

MSc Applied Psychology

WEEK FOUR: APPLIED RESEARCH DESIGN: ISSUES AND APPLICATIONS

Dr Ceri Phelps



STUDY DESIGN: A BRIEF REFRESHER



Choosing appropriate methodology for a study is not always as simple as it may appear



Need to think carefully about what it is you actually want to find out and what the best way doing this is



Different ethical and practical considerations for every project depending on the nature of the research question, target population or intervention



Critical thinking key!

QUESTIONS TO CONSIDER

What sort of design issues does your methodological approaches raise?

What ethical issues are specific to this approaches?

What type of research questions should such an approach employ?

REFRESHER:
DIFFERENT TYPES
OF RESEARCH

Basic/Pure versus applied
research

Qualitative versus
quantitative

Experimental V non-
experimental

REFRESHER: QUALITATIVE AND QUANTITATIVE DATA

Qualitative



Free text/words

Photos/Videos

Quantitative



Numbers

Categories / Continuous

Nominal, Ordinal, Ratio, Interval

Qualitative versus Quantitative Research

Quantitative research:

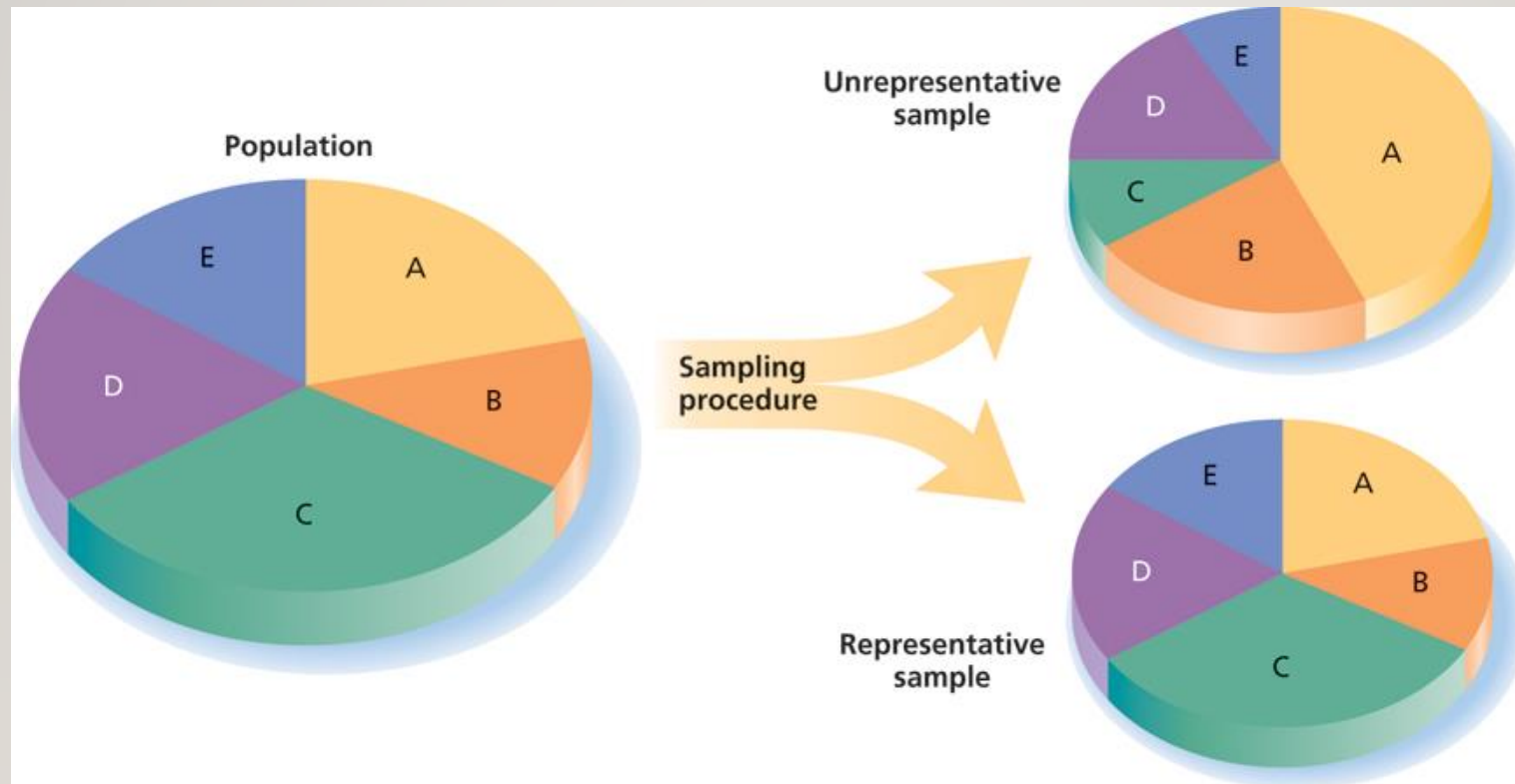
- We are not really interested in the sample that we study – we are interested in the target population
- Ability to generalise results to target population

Qualitative research:

- Interested in the specific experiences of our sample
 - the “life-world” of our participants
- Do not attempt to generalise to larger populations

NB: Growing role of “Mixed Methods” research!

YOUR RESEARCH POPULATION AND SAMPLE



QUALITATIVE RESEARCH DESIGN

NB: Focus of session on 10th November!

WHAT IS QUALITATIVE RESEARCH?

“Qualitative research is an enquiry process of understanding based on distinct methodological traditions of enquiry that explore a social or human problem. The researcher builds a complex, holistic picture, analyses words, reports detailed views of informants, and conducts the study in a natural setting” Creswell, 1998/2007

WHAT DOES QUALITATIVE RESEARCH INVOLVE?

- An understanding of which approach you are following
- Significant amount of time spent gathering data
- Time-consuming and complex data analysis – reducing large sets of data to a few themes or categories
- Long pieces of text/writing incorporating quotes



WHY CONDUCT A QUALITATIVE STUDY?

- In-depth exploration of a topic: often “how” “what” or “why”
 - How do people cope with xxxxx?
 - What do people tell their family about xxxxxx?
 - What do people understand about xxxxxxxx?
- Is there a lack of current theory/literature/evidence in the area?
- Do you want to study people in a naturally-occurring environment?



QUALITATIVE RESEARCH

- May be able to answer questions which large quantitative studies cannot
- Can provide an in-depth understanding of one particular phenomenon or specific beliefs or behaviour
- Qualitative findings can be used to raise awareness of lived experiences amongst a specific population

QUALITATIVE DATA COLLECTION TECHNIQUES

- In-depth interviews
- Semi-structured interviews
- Observation
- Focus groups

INTERVIEWS

- Structured V Unstructured V Narrative
- Semi-structured interviews:
 - neutral open-ended questions, aimed at eliciting in-depth responses from participants
 - questions form a prompt to the interviewer
 - should enable participants to express their beliefs, opinions and feelings freely

J Genet Counsel (2008) 17:394–405
DOI 10.1007/s10897-008-9158-z

ORIGINAL RESEARCH

“I Wouldn’t Classify Myself as a Patient”: The Importance of a “Well-being” Environment for Individuals Receiving Counseling about Familial Cancer Risk

Ceri Phelps • Debra Horrigan • Liwsi Kim Protheroe •
Janina Hopkin • Wendy Jones • Alexandra Murray

Focus Groups

- group discussions of a small number of people who have something in common and are
- an ideal method eliciting people's own meanings and understanding of health and illness (Wilkinson, 2005).
- allow individuals to interact with each other in response to a particular topic,
- make use of group dynamics to stimulate discussion, generate ideas and gain insights

J Genet Counsel (2010) 19:487–496
DOI 10.1007/s10897-010-9300-6

ORIGINAL RESEARCH

“The Bigger the Network the Bigger the Bowl of Cherries...”: Exploring the Acceptability of, and Preferences for, an Ongoing Support Network for Known BRCA 1 and BRCA 2 Mutation Carriers

Lisa Hughes • Ceri Phelps

PSYCHO-ONCOLOGY

Psycho-Oncology (in press)

Published online in Wiley InterScience (www.interscience.wiley.com). DOI: 10.1002/pon.937

THE DEVELOPMENT OF A DISTRACTION-BASED COPING INTERVENTION FOR WOMEN WAITING FOR GENETIC RISK INFORMATION: A PHASE 1 QUALITATIVE STUDY

CERI PHELPS^{a,*}, PAUL BENNETT^b, RACHEL IREDALE^a, SALLY ANSTEY^c and JONATHON GRAY^c

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SUMMARY

INTERPRETATIVE PHENOMENOLOGICAL ANALYSIS

- Qualitative methodological tool
- How an individual makes sense of their life world– individual viewpoint and experience (Phenomenological)
- Interested in personal perception of an object or event
 - “*Insiders perspective*” (Conrad, 1987)
- Recognises access to a participant’s world is dependent on the researcher’s own conceptions which are needed to make sense of that other personal world
 - double interpretation

PHENOMENOLOGICAL APPROACHES

- A psychological approach
- Aims to describe the meaning of lived experiences for several individuals about a concept or phenomenon
- Draws on previous research/theory to inform the research questions
- Preconceptions held by interviewer are highlighted so as not to bias the study
- Data analysis is systematic – often a thematic content analysis

INDUCTIVE V DEDUCTIVE APPROACHES

INDUCTIVE

- Data driven
- Themes emerge from participant accounts
- Theory developed from findings

Inductive: Exploring experiences of student wellbeing and identify novel themes.

DEDUCTIVE

- Theory driven
- Existing framework guides coding
- Findings used to assess theory

Deductive: Analysing interview data using Self-Determination Theory or another established psychological framework.



Ways of increasing the quality and credibility of findings from qualitative research:

- Prolonged engagement & persistent observation in the field
- Triangulation – making use of multiple and different sources, methods, theories etc
- Peer-review/de-briefing – external check of research process
- Negative case analysis – refine working hypotheses as the inquiry advances in light of disconfirming evidence
- Clarifying researcher bias from the outset
- Member checks/participant validation
- Rich thick description – allow reader to assess accuracy
- External audits

Should engage in at least two of the above in any given study



PRINCIPLES OF EXPERIMENTAL RESEARCH DESIGN

EXPERIMENTAL RESEARCH DESIGN

- Experiments: three characteristics
 - Researcher manipulates (controls) one or more variables
 - Researcher measures whether this manipulation influences other variables
 - Researcher attempts to control extraneous factors that might influence the outcome of the experiment

PRINCIPLES OF EXPERIMENTAL RESEARCH

- Highly controlled
- Hypothesis testing
- Can tap into implicit attitudes etc
- Ecological validity?

HYPOTHESES AND VARIABLES

Research hypothesis

Null Hypothesis

Extraneous variables

Confounding variables



Role in
applied
research?

QUESTIONNAIRES & SURVEYS

- Survey research: information about a topic is obtained by administering questionnaires or interviews to many people
 - A *population* consists of all the individuals that we are interested in drawing a conclusion about
 - A *sample* is a subset of individuals drawn from the larger population
 - A *representative sample* is one that reflects the important characteristics of the population

TYPES OF QUESTIONNAIRE STUDY

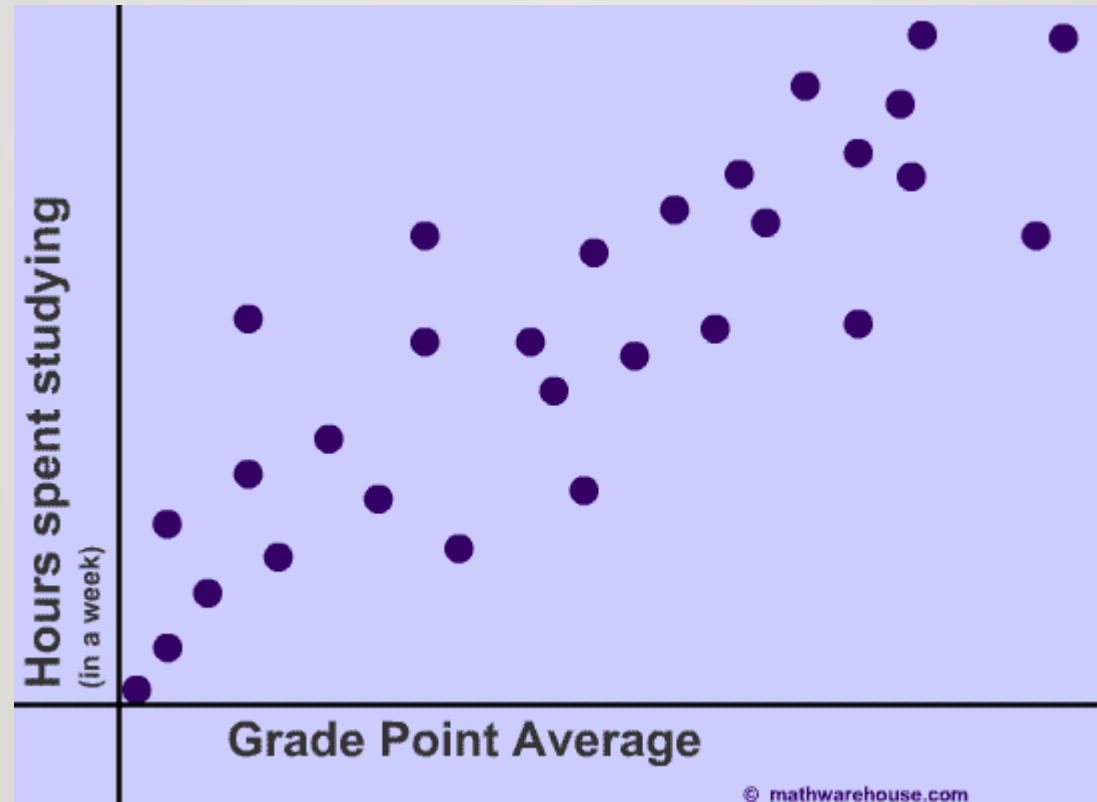
- Cross-sectional
- Longitudinal/Prospective
- Randomised controlled trials
- Quasi-Experimental

- Correlational Research: three components:
 - Researcher measures one variable (X)
 - Researcher measures a second variable (Y)
 - Researcher statistically determines whether (X) and (Y) are related

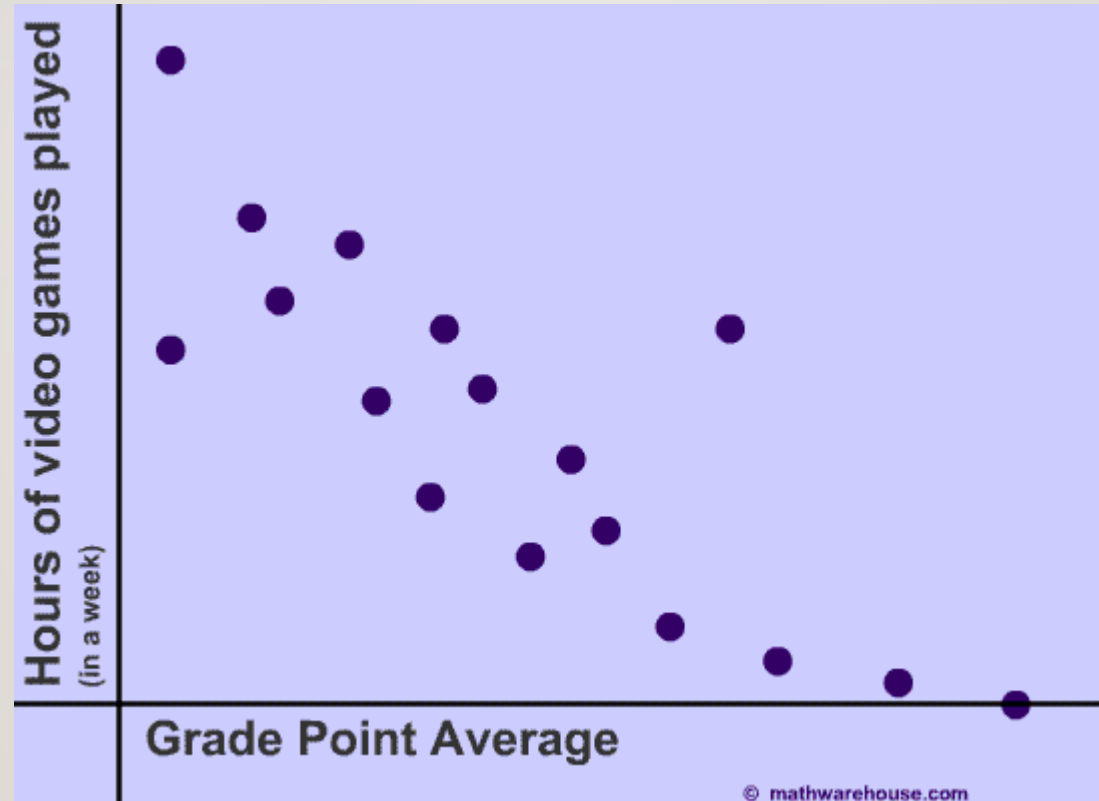
- REMINDER: Correlation does not equal causation
 - Some interpretive possibilities:
 - X caused Y
 - Y caused X
 - Both variables influenced each other
 - A third variable influenced both X and Y (spurious)



Positive correlation



Negative correlation



LONGITUDINAL /PROSPECTIVE STUDIES

Ability to follow up a sample of participants over time e.g *how do early attachments influence later attachment styles...*

Does academic ability predict future performance at work?

Allows predictions about causality

Original Research

Knowledge and Expectations of Women Undergoing Cancer Genetic Risk Assessment: A Qualitative Analysis of Free-Text Questionnaire Comments

C. Phelps,^{1,5} F. Wood,² P. Bennett,³ K. Brain,¹ and J. Gray⁴

Individuals undergoing cancer genetic risk assessment have been found to have a poor understanding of the process, which may affect how well they cope with learning their risk. This paper reports free-text data from questionnaires completed by women undergoing a randomised controlled trial of a psychological intervention. Of the 268 women undergoing genetic assessment for familial breast/ovarian cancer risk who were invited to take part in the trial, 157 women returned research questionnaires. Of these, 97 women provided free-text comments upon referral to a cancer genetics clinic, 62 provided com-

Illness representations and distress in women undergoing screening for familial ovarian cancer

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Women with a familial or genetic predisposition to ovarian cancer are at significantly increased risk of developing the disease, and this warrants effective risk management strategies. A clinical trial of ovarian cancer screening (OCS) is being conducted to establish the effectiveness of this risk management strategy. This article reports data from its psychological partner study which aims to evaluate the psychological effects of OCS.

RANDOMISED CONTROLLED TRIALS

- A randomised controlled trial is an experimental research design in which participants are randomly assigned to intervention and control groups. Randomisation reduces selection bias and strengthens causal inference.

Core Elements of an RCT

Research question & hypothesis

Random allocation

Intervention group

Control/comparison group

Outcome measures

Statistical comparison

RCTs are the gold standard for evaluating interventions in applied psychology.

- **Random allocation helps establish cause-and-effect relationships.**
- **Findings can inform evidence-based practice and policy.**

Strengths:

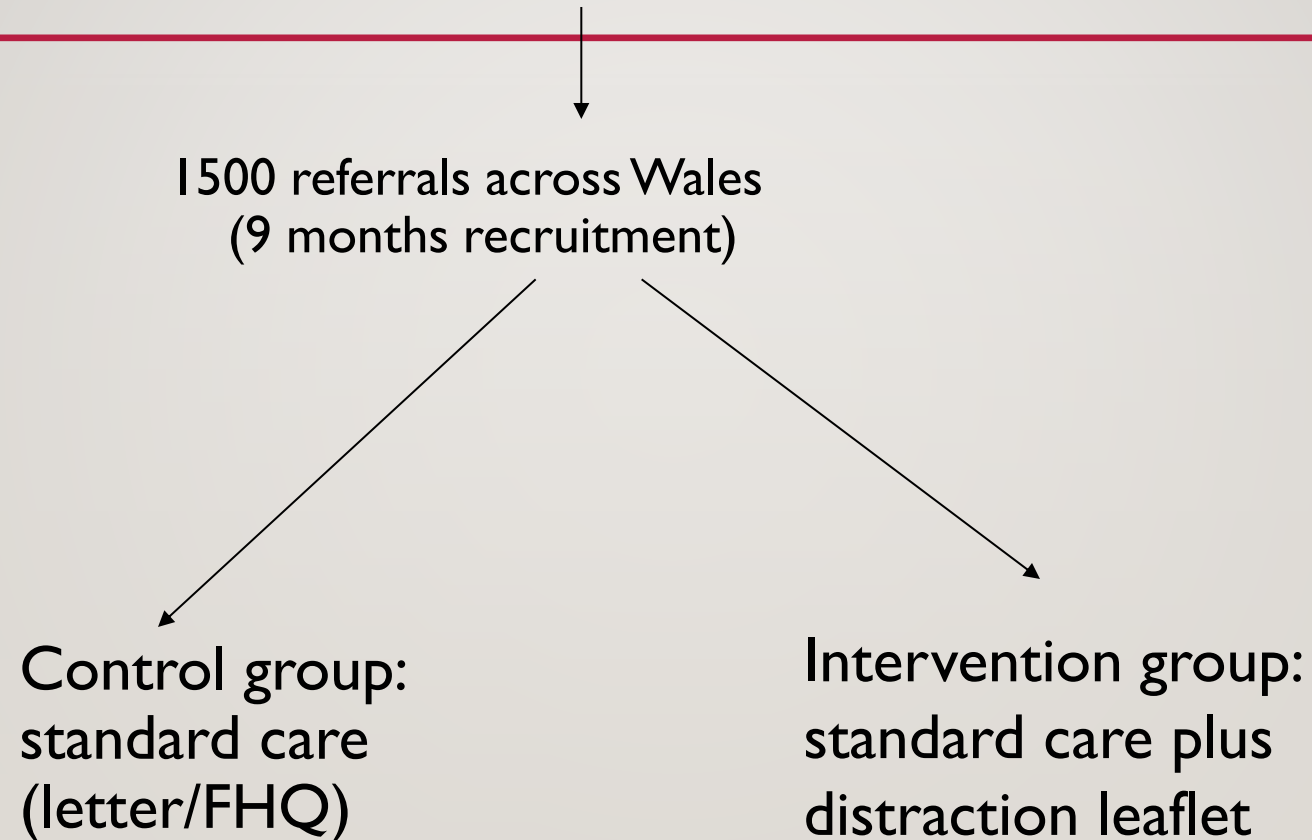
- Strong evidence for causality
- Reduced bias
- Replicable design

Limitations:

- Can be expensive and time-consuming
- Ethical constraints
- May have limited real-world generalisability

Phase III: The CARIAD Trial

MRC Phase III Randomised Controlled Trial



A self-help coping intervention can reduce anxiety and avoidant health behaviours whilst waiting for cancer genetic risk information: results of a phase III randomised trial

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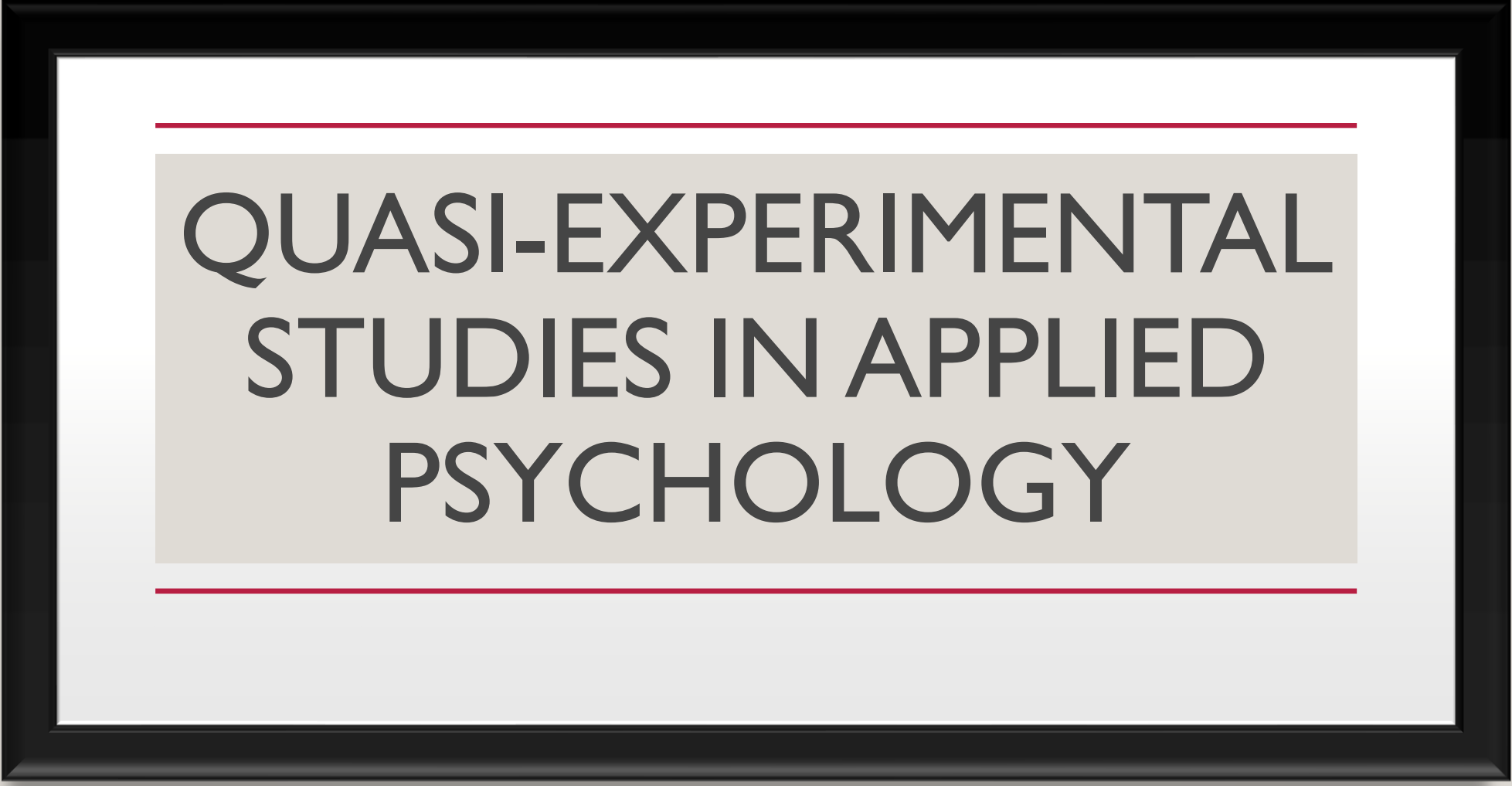
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Abstract

Objective: The objective of this study is to evaluate the effectiveness of a self-help coping intervention in reducing intrusive negative thoughts while waiting for cancer genetic risk information.

Methods: Between August 2007 and November 2008, 1958 new referrals for cancer genetic risk assessment were invited to participate in a randomised trial. The control group received standard information. The intervention group received this information plus a written self-help coping leaflet. The primary outcome measure was the intrusion subscale of the Impact of Event Scale.

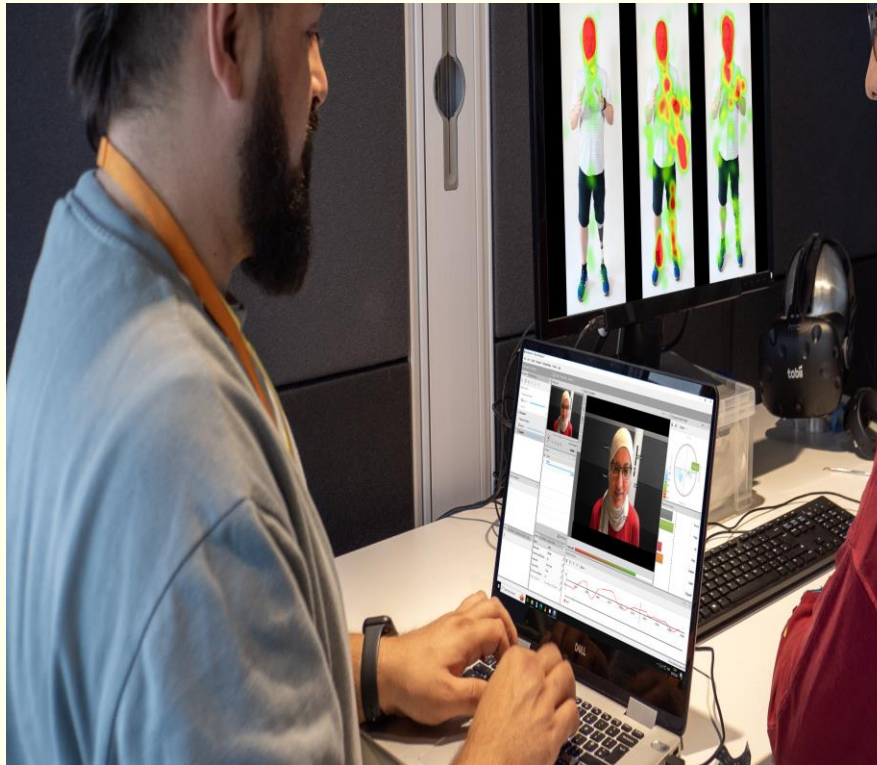
Results: The intervention significantly reduced intrusive thoughts during the waiting period in those reporting moderate baseline levels of intrusion ($p = 0.03$). Following risk provision, those in the inter-



QUASI-EXPERIMENTAL STUDIES IN APPLIED PSYCHOLOGY

EXPERIMENTAL TESTING OF INTERVENTION AND UX TESTING

Wales Institute of Digital Information



Category	Items
Good	Delight, Excellent, Celebrate, Enjoy, Love, Fabulous, Appealing, Glad
Bad	Angry, Bothersome, Gross, Dirty, Tragic, Awful, Selfish, Sick
Physically Disabled People	     
Physically Abled People	     

Explicit Measures

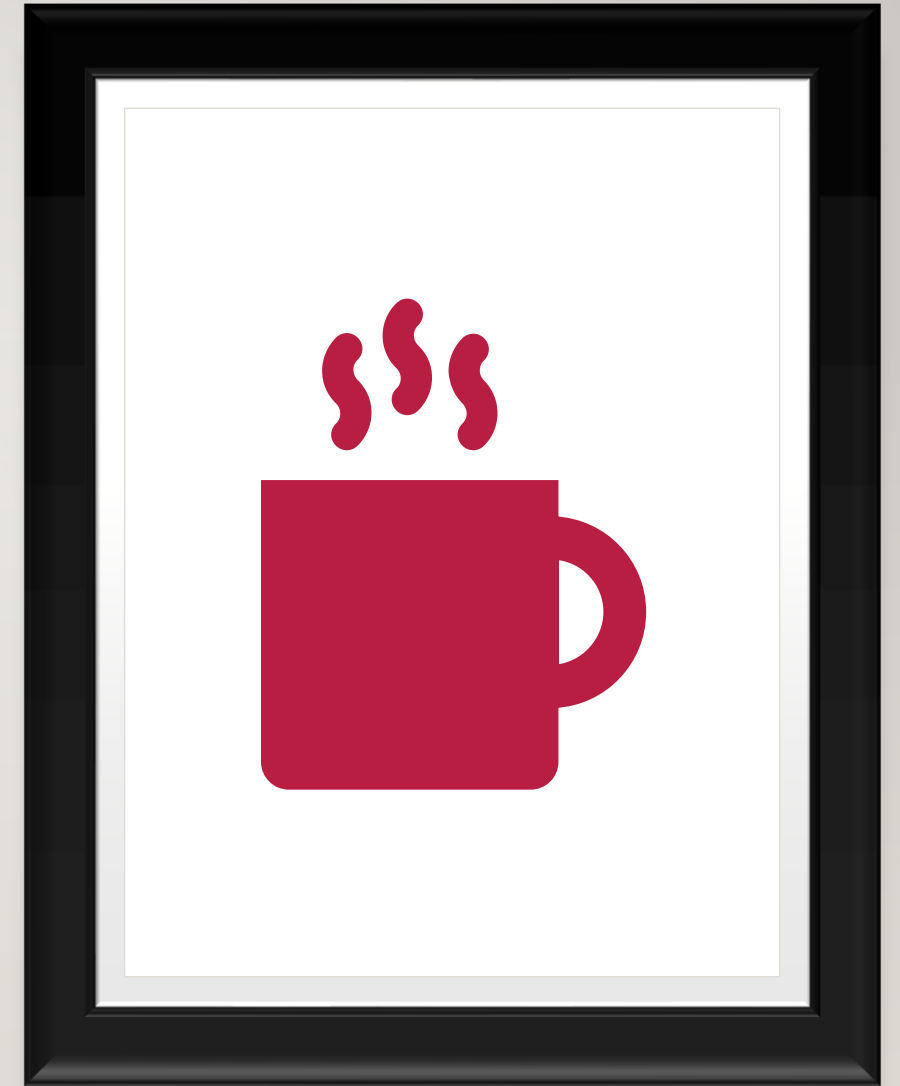
	Strongly disagree	Disagree	Uncertain	Agree	Strongly agree
Amputees find it harder than others to make new friends	☐				
Amputees have problems getting involved in society	☐				
People often make fun of amputees	☐				
Amputees are easier to take advantage of (exploit or treat badly) compared to other people	☐				
Amputees are a burden on society	☐				
Amputees are a burden on their family	☐				
Being an amputee can make someone a stronger person	☐				
Being an amputee can make	☐				

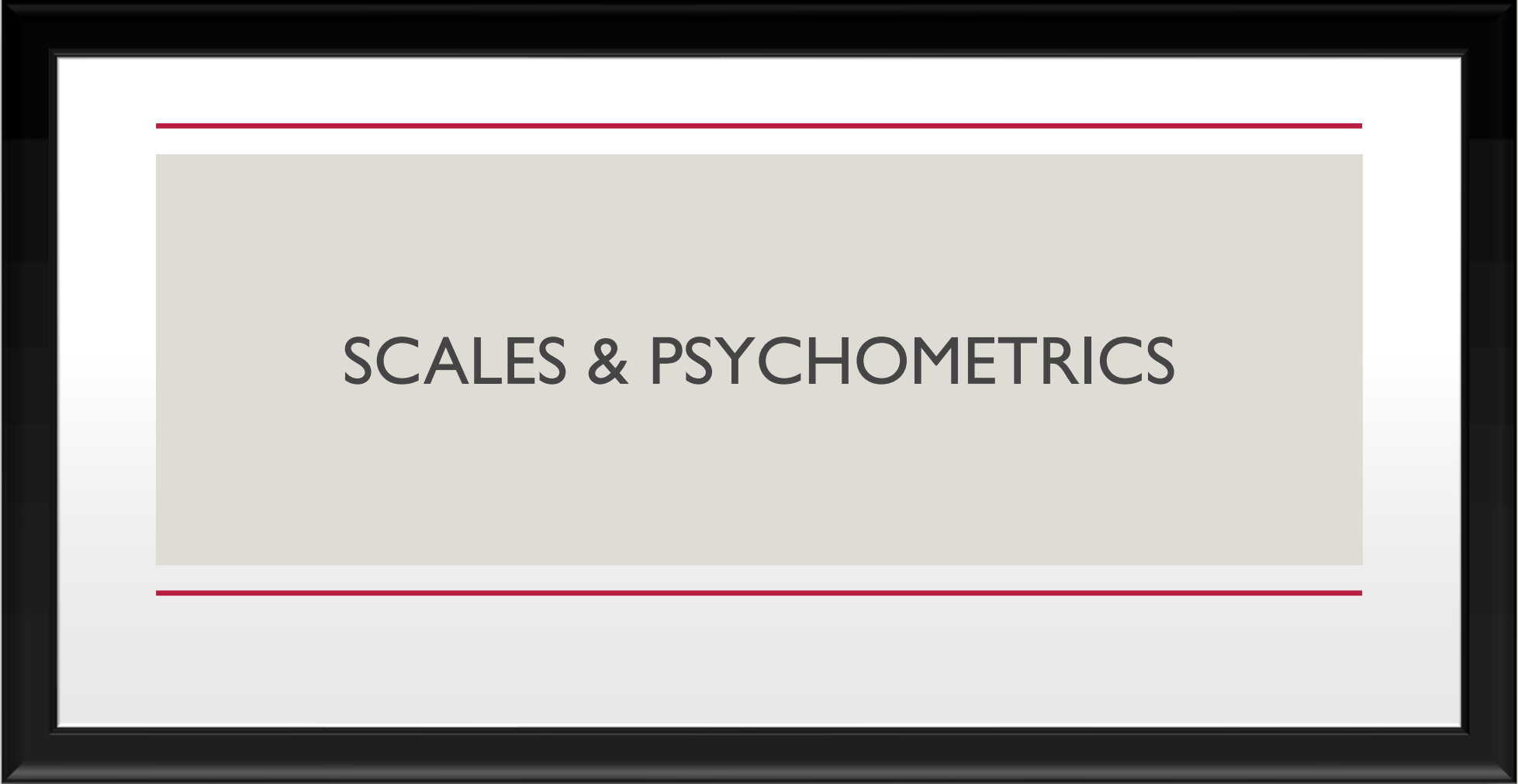
➤ Adapted WHO-QoL Attitudes towards Disability Scale

➤ Adapted Version of Comprehensive Empathy Scale

➤ Social Interaction preparedness

BREAK





SCALES & PSYCHOMETRICS

REMINDER: TWO BROAD TYPES OF DATA:

- Categorical
 - e.g. gender, personality type
 - Limited number of groups to which people can belong/can only belong to one group
- Continuous
 - e.g. age, scores on a stress scale, seconds taken to complete a task.
 - Can take a vast range of values often from zero to an infinite number of different values
- You can turn continuous data into categorical but not vice versa

WHY DOES IT MATTER?

- Will influence the quality of your results, the type of conclusions you are able to draw
- and the type of statistical analyses you are able to conduct

<i>scale type</i>	<i>properties of scale</i>
nominal	records differences <i>A is red, B is blue</i>
ordinal	records differences & magnitudes <i>A is larger than B</i>
interval	records differences & magnitudes & has equal intervals <i>A is two units larger than B</i>
ratio	records differences & magnitudes, has equal intervals & a true zero <i>A is twice as large as B</i>



QUANTITATIVE MEASURES

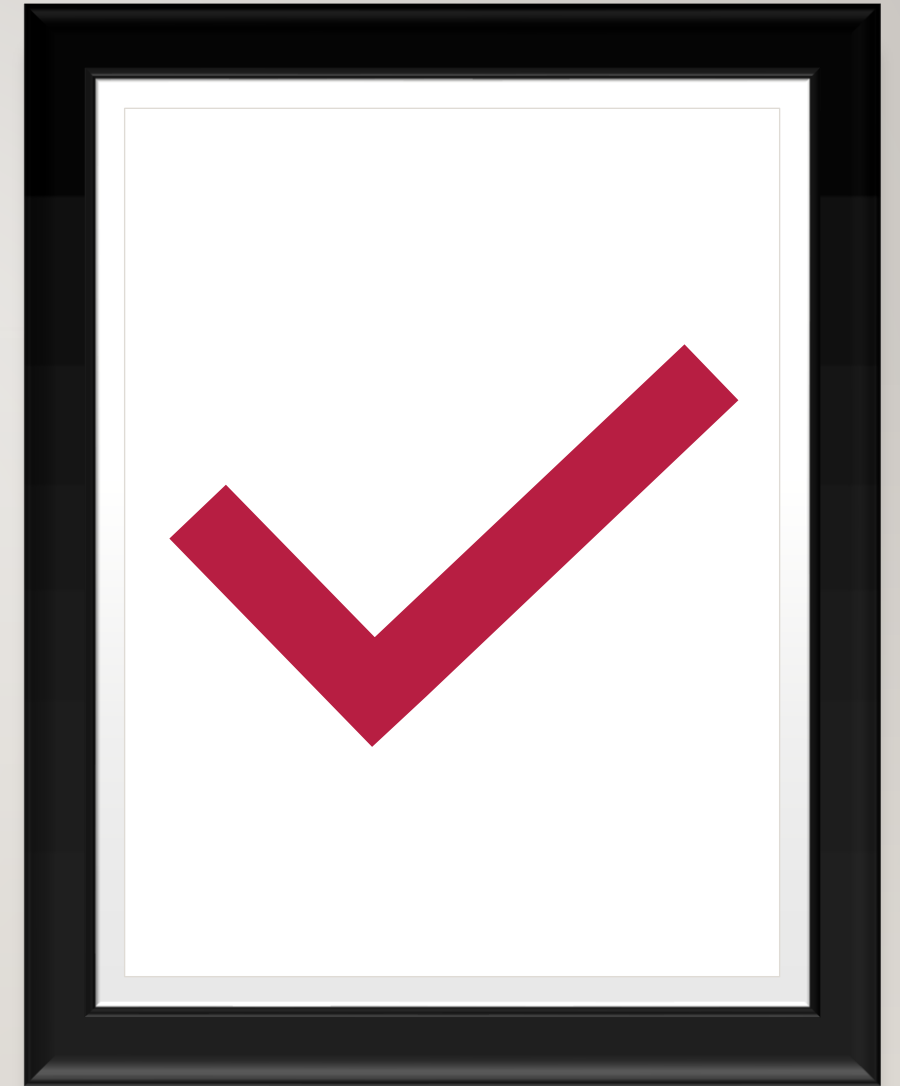
- Choosing appropriate measures for your study is another vital aspect of study design
- Need to think carefully about what it is you actually want to measure (think about your operational definition!) and what the best way of measuring this is....
- Measures capturing psychological constructs are expected to be **reliable** and **valid**.

Choosing a reliable and valid scale is always the best option:

- **you know that you are measuring something in a robust way**
- **you have existing data from other studies to compare your findings with**
- **Sensitive to change within studies (if appropriate)**
- **Allows for stronger statistical analyses**



PSYCHOMETRIC STANDARDS



PSYCHOMETRIC STANDARDS

Key measurement concepts:

- Reliability
 - Is the measure consistent and stable over time?
- Validity
 - Is it an accurate and precise measure i.e., does it measure what it claims to measure?
- Standardization



**VALIDITY: HOW
WELL A TEST
ACTUALLY
MEASURES WHAT IT
IS DESIGNED TO
MEASURE**

E.G., A SCALE OF EXTRAVERSION

Very much so Moderately so Somewhat so Not at all so

1. I feel at ease with people.
2. I start conversations.
3. I take charge.
4. I am the life of the party.
5. I am skilled in handling social situations.
6. I make friends easily.
7. I talk to a lot of different people at parties.
8. I know how to captivate people.
9. I do not mind being the centre of attention.
10. I feel comfortable around other people.

response to each item should be correlated with the response to every other item – otherwise not tapping into the same thing!



Face validity

- test looks plausible at face value i.e., does it look like it is measuring what it claims to be measuring?

E.g., Life Orientation Test (Scheier & Carver, 1985): a measure of dispositional optimism

- **In uncertain times I usually expect the best**
- **If something can go wrong for me, it will**
- **I'm always optimistic about my future**
- **I hardly ever expect things to go my way**



Construct Validity

Does the test successfully measure the psychological construct it is designed to measure?

- E.g., intelligence
- Assessed by looking at the relationship between test scores and other behaviours that it should be related to
 - Do scores on a new IQ test relate to academic performance?
 - does a measure of psychological distress report similar scores to a psychiatric interview.
- Should be related to measures of the same construct – *convergent validity* – and it should be unrelated to measures of unrelated constructs – *discriminant validity*

Content Validity

- whether the items on a test measure all the knowledge or skills that are assumed to underlie the construct of interest
- E.g. does a measure of intelligence capture all types of intelligence or just certain types e.g. problem-solving ability; numerical reasoning;

Criterion-related Validity

- the ability of test scores to correlate with meaningful criterion measures
- are they able to predict future outcomes?
- Test should predict present or future outcomes that are influenced by the construct being measured
 - e.g. does a measure of IQ successfully predict future performance/success in that job?
 - e.g., Do scores on a measure of conscientiousness predict future academic performance?

**RELIABILITY –
CONSISTENCY OR
STABILITY OF A MEASURE.**

TEST –RETEST RELIABILITY

- ❑ Consistency of measurement over time
- ❑ Assessed by administering the measure to the same group of participants on two or more separate occasions and correlating the sets of scores
- ❑ If the construct being measured is stable, scores should be consistent over time
- ❑ E.g., you would not expect the results of a test of IQ or personality traits to be different if measured more than once.

INTERNAL RELIABILITY/CONSISTENCY: CONSISTENCY OF MEASUREMENT WITHIN THE TEST ITSELF

- All the items on a test should measure the same thing
- Items should correlate highly with each other
- Internal consistency reliability – the extent to which a test has homogenous content

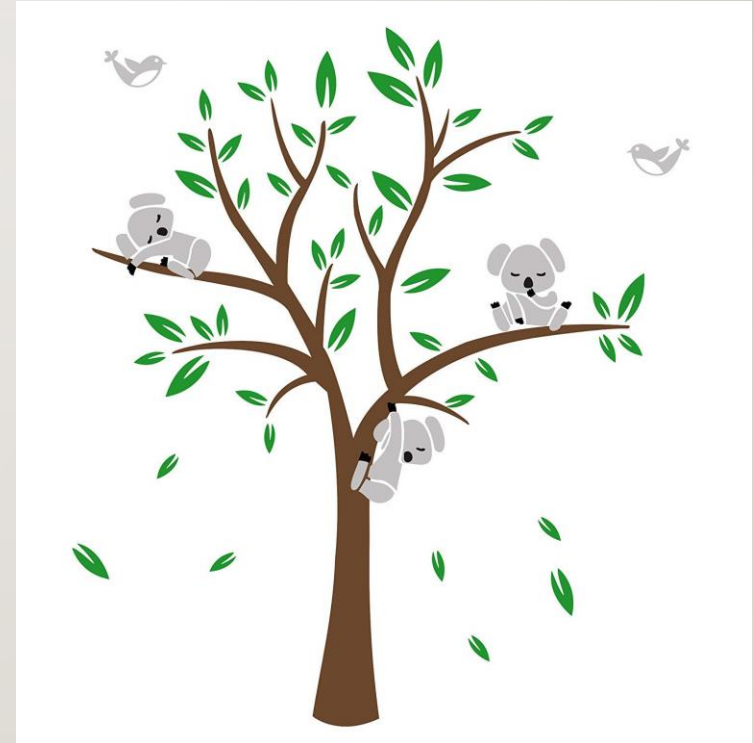
Cronbach's alpha – response to each item is correlated with the response to every other item

Note : Interpreting Reliability .70 or above



MAKING DESIGN CHOICES

- In two groups work through the following research questions and identify and justify the best methodological approach



RESEARCH QUESTIONS

- 1. How can we best evaluate the impact of a virtual reality anti-sexism intervention designed to reduce misogynistic behaviour in Welsh Rugby? The intervention involves wearing a VR headset for 20mins which places participants “in the shoes” of three different females (one female rugby player, one female administrative assistant and one female board member).
- 2. How can we understand the impact of a new four day working policy among key outcomes in a national insurance company? Employees can currently choose between completing their 37.5 hour contract across five days, or condensed across four days.

Feature	Research Aim	Research Question	Research Objectives
Core Nature	Broad and conceptual ("What")	Inquisitive and focused ("Which/How/Why")	Practical and step-by-step ("How to execute")
Quantity per Project	Usually 1 to 3 statements	Usually 2 to 4 questions	Usually 3 to 5 milestones
Typical Verbs	To explore, to investigate, to assess, to understand	How, what, why, to what extent	To identify, to measure, to determine, to compare

SUMMARY



Choosing appropriate measures for your study is a vital aspect of study design



Need to think carefully about what it is you actually want to measure (think about your operational definition!) and what the best way of measuring this is....



Measures capturing psychological constructs are expected to be **reliable** and **valid**.



Need to understand how a scale has been constructed in order to analyse it properly

Recoding instructions?
Reverse scoring?
Sub-scales?