



Lecture 03: Experimental Design & Critical Proposal



STUFF

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Key topics today

The week ahead





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- Personal Tutor Meeting about MD next week (wk4)





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- also Weeks 8 (ethics), 13 (write-up prep), 17 (Stats)





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- Critical Proposal overview and tips
- Lab preview - Your Critical Proposal Target Paper





Personal Tutor Meeting Week 4

Next week (week 4) you have 50 minutes with your Personal Tutor to discuss the Mini-Dissertation.



Tip

Your Personal Tutor is ANOTHER source of guidance and support.

Give them the information they need to best help you on this journey.

Dear PTs, “Next week, you are given **no information whatsoever**, and are asked to turn up to your session with nothing other than perhaps a pen and paper, a big smile, and anticipation of lots of exciting research in the making.”





Future PT Sessions devoted to the MD

Week 8 - Check on status of Ethics application, and troubleshooting

Week 13 - Session to support Analysis Planning and Writing up/Submission preparation

Week 17 - Result interpretation, and any concerns arising in the final phase of the MD





Please complete the Form about your Group and your CP paper

This is compulsory.





< **Any Questions?** >





Quick recap of Golf and TeemuBall!

see .pdf in The Document Repository.





Being critical and evaluating the work of others





This is a topic and skill you've already been shown

PS51015C: Essential Skills for Psychologists

Academic Skills 3: Critical Thinking and Analysis

Teaching Week 14 (Fri 11 Feb)

Review these materials and consider your performance of the assessment, and any feedback





This year Critical Analysis has a ‘point’

The objective of the Critical Proposal is that you start to deploy the tools you have practiced in the service of your Mini-Dissertations.

A ‘practical’ exercise, which we are giving feedback to once... but that you will do multiple times for your Mini-Dissertation.

GOAL: to develop some aspect of your study design or methodology.

You will probably follow this process ‘a few times’ for your final year dissertation!





The Four 'Big' Validities

Internal Validity: The degree to which an experiment accurately assesses variable relationships without interference from confounding factors.

External Validity: The degree to which study results can be applied to different populations or settings, indicating generalizability.

Construct Validity: The evaluation of whether a test effectively measures the intended theoretical construct using multiple indicators.

Statistical Validity: The assessment of whether statistical methods used in data analysis yield accurate conclusions





Reading list items (Barber 2002; 2004)

BARBER

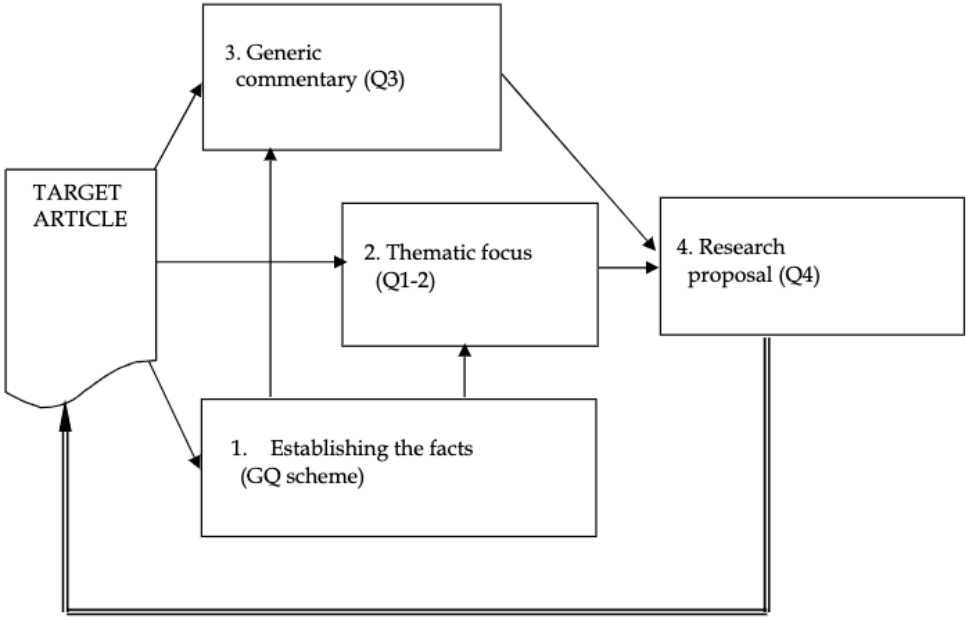


Figure 1

Proposed scheme for a course on critical analysis of psychological research





Table 3

Guiding critical analysis: example of 'orienting questions' for a fictional article

1. How did the authors seek to ensure the 'ecological validity' of their study? What theoretical or methodological issues did this raise?
2. The authors used 'improved' measures of face recognition and sought to overcome experimental design and statistical weaknesses in previous research. Did they succeed in these respects?
3. Write a brief general critique of the study.
4. Reflecting on the state of research on the issues they addressed, the authors observed that 'much remains to be done'. What study or studies would need to be done to bring about a convergence between research on this topic and general accounts of remembering?

Table 4

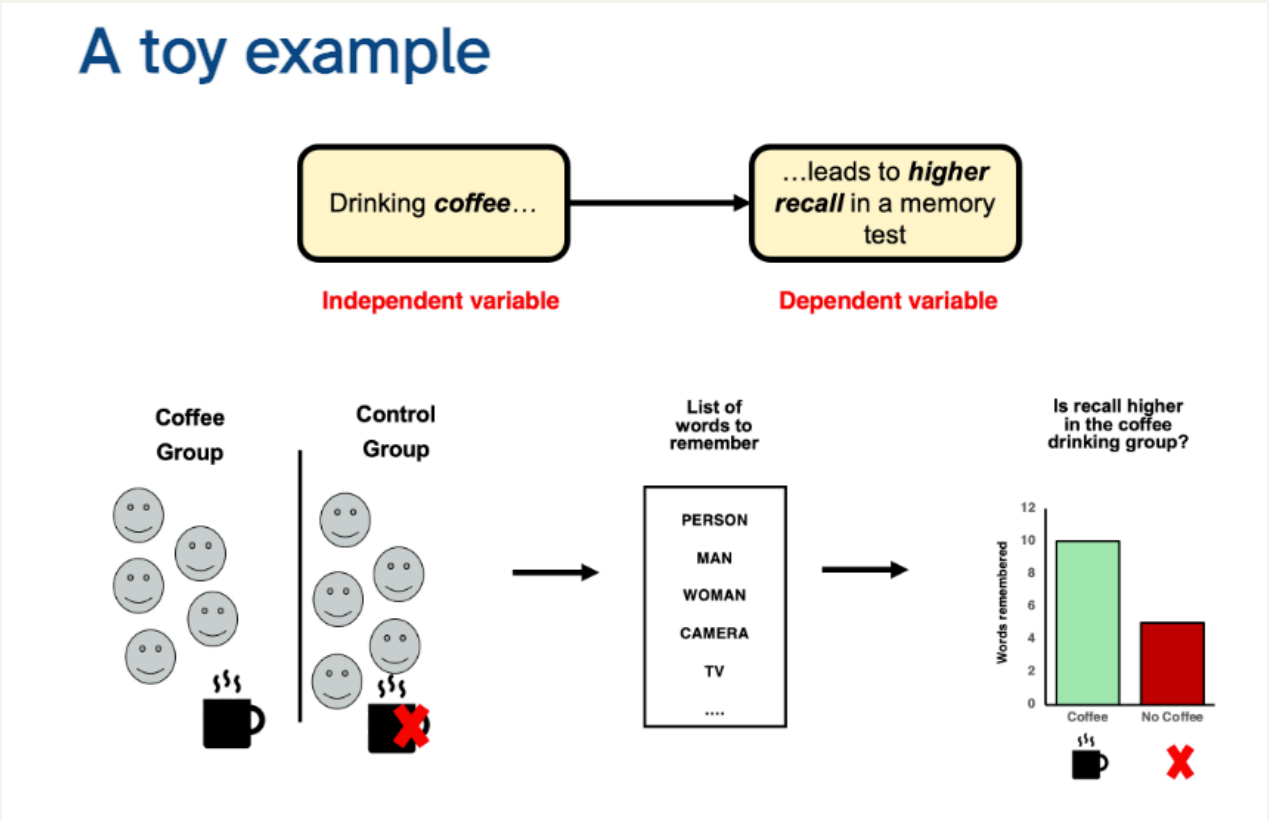
Towards a general critique: the JORIEPIEF checklist mnemonic

Justification	Has a case been made out for conducting the investigation reported?
Operationalisation	Have the hypotheses been appropriately realised?
Replicability	Has sufficient detail been supplied for a replication to be done?
Internal validity	Is the internal logic of the research (design) satisfactory? Have the results been analysed correctly and thoroughly?
Presentation	Are there any serious flaws in the presentation of the paper (language, format)? Have the data been presented effectively and in sufficient detail?
Interpretation	Have the data and analyses been interpreted satisfactorily and correctly?
External validity	How far can the findings be generalised?
Final judgement	Has the psychological importance of the study been established? Did it achieve any progress with the topic matter? Is the study a competent piece of research considered overall relative to the declared (or emergent) objectives? Are there any grounds for doubting the decision to accept the article for publication (given the circumstances applying when it was written)?





Let's look at the example from last week





How do I do it? [one approach]

Review literature on a key part of your 'puzzle' (an IV, a 'tool', the DV etc)

Apply critical evaluation to carefully chosen paper(s)

Consider how it might realistically guide or inform your own research

Identify a procedure to partially replicate, replicate, or replicate and extend/improve

Detail how that takes shape and reflect on your confidence, skill base, perception of value





or

You could approach it strategically as a group.

Identify areas to take ownership of, then divide and conquer!

Or fly solo and agree to later apply the same process to a mutually beneficial part of your study





Critical Proposal Support





Briefing and Rubric





Critical Proposal (15%)

Identify a peer-reviewed empirical paper (from psychology or very nearby) that potentially informs the research you want to do, and show what's useful (or not) and how you're going to build on it. Not a sidetrack, a springboard.

Submission Date:

1st November Midday (end week 05)

Submission Requirements:

1,800 word **Critical Proposal of an empirical target article related to proposed topic**

[Brief, Rubric & Example](#)





Briefing

Critical Proposal Information

[Download the detailed Critical Proposal Rubric](#)

[Download this Critical Proposal Detailed Briefing as pdf](#)





Rubric

	FAIL (UNSATISFACTORY)	3RD (SATISFACTORY)	LOWER 2ND (GOOD)	UPPER 2ND (VERY GOOD)	FIRST (EXCELLENT)
SUMMARY: [Does the proposal summarise the chosen empirical article?]	There is no summary of the chosen empirical paper.	The chosen empirical paper is described, but with inaccuracies or imprecision.	The chosen empirical paper is described, with only a few errors, gaps, or a minor lack of clarity.	The chosen empirical paper is clearly and fully summarised, with appropriate terminology and precision.	The chosen empirical paper is clearly and fully summarised, with excellent terminology, accuracy and accessibility, showing a comprehensive understanding of the paper.
RESEARCH QUESTION [Does the proposal critique the research question and general domain?]	There is no overview of the research domain or research question addressed.	The proposal summarises the research area and general question addressed, but does so imprecisely or with errors.	The proposal accurately summarises the domain of research and the specific question addressed in the paper.	The proposal accurately summarises the domain of research and the specific question addressed in the paper and does so in an accessible and precise manner.	The proposal accurately summarises the domain of research and the specific question addressed in the paper and does so in an accessible and precise manner while evaluating the merit or importance of the research.
METHOD [Does the proposal critically evaluate the chosen method and operationalisation of variables?]	There is no attempt to evaluate the methods of the paper.	Evaluation of the methods are few and preliminary.	Evaluation of the method is clear, but doesn't consider important aspects.	Evaluation of the method is clear and focusses on important aspects.	Evaluation of the method is clear, identifies the most important aspects, and the impact on possible results is argued.
OUTCOME [Has the proposal critically evaluated the analysis, reporting, and interpretation of the results?]	There is no discernible evaluation of the results section.	The proposal makes few, superficial comments on the presentation and analysis of results.	The proposal makes a good attempt at presenting an evaluation of the results, but they are preliminary.	The proposal makes good suggestions for how the results may be more accurately presented and analysed.	The proposal shows insight in the evaluation of analysis, reporting and interpretation of the results of the chosen study.
DISCUSSION [Does the proposal address how well results are integrated into the literature, and how the authors address limitations and opportunities for extension?]	The proposal has failed to address how the results sit within the literature or the authors efforts to critique their own work.	The proposal presents preliminary ideas on how the research integrates results and appraises the research.	The proposal presents clear appraisal of how the research integrates results and appraises the research.	The proposal presents thoughtful evaluation of how the research integrates results and appraises the research.	The proposal examines how results are discussed well and presents a robust examination of the researchers discussion.
IMPROVEMENTS [Does the proposal present means by which to avoid limitations and/or build on strengths of the study?]	The proposal makes no effort to mitigate limitations or build on strengths.	The proposal has identified steps by which to EITHER avoid limitations or accentuate positive aspects of the study.	The proposal has dealt with limitations AND strengths and proposed improvements.	The proposal has identified important limitations and strengths and presented feasible improvements.	The proposal identifies and argues the most salient areas of improvement and presents carefully considered and supported suggestions for improvement.
CRITICAL REFLECTION/CONCLUSION [Does the proposal clearly summarise key points from the essay and propose specific means by which the student may improve research in this area?]	There is no reflection on how the points made in the essay work together or how the student may feasibly improve work in this area.	There is an effort to synthesise the argument made during the essay and an attempt to illustrate how the author may improve research in this area, but it is vague.	A conclusion is presented and it features reflections on future improvement that don't tie together or have limited focus on priority.	The conclusion brings the main points of the critique together and a clear set of ideas presented by which the student may improve research in the area.	The conclusion synthesises the main points of the critique nicely with clear evaluation. The student has presented a thoughtful and focussed reflection on how they might make a meaningful improvement in the research field.
DESIGN SCHEMATIC [The inclusion of a copy of the Experimental Design Schematic 2x2 grid is required. At the very least, it must include details of a single IV, with 2 levels, and a calculated Effect Size]	Design Schematic not included.	Design Schematic included but fails to either break down one IV with two levels (relevant to the target paper) or present an effect size	Presents the schematic with correct details of at least one IV with an effect size	The Design Schematic is presented and includes correct information for one IV, an effect size and at least one other element (e.g. Hypothesis, Sample Size, Details of DV)	The Design Schematic is presented and includes correct information for both IVs, an effect size for each and at least two other elements (e.g. Hypotheses, Sample Size, Details of DV)
FORMAT AND REFERENCING [Is the proposal well-written, well-presented, with appropriate in-text citations and references?]	The proposal is poorly formatted and referencing is either absent or very poorly inserted / inaccurately listed at the end.	The format is adequate and there is some appropriate referencing, but there are also lots of inaccuracies and omissions.	The format and referencing is appropriate for the most part, but there are a number of minor errors.	Formatting is good and references are inserted accurately and appropriately in the text and listed correctly at the end.	The format is clear and professional and referencing is to a high academic standard.
GRADE [Why was your proposal placed within its particular degree class?]	A typical fail contains no or very limited material to indicate the student has attended relevant lecture(s), attended relevant labs or read any relevant literature.	A typical third class proposal presents material that is for the most part relevant, but it is poorly organised and tends to contain quite a few errors, is overly general, or indicative of misunderstanding.	A typical 2:2 proposal contains relevant material that is mostly accurately presented (although there may be a few minor errors). However, the proposal fails to elaborate or integrate aspects of the critique into a logical structure or coherent narrative.	A typical 2:1 proposal presents relevant material with very few errors. It is well organised and clearly expressed. However, the level of analysis is not particularly deep and critical reflection is formulaic.	A typical first class proposal presents highly relevant wide-ranging material that clearly addresses a considered critique of the study and domain. It also includes specific ideas on how the Mini-Dissertation (and future work by the student) may tangibly improve research in the area.





Please follow the suggested outline

SUGGESTED OUTLINE

Summary - Provide a summary of the article in 150-200 words in which you capture the essentials of what was done.

- (a) What is the research domain and core question?
- (b) What is the method?
- (c) What is the outcome?
- (d) Were there significant flaws or limitations in the study?

Research Question – Do the authors link their experiment to wider issues and theories in psychology? What question is the paper trying to answer? Is the hypothesis clear? Is it well argued?

Method - Is it clear and unambiguous? Could another (better) method have been used? Could you carry out a replication from this report? Is the design the most efficient for the purpose? Have broad theoretical constructs been well operationalised into specific variables?

Outcome - Is the Results section clear? Is the analysis unambiguous? Are all analysis and statistical choices appropriate? Did the experimenter answer the question?

Experimental Design Schematic – You are required to complete details of one IV and an effect size (drawn from the target paper) at least!





More tips





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- Give yourself time to read, review, re-read and select your juiciest points
- Avoid any discussion of methodologies that cannot inform your study directly
 - e.g. Clinical diagnostic procedures, fMRI technicalities, Criminal Record or Case Study review procedures





You can (will) use **LOTS** of this in your MD!

This isn't a sidetrack exercise. It's a critical step in your project

Note your references, note your main points, be organised





Weeks 4 & 5

Talking about Variables and the 3 'flavours' of ANOVA in week 4

Week 5 is 'power calculations' and opportunity to discuss CP before submission

But we will be moving on and the CP will be part of your independent study

Same opportunities for RASA submissions/summer deferrals & re-submissions





Questions?

