12 ATAR PSYCHOLOGY 2016

TEST ONE

Name: _____ **Teacher:** _____ **Mark:** /44

MARKING KEY **Percentage:** %

Section One: Research methods **(21 marks)**

Question 1 **(12 marks)**

Dr Scott wanted to test whether a vitamin supplement helped to improve students' grades. To test her idea, she told her class she was giving them all a supplement that would make them smarter. She told them they all had to participate. Dr Scott then divided the class into two equal groups. Group A received the vitamin supplement and Group B received an inactive substance (sugar pill).
Over the two week trial, Dr Scott spent a lot of time with the students gathering data. She was excited to find that the results showed that all students' grades had improved. She concluded that the vitamin supplement had worked. 2014 12 ATAR EXAM

(a) Explain what Dr Scott should do after the experiment has ended to make sure the research has been conducted ethically. (1 mark)

Dr Scott should debrief the participants.

(b) Outline how Dr Scott may have affected the results of the experiment. (1 mark)

(Any response that refers to an example of experimenter effect).

eg.

- The results might have been because Dr Scott spent a lot of time with the students collecting data for the study.
- Dr Scott may have marked students more leniently because she wanted the experiment to work.

(c) Explain the difference between the terms 'population' and 'sample' in psychological research. (2 marks)

(1)

The population represents the entire group of interest whereas a sample is a small group from the population. (1)

(d) (i) Outline three (3) ethical issues associated with this research. (3 marks)

- No informed consent.
- The students were required to participate in the experiment.
- Deception as some students did not actually receive the supplement but thought they were.
- Relationship between the experimenter & the students
- There may be benefits of the vitamin that placebo group have not had access to.

(ii) Identify two (2) sources of error in the design of this experiment. (2 marks)

- The researcher was the teacher (and could have been biased) / the researcher should have been independent.
- The experiment time frame was too short.
- There was no random sampling

(e) State whether the method of the research used 'independent measures' or 'repeated measures' and explain the reason for your response. (2 marks)

Independent measures.
Different participants are used in each condition of the independent variable.

(f) Identify the sampling method that Dr Scott used in her research. (1 mark)

Convenience sampling

Question 2 **(6 marks)**

A psychologist wanted to investigate the relationship between temperature and performance on a test of divided attention. The psychologist required a sample of 60 adults to participate in the study. Each participant would complete a divided attention task under two conditions: firstly in a room where the temperature was 16°C; and secondly in a room where the temperature was 24°C. 2012 12 ATAR EXAM

(a) Identify whether this is an experimental or non-experimental study and give a reason for your answer. (2 marks)

Experimental study (1)

- The independent variable is able to be manipulated.
- There is an independent and dependent variable. > (1) for one reason
- A cause-and-effect relationship can be found.

(b) Identify

(i) the independent variable for the study. (1 mark)

Temperature

(ii) the dependent variable for the study. (1 mark)

Divided attention score

The results of the study are shown in the table below. Higher scores indicate better performance on the divided attention task.

Room temperature	Mean divided attention score
16 °C	$\frac{49}{80}$
24 °C	$\frac{60}{80}$

A statistical test on the difference between the two mean scores found $p < 0.05$.

(c) Explain the meaning of '$p < 0.05$'. (2 marks)

eg. $p < 0.05$ means that the probability of the difference between the two mean scores being due to chance is less than 5%. > (2)
or we can be 95% certain that the difference between the two scores is real rather than due to chance.

1 mark responses = the results are statistically significant.
= The results are not due to chance. > (1) only

Question 3 **(3 marks)**

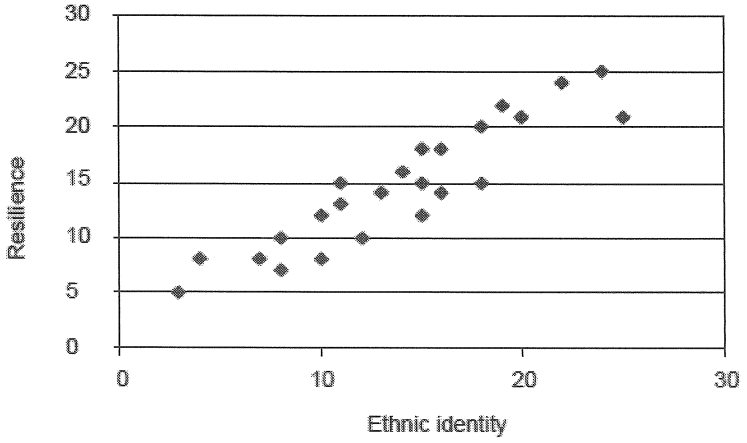
A psychologist was interested in the relationship between how strongly a person identifies with a particular ethnic group (ethnic identity) and their resilience to stress. The psychologist collected questionnaire measures of ethnic identity and resilience from 300 volunteer adults.

2011 12 ATAR EXAM

(a) State a hypothesis that the psychologist could develop for this study. (1 mark)

It is hypothesised that adults with .... higher levels of ethnic identity will be associated with higher resilience to stress.

The results of the study are shown in the scattergram below.



(a) (i) Identify the nature of the relationship between the two variables shown in the scattergram. (1 mark)

Positive

(ii) Do the results shown in the scattergram support the hypothesis stated in Question 1(a)? (1 mark)

If hypothesised that there is positive relationship - YES

If hypothesised that there is a negative relationship - NO

Section Two: Short answer **(23 marks)**

Question 4 **(5 marks)**

(a) After falling off his bike on the way to school during the first week of term, Matt spent two weeks in hospital. Matt returned to school in the 4th week of term and is having difficulty recognising his school friends. State the lobe of the brain that he has most likely damaged. (1 mark)

Temporal lobe

(b) Tom is an excellent musician. Which hemisphere of the brain is likely to be more dominant when he plays the guitar? (1 mark)

Right hemisphere

(c) The primary sensory cortex and primary motor cortex lie next to each area on the cerebrum. For each area, state the lobe of the brain that it resides in. (2 marks)

Primary sensory cortex - parietal lobe. (1)

Primary motor cortex - frontal lobe. (1)

(d) Identify a function of the myelin sheath. (1 mark)

- Protects the axon
- Increases speed of conduction of electrical impulses of messages
- Helps improve the conduction of nerve impulses along axon.
- Insulates axon from chemical & physical stimuli that might interfere with transmission of nerve impulses.
- Helps improve conduction of nerve impulses along axon.

Question 5 **(10 marks)**

(a) List two (2) effects of each of the following neurotransmitters.

(i) Noradrenaline (2 marks)

- Boosts mood - Reduces symptoms of depression
- Involved in maintenance of alertness, drive & motivation
- Involved in memory retrieval

(i) Endorphins (2 marks)

- Boosts mood - blocks pain
- Can be experienced as 'runner's' high after vigorous exercise

(b) While she was out walking, Maddy was startled by a dog suddenly barking at her from behind a fence, causing her heart to race and her blood pressure to increase. As she continued on her walk, Maddy's blood pressure and heart rate returned to normal levels. Identify the type of nervous system that allowed her blood pressure and heart rate to return to normal levels. (1 mark)

Parasympathetic nervous system

(c) The peripheral nervous system can be subdivided into two nervous systems that have quite distinct features. Identify these two nervous systems. (2 marks)

Autonomic (1) nervous system and somatic (1) nervous system.

(d) Contrast between a pre-synaptic neuron and a post-synaptic neuron. (2 marks)

Pre-synaptic neuron sends a (1) nerve impulse to another neuron whereas a post-synaptic neuron receives a nerve impulse. (1)

(e) Damage to Broca's area is known as Broca's aphasia. Describe one main difficulty someone who suffers from Broca's aphasia would have. (1 mark)

- An impairment in the ability to produce articulate speech. / difficulty producing speech.

Question 6 **(8 marks)**

(a) Frontal lobotomies were used in the early 20th century to 'cure' people of schizophrenia. This involved removing a part of the patient's frontal lobe. Give two possible side effects that could result from this surgery. (2 marks)

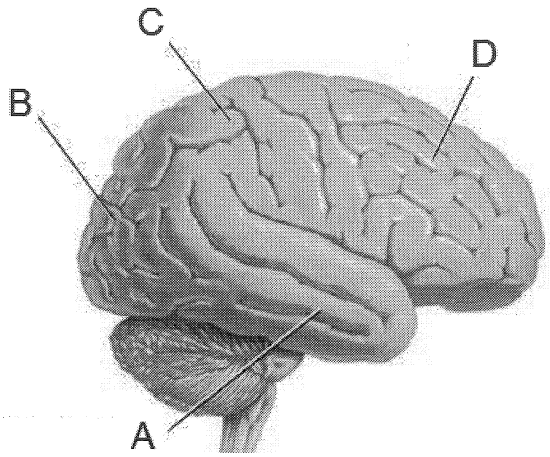
- Personality changes. - Loss of control of voluntary muscle movement. - planning difficulties. - Disturbances to production of speech. - Impairment to decision making, - Illogical thoughts. - Emotional changes.

* Any from table of fronta lobe functions in booklet 2.

(b) State the name of the primary cortex that is located at the rear of the frontal lobe. (1 mark)

Primary motor cortex

(c) Label the four lobes of the brain on the diagram below. (4 marks)



A: Temporal lobe (1)

B: occcipital lobe (1)

C: Parietal lobe (1)

D: Frontal lobe (1)

(d) Tabitha was cleaning out her gutters on the weekend and was on a high ladder. She slipped while reaching for some leaves, fell off the ladder and hit her head quite hard on the concrete below. Once Tabitha regained consciousness she experienced difficulty moving her right hand. Identify the lobe of the brain most likely affected in this case. (1 mark)

Frontal lobe