**STAGE 1 psychology**

**INVESTIGATIONS FOLIO: COGNITIVE PSYCHOLOGY**

**Purpose**

This assessment provides you with the opportunity to:

* evaluate the method provided from an ethically approved investigation for its strengths and/or limitations, the effect of these strengths and/or limitations on data
* deconstruct a problem related to the provided investigation
* design a method to investigate this problem and obtain approval from both your teacher and either the Head of Faculty, Head of House or the school Counsellor
* conduct your investigation using recruited participants, analyse the data to formulate a logical conclusion and write a report of your findings.

**Description of assessment**

The report you are required to produce should contain four sections:

1. Analysis and Evaluation  
   Using the information in the summary of an investigation report on *Remembering* provided below, this section of your report could include:

* an explanation of the design type used in the investigation described
* an evaluation of the choice of participants
* evaluations of the strengths and/or limitations of the investigation
* a suggestion for increasing the reliability of the data, justifying your answer
* a suggestion for increasing the validity of the data, justifying your answer.

1. The Deconstruction section of the report requires you to consider how you could conduct new research addressing a problem related to this investigation.  
   You could do this by including:

* a consideration of how various factors could affect the outcome
* identification of the dependent and independent variables
* a consideration of the factors that should be held constant, with a description of how these factors could be controlled
* identification of factors that may not be able to be controlled
* a consideration of the sampling method and sample size.

1. The Design section of your report must include:

* a hypothesis or an investigable question
* a list of materials required
* a detailed method to test your hypothesis or question
* identification and management of safety and/or ethical risks
* explanations of the limitations of the investigation or the conclusions that could be drawn
* references (if applicable).

You could annotate your design to explain why you have made the decisions you have made.

1. The Results section of your report requires:

* a presentation of your results in an appropriate format
* analysis of your data
* a conclusion made from the data you obtained.

**Assessment Conditions:**

For this investigation, students present an individual report.

Section 1: One lesson to evaluate the method of the investigation in the provided report.

Section 2: Two lessons to deconstruct a problem and design an investigation, either individually or in pairs, write the deconstruction and design parts of the report, and have the design approved by the teacher (see Handout 1).

Section 3: Each student is to obtain approval from either the Head of Faculty, Head of House or the school Counsellor (see Handout 1), obtain consent from participants (see Handout 2), and collect data at a time that is convenient to the participants. This replicates the process undertaken by a researcher and the approval process through an Ethics Board.

Section 4: Students complete the writing of the report at home. Time of submission will be negotiated with the teacher.

**The report should be a maximum of 1000 words if written, or a maximum of 6 minutes for an oral presentation, or the equivalent in multimodal form.**

**The deconstruct and design section should be on no more than 3 single sided A4 sheets of paper.**

**Remembering**

Craik et al. (1996) investigated how effectively material was learned and how effectively it was recalled under different conditions.

The researchers hypothesised that if attention were divided during encoding, recall would be negatively affected compared to full attention paid during the learning process. Since automatic processing would be involved in retrieval, more material would be recalled for both retrieval conditions: full attention and divided attention.

Participants were thirty-two University of Toronto undergraduates who took part in the experiment for course credit.

The researchers began by finding out the average reaction time (RT) for participants who were trained on a simple computerised RT task until they could not do the task any faster. Then the researchers established how many words could be learned or recalled under full attention in a particular time.

The experiment involved the following:

* The first experimental condition involved getting participants to learn material while they were carrying out the reaction time task.
* The second experimental condition involved asking participants, while carrying out the reaction time task, to remember what they had learned.
* In addition, the researchers gave different instructions to different participants. Emphasis was given to either:
  + the need for speed and accuracy in the reaction time task
  + the need for speed and accuracy in both tasks (‘50/50’)
  + the need for speed and accuracy in the memory task (either encoding or retrieval).

In this way a different emphasis was placed on the way that participants divided their attention if they followed the instructions.

The researchers delivered the words to be learned to the participants aurally (the participants heard them) and the participants had to recall them orally (they spoke them). The reaction time task involved observing an asterisk appear in a box on a computer screen, and hitting one of three keys on a keyboard. As soon as the participant hit a key, a new stimulus appeared in the box. It was expected that divided attention would lower the number of words recalled and that the reaction times would increase.

**An outline of the experimental conditions for the research**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Experimental condition** | | |
|  | **Reaction Time (RT)** | **50/50** | **Memory** |
| **Instructions** | Speed and accuracy for RT task | Speed and accuracy for both Reaction Time and Memory task | Speed and accuracy for Memory task |
| **Participant’s task** | Learn material while doing RT task | Learn material while doing RT task | Learn material while doing RT task |
| **Hypothesis** | Least words recalled Lowest reaction times | Less words recalled Medium reaction times | Most words recalled High reaction times |

The results of the research are illustrated below.

DA-ret

DA-enc

Numbers of words recalled under conditions of full attention and divided attention at retrieval (DA-ret) and divided attention during encoding (DA enc).  
Instructions emphasised the reaction time task (RT), the memory task (memory) or both tasks equally (50/50).

Adapted from Craik, Govoni, Naveh-Benjamin & Anderson (1996).

The Effects of Divided Attention on Encoding and Retrieval Processes in Human Memory – Craik et. Al

STAGE 1 PSYCHOLOGY

Cognitive Psychology

Student Researcher’s Application Form

|  |  |
| --- | --- |
| Research Question/Hypothesis: |  |

Provide a brief summary of the procedure, including:

* who the participants will be
* how data will be collected
* the type of data that will be collected.

In order to investigate the proposed research question/hypothesis, I undertake to:

1. Explain the nature of the investigation, including questionnaire(s), experimental procedure, or interview to the participants.
2. Ensure that participants understand the following:
3. They are free to withdraw from the investigation at any time. There will be no penalty if they decline to participate, or if they initially agree to participate but later decide to withdraw.
4. The investigation is for the purpose of learning. It does not involve any treatment.
5. The confidentiality of the information participants provide—whether on paper or recorded on audio-tape—will be safeguarded. (Pen-and-paper measures will be identified only by a code number in order to ensure that answers are anonymous. Any audio-recording that is made of a focus group discussion will be erased immediately after the transcription has been checked.)
6. Access to any pen-and-paper or audio tape recordings will be limited to the researcher, teacher and to students whose role it is to transcribe any tapes.
7. There are no known adverse effects of participation in this program.
8. Participants will be debriefed at the end of the investigation.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Name | Signature | Date |
| Student Researcher |  |  |  |
| Supervising Teacher |  |  |  |
| One of:   * Head of Faculty * Head of House * Counsellor |  |  |  |

STAGE 1 PSYCHOLOGY

Cognitive Psychology

Participant Consent Form

Students are to provide a brief summary of the procedure, including:

* who the participants will be
* how data will be collected
* the type of data that will be collected.

|  |  |
| --- | --- |
| Participant’s Name (capitals): |  |
| Research Question/Hypothesis: |  |
| Student Researcher’s Name |  |
| Supervising Teacher’s Name: |  |

1. I consent to participate in investigating the research question/hypothesis stated above. The nature of the program, including questionnaire(s), experimental procedure, or interview has been explained to me.
2. I authorise the student researcher and supervising teacher, named above, to use the questionnaire(s), experimental procedure or interview with me.
3. I understand that:
4. I am free to withdraw from the program at any time. There will be no penalty if I decline to participate, or if I initially agree to participate but later decide to withdraw.
5. The program is for the purpose of teaching. It does not involve any treatment.
6. The confidentiality of the information I provide—whether on paper or recorded on audio-tape—will be safeguarded. (Pencil-and-paper measures will be identified only by a code number in order to ensure that answers are anonymous. Any audio-recording that is made of a focus group discussion will be erased immediately after the transcription has been checked.)
7. I am aware that access to audio tape recordings will be limited to the researcher, teacher and to students whose role it is to transcribe the tapes.
8. There are no known adverse effects of participation in this program.
9. I should return only the tear-off slip below. I should keep the remainder of the consent form so that I have a record of what I have agreed to.

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|  |  |  |  |
| --- | --- | --- | --- |
| Signed: |  | Date: |  |
| Participant Name |  |  |  |

Students under 16 years of age may participate in the program only if a parent or guardian completes the following section.

|  |  |  |  |
| --- | --- | --- | --- |
| I consent to the participation of |  | in the above research. | |
| Signed: |  | Date: |  |
|  | *Parent/guardian/in loco parentis* |  |  |

Performance Standards for Stage 1 Psychology

| - | Investigation, Analysis, and Evaluation | Knowledge and Application |
| --- | --- | --- |
| A | Critically deconstructs a problem and designs a logical, coherent, and detailed psychological investigation.  Accurately and thoroughly obtains, records, and represents data.  Systematically analyses and interprets data and evidence to formulate logical conclusions with detailed justification.  Critically and logically evaluates procedures and their effect on data. | Demonstrates deep and broad knowledge and understanding of a range of psychological concepts.  Applies psychological concepts highly effectively in diverse contexts.  Critically explores and understands in depth the interaction between science and society.  Communicates knowledge and understanding of psychology coherently, with highly effective use of appropriate terms, conventions, and representations. |
| B | Logically deconstructs a problem and designs a well-considered and clear psychological investigation.  Logically obtains, records, and represents data.  Logically analyses and interprets data and evidence to formulate suitable conclusions with reasonable justification.  Logically evaluates procedures and their effect on data. | Demonstrates some depth and breadth of knowledge and understanding of a range of psychological concepts.  Applies psychological concepts mostly effectively in diverse contexts.  Logically explores and understands in some depth the interaction between science and society.  Communicates knowledge and understanding of psychology mostly coherently, with effective use of appropriate terms, conventions, and representations. |
| C | Deconstructs a problem and designs a considered and generally clear psychological investigation.  Obtains, records, and represents data with some errors.  Undertakes some analysis and interpretation of data and evidence to formulate generally appropriate conclusions with some justification.  Evaluates procedures and some of their effect on data. | Demonstrates knowledge and understanding of a general range of psychological concepts.  Applies psychological concepts generally effectively in diverse contexts.  Explores and understands aspects of the interaction between science and society.  Communicates knowledge and understanding of psychology generally effectively, using some appropriate terms, conventions, and representations. |
| D | Prepares a basic deconstruction of a problem and an outline of a psychological investigation.  Obtains, records, and represents data with occasional accuracy and effectiveness.  Describes data and undertakes some basic interpretation to formulate a basic conclusion.  Attempts to evaluate procedures or suggest an effect on data. | Demonstrates some basic knowledge and partial understanding of psychological concepts.  Applies some psychological concepts.  Partially explores and recognises aspects of the interaction between science and society.  Communicates basic psychological information, using some appropriate terms, conventions, and/or representations. |
| E | Attempts a simple deconstruction of a problem and a procedure for a psychological investigation.  Attempts to record and represent some data.  Attempts to describe results and/or interpret data to formulate a basic conclusion.  Acknowledges that procedures affect data. | Demonstrates limited recognition and awareness of psychological concepts.  Attempts to apply psychological concepts.  Attempts to explore and identify an aspect of the interaction between science and society.  Attempts to communicate information about psychology. |