

Psychology research methods

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Psychology Research Methods - The general investigative purpose of a psychology study (why the researcher has decided to conduct an investigation) is called its aim. - A hypothesis is a precise and testable statement of what the researcher predicts will be the outcome of the study. In an experiment this is called the experimental hypothesis. - In a correlational study the hypothesis is called a research hypothesis, and it will predict a relationship between two variables. - A research hypothesis is called an alternative hypothesis. An alternative hypothesis is either: - Directional (one-tailed): predicts the direction of the effect expected (e. g. ' using visual imagery will improve how well words are recalled'), or - Non-Directional (two-tailed): predicts an effect but does not specify its direction (e. g. ' using visual imagery will affect how well words are recalled'). - Every hypothesis also has a null hypothesis. This predicts that there will not be a difference; any difference is due to chance. Designing experimental research

Independent groups design Each participant (P) is involved in only one condition of the experiment; the P is selected randomly for either the experiment or the control condition. Advantages: Can be used in wide range of situations, fairly easy to run, no order effects from P's becoming skilled, bored or fatigued. Disadvantages: Individual differences between groups may distort findings (random allocation to conditions helps reduce this risk); require fairly large sample size because each P is used only once. Repeated measures design Each P is involved in all conditions, the same Ps are used in experimental and control groups. Advantages: Economical in use of Ps, no risk of participant variables confounding the findings as same Ps used in each condition, Disadvantages: Demand characteristics- Ps have more opportunity to guess the purpose of the study, order effects- performance

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could be affected by boredom or fatigue. Problem of order effects can be overcome by using: counterbalancing- half the Ps perform first in condition A and half perform in condition B. Matched participants design Each P in the experimental condition is matched on relevant variables (age, intelligence) with a P in the control condition. Members of the pairs are randomly allocated to conditions. Advantages: No order effects, reduced risk of individual differences between Ps confounding the findings, Disadvantages: Matching Pairs of Ps is time-consuming and expensive, requiring a large number of Ps to begin with; difficult to ensure adequate matching of the pairs.

Designing naturalistic observations Observers usually sample the behaviour to be recorded and interpreted. Ways of doing this include: Time interval sampling- observe and record what happens only during specified time, such as for the first 15 minutes of each hour. Event sampling- observe and record only the events of interest, such as every instance of aggressive behaviour.

Designing questionnaires surveys and interviews Issues that need to be resolved when designing these studies include: Type of questions e. g. open or closed Clarity in wording to avoid unnecessary jargon or vagueness Avoiding ‘ leading’ questions

Factors associated with research design Numerous factors need to be considered if a study is to be well designed - Procedures and instructions should be standardised. For example, all Ps in the same condition in an experiment should receive exactly the same instructions. - Potentially confounding variables should be held constant across experimental conditions or eliminated. - Variables should be operationalized, i. e. defined in terms of the exact steps (operations) taken to measure them. For example, ‘ the number of words recalled immediately after learning’ could be used as an operational definition of STM. - A pilot

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study should be conducted- a small scale run-through of the investigation that is useful to identify possible problems - Ethical issues Assessing and improving reliability and validity Reliability Reliability is another term for consistency. It is measured by correlating sets of observations or scores. A correlation coefficient is a numerical index that represents the extent of the relationship between two variables; they are used to indicate levels of reliability. Inter-observer reliability is the amount of consistency between two or more observers who observe the same event simultaneously. Researchers record their own observations independently and then compare them. Reliability can be improved by: Training the observers thoroughly before the observations start Agreeing how concepts are to be operationalized e. g. deciding what constitutes 'aggressive behaviour' Test Reliability Refers to the consistency of people's test scores. It can be measured in several ways: - Test-re-test reliability tests for reliability over time. The same individual takes the test on two separate occasions and scores are compared using correlation analysis. A significant positive correlation indicates reliability. - Split-half reliability- items on the test are split into two balanced halves. An individual's performance on each half should be similar if the test is reliable. - Alternate-form reliability- two similar tests are taken. If there is agreement between results then reliability is high. Test reliability may be improved by: standardising the testing procedures, revising/replacing problem test items. Validity There are two types of research validity: Internal Validity: the effects observed are genuine. Problems with internal validity: may be caused by confounding variables, demand characteristics and investigator effects. External Validity: the effects can be generalised to different situations- ecological validity and to different groups of people- population validity.

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Problems with external validity: tend only to emerge when others rerun the investigation in different situations. Selection of Participants - The participants selected for a psychology investigation are called the sample. - The population from which the sample is drawn is the group of people to whom any significant findings will be generalised. - Researchers always aim to select a sample that is truly representative of its population. - There is no rule as to what size a sample should be, but the smaller a sample the more likely that it is biased. - However large samples are time-consuming and expensive. Psychologists use various techniques to select samples. These include: - Random sampling- every individual in the population has an equal chance of being selected. Random sampling does not guarantee a representative sample. - Stratified sampling- selecting a sample to reflect the key features. Stratified samples are sometimes time-consuming to select, but are likely to be representative of the population. - Opportunity sampling- using people who are available. Will not be a representative sample of any meaningful population. May create problems with generalising findings. Relationship between researchers and participants Some problems that may arise include: Demand characteristics- cues in the research setting that lead Ps to modify their behaviour in an effort to help or hinder the researchers. The single-blind procedure where participants in an experiment do not know in which condition they have been placed can reduce demand characteristics Investigator effects- may on rare occasions be caused intentionally if an investigator deliberately fakes results. More often the effects are accidental. The double-blind procedure where neither the participant nor the investigator knows the hypothesis being tested can reduce investigator effects.