Control of variables and standardisation

Lesson 2.2.4 | AS research methodology

Core ideas

Control of variables means reducing unwanted factors that could affect the dependent variable.

Extraneous variables are possible influences that are not the main focus of the study.

Standardisation means keeping instructions, materials and procedures the same for all participants where possible.

Control groups or comparison conditions help researchers judge whether the independent variable made a difference.

Random allocation can reduce bias by assigning participants to conditions by chance.

Strong evaluation balances control and reliability against artificiality and ecological validity.

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Key terms

Control of variables: Managing unwanted factors so comparisons are fairer.

Standardisation: Keeping procedures the same across participants or conditions.

Extraneous variable: An unwanted factor that could affect the dependent variable.

Control group: A comparison group that does not receive the key experimental treatment.

Comparison condition: A condition used to compare against another condition.

Random allocation: Putting participants into conditions by chance.

Procedure: The planned steps followed in a study.

Ecological validity: How well a study reflects real-life behaviour.

Further detail and evidence

Participant variables include abilities and previous experience; situational variables include noise, instructions and time. An extraneous variable becomes a confound when it systematically varies with the IV and offers an alternative explanation of the DV difference.

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Applying the ideas

Keep a memory test's word list, exposure time, delay and instructions constant, while changing only the defined music condition. Random allocation distributes participant differences. Counterbalancing distributes order; matched pairs addresses selected baseline characteristics. A placebo can control expectations about receiving treatment.

Worked example: Choose two controls for a memory experiment and explain why they matter. A researcher could give every participant the same word list and the same amount of time to learn it. These controls matter because differences in word difficulty or learning time could affect recall scores instead of the independent variable. Keeping these parts standardised makes the comparison fairer.

Worked example: Assess one strength and one limitation of standardising a procedure. A strength of standardisation is that it improves reliability because the study can be repeated using the same instructions, materials and timing. A limitation is that a highly standardised setting may feel artificial, so behaviour may not fully match real life. Standardisation helps consistency, but ecological validity still needs evaluation.

Evaluation and connections

Standardisation applies to relevant procedures, not to making the intended IV identical. Excessive control can create artificiality. Blinding reduces some expectation effects, but may be impossible when a treatment is obvious. Name a plausible unwanted influence and explain how the proposed control reduces it.