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93405



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SCHOLARSHIP EXEMPLAR



Mana Tohu Mātauranga o Aotearoa
New Zealand Qualifications Authority

Scholarship 2025 Psychology

Time allowed: Three hours
Total score: 24

Check that the National Student Number (NSN) on your admission slip is the same as the number at the top of this page.

You should answer ALL the questions in this booklet.

Pull out Resource Booklet 93405R from the centre of this booklet.

If you need more room for any answer, use the extra space provided at the back of this booklet.

Check that this booklet has pages 2–23 in the correct order and that none of these pages is blank.

Do not write in the margins (XXXX). This area will be cut off when the booklet is marked.

YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.

INSTRUCTIONS

You must answer ALL three questions.

The Resource Booklet contains a variety of resources based on a theme: **cognitive psychology**.

The Resource Booklet has resources that relate specifically to Questions One and Two. The resource booklet may be used, but is not required, for Question Three.

Space for planning has been provided on pages 4, 10, and 16.

The questions on page 3 are repeated above their respective planning pages.

QUESTION ONE

Ash, an Honours student in Psychology, used the research into how language restructures cognition (**Resource A**) to plan a research study (**Resource B**) investigating whether the processing of navigation instructions is influenced by language.

Find flaws in the current design of Ash's research study, and suggest improvements.

QUESTION TWO

Analyse how a selection of **Resources C, D, and E** examine an issue in cognitive psychology. Provide your own insight into possible solutions, using psychological approaches.

QUESTION THREE

Select (✓) ONE of the statements below. Use your own knowledge of psychology to address the statement, including links to debates within psychology, and provide an analysis of different sides of the argument.

- ☒ (a) Current memory models oversimplify human memory.
- ☐ (b) Learning is best explained by cognitive theories.
- ☐ (c) Your working memory capacity is the best predictor of intelligence.
- ☐ (d) Intelligence is more about adaptability than problem-solving ability.

QUESTION ONE

Ash, an Honours student in Psychology, used the research into how language restructures cognition (**Resource A**) to plan a research study (**Resource B**) investigating whether the processing of navigation instructions is influenced by language.

Find flaws in the current design of Ash's research study, and suggest improvements.

PLANNING

Begin your answer to Question One here:

One flaw in ~~the~~ Ash's ^{research} ~~study~~ proposal is that the group of Bilingual migrants to New Zealand is stratified to ensure diversity in age and gender but not culture. As New Zealand is a multicultural country with migrants ^{from} ~~at~~ many different countries with distinct languages and cultures, participant variability in the Bilingual participants could unduly impact the results of the ~~study~~ study. A suggested improvement for this flaw would be to also stratify the sample based on culture. Ash could include participants from distinct culture and languages from English to ensure that there would be an accurate representation of bilingual individuals. This could include recording the language as well as how the language depicts space, either using absolute spatial language or relative spatial language. By including a variety of participants of different backgrounds, the study is likely to be more generalisable to other populations and cultures as well as having greater construct validity.

Another flaw of this proposal is that it involves a computer based maze. This computer based maze does not ~~even~~ imitate real life as it is a very ~~basic~~ maze. This results in the study being very artificial due to the abstract nature of the task as many people will never conduct this activity in real life. This means that the ecological validity of this study will be low. A suggested improvement for this would be to redesign the maze to better replicate real

world scenarios where a person may need spatial memory and navigation skills such as while walking or driving. ~~that~~ In these situations, the person is able to not only recall their movements based on language but also the differences in surrounding. Thus, a possible improvement would be to recreate a bush with unique markers such as trees or conduct the ~~same~~ experiment in real life. Using a make shift maze.

A possible flaw in Ash's procedure is that the participants only carry out the task once. This reduces the amount of ~~more~~ data gathered and also ~~and~~ increases the possibility that the artificial nature of the task ~~might~~ caused differences in the completion of the task.

A possible improvement would be to repeat the procedure multiple times with each participant using different mazes. It must be ensured that the process is not repeated too many times that the participants are able to show a drastic improvement. For example, having 3-5 different mazes for each participant to go through would be sufficient.

A flaw in the procedure is that the baseline levels of memory capability were not accounted for. As participants' memory could differ inherently due to culture and upbringing, the differences in the results could be attributed to memory abilities linked to ethnicity and culture rather than due to bilingualism. This would

affect the construct validity of the study. An improvement for this would be to conduct preliminary testing of memory in all participants and ~~also~~ ensure that there is an even distribution of memory ^{ability} across both the bilingual and monolingual participants. ~~This could also~~ The difference in memory across the bilingual and monolingual groups could also be accounted for by comparing memory baseline scores to determine relative recall in the spatial recall task. If there is an even distribution of memory ability across the bilingual and monolingual participants, a matched pairs design could be used to ensure that there is an even distribution of memory ability for condition A and condition B. This would improve the ~~reliability~~ ~~and~~ validity of the study.

A flaw in my procedure is that the participant variability in memory ability may be too large to account for. In this case, a possible improvement would be to use a matched pairs design where each participant takes part in both conditions. As there is the possibility of order effects such as learning the skills required and becoming bored of the task, it would be important for there to be counterbalancing where the order of conditions is varied so that the order is not a confounding variable. This would allow each participant to be compared only to their own ability to determine if there is a difference in using absolute versus relative spatial language when testing spatial memory and navigation skills. This would improve the validity of

the planned study as it more closely investigates how the difference in spatial language affects memory and navigation without being influenced by participant variability.

Another ~~that~~ ~~potential~~ flaw in this plan is that Ash does not ask the participants for feedback about their experience of the study. This is because most English speaking people may be more used to using relative spatial language rather than absolute spatial language. Therefore, there may be a significant difference due to the fact that people are not used to the language used rather than bilingual versus monolingual alone.

A suggested improvement would be to conduct a questionnaire for participants to complete after the study with questions such as their confidence in using each type of spatial language with rating systems such as the Likert scale or using short answer responses. This would improve reliability of the study as it gathers data using a different source. It would be important to bear in mind that these questionnaires mean that there is a possibility of demand characteristics such as social desirability bias. It would be good to ensure that the name of the participant is not recorded but ~~noted~~ ~~on~~ instead another form of identification such as a code.

This research plan has a flaw that it does not mention how the participants will be debriefed after the

study. As debriefing is an important ethical consideration, it would be important for Ash to prepare an explanation of why the study was conducted, the theory behind the study, and the rights of the participants. This would include how their data will be stored and kept confidential as well as their right to withdraw from the study, even after it has ended. It is important to ensure that good ethical considerations are met so the inclusion of a detailed debrief would be essential for Ash.

When analysing the data, Ash should consider how being a researcher with personal ideas and beliefs can result in bias. He should conduct reflexivity to reduce the effect of his personal bias.

Another way that the bias of the study could be reduced would be to have an outside researcher or assistant to assign participants to groups and conduct the experiment. In this way, the ~~for~~ researchers such as Ash would be able to analyse the results in a single blind condition to further reduce any biases.

QUESTION TWO

Analyse how a selection of **Resources C, D, and E** examine an issue in cognitive psychology. Provide your own insight into possible solutions, using psychological approaches.

PLANNING

Begin your answer to Question Two here:

In Resource C, the issue of the unlikely effectiveness of working memory treatment is established. The idea of the specificity of these cognitive training tasks is seen through how the study's lead author states that "simply loading up the brain with training exercises will not lead to better performance outside of the tasks presented within these tests." As the overall goal of helping children suffering from disorders such as Attention-Deficit/Hyperactivity or dyslexia would be to help them to better integrate into society, only focusing on specific tasks would not be sufficient. For many children with ADHD, their attention is not able to be maintained while for those with dyslexia, there may be a problem in how verbal information is processed in the phonological loop of the working memory model. As these problems have not developed overtime but rather stem from underlying deficiencies in the brains capacity for the working memory, it may be more suitable to change the surroundings to support these children to grow. For those with ~~ADHD~~ ADHD, there may be an underlying issue in the ~~work~~ central executive component of the working memory which distributes a persons attention. Similar to the phonological loop, these components of memory cannot be easily changed. Rather than relying on cognitive training programs that only result in improved performance on related tasks which could lead children without a clear understanding of what to do in ~~the~~ situations

outside what they have practiced, it would be a good idea to change how they learn and communicate.

For example, as dyslexia is correlated with a difference in the ability of reading and verbal ability, it may be a possible solution that the children suffering from dyslexia use other parts of their working memory such as the visuo spatial sketchpad or long read verbal ones from teachers or technology. By teaching these children methods in which they are able to overcome these barriers instead of trying to change their innate abilities, these children are more likely to develop a more complete understanding of how best they are able to function. For students with ADHD, the inability of focus attention could be the result of external or internal distractors such as excess stimulation and distractions in their surrounding. As these distractors may be different for all children, it would be important to develop a personalised understanding of the distractors that a specific child may face. As these distractors are allocated attention by the central executive in the working memory, it would be reducing the amount of attention that is allocated to the original task that they were supposed to complete. Rather than trying specific tasks, it would be better to teach children with ADHD how to identify their distractors and signal to themselves a know themselves how to remove this distraction. This way, more attention could be paid to the task at hand. ~~For~~ For both children with ADHD and dyslexia it would be important to acknowledge the underlying reasons

for their disorders rather than trying to increase cognitive ability. This would allow them greater adaptability and would likely benefit them much more in the long term.

In resource D, the relationship between salience of phones and mean memory accuracy was researched. The study determined that having high salience of one's phone by placing it in sight leads to a lower mean memory accuracy. This brings up the issue of the ~~place~~ placement of mobile phones for students in the classroom as well as adults at work. The working memory model can also be used to explain the decrease in mean memory accuracy as the phone acts as a distractor that the central executive ~~to~~ attends attention to. This reduces the overall attention that is given to the task at hand. This is similar to the example of children with ADHD in resource C. This becomes an issue as technology is becoming increasingly accessible and the development of applications such as social media and other short form content is highly addictive due to the rush of dopamine that is obtained in the activities that can be done on a phone. The use of phones and other forms of technology such as laptops and tablets can pose as a distractor for students and workers. Although these technologies cannot be completely removed from the school or workplace, use of them should be regulated to ensure that attention is ~~paid~~ ^{given} to the task at hand. The distractive nature of mobile phones

is even more pronounced in children and teenagers as their brain is still developing. This means that in schools, the influence of phones as a distractor could lead to significant impacts on academic performance. A possible solution would be to ban phones in schools and to regulate the use of other technologies to only when the teacher has allocated a specific task. This would reduce the possibility of mobile phones acting as a distractor. Additionally, teachers act as role models to students in the school. Thus, using the social learning theory proposed by Bandura, the teachers should also be subjected to the same requirements as students to decrease the amount of students that also ^{adopt} this idea that phones act as a distraction. Using ^{operant} conditioning as proposed by Skinner, schools could also promote no phone use in schools through the use of rewards systems such as certain privileges or physical rewards. This would allow for students to build healthy habits with their placement of phones while at school. As students get used to the idea of keeping their phones away, the rewards could gradually reduce so that the students are less reliant on extrinsic motivation and are more motivated intrinsically due to the knowledge of now putting away their phones could benefit their learning. This could shape new values, leaving a long lasting impact that could also help them in university or working life.

In resource E, the ~~main~~ issue of the reliability of eye witness testimonies in the courtroom is brought up as stress can cause a difference in encoding of an event. Differences in relevance to stress can result in a difference in a person's ability to form accurate memories as well. Therefore, eye-witness testimonies, especially for more severe cases, may not be highly accurate. For events of significant importance to a person, a flashbulb memory which is a vivid and highly detailed, but not necessarily accurate, memory can be formed according to the importance driven model. As a courtroom is consisting of people of different levels of psychological knowledge including experts as well as laypeople that form the jury, a difference in the understanding of the effects of stress can lead to discrepancies in the courtroom which may affect a court ruling. As the role of the court is to give an unbiased judgement, this could undermine its role. In figure one there is not a significant difference in the understanding of the three groups of people but in figure 2 and 3, there is a significant difference in the understanding of laypeople. This is especially prominent in Fig 3 where laypeople have a majority believing that trained professionals are not affected by stress or normal eyewitnesses while both bodies of experts ~~do~~ have a majority that disagree. This shows that the judgement of the laypeople that act as jurors may not always be correct.

2. A solution to the difference in understanding of the significance of eye witness testimonies would be to remove the use of eye witness testimony in general. With many research studies showing evidence for the unreliability of eye witness testimony such as Loftus and Palmer due to the fallibility of reconstructive memory and leading questions, it may be ~~not~~ better to use concrete evidence such as video tape footage or fingerprints or DNA when finding evidence ~~if~~ that could incriminate someone. There are many cases of ~~these~~ false eye witness testimonies that result in the incrimination of an innocent individual. Thus with the development of technology it would be better to use sources of information that are not as prone to distortion as the human memory. If eye witness testimony were to be used, it would be important to do it soon after the event to prevent distortion.

QUESTION THREE

Select (✓) ONE of the statements below. Use your own knowledge of psychology to address the statement, including links to debates within psychology, and provide an analysis of different sides of the argument.

- ☒ (a) Current memory models oversimplify human memory.
- ☐ (b) Learning is best explained by cognitive theories.
- ☐ (c) Your working memory capacity is the best predictor of intelligence.
- ☐ (d) Intelligence is more about adaptability than problem-solving ability.

PLANNING

Multi store model

- ↳ Atkinson & Shiffrin
- ↳ HM Milner
- ↳ Glanzer & Cunitz

different locations
Reductionist
Milner's amnesia

Working Memory Model

- ↳ Baddeley & Hitch
- ↳ Laidley & Barking
- ↳ Phonological loop
 - ↳ Auditory suppression
 - ↳ Inner voice
 - ↳ Inner ear

Long term

- ↳ Semantic

Short term

- ↳ ~~Acoustic~~ Auditory

- ↳ Visuo spatial sketchpad
- ↳ Episodic Buffer → Addition
- ↳ Central executive → Milner 7 ± 2

or chunking

Tulving's long term memory model 4 ± 1

Begin your answer to **Question Three** here:

Current memory models used by psychologists in cognitive psychology include the multi store model proposed by Atkinson and Shiffrin, the working memory model proposed by Baddeley ~~and~~ and Hitch, and Tulling's long term memory model. This essay will explore how the multi store model and the working memory model can be used to debate the two sides of if current memory models ~~can be~~ oversimplify human memory. The multi store model looks at the movement of information through multiple memory stores including sensory memory, short term memory and long term memory. Movement of information from the sensory memory into the short term memory occurs due to attention. From the short term memory, rehearsal of a piece of information must occur so that it can be consolidated into long term memory. If a person wants to obtain information from the long term memory and bring it to the short term memory, this is known as retrieval. In contrast to the multi store model, the working memory model primarily aims to explain how the short term memory works in greater depth. The ~~short~~ working memory model contains many components including the central executive, which determines what information to pay attention to and, thus, bring into the working memory, the phonological loop is the part of the working memory that deals with verbal information such as words, the visuo spatial sketchpad ~~refer~~ is the

component of the working memory model that deals with visual information, and the episodic buffer was an additional component added to the working memory model that aims to explain how information is transferred from the working memory into the long term memory. The phonological loop consists of the inner voice and inner ear that can be used for rehearsal of information. Both the Multi Store model and the working memory model are ~~the~~ current memory model, widely accepted in psychology, yet, both somewhat offer a reductionist view of memory. The multi store model is generally seen as being more reductionist and an oversimplification of memory than the working memory model which is slightly more complex.

The ~~multi~~ multi store model, first introduced by Atkinson and Shiffrin, offers a reductionist view of memory. This is supported by Milner's study into the patient HM. HM had his hippocampus removed due to the effects of a bicycle accident that left him with severe epilepsy. Milner aimed to determine the effects of removal of the hippocampus, and thus ~~test~~ the function of the hippocampus through a longitudinal case study on HM. Through a variety of methods such as psychometric testing, MRI scans for brain damage, interviews with close friends and family, cognitive testing and direct observation, Milner was able to ~~find out~~ determine multiple effects of the removal of the hippocampus.

on patient HM. After surgery, HM could no longer form new ~~memories~~ episodic or semantic memories. This shows that there was a problem in rehearsal of short term memories so that they could be consolidated into long term memory. The researchers were able to determine that HM had ~~retrograde~~ amnesia where he was able to remember information from before he surgery but not after. As HM could carry on a conversation with others, Milner determined that HM had a capacity for working memory as he could remember recent information. Researchers also determined that HM could form a usual layout of his home indicating that the type of memory being formed ^{and} what information was being remembered could have different methods of consolidation. This is evidence of the multistore model being an oversimplification as there is only one pathway for information into the long term memory. The researchers concluded that the hippocampus plays a role in the ~~storage~~ of processing of information for long term storage. This aspect of memory formation is not accounted for as part of the multistore model, thus showing how it is a reductionist view. Additionally, Milner determined that there are multiple different stores in the brain including different stores for types of implicit memory. As the multistore model only views long term memory as a single store, this is ~~an~~ oversimplification.

Although ~~the~~ HM, Milner's study is generally seen as

both reliable and valid, there are some limitations that may prevent it from being good evidence for the idea that the multistore model is an oversimplification. One limitation is that due to the case study nature, only one participant, HM, was included. This meant that the reliability of the study was reduced as there is no data from other participants to compare to. Another limitation of this study is the questionnaire ethics used to obtain consent as HM would not be able to give his own consent. Some strengths of the study include that method triangulation was used to increase the reliability of the results. Overall, this study is still a reliable and valid source of evidence for ~~the~~ ~~the~~ presence of the multiple stores of memory in the brain but also how the multistore model is a reductionist approach to understanding memory.

In contrast to the multistore model which ~~for~~ considers ~~all types of memory~~ long term and short term memory, the working memory model, introduced by Baddeley and Hitch, focus on the short term or working memory which allows for it to explain the working memory to a greater depth. The working memory model is supported by evidence from Landau and Baithly's (2011) study into auditory suppression in the phonological loop. Landau & Baithly aimed to determine how auditory suppression could impact how well a person could recall a list of phonetically dissimilar letters in the correct order.

The participants were university students from Washington. Participants of this study took part in a true experiment which shows how a cause and effect relationship can be determined. The participants were given a list of ~~phon~~ letters that they had to recall in order. One condition, control, did not give the participants any additional tasks while in the experimental condition, the participants were told to speak out loud the words "one" and "two" at a rate of two words a second. The researchers aimed to use this task as ~~articulatory~~ ^{articulatory} suppression as the participants would not be able to use their inner voice to rehearse the list of letters ~~the~~ in the phonological loop. The researchers found that the participants in the ~~articulatory~~ ^{articulatory} suppression group did significantly worse than the control group. The control group had an accuracy rate of over 70% while the experimental group had an accuracy rate of only 45%. This is evidence that supports the phonological loop in the working memory model as it suggests that the use of the same part of the working memory leads to overload of that system resulting in a depleted performance. Landau and Bartling's study supports the accuracy of the working memory model as a model of memory that is not oversimplified.

Additional studies have found that when performing two tasks that do not use the same component of the working memory such as ~~the~~ one task that utilises the visuo spatial sketchpad and ~~one~~ one that uses

Extra space if required.

Write the question number(s) if applicable.

QUESTION
NUMBER

3 the phonological loop, that the efficacy of completing both tasks was not diminished. This further supports the working memory model as an accurate representation of memory.

~~Although the~~ The current ^{working} memory model is different from what it used to be. ~~But~~ After the first introduction of the model, which did not include the episodic buffer, many studies obtained results that could not be explained by the working memory model. Baddeley accepted the criticism of the model and incorporated the newest component, the episodic buffer, as a way to make the working memory model more representative of how memory actually works. This shows adaptability of the model so that it has more evidence to support it, so that it can be applied more widely and so that it can be used to ~~extra~~ predict how memory will work for a wider range of situations.

The study by Landau and Bartling, although generally seen as reliable and valid, still shows some ~~to~~ limitations to its use as evidence to support that the working memory model is not an oversimplification of human memory. Firstly, the use of a biased sample of university students means that the results

Extra space if required.

Write the question number(s) if applicable.

QUESTION
NUMBER

3 cannot be as easily generalised to other populations and cultures. This means that there is a possibility that the phonological loop or working memory in general can differ in cultures or ages. Another limitation of this study is that it only considers the phonological loop. The other components of the working memory are not tested and, thus, there is less evidence that supports the accuracy of the other components. Overall, due to the true experiment design, researchers were able to ~~determine~~ maintain high internal validity to determine a cause and effect relationship.

Another study, KF, studied a patient after a motor bike accident. The researchers were able to determine that KF was unable to remember more than two items on a ^{grocery} list of written words while he ~~could~~ had a normal capacity when remembering the physical objects he had to remember was given to him. As written words are processed and remembered in the phonological loop while the the images of the items are processed in the visuo spatial sketchpad, the difference in ability to remember the objects due to inability shows how the components of the working memory are separate. This supports that the working memory model is accurate and not an over simplification of human memory.

3.

in conclusion, the multi store model and the working memory model are both current models of memory used to explain human memory. The multi store model is seen as being more oversimplified and a reductionist approach to understanding human memory as seen in ~~the~~ Milner's study of HM which showed that there were different long term memory stores and that the hippocampus played a role in processing memories. In contrast, the working memory model shows a more complex approach to understanding and representing memory and is seen to be accurately represented by the student Lashley and Bartlett (2011) and the study into the patient KF. The addition of the episodic buffer into the working memory model also shows how these models can adapt and accommodate to new evidence. This allows these models to become more complex and act as a less oversimplified view of human memory. Due to the current limitations of research into the brain, the current memory models will always be more simple than reality, though they are gradually getting more and more complex and representative of human memory.

Scholarship

Subject: Psychology

Standard: 93405

Total score: 17

Q	Score	Marker commentary
1	6	A comprehensive analysis of ethics, validity and biases, with reasoned improvements given. However, the analysis of the study's purpose and design does not progress to the level of a critical evaluation.
2	6	This candidate's response has addressed all the requirements of the question and used behavioural and social learning approaches in the solutions. They have referred to theories and studies to explain the effectiveness of working memory and are clear and accurate in their response. Each resource has been looked at in turn, rather than being presented as an integrated response.
3	5	Comprehensive knowledge about current memory models is shown. There is an analysis of theories, studies, and research methods. However, the evaluation of the debates is not as strong.