**Statistical concepts**

In two famous experiments summarised below, identify the independent variable, dependent variable, experimental group and control group (if they exist).

1. In Pavlov’s experiment about classical conditioning applied to dogs, the association of stimuli forms a learned response. A stimulus (food) leads to an unconditional response (salivation). When this has been experienced repeatedly, this creates a conditioned response. Pavlov designed an experiment where he used a bell as a stimulus and gave the dogs food after ringing the bell. When the dogs were used to this routine, they would respond to the bell with increased salivation even if they were not given the food. This is a conditioned response.

In this experiment, what are the dependent and independent variables?

The independent variable in this study is the stimulus given to the dogs in the form of ringing of the bell and giving food. The dependent or response variable is the dogs’ salivation.

If you are going to create a control and experimental group as part of the procedure in this experiment to better assess the characteristics of the dog, how would you implement it?

The control group shouldn’t be exposed to any stimulus. In essence, the dogs won’t be given food after ringing the bell. The original scenario will be the experimental group. The salivation of the control group and the experimental group can be compared to see if there is a significantly greater increase in salivation in the experimental group.

1. The Bobo Doll experiment

Professor Albert Bandura of Stanford University conducted an experiment with 36 boys and 36 girls aged 3 to 6 years old. He wanted to see if children witnessing acts of aggression towards an inflatable, life-size bowling pin doll would copy the act. The children were split into three groups with 24 members each. One group observed aggressive behavior by an adult model towards the doll, another group saw non-aggressive play, and the last group was just given the doll with no adult models.

After this exposure, and a period of 'aggressive arousal', the children observed at play. Those who had watched aggressive adults were more likely to play aggressively with their toys, imitating the adults’ acts. In addition, female children acted with more physical aggression after watching an aggressive male subject while being more verbally aggressive after watching an aggressive female subject.

In this experiment, which are the independent and dependent variables?

The independent variable is the children’s exposure to aggressive behavior. The dependent variable is the children’s reaction or how they played with the Bobo doll after being exposed to the conditions.

Which groups are the control and experimental group?

The control group is the third one, where no adult models were shown to the children. The two remaining groups are the experimental groups.

**Data types**

For each variable, identify the data type: continuous, ordinal or categorical).

Sex / Marital status / Level of Education / Age group / Level of agreement / Temperature / Distance

* Sex - categorical
* Marital status – categorical
* Level of education - ordinal
* Age group - ordinal (for analytical purposes, you would normally convert to integers, e.g. 0 - 9 years becomes 1, 10 – 19 years becomes 2, and so on)
* Level of agreement - ordinal
* Temperature - continuous
* Distance - continuous