DULWICH COLLEGE
FOUNDED 1619

Upper School Entrance Examination
Specimen Paper
Psychology

Your last name	
Your first name	
Your date of birth	
Current school	

Time allowed for this paper: **45 minutes**

Instructions

- Use black ink or black ball-point pen.
- Fill in the boxes at the top of this page.
- Answer **all** questions.

Information

- The maximum mark for this paper is **35**
- The marks for questions are shown in brackets.
- You are reminded of the need for good English and clear presentation in your answers.
- Quality of Written Communication will be assessed in all answers.

<u>Question 1:</u>

Please read the following passage

If you're preparing to receive a flu vaccine — or even a COVID-19 vaccine — this winter, you'll be interested in the results of a new study that investigates whether it's better to smile or grimace your way through the pain of an injection.

The idea that manipulating our facial expressions can affect our emotions has a long and storied history. There are many advocates of this "facial feedback hypothesis", and many critics, too. Indeed, one of the classic findings in the field —that people find cartoons funnier if they hold a pen between their teeth, inducing a smile — recently failed to replicate. This mixed research background was well known to Sarah D. Pressman and Amanda M. Acevedo at the University of California, Irvine, who led the new work, published in *Emotion*.

The team randomised 231 student participants to hold either a neutral expression, a regular smile
(which involves just moving the mouth by the cheek muscles), a Duchenne smile (a 'full' smile which also recruits muscles by the eyes, resulting in creasing around the eyes) or a grimace (which recruits both these sets of muscles, plus those which allow us to wrinkle our brows).

To induce these expressions, the participants (who thought they were taking part in an investigation of multi-tasking) were given chopsticks to hold in one of four positions between their teeth and asked to imitate an example photo. Each participant then held their assigned facial position while they received an injection of saline solution into the upper arm, designed to mimic a flu jab. Their heart rates and skin conductance were measured throughout, as objective markers of their stress levels, and they also reported on levels of pain (anticipated and then actual) and other emotions, such as being jittery or relaxed.

The researchers found some interesting differences between the groups. The Duchenne smiling and grimacing groups gave lower pain ratings than the neutral group while waiting for the injection, during the injection, and immediately after it. The regular smiling group fell somewhere in between. Notably, the Duchenne group reported 40% less pain during the needle insertion than the neutral controls, and the grimace group reported 39% less pain. These were clinically meaningful results, the team stresses, equivalent to pain being "very much improved". In addition, the Duchenne group had the lowest heart rates during the study, while the grimacing group reported feeling the lowest levels of stress.

Smiling and grimacing recruit some of the same key facial muscles, and both are seen in people undergoing negative experiences, including pain. The facial feedback hypothesis would hold that both these facial configurations act to regulate feelings of pain and stress. In the case of Duchenne smiling, it might be that we associate this expression with feeling positive emotions, and this reduces perceived pain. With grimacing, it's possible, the team suggests, that intense

activation of muscles around the eye and forehead has a more direct effect on pain and/or levels of physiological arousal, and stress, perhaps via stimulation of the trigeminal nerve in the face.
But the nature of this mechanism, if it exists, is certainly not clear.

Questions

1a. Give a word which has the same meaning as the following words in the first two paragraphs of the text:

i) Advocates:

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ii) Inducing:

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iii) Replicate:

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(3 marks)

1b. Which word in the third paragraph is used

i) To describe people that took part in the experiment?

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ii) To describe a grumpy/disgusted expression?

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(2 marks)

1c. Why do you think the people taking part in the study were told they were taking part in a study on multitasking rather than being told its true purpose? (Paragraph 4)

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(2 marks)

1d. Explain what you understand by the term ‘objective markers’ in Paragraph 4?

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(2 marks)

1e. Which type of facial expression resulted in the least pain during the injection?

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(1 mark)

1f. What do you understand by the term ‘clinically meaningful’ (paragraph 5)?

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(2 marks)

1g. Why do the researchers think that a Duchenne smile may reduce pain?

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(1 mark)

1h. How is it suggested that a grimace may result in less pain?

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(1 mark)

1i. Suggest how the findings of this study might be useful?

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(2 mark)

Question 2:

2. A psychologist was reading an article about typical dream themes in adults.

The pie chart below shows the main dream themes identified in the article.

Main dream themes

2a) Using the pie chart above, estimate the percentage of dreams that were reported to be about being chased. Shade **one** box only. **(1 mark)**

A 4% ○

B 12% ○

C 27% ○

D 42% ○

When comparing the data for males and females, the psychologist found that there was a difference in the proportion of friendly and aggressive social interactions. This is shown in the table below.

Percentage of friendly and aggressive social interactions in dreams reported by males and females

	Males	**Females**
Friendly	40%	56%
Aggressive	60%	44%

2b) A total of 375 dreams reported by males included social interaction. Use the data in the table above to calculate how many of these dreams reported by males were classified as aggressive. Show your workings.

(2 marks)

2c) Draw a suitable graphical display to represent the data in the table above. Label your graph appropriately. **(4 marks)**

Title:

Questions 3 and 4:

Read the item and then answer the questions that follow.

An experiment was carried out to test the effects of learning similar and dissimilar information on participants' ability to remember.

In **Stage 1** of the experiment, 10 participants in **Group A**, the 'similar' condition, were given a list of 20 place names in the UK. They were given two minutes to learn the list. 10 different participants in **Group B**, the 'dissimilar' condition, were given the same list of 20 place names in the UK. They were also given two minutes to learn the list.

In **Stage 2** of the experiment, participants in **Group A** were given a different list of 20 more place names in the UK and were given a further two minutes to learn it. Participants in **Group B** were given a list of 20 boys' names and were given a further two minutes to learn it.

In **Stage 3** of the experiment, all participants were given five minutes to recall as many of the 20 place names in the UK, from the list in **Stage 1**, as they could. The raw data from the two groups is below.

Number of place names recalled from the list in Stage 1

Group A	Group B
5	11
6	10
4	11
7	13
8	12
4	14
5	15
4	11
6	14
7	14

3a) What is the most appropriate measure of central tendency for calculating the average of the scores, mean, median or mode, from the table, in each of the **two** groups? Justify your answer.

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(2)

3b) Calculate the measure of central tendency you have identified in your answer to **part** for **Group A** and **Group B.** Show your calculations for each group.

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(4)

4) Write a detailed plan for the experiment testing the effects of learning similar and dissimilar information on participants' ability to remember. Your plan must include:

- an operationalised, directional hypothesis
- the independent variable
- the dependent variable
- controlled variables that would be used in this investigation
- how the researcher should collect the data obtained
- how participants should be recruited for this investigation

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(6 marks)

End of Questions