differences between viewing a car accident in a controlled situation like this one and viewing a real accident. Discuss this with your teacher or with other students.
Test your understanding

Use the questions below to evaluate the study. Suggested answers can be found at the back of the book.

1. The sample used in this study were all students. Suggest one strength and one weakness with using this sample.
   Strength
   Weakness

2. Suggest another sample that could have been used for this experiment and suggest the effect that this might have on the results.
   Alternative sample
   Possible effect

3. This study was a laboratory experiment. Suggest one strength and one weakness with the use of this method to investigate eyewitness testimony.
   Strength
   Weakness

4. Suggest how eyewitness testimony could be investigated outside of the laboratory and identify the strengths and weaknesses of your suggested alternative.
   Alternative
   Strengths/Weaknesses
Another advanced test of theory of mind: evidence from very high-functionality adults with autism or Asperger Syndrome

Journal of Child Psychology & Psychiatry
Vol 38. No 7. pp 813 – 822

Simon Baron Cohen & Therese Jolliffe (1997)

Introduction / Background
Adults with autistic spectrum disorders have problems with social relationships. Research using 1st order Theory of Mind (TOM) tasks has found that children diagnosed as autistic are not able to reason what another person is thinking (example of 1st order TOM task is the ‘Sally Ann’ test). Normal children develop the ability to ‘read minds’ by the age of 6 but the Sally Ann test is not appropriate for adults.

The aim of the study was to find out why adults with autistic spectrum disorders have problems with social relationships and to develop an advanced test for theory of mind in adults with Autism.

The hypothesis
That adults with Asperger Syndrome (autism) can’t interpret states of mind from ‘reading eyes’.

Method
Natural experiment having matched participant design. 3 groups of participants: 16 autistic (Asperger), 13 male, 3 female; 50 normal, 25 male, 25 female; 10 Tourette’s patients, 8 male, 2 female; matched on age and normal intelligence. The 2 clinical groups had passed 1st order TOM tests at 6-year-old level.

IV = Normal, Autistic, Tourette’s Syndrome
DV = performance on eye task (maximum score = 25)

The ‘eye task’ procedure
25 photos of eyes, each 15 x 10cm black and white, were each shown for 3 seconds. Participants, tested individually, were asked a forced-choice question:
Example: Which word best describes what this person is thinking or feeling?

Reflective or Unreflective
The TARGET is the correct answer and as a control was presented randomised on both left and right.

The ‘eye task’ was created by selecting magazine photos, and 4 judges generated the target words e.g. TARGET= calm, FOIL = anxious. The TARGET is the correct answer, the FOIL is the opposite.

Controls
When generating targets and foils the eye photos were shown to a panel of 8 adults who did not know there was a ‘right or wrong’ answer and there was 100% agreement with TARGET.

Control tasks
(i) Gender identification: all participants asked to identify the GENDER of each of the 25 eye photos (ii) Basic emotion task: all participants asked to identify the emotion in full-face photos, happy, sad, angry, afraid, surprise, disgust (Ekman categories).

Results
The Autistic adults were less likely to identify the Target foil than the Normal or Tourette’s group. At a significance level of p =< 0.0001 Normal and Tourette’s better than Autistic.

Eye Task | Autistic | Normal | Tourette’s |
---------|---------|--------|-----------|
Mean     | 16.3    | 20.3   | 20.4      |
Range    | 10      | 9      | 9         |
Identify gender? | 24.1 | 23.3 | 23.7 |

Females were better at reading minds from eyes than Males. At a significance level of p=<0.0001 Normal Females better than Males.

Eye Task | Normal (m) | Normal (f) |
---------|------------|------------|
Mean     | 18.8       | 21.8       |
Range    | 6          | 5          |
Identify gender? | 24 | 23.3 |

Conclusion
(i) There is evidence for subtle ‘mindreading’ deficits in intelligent adults on the Autistic spectrum.
(ii) The eye task is a ‘pure theory of mind test’ for adults because there is NO context (does not require an understanding of what the person whose eyes are shown is ‘doing’).

Extra pics
Which word best describes what this person is thinking or feeling?

Serious or playful

Examples of forced-choice ‘eye task’ question
TARGET
attraction
friendly
calm

FOIL
worried
hostile
anxious

More resources via
researchdigest.org.uk/blog
from the british psychological society

www.ocr.org.uk
Baron-Cohen

Participants...

Method & Design...

- A Natural Experiment was used with an Independent measures design.
- The Eyes task, Strange Stories task and two control tasks were presented in random order to all subjects.
- Subjects were tested in a quiet room either at home, in clinic or in a laboratory.

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<tr>
<th>Independent Variables</th>
<th>Dependent Variables</th>
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The 3 Tasks

‘Eyes Task’

Hypothesis 1:

‘Strange Stories Task’

Hypothesis 2:

‘Control Tasks’

1. Emotion Recognition
2. Gender Recognition

Hypothesis 3:

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## Results...

<table>
<thead>
<tr>
<th></th>
<th>EYE-TEST Mean correct Answers (25)</th>
<th>Strange-Story Task</th>
<th>Control: Gender recognition</th>
<th>Control: Emotion recognition</th>
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</thead>
<tbody>
<tr>
<td>Autism/Aspergers</td>
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<td>Normal</td>
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<td>Tourette's syndrome</td>
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## Conclusions...
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<td>Strengths</td>
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The study by Baron-Cohen is an example of the Cognitive approach to Psychology because...

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Test your understanding

Use the questions below to evaluate the study. Suggested answers can be found at the back of the book.

1. Suggest one improvement that could be made to this study and explain why you would make this improvement.

   Suggested improvement

   ____________________________

   ____________________________

   Reason for improvement

   ____________________________

   ____________________________

   What effect do you think this improvement might have on the research?

   ____________________________

   ____________________________

2. The data collected in this study was quantitative data. Outline one strength and one weakness with collecting quantitative data in this study.

   Strength

   ____________________________

   ____________________________

   Weakness

   ____________________________

   ____________________________

   Suggest how qualitative data might have been collected in this study.

   ____________________________

   ____________________________

   What strengths and weaknesses would this have?

   Strength

   ____________________________

   ____________________________

   Weakness

   ____________________________

   ____________________________
Test your knowledge

Answer the multiple choice questions below by ticking the correct answer(s) to test your knowledge of the study. You will find the answers at the bottom of the page.

1. Which of the following is not a group of participants in this study?
   a) ☐ people with autism/Asperger's Syndrome
   b) ☐ 'normal' controls
   c) ☐ people with Tourette's Syndrome
   d) ☐ people with Down's Syndrome

2. Why is this described as a quasi-experiment?
   a) ☐ because the experimenter had no direct control over the IV
   b) ☐ because the experimenter had direct control over the IV
   c) ☐ because the experimenter had no direct control over the DV
   d) ☐ because the experimenter had direct control over the DV

3. Which is the question used in the Eyes Task?
   a) ☐ 'What do you think this person is thinking?'
   b) ☐ 'What emotion is shown in this picture?'
   c) ☐ 'Which word best describes what this person is feeling or thinking?'
   d) ☐ 'Which word would you use to describe this person?'

4. Concurrent validity is based on the assumption that two measures of the same variable should produce the same results. Which other test was used to check the validity of the Eyes Task?
   a) ☐ Happe's strange stories
   b) ☐ the Gender Recognition task
   c) ☐ the basic Emotion Recognition task
   d) ☐ the IQ test

5. Why was the Gender Recognition task included?
   a) ☐ to check whether the results were due to IQ
   b) ☐ to check whether the results were due to gender
   c) ☐ to check whether the results were due to general deficits in face/social perception
   d) ☐ to check whether the results were due to autism

6. Which group performed worst on the Eyes Task?
   a) ☐ autistic/Asperger's Syndrome
   b) ☐ control
   c) ☐ Tourette's
   d) ☐ there was no difference

7. What was the difference between 'normal' males and 'normal' females on the Eyes Task?
   a) ☐ they were both very poor at the task
   b) ☐ there was no difference
   c) ☐ males did better than females
   d) ☐ females did better than males

8. Which of the following is a conclusion from the study?
   a) ☐ low IQ is a core cognitive deficit in autism
   b) ☐ neuro-psychiatric disability is a core cognitive deficit in autism
   c) ☐ lack of theory of mind is a core cognitive deficit in autism
   d) ☐ presence of theory of mind is a core cognitive deficit in autism

What do you think?

What everyday problems might be experienced by someone who lacks theory of mind? Discuss this with your teacher or with other students.
Spontaneous symbol acquisition and communicative use by pygmy chimpanzees
Savage-Rumbaugh et al (1986)

Introduction
Whether the ability to communicate using human language is learned or arises as the result of an innate biological structure in the human brain is an example of the nature-nurture debate. To try to answer this question many attempts have been made to teach primates to use human language with varying outcomes. This study reports the language development of Kanzi, a pygmy chimpanzee, who used symbols (lexigrams) to communicate with humans. The report contrasts how Kanzi, unlike common chimpanzees, began spontaneously to use symbols and also understood spoken English, and suggests that pygmy chimpanzees have symbolic and auditory perceptual skills that are different from common chimpanzees.

The study arose as a result of a ‘serendipitous’ occurrence, when Kanzi was observed spontaneously to start using the symbols, perhaps as a result of observing his mother using symbols, to communicate with humans.

Method
A case study – having a longitudinal design:
The participant: A pygmy chimpanzee, Kanzi (his name means Treasure in Swahili) born 28/10/80 in captivity in the Yerkes Regional Primate Centre, USA. His mother was a ‘language chimp’ born 28/10/80. Kanzi was assigned to the language research centre at 6 months old and was reared in a ‘language using’ environment with humans. When he was 2.5 yrs old, after being separated from his mother, he was observed spontaneously to start using symbols, (he had observed his mother using the lexigram keyboard). Without training, Kanzi identified symbols correctly and did not confuse them (e.g. apple, orange, banana) and he understood spoken words.

Procedure
Because chimpanzees have no vocal chords; when indoors Kanzi uses a battery powered keyboard with geometric symbols that brighten when touched, then a speech synthesiser ‘speaks’ the word. When outdoors, Kanzi uses a laminated copy of the keyboard as a ‘pointing’ board (each symbol is called a lexigram).

Kanzi’s environment:
Kanzi’s outdoor environment is 55 acres of forest in which specific food types are stored at 17 different locations, thus he must travel to get the food type he prefers. e.g. If he wants bananas he must go to the tree house but if he wants peaches he must go to the ‘look out’. A record was kept of Kanzi’s language development (symbol use) for 17 months from when he was 2 ½ years old. Two kinds of records were kept – an automatic computerised record from his keyboard use and notes from observers when outside.

Kanzi’s symbol use was recorded as correct, incorrect, spontaneous, imitation, structured (e.g. response to question) and a record was kept of whether his behaviour matched his symbolic utterance e.g. if he indicated he was going to the treehouse he led a person to the treehouse.

Kanzi’s progress
Savage-Rumbaugh reports that Kanzi learned where all the food was located. He could use a photo on the ground to select a food and then guide another person to his chosen location. He also learned to use the symbols on the keyboard to indicate where he wanted to go.

Kanzi’s symbol use was analysed and some results are shown:

Results
2530 correct combinations of symbols, many being two foods e.g. hotdog & coke, were recorded. 265 instances of imitating symbols were recorded.

Comparing Kanzi with other language learning primates.
Imitated Versus Spontaneous Utterances

<table>
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<tr>
<th>Subject</th>
<th>Proportion of imitated utterances</th>
<th>Proportion of spontaneous utterances</th>
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<tbody>
<tr>
<td>Kanzi</td>
<td>.41</td>
<td>.80</td>
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<td>Mulka</td>
<td>.20</td>
<td>.47</td>
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<td>Nim</td>
<td>.39</td>
<td>.56</td>
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<td>Sherman</td>
<td>.49</td>
<td>.78</td>
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<tr>
<td>Austin</td>
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Conclusion
Kanzi learned to use symbols spontaneously - compared to other species of chimps, pygmy chimpanzees appear to be able to learn and use language more like a human child.
Aims
Research question: Can Kanzi learn symbolic language without training in the same way children do?

To compare this chimpanzee with another species of chimpanzee, the common chimp (*Pan troglodytes*) – ‘Sherman’ and ‘Austin’

Method
Case Study - longitudinal design (but it may be considered a quasi-experiment because comparisons were made between the Pygmy and Common chimpanzees who were taught with the same visual graphic symbol system – lexigram)

- The case study was conducted over 17 months.
- The events were written up.
- This is a different method to an experiment set up to produce findings.

Participants...Describe each and say why they were chosen

- Kanzi & Mulika
- Austin & Sherman
### Procedure – in each box describe how this part of the procedure worked

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<th>Exposure to the lexigram</th>
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<td>Data recording</td>
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<td>Vocabulary acquisition criteria</td>
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</table>
Data Collecting

From Kanzi’s first use of the lexigram at the age of 2½ a complete record was kept of all his utterances for 17 months. The same was kept for Mulika from 11-21 months.

<table>
<thead>
<tr>
<th>Classification</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Correct</td>
<td>Appropriate utterances.</td>
</tr>
<tr>
<td>Incorrect</td>
<td>Inappropriate utterances.</td>
</tr>
<tr>
<td>Spontaneous</td>
<td>Any utterance initiated without prior prompting, querying or attempts to elicit a specific utterance.</td>
</tr>
<tr>
<td>Imitation</td>
<td>Any utterance which includes any part of a companion’s prior keyboard utterance.</td>
</tr>
<tr>
<td>Structured</td>
<td>Any utterance initiated by questions, request, or object-showing behaviour on the part of the companion e.g. ‘what is this?’</td>
</tr>
</tbody>
</table>

Indoor data
Data was automatically recorded from the computer.

Outdoor data
Data was collected by hand and entered into the computer at the end of each day.
### FINDINGS: Write down at least 1 finding from each category...

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Untutored gestures</td>
<td></td>
</tr>
<tr>
<td>First use of lexigrams</td>
<td></td>
</tr>
<tr>
<td>Associative usage</td>
<td></td>
</tr>
<tr>
<td>Progress</td>
<td></td>
</tr>
<tr>
<td>Combinations</td>
<td></td>
</tr>
<tr>
<td>Imitation</td>
<td></td>
</tr>
<tr>
<td>Formal Testing</td>
<td></td>
</tr>
<tr>
<td>Travel Plans</td>
<td></td>
</tr>
</tbody>
</table>

Mrs R. 2013
<table>
<thead>
<tr>
<th>General Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

Mrs R.  2013
## Evaluate....

<table>
<thead>
<tr>
<th>ISSUE</th>
<th>COMMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>G</td>
<td></td>
</tr>
<tr>
<td>R</td>
<td></td>
</tr>
<tr>
<td>A</td>
<td></td>
</tr>
<tr>
<td>V</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td></td>
</tr>
</tbody>
</table>
The study by Savage-Rumbaugh is an example of the Cognitive approach to Psychology because...

________________________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________

Mrs R. 2013
Test your knowledge

Answer the multiple choice questions below by ticking the correct answer(s) to test your knowledge of the study. You will find the answers at the bottom of the page.

1. Which two species were compared in this study?
   a) ☐ pygmy chimpanzees and humans  
   b) ☐ pygmy chimpanzees and common chimpanzees  
   c) ☐ common chimpanzees and humans  
   d) ☐ pygmy chimpanzees and bonobos

2. What time period of the study does this cover?
   a) ☐ 10 years  
   b) ☐ 17 years  
   c) ☐ 10 months  
   d) ☐ 17 months

3. Why is this best described as quasi-experimental?
   a) ☐ because species was experimentally manipulated  
   b) ☐ because it is not possible to experimentally manipulate species  
   c) ☐ because it was longitudinal  
   d) ☐ because there was more than one chimpanzee

4. What is a lexigram?
   a) ☐ a system of flash cards  
   b) ☐ sign language  
   c) ☐ a system of geometric symbols  
   d) ☐ none of these

5. Which two criteria had to be met before a word could be included in Kanzi and Mulika’s vocabulary?
   a) ☐ symbol production should be appropriate  
   b) ☐ spontaneity/concordance  
   c) ☐ both a and b  
   d) ☐ none of these

6. The coding for this criteria was checked. What level of agreement was found?
   a) ☐ 50%  
   b) ☐ 75%  
   c) ☐ 90%  
   d) ☐ 100%

7. Which of the following correctly describes the differences between the species in using the lexigram?
   a) ☐ Kanzi and Mulika used the lexigrams more spontaneously than Sherman and Austin  
   b) ☐ Kanzi and Mulika used the lexigrams more specifically than Sherman and Austin  
   c) ☐ Sherman and Austin used the lexigrams more specifically than Kanzi and Mulika  
   d) ☐ Both a and b

8. Which of the following is the best summary of the conclusion reached by Savage-Rumbaugh et al?
   a) ☐ pygmy chimps exhibit symbolic and auditory perceptual skills that are distinctly different from those of humans  
   b) ☐ pygmy chimps exhibit symbolic and auditory perceptual skills that are distinctly different from those of common chimpanzees  
   c) ☐ pygmy chimps exhibit symbolic and auditory perceptual skills that are distinctly different from those of bonobos  
   d) ☐ humans exhibit symbolic and auditory perceptual skills that are distinctly different from those of common chimpanzees

What do you think?

Is research with animals of any use to psychologists? Discuss this with your teacher or with other students.
Test your understanding

Use the questions below to evaluate the study. Suggested answers can be found at the back of the book.

1. This study was a longitudinal study. Outline two strengths of using a longitudinal study to study language acquisition in chimpanzees.

   Strength 1
   ____________________________
   ____________________________

   Strength 2
   ____________________________
   ____________________________

   Outline one weakness with the way this study was conducted.
   ____________________________
   ____________________________

   Suggest how this weakness could be overcome.
   ____________________________
   ____________________________

   What effect might this have on the results of the study?
   ____________________________
   ____________________________

2. Research with animals raises a number of ethical issues. Identify two ethical issues that are raised by this study and consider whether this study should have been conducted.

   Issue 1
   ____________________________
   ____________________________

   Issue 2
   ____________________________
   ____________________________

   Should the study have been conducted?
   ____________________________
   ____________________________
Similarities and Differences of the Cognitive Studies

<table>
<thead>
<tr>
<th>Similarities</th>
<th>Savage Rumbaugh</th>
<th>Baron-Cohen</th>
<th>Loftus &amp; Palmer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Savage Rumbaugh</td>
<td>Similarities :</td>
<td>Similarities</td>
<td>Similarities</td>
</tr>
<tr>
<td>Baron-Cohen</td>
<td>Differences;</td>
<td>Similarities</td>
<td>Similarities</td>
</tr>
<tr>
<td>Loftus &amp; Palmer</td>
<td>Differences</td>
<td>Differences</td>
<td>Similarities</td>
</tr>
</tbody>
</table>

Mrs R. 2013
What behaviours does the cognitive approach explain?

<table>
<thead>
<tr>
<th>Savage-Rumbaugh</th>
<th>Loftus &amp; Palmer</th>
<th>Baron Cohen</th>
</tr>
</thead>
</table>
| • Pygmy chimpanzees learned lexigrams quicker than common chimpanzees. | • Shows that our memories can be altered by leading questions  
• Shows that we use information from the event itself and information supplied after an event to make a memory  
• Demonstrates that memory is not entirely reliable | • Adults with autism/Asperger’s Syndrome were impaired on Theory of mind test.  
• Normal females better than normal males on Theory of mind test.  
• Intelligence was not linked with performance (some of the autism group had university degrees). |
| • Pygmy chimpanzees could understand spoken English unlike common chimps. | | |
| • They were able to understand single words, without specific training | | |

Describe how the cognitive approach explains memory. (4)

___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________

Describe how the cognitive approach explains the development of language. (4)

___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________

Describe how the cognitive approach explains lack of theory of mind. (4)

___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________

Savage-Rumbaugh
Pygmy chimpanzees learned lexigrams quicker than common chimpanzees.

Pygmy chimpanzees could understand spoken English unlike common chimps.

They were able to understand single words, without specific training.

Loftus & Palmer
• Shows that our memories can be altered by leading questions
• Shows that we use information from the event itself and information supplied after an event to make a memory
• Demonstrates that memory is not entirely reliable

Baron Cohen
• Adults with autism/Asperger’s Syndrome were impaired on Theory of mind test.
• Normal females better than normal males on Theory of mind test.
• Intelligence was not linked with performance (some of the autism group had university degrees).
## Strengths and weaknesses of approach

The following tables suggest some strengths and weaknesses of the Cognitive Approach in psychology. Using the three studies from this section try to complete the ‘examples’ column with one or more example to illustrate the strength or weakness. The first one has been done for you.

### Strengths of COGNITIVE approach

<table>
<thead>
<tr>
<th>Strengths of COGNITIVE approach</th>
<th>Example from Core Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 High levels of control in laboratory conditions</td>
<td>Loftus and Palmer controlled many variables</td>
</tr>
<tr>
<td>2 May be able to help those with cognitive problems and may lead to practical applications for teaching/treatment</td>
<td></td>
</tr>
<tr>
<td>3 Increases our understanding of cognitive abilities of other species</td>
<td></td>
</tr>
<tr>
<td>4 Can you think of any more strengths?</td>
<td></td>
</tr>
</tbody>
</table>

### Weaknesses of COGNITIVE approach

<table>
<thead>
<tr>
<th>Weaknesses of COGNITIVE approach</th>
<th>Example from Core Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Laboratory research may have low ecological validity</td>
<td>Eyes Task may not be the same as real life (Baron-Cohen et al)</td>
</tr>
<tr>
<td>2 Cognitive research tends to be reductionist</td>
<td></td>
</tr>
<tr>
<td>3 Cognitive research tends to use quantitative rather than qualitative measures</td>
<td></td>
</tr>
<tr>
<td>4 Can you think of any more weaknesses?</td>
<td></td>
</tr>
</tbody>
</table>
Discuss strengths and weaknesses of the cognitive approach using any examples from cognitive approach studies. (12)

<table>
<thead>
<tr>
<th>Paragraph 1</th>
<th>Point</th>
<th>Example</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>One strength is ...</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Paragraph 2</th>
<th>Point</th>
<th>Example</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Another strength is ...</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Paragraph 3</th>
<th>Point</th>
<th>Example</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>One weakness is ...</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Paragraph 4</th>
<th>Point</th>
<th>Example</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Another weakness is ...</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Strengths
- Uses high level of controlled lab experiments
- May be useful in the real world eg to teachers or for treatments
- Increases our understanding of the cognitive abilities of other species
- Objective & scientific
- Probably most dominant approach in psychology today

Weaknesses
- Lab research may have low ecological validity
- Tends to be reductionist
- Tends to use quantitative not qualitative data
- Behaviours can only be studied by inference
- Can ignore biological factors
- Can be highly deterministic
Cognitive Studies crossword

Across
4. the number of groups in Study 1 by Loftus and Palmer (5)
7. Sherman and Austin were the type of chimpanzees (6)
9. where Loftus and Palmer conducted their research (8)
10. Palmer and Rumschlag covered (7)
15. the number of months that the report by Savage-Rumbaugh was written (9)
19. the word used in one of the questions in Study 2 by Loftus and Palmer (7)
20. the number of autistic children's participants in the study by Baron-Cohen (7)

Down
1. the important question in Loftus and Palmer's study (7)
2. Kord's sister (6)
3. a study that covers a long time period (11)
4. a disorder characterised by lack of theory of mind (9)
5. a task used by Baron-Cohen (5)
6. the number of criteria used to assess vocabulary acquisition in the study by Savage-Rumbaugh (3)
8. the name of the first study that Kord and Malick conducted (6)
11. the term used for the words or symbols that a person or animal can use (10)
12. the number of groups in Study 2 by Loftus and Palmer (7)
13. the number of normal participants in the study by Baron-Cohen (7)
14. a method to estimate the number of criteria used to assess vocabulary acquisition in the study by Savage-Rumbaugh (3)
16. a disorder that affects the ability to communicate, learning difficulties, and impaired social interaction (8)
17. the list of criteria used in the study by Baron-Cohen (9)
18. a method to estimate the number of criteria used to assess vocabulary acquisition in the study by Savage-Rumbaugh (3)
19. the word used in one of the questions in Study 2 by Loftus and Palmer (7)

Answers: