

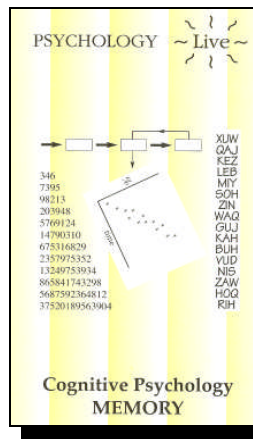
PSYCHOLOGY



SERIES

USER'S GUIDE

**Cognitive Psychology
THE STUDY OF MEMORY**



This Guide is designed to be read before viewing and an overview of the content and structure of the programme is given to assist with planning and lesson preparation. It is written to support the teaching of psychology and will be particularly helpful for those new to this subject. The DVD includes a menu linking to sections within the programme. The default setting is to play the DVD through automatically. To select a section highlight the relevant heading using the arrows on your remote control and press 'ENTER'. The chosen section will then play through and return to the menu for your next choice.

Running time: 74 minutes (1996)

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We hope you find this programme a useful teaching tool.

Introduction

The Study of Memory is designed to be watched in parts. It is very comprehensive and contains too much information too quickly to be useful if watched from start to finish in one sitting.

The programme can be divided into several separate sections:

- Types and Processes of Memory, Early Theories 17 mins approx
- Modern Theories of Memory 23 mins
- The Study of Everyday Memory 12 mins
- Theories of Forgetting 12 mins
- Physiological Bases of Memory 3 mins
- Improving Memory 9 mins

If time is short, the first section could be dispensed with for those with some knowledge of memory study but it is important as an introduction for beginners. For more advanced students the film could be useful revision of the basics but the content will need to be supplemented with more advanced material.

Ideally a suitable section will be watched in one session, making liberal use of the pause or stop button for discussion and/or note-taking.

We have included many breaks for thought, discussion or activities which are listed in this Guide. The cued pauses are 7-10 seconds long to allow those using video to turn off and switch on again.

Writing materials are required by viewers throughout as there are several memory tests and exercises for them to carry out.

Warning: There is a rather gory view of primitive brain surgery during the piece on the theories of the Ancient Greeks. Perhaps you should assure your viewers beforehand that this is only Psychology student drama using a plastic brain and plenty of tomato sauce!

Aims

- To explain, illustrate and evaluate past theories of Remembering and Forgetting - in particular to look at current research in Memory relating to the laboratory-based versus ecological studies argument.
- To apply the knowledge that psychologists have acquired to suggest ways of improving memory, particularly for students.

Psychology Syllabus Links

AQA (A) AS Mod 1 10.1 Cognitive Psychology: Human Memory
 AQA (A) A2 Mod 4 13.3 Perceptual processes (a, b)
 Mod 5 14.3 Approaches (a) Cognitive
 AQA (B) AS Mod 2 11.5.2 Key Approaches - Cognitive
 AQA (B) A2 Mod 2 11.6 Remembering and Forgetting
 Mod 5 14.1.3 Cognitive Perspective
 AQA GCSE Section 10 Cognitive Psychology 10.3 Memory

Edexcel AS Unit 1 Cognitive, Social & Developmental Processes – information processing
 Edexcel A2 Unit 6 Cognitive Approach

OCR AS/A2 Core Studies Cognitive: Memorising material and Eye Witness Testimony

Timing and Content of the Programme

	Introduction Episodic, Semantic and Procedural Memory Encoding, Storage and Retrieval
08.20	Past studies of Memory - Ancient Greeks, Ebbinghaus, Bartlett
17.20	Modern Theories of Memory - explanations and evaluations Two-Process
27.15	Levels of Processing
29.30	Parallel Distributed Processing
37.45	The Working Memory Model
41.00	The Study of Everyday Memory
43.40	Discourse Analysis
45.50	Current research areas in Everyday Memory
52.30	The Study of Forgetting Ebbinghaus The Curve of Forgetting
53.30	Trace Decay Theory
55.00	Interference Theory
56.40	Amnesia
57,30	Repression
58.30	Context and State dependency
60.00	Physiological & Biological Bases of Memory
64.00	Summary of The Study of Memory
65.00	Improving Memory including Use of Mnemonics, Imagery, Eidetic Memory, Acronyms, Rhymes, Method of Loci, Peg Words, Organisation

Timing of Breaks for Exercises, Activities or Discussion

01.00 Break 1

What would life be like with absolutely no memory?
Find an example of a situation where you do not need memory.

Notes: This early break is designed to provoke thought and discussion about the necessity of memory for survival.

14.30 Break 2

Read 'War of the Ghosts'
Recall using Serial Reproduction
Compare your results with those of Bartlett

Notes: The exercise illustrates Bartlett's theory and method and a link could be made to the current return to the study of Everyday Memory. 'The War of the Ghosts' and some of Bartlett's findings are found on page 7 of this Guide.

19.50 STM Exercise

Remembering number sequences

Notes: Writing materials are needed for this exercise which does not require you to stop the film. Viewers are asked to remember increasingly large number of numbers and write them down on the word GO. It demonstrates the limited nature of STM when there is no time for rehearsal and consolidation.

Number Sequences	Word List Used in the Film
852	1. Coin 10. Card
3769	2. Hat 11. Knife
41805	3. Tree 12. Desk
726341	4. Button 13. Cat
2918736	5. Sky 14. Mug
53862479	6. Paper 15. Key
613741786	7. Book 16. Torch
5926381527	8. Cake 17. Flower
	9. Boat 18. String

24.00 Break 3

Primacy/Recency Exercise

Notes: Viewers are asked to watch a word list as it appears at two second intervals on the screen. When the list is complete they write down the words they remember in any order (list reproduced below).

NB the programme says by mistake "remember in order", whereas for the best effect it should be "remember in any order"

If a group are watching, they can tally all the scores and plot on a frequency graph. This demonstration can be used as a piece of coursework if carried out under controlled conditions.

25.00 Break 4

How does the Primacy /Recency Effect give evidence for the STM/LTM model?

Notes: This discussion can be a useful starter for analysis and evaluation in a piece of coursework

30.50 Break 5

Think about the processes you went through to try to find the name of this person.

Notes: The viewer is given clues to identify a famous person. The answer is easy to come up with but the way it is arrived at is a good demonstration of the parallel thinking explained in The PDP Model. Considering this question could also be seen as a good exercise in assessing Metamemory ie understanding how our own memory works.

34.40 Break 6

Write down your response to the word "DOG".

Notes: This exercise demonstrates how, according to PDP theory, the stimulus of one piece of information can activate many units related to this stimulus and allows spontaneous generalisations to be made about items.

41.00 Break 7

What questions about Memory do we still not have an answer for?

Notes: Having looked at the four main modern cognitive theories of memory, the viewer is invited to look at where we have got to in terms of explaining memory problems. We would expect the answer to be 'not very far' and to cover everything from simple 'Why do I sometimes forget names?', to the more complex problems of diseases such as Alzheimer's.

This leads onto the current move towards study of memory in everyday life which may help with the former and, later in the programme, to the Biochemical Neurophysiological studies which will, hopefully, help with the latter.

48.20 Eye Witness Testimony Exercise

Seven questions related to a film clip shown earlier, listed on page of this Guide, are read and appear on the screen. Viewers should write down their answers.

49.30 Break 8

**How accurately did you recall the details of the scene?
Was your memory distorted by the way the questions were framed?**

Notes: This gives the viewer time to check their answers, discuss where they went wrong and, more importantly, why their memory for something seen recently may not be accurate. Discussion could include the implications of leading questions in real life (Eye Witness Testimony), Short Term Memory and many of the theories of forgetting discussed later in the programme eg Trace Decay Theory, Interference Theory.

Various features of forgetting could have been mentioned such as Tip of the Tongue phenomenon, Korsakoff's syndrome and Psychogenic Amnesia but we'll leave the teacher to discuss these!

Non-Greek speaking viewers may be interested in a translation!

**Afto to tripanee thelee = This drill needs sharpening!
Tora poo eene aftee ee mneemee = Now where's that memory!
Aftee ee sos na eene = This may be it !**

Frederick Bartlett's Reconstructive Memory Studies

Bartlett's work is discussed in the programme. One of his better known stories is reproduced below and could be used for an activity that the students always enjoy.

War of the Ghosts

One night two young men from Egulac went down to the river to hunt seals. While they were there it became foggy and calm. Then they heard war cries and they thought, 'Maybe this is a war party.' They escaped to the shore and hid behind a log. Then some canoes came up and they heard the noise of paddles and saw one of the canoes coming up to them.

There were five men in the canoe and they said, 'What do you think? We wish to take you along. We are going up the river to make war on the people.' One of the young men said, 'We have no arrows.' 'Arrows are in the canoe,' they said. 'I will not go along. I might be killed. My relatives do not know where I've gone. But you,' he said turning to the other, 'may go with them.' So one of the young men went and the other returned home.

And the warriors went up the river to a town on the other side of Kalama. The people came down to the water and they began to fight and many were killed. But presently the young man heard one of the warriors say, 'Quick, let us go home, that Indian has been hit.' Now he thought, 'Oh they are ghosts'. He did not feel sick but they said he had been shot. So the canoes went back to Egulac and the young man went ashore to his house and made a fire. And he told everybody, 'Behold I accompanied the ghosts and we went to fight. Many of our fellows were killed. They said I was hit and I did not feel sick.'

He told it all and then he became quiet. When the sun rose he fell down. Something black came out of his mouth. His face became distorted. The people jumped up and cried. He was dead.

As shown in the film, a story is read and memorised by one person and then passed on, out of earshot of the others, to another, who passes it on to another and so on. The last person then relates the story they heard to all participants. It has usually changed out of recognition and sometimes very amusingly!

As a practical rather than just a fun event the story is passed through several people and the final versions recorded on tape or written reports collected.

The story above is an American Indian folk story and difficult to understand, let alone remember! A more up-to-date version can be created.

A typical end story after many repetitions may be:

'Some men were going to hunt seals (primacy effect!) and then they went to a fight and lots got killed. One man went home and told everyone what a good fight it had been but something black came out of his mouth. He didn't feel ill but he fell down on the floor dead. '

Bartlett found on analysis that we make a number of systematic changes to this type of story material when we pass it on.

These include:

- Shortening - omission of detail, especially that which doesn't fit in with our understanding of the story or our culture.
- Change in Focus - making one part of the story the most significant bit, even if it wasn't in the original.
- Affective Influence - allowing our own feelings and reaction to the story influence what we remember.
- Change of Facts - any numbers or proper names may be missed out or changed to fit in with more familiar ones.
- Conventionalise - expressions and cliches tend to change to fit in with our own culture and social expectations.
- Rationalise - new material may be introduced, or the order of events changed, to make it make sense to us.

The end stories could be analysed for examples of the above changes.

A simple scoring system such as one mark for every variation from the original could be devised.

If it is a modern culturally-relevant story, obviously some of the above categories would not be used as much and it may be easier to choose just 3 or 4 categories and develop very clear criteria of what constitutes an example of a particular category. The results will provide evidence for Bartlett and be a good example of qualitative analysis producing rich and interesting data. Discussion can include some of the modern debate on the importance of studying Everyday Memory.

Eye Witness Testimony Practical

Eye Witness Testimony offers many possibilities for a practical but students must be made aware of the Ethical Guidelines. (See References). Although there is strict copyright on our film, you are welcome to use the robbery film clip as a basis for a practical in this area.

The robbery film clip appears for the first time at approx 16.00 minutes.

Then the questions appear at approx 46.45 minutes.

Then the clip is shown again for answers to be checked at 48.00 minutes.

Students or participants should watch the film without knowing that they will be questioned afterwards. They should then be asked to answer the following questions.

1. What was the shopkeeper doing when the robbers entered the shop?	
2. Did the robber in trainers enter the shop first?	
3. How old were the youths who robbed the shop?	
4. What weapon did the second attacker hit the male shopper with?	
5. Did the shopkeeper shout for help before or after the till was opened?	
6. At what stage did the witness lose his glasses?	
7. In what direction did the car turn to make its getaway?	

Results can be marked for accuracy, perhaps comparing male/female or different age groups.

Group Discussion

These are really questions which test memory rather than typical of the questions asked by police or lawyers. Each question gives the eye witness a piece of information eg Q2 gives away the type of shoes; Q3 uses the word 'youths'. They are all leading questions to some extent.

The work on eye witness testimony has made a contribution to the procedures used by the police and courts when dealing with identification parades and the use of leading questions in court. The work of Elizabeth Loftus has led to an enormous amount of research into all aspects of obtaining accurate witness statements. It seems though that we are very unreliable when it comes to remembering details of events, tending to remember clothing more than more stable features such as height and facial features. Modern technology has put less reliance on human memory in recent years with CCTV cameras and improved forensic technology but human memory is still a vital part of crime investigations.

Current Research Trends in Memory

Research has moved on from the theoretical memory models of the 20th century. With the rise of the computer, the **information-processing** model of cognition has moved into pole position. Marr's computational theory of vision (see the Perception programme in this Series [Perception: the Theories](#)) is an example of an information processing model of how humans think.

Artificial Intelligence is at the forefront of current research with the attempt to create a machine which can be claimed to have global intelligence.

The search is now on, and will continue through the 21st century and beyond, to develop a computational Theory of Mind whereby a machine can be made, not human, but useful to mankind by extending the amazing mental abilities we already have. (Ford & Hayes (1998)). This would not mimic the way that humans behave in terms of emotions, social language and interaction but would develop a global model of intelligence which could be used by all systems in the universe. Of course, software is already capable of holding almost limitless amounts of information in memory but this is only useful if used with intelligence based on the type of knowledge humans have. A machine can beat the world champion at chess but it does this by using serial processing of every possible move held in STM. Humans use pattern matching, a parallel process which includes knowledge and experience (LTM), not a huge memory bank.

Rose (2003), in her excellent book, highlights the plasticity and adaptability of human brains compared with machines. She argues that everything we take in from our environment changes our memories and that makes our brains an ever-changing and modifying processor, which is impossible to simulate.

Expert Systems, ie software which integrates human experts' knowledge, is an active area of research, most noticeably in the medical arena. For example, GUESSING (the wonderful acronym for Glasgow University Expert Systems in Nursing Group) is a system which has used the knowledge built up over years by clinically excellent nurses in certain areas of care, such as predicting bed sore occurrence. If the software could take the load off humans, as far as storage of huge amounts of factual information in memory, then humans' brains could be used to add the expert knowledge and experience required for the system to make a difference in a wide range of situations.

Memory in everyday life. There is ongoing useful research on the effect of emotional state of witnesses, the errors in identification when races are different, false memories and children as witnesses and the neurobiology of the misinformation effect (see Loftus, 2005).

Study of absentmindedness. 'Action slips' is currently ongoing in studies of Memory and Attention. This may seem a fairly unimportant and very 'human' failing which is the price we pay for being able to multi-task while using 'auto-pilot' for routine practised tasks. However, Reason has pursued his research in the belief that a thorough understanding of the nature of action slips is necessary to avoid potential danger occurring in the real world. (Reason & Mycielska, 1982).

Alzheimer's research is also advancing. It has been shown that the medial temporal lobe in Alzheimer's patients' brains shrinks much faster than in normal ageing (OPTIMA, the Oxford Project to Investigate Memory and Ageing), supporting the idea of a disease distinct from normal ageing. Current research is obviously searching for the cause of Alzheimer's and ultimately the cure.

Websites

www.uniview.co.uk

a large collection of psychology videos, DVDs, posters, brain jellies, X-psyting extras, etc worth checking regularly for latest news

www.theatp.org

the home of the Association for the Teaching of Psychology
invaluable access to information and advice for teachers of psychology in UK and Europe

www.bps.org.uk

the home of The British Psychological Society
free downloads of recent articles from The Psychologist magazine

www.apa.org

the home of the American Psychological Association
nothing free on this site!

www.psychology.heacademy.ac.uk

details of psychology events, resources and research
lists all UK university psychology departments; BPS list of accredited undergraduate courses

www.s-cool.co.uk

revision site for students on a limited number of topics; club-like feeling with an s-magazine giving advice on bank accounts, interview skills and even how to shave! Teachers World with generic information

<http://www.mrmind.com/mrmind3>

turning the Turing Test upside down, MRMIND challenges you to take the Blurring Test and prove to him(?) that you are human - make your case to a robot of your choice
take the Human Quotient test - great fun and time-waster!

www.youramazingbrain.org.uk

just go and enjoy – the brain in great detail, packed with information, activities

www.holah.karoo.net

information, fun activities, links – excellent for staff and students alike

<http://psyonline.edgehill.ac.uk>

A Level resource from Edgehill College for AQA. Good and reliable resource for students and teachers. Includes a countdown to Mod 4 exams to the nearest second!

<http://psyberfun.users.btopenworld.com/>

too new to comment on but looks promisingly weird, wacky and addictive!

<http://en.wikipedia.org/wiki/Psychology>

extraordinary free encyclopedia which anyone can edit anytime even without being online! Over 1 million entries with definitions and further information

<http://www.brainconnection.com/>

an award-winning site (USA) with lots of relevant material and some excellent animated mini-demonstrations. Learning and Memory section

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Further Reading for Students

- Association for the Teaching of Psychology (1992) *Ethics in Psychological research: Guidelines for Students at Pre-degree Level* Leicester ATP available on <http://www.theatp.org/>
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Further Reading for Teachers

- British Psychological Society (Mar 2006) *Code of conduct, Ethical Principles and Guidelines* Leicester BPS available on [http://www.bps.org.uk/document-download-area/document-download\\$.cfm?file_uuid=5084A882-1143-DFD0-7E6C-F1938A65C242&ext=pdf](http://www.bps.org.uk/document-download-area/document-download$.cfm?file_uuid=5084A882-1143-DFD0-7E6C-F1938A65C242&ext=pdf)
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- Flavell, J.H. (2004) *Theory of Mind Development: Retrospect and Prospect* Merrill Palmer Quarterly 50
- Griggs, R. A. (2005) *Psychology: A Concise Introduction* Palgrave Macmillan All the main topics in psychology covered, clearly and concisely - American. A companion website <http://bcs.worthpublishers.com/gray/content/psychsim5/launcher.html> is worth looking at for 20 animated activities
- Loftus, Elizabeth F. (2001) *Imagining the Past* The Psychologist, 14(11), 584-586
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Contacts

The Association for the Teaching of Psychology

The ATP has highly experienced teachers and examiners ready to give advice and assistance, especially for new teachers of this topic. They can recommend textbooks and resources that will get you started.

ATP Helpline: Dorothy Coombs

work: dorothy@pursglove.ac.uk 01287 280800

home: dorothycoombs@24whinchat.freemove.co.uk 01287 636502

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The Association for the Teaching of Psychology
c/o The British Psychological Society
St Andrew's House
48 Princess Road East
Leicester
LE1 7DR
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The British Psychological Society

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