

Experimental designs

| You are learning how to... | In the context of... |
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| <ul style="list-style-type: none"> Identify and distinguish between independent groups, repeated measures and matched pairs experimental designs. Identify problems in the design of experiments and suggest ways of controlling them. | <ul style="list-style-type: none"> Studies of social and cognitive psychology and individual differences |

Experiments can be arranged in different ways

An experiment must have (at least) two conditions, in which PPs are exposed to different levels of the IV whilst the DV is measured. The analysis of experimental data involves comparing DV measurements from the two conditions to see if the IV had an effect. There are several ways of arranging the conditions in an experiment. They are called **experimental designs**.

- **Independent groups:** each condition has its own group of PPs. The scores (DV measurements) for each group are compared.
- **Repeated measures:** only one group of PPs is used. The group completes both conditions and PPs scores in each condition are compared.
- **Matched pairs:** pairs of PPs are selected, who are as similar as possible. One member from each pair completes each condition. The scores for the pairs of PPs are compared.

Read about each of the experiments below. For each experiment, identify (1) which experimental design was used; and (2) why the researcher might have used that design.

- A researcher wanted to find out if flooding was a more effective therapy for phobias than systematic desensitization. She recruited two groups of people who were awaiting treatment for phobias, ensuring that every member of the flooding group had a counterpart in the systematic desensitization group with a similar type and severity of phobia. Each PP completed a questionnaire before and after treatment to measure how severe their phobic symptoms were. The 'after' score was subtracted from the 'before' score to give an improvement score for each PP. Improvement scores for the two treatments were then compared.
- A researcher had read that using imagery can slightly improve recall of verbal material and wanted to confirm this. She created a list of thirty words. Her participants were presented with the words one at a time on a screen, with each word shown for three seconds. The first fifteen words were shown on their own. Each of the last fifteen was accompanied by a photograph that corresponded to the word. PPs were then given a list of one hundred words that contained the thirty they had seen mixed with seventy other words. They were asked to pick out the thirty words they had been shown. The number of correct choices from the first fifteen and the second fifteen were then compared.
- A researcher wanted to investigate audience effects on sporting performance in college students. PPs were recruited from the students of a large Sixth Form college in the locality. Each PP was asked to throw a basketball through a hoop positioned 4 metres away and 2 metres off the ground. They did this ten times and the number of times the ball went through the hoop was recorded by an electronic sensor. Half of the PPs did this in an empty gym and half did it in front of an audience of fifteen student volunteers recruited from the same college. The number of 'baskets' scored by PPs alone and with an audience were compared.

Revisit each experiment and identify (3) a problem that might arise from using the design adopted by the researcher; and (4) a precaution the researcher could take to try to avoid that problem.