WJEC Psychology A-level

The Cognitive Approach

Notes

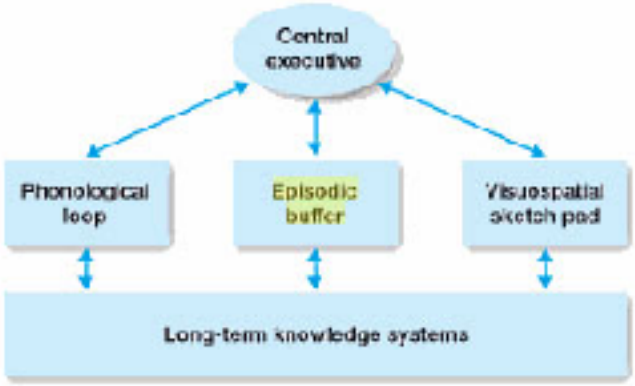
WJEC - The Cognitive Approach

Part 1— An Introduction to The Cognitive Approach

A01 Introduction and Assumptions:

- Assumes that the scientific and objective study of internal mental processes is possible. However, as these private processes cannot be directly observed, cognitive psychologists formulate conclusions of their workings, through making inferences, based upon observable behaviours.
- Therefore, much of the work of cognitive psychologists is the indirect measurement of cognition.
- The cognitive approach sees mental processes as being separate from the brain.
- Cognitive psychologists use computer models and theoretical models to better understand and model cognitive processes, through the use of analogies.

The 'Computer Analogy' and Theoretical Models:



- An example of a theoretical model would be the working memory model, which is a diagrammatic representation of short-term memory, made up of the following cognitive components, through which information flows: Central executive, phonological loop, visuo-spatial sketchpad and the episodic buffer.
- Analogies can also be made between the workings of a computer and the functions of the human brain. For example, both contain a series of 3 processes: input, the use of a processor (e.g. the brain) and the production of a comprehensible output (e.g. computer code or human language).
- The invention of the computer in the 1960s was crucial in the development of cognitive psychology, as psychologists now had a metaphor for the mind.

Schemas:

- Schemas are 'packages' of ideas and knowledge about a certain person, place, object or time. They are generated through experience, becoming more sophisticated through time.
- They also act as mental frameworks, providing us with 'mental shortcuts' so we can process large volumes of data quickly and efficiently, thus avoiding sensory overload.
- However, since schemas are 'pre-conceived', they may lead to perceptual distortions due to having an already established mental framework e.g. James Potter et al (2009) showing that when watching TV, [1] "although viewers may share the same story schema, they appear to make different judgements on the schema elements, and hence their judgements about violence vary".

The Emergence of Cognitive Neuroscience:

- Cognitive neuroscience is defined as 'the scientific field concerned with the study of the biological processes and aspects that underlie cognition, with a specific focus on the neural connections in the brain which are involved in mental processes'.
- A brief history of the emergence of cognitive neuroscience is detailed below:

[1] W. James Potter, K. Pashupati, R.G. Pekurny, E.Hoffman and K.Davis, Perceptions of Television: A Schema Explanation, *Media Psychology*, 4(1), 2002.

WJEC - The Cognitive Approach

1. Brain Mapping in the 1870s = Carl Wernicke, based on case studies of patients who all had damage to a specific area of the brain and all suffered from the same type of aphasia (Wernicke's), inferred that Broddman's area 22 must be involved in language comprehension.
2. Objectively Investigating Brain Localisation Theory in the 1970s = Advances in technology meant that it was possible to systematically measure and observe the neural processes which coincide with specific brain functions. For example, using PET scans, Petersen et al (1988) found evidence of Wernicke's area being activated during a listening task and Broca's area being activated during a reading task.
3. Current Focuses of Cognitive Neuroscience = Current research focuses on the neural basis of model-based planning (including the role of the dorsal hippocampus), the neurological basis of autism, and also the neural basis of moral reasoning (involving the ventral striatum).

A02 Potential Application Questions:

1. The current, modern applications of cognitive neuroscience.
2. The use of theoretical and computer models to understand cognition.
3. Explanations of perceptual errors, using knowledge of schemas.

A03 Evaluation:

+ Scientific Methods and Rigour = The emergence of cognitive neuroscience has substantially increased the scientific credibility of psychology, bringing it closer to that of biology, physics etc. This is due to the emphasis on objectively collecting reliable data through direct observation of the neural processes underlying cognition, as seen in PET, CT, MRI and fMRI scans.

— Overly-Abstract Concepts = Cognitive psychology makes extensive use of schemas and analogies as ways of indirectly studying and inferring the cognitive basis of behaviour. However, this reliance of inference means that some ideas in cognitive psychology may seem too abstract and not have enough supporting empirical evidence of such mechanisms being observed. Therefore, this reduces the potential practical applications of cognitive research, as it remains mainly theoretical.

+ Practical Applications of Cognitive Neuroscience = An increased understanding of the neural processes underlying cognition have proven to be useful in many areas. For example, the design and manufacture of modern technology relies on an understanding of behavioural science and human-computer interactions. In education, cognitive neuroscientists can study a child's performance in phonological tests to serve as a more accurate prediction of their reading ability. Therefore, the impact of cognitive neuroscience is increasingly seen in the real world.
+ Soft Determinism = The cognitive approach sees humans as being able to reason and make conscious decisions within the limits of what they know or their 'cognitive system', and so adopts a soft deterministic approach. This is more flexible than the behaviourist hard determinism stance because it allows for humans to have some conscious insight into their behaviour: a complexity which differentiates us from animals, and so provides a better explanation for human behaviour than behaviourism.

<u>Part 2: Cognitive Behavioural Therapy (Application to Depression)</u>

CBT aims to identify and challenge irrational thoughts, replacing them with more productive behaviours, and thus treating depression. Beck's CBT aims on identifying the patient's thoughts and challenging them as irrational. This can be guided by the cognitive triad of automatic negative

thoughts (negative thoughts about the self, the future and the world), faulty information processing and negative self-schemas. Cognitive therapy also aims for patients to test the reality of their beliefs. For example, a patient may record each time someone was nice to them for the past week. Next time they say that everyone hates them, the therapist can point towards the journal as counter-evidence, thus proving the patient's beliefs as irrational. This demonstrates the idea of 'patient as scientist'. Ellis's rational emotive behaviour therapy aims to identify the patient's thoughts and challenge them as irrational, leading to a vigorous argument. This may be a logical argument (i.e. the belief doesn't follow on logically from the facts) or an empirical argument (there is no evidence to support the irrational belief). Thus, this aims to change the irrational belief and to break the link between negative life events and depression. Through behavioural activation, patients are encouraged to engage in enjoyable activities, to provide further counter-evidence for their irrational beliefs.

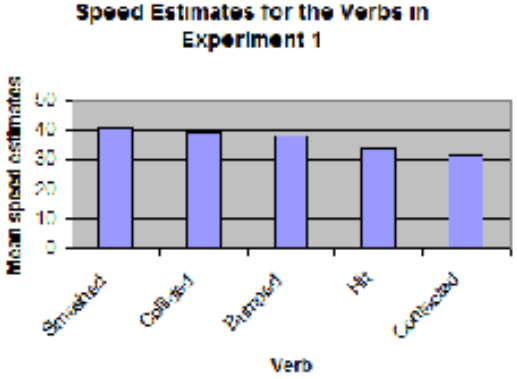
\+ = Supporting research evidence - March followed a group of 327 adolescents with a main diagnosis of depression. After 36 weeks - 81%, 81% and 86% were the respective improvement rates for each of the three experimental conditions (CBT, antidepressants, CBT+ antidepressants). Therefore, this is compelling evidence for the idea that antidepressants are effective in treating depression and are based on accurate biological explanations of depression i.e. linked to the role of serotonin and noradrenaline in the development of depression.

— = CBT may not be an appropriate treatment for all cases of depression, and particularly the most severe cases. This idea could also have been reflected in the evidence provided by March et al, where a combination of CBT and antidepressants is the most effective combination. This is because those with severe depression may not be able to attend the regular CBT sessions, due to a lack of motivation/ an inability to get out of bed in the morning, and also may feel completely hopeless i.e. that they are beyond help. This means that CBT cannot be used to address all cases of depression, and arguably is not suitable for cases which need help the most!

— = The focus of the cognitive approach is on present life and the present challenges which life presents. It is then assumed that the patient's current circumstances are responsible for their depression. However, a considerable number of patients may be aware of specific past events which may be responsible for their depression, such as a traumatic life event or the death of a loved one. Therefore, since CBT therapists are unwilling to 'dwell on the past', patients may become frustrated that they have such little input or say into how their therapy is brought about.

Part 3: Key Study - Loftus and Palmer

- Eyewitness testimony refers to the information recalled about a crime by an eyewitness. The accuracy of such an account can be reduced through the influence of misleading (incorrect) information in the form of leading questions and post-event discussions.
- The effects of leading questions on the accuracy of EWT was investigated by Loftus and Palmer (1974) where participants watched a film clip of a car crash and then gave speed estimates of the cars based on the leading question of "About how fast were the cars going when they x into each other?", with each group being exposed to a different critical verb. Those exposed to the verb "smashed" gave a speed estimate 8.7 mph greater than those who'd heard "contacted". Therefore, this shows that leading questions, because of the way they are phrased, suggest that there is a correct answer.
- The effects of leading questions can be explained using the idea of response bias (i.e. these questions only influence the participants to give a certain answer), whereas Loftus and Palmer's study supports the substitution explanation (i.e. leading questions change the eyewitness' memory of the crime), as those who'd heard the word "smashed" were more likely to report having seen broken glass 2 weeks after the crime (despite there being no broken glass) compared to those who'd heard the word "contacted".



WJEC - The Cognitive Approach

— A key methodological criticism for studies of EWT (including that of Loftus and Palmer) is that they often use the same, young target to identify. This, as argued by Anastasi and Rhodes, may be affected by own age bias, which describes the tendency to recall others from your own age group with a high degree of accuracy, with a lower accuracy rate for those from other age groups. This means that participants aged 55-78 years may be inaccurately represented as having a lower accuracy of EWT, due to the frequent use of young targets.

— Demand characteristics may also reduce the reliability of the findings, as argued by Zaragosa and McCloskey, who suggest that participants often want to be as helpful and attentive as possible. This means that, through the mechanism of social desirability bias and the 'Please-U' effect, when in doubt over their answer to a question, they are likely to give an answer which seems most beneficial or expected of the researcher, thus biasing the results and reducing the likelihood that the same results will be demonstrated again.

— The artificial tasks and stimuli used by both Loftus and Palmer, alongside Gabbert, reduces the ecological validity of the findings and the mundane realism of the methodology. For example, the film clips of the car crashes do not expose participants to the anxiety of experiencing a real-life car crash. This anxiety may either have a negative (Johnson and Scott) or positive (Yuille and Cutshall) effect on the accuracy of EWT, thus biasing the findings.