PSYC718

Advanced Research Design and Statistics

S1 Day 2017

Department of Psychology

Contents

General Information

Unit convenor and teaching staff
Lecturer and Convenor
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C3A 512

Credit points
4

Prerequisites
Admission to MRes

Corequisites

Co-badged status
PSY 418

Unit description
This unit is designed as preparation for honours projects and to help equip students for research careers. The unit focuses on practical issues of quantitative data analysis. Most topics are dealt with in the context of SPSS. Topics include sample size and statistical power analysis, data management in SPSS and more advanced methods specifically applicable to research in psychology.

Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at https://www.mq.edu.au/study/calendar-of-dates

Learning Outcomes

On successful completion of this unit, you will be able to:

Understand how to calculate both prospective sample size requirements and retrospective: a) Be able to estimate sample size needed for simple research designs b) Be able to calculate statistical power available at the end of a study for simple research designs

Understand the impact of several aspects of research design on sample size requirements and statistical power. a) Between vs within-subject design b) Effects of between-subject variance and instrument responsiveness

Understand how abstract concepts are operationalised in statistical terms in

psychological research.

Understand the application and interpretation of several advanced statistical methods applicable to research in psychology.

Gain an enhanced practical understanding of statistical software use in psychological research, with a focus on understanding the syntax required to carry out analyses and interpreting output.

Assessment Tasks

Name	Weighting	Hurdle	Due
Final examination	60%	No	Week 13
Research Article Review	40%	No	TBA

Final examination

Due: **Week 13**
Weighting: **60%**

This will be a 2-stage exam, with a team-work component. The exam will be a mixture of multiple choice and “fill in the blank” short answer questions. The procedure is such that you will first sit the exam individually, and then immediately afterwards in the same time slot you will do the exam again in groups of four. The exams will then be graded such that 90% of the score comes from the individual attempt, and 10% from the group attempt, unless the individual attempt is better than the group attempt, in which case the student will get 100% of their score from the individual attempt.

I will be allocating all students to groups. I will post the group allocations to iLearn in the week prior to the exam. All allocations will be completely random and based on a random number generator.

If a student misses the exam due to illness or other unavoidable circumstances they can sit a supplementary exam which will contain only an individual component, with no group component (following University guidelines that the supplementary exam does not need to be the same format as the original exam). If a student has special circumstances such as the need for an individual testing room, or a longer testing time, they will sit the individual exam at the same time as the rest of the group, but in their own room. They may start the exam earlier to enable them to finish the individual component with enough time to make their way to the group exam room to complete the group component of the assessment.

On successful completion you will be able to:

- Understand how to calculate both prospective sample size requirements and retrospective: a) Be able to estimate sample size needed for simple research designs b)

Be able to calculate statistical power available at the end of a study for simple research designs
- Understand the impact of several aspects of research design on sample size requirements and statistical power. a) Between vs within-subject design b) Effects of between-subject variance and instrument responsiveness
- Understand how abstract concepts are operationalised in statistical terms in psychological research.
- Understand the application and interpretation of several advanced statistical methods applicable to research in psychology.
- Gain an enhanced practical understanding of statistical software use in psychological research, with a focus on understanding the syntax required to carry out analyses and interpreting output.

Research Article Review

Due: **TBA**
Weighting: **40%**

The Research Article Review is designed to help you with the process of planning your empirical project. It consists of a critical examination of an empirical journal article which contains detailed description of a study's methods and analysis. Responses may include SPSS syntax.

On successful completion you will be able to:
- Understand how abstract concepts are operationalised in statistical terms in psychological research.
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- Gain an enhanced practical understanding of statistical software use in psychological research, with a focus on understanding the syntax required to carry out analyses and interpreting output.

Delivery and Resources

Lectures will involve demonstrations of SPSS procedures, using various examples. Students are encouraged to bring their own laptop with SPSS installed, but this is not required. Theoretical issues will also be discussed during the lectures.

While there will be Echo recordings, the lectures are designed for face-to-face format. Due to the interactive nature of the lectures in which students are encouraged to ask questions as we go, on occasion additional notes may be written on a whiteboard, or discussed verbally. There is no guarantee these will be captured by the recording. Further, if a recording fails, no replacement recordings will be uploaded as this unit is designed for internal mode only, with the assumption

that students are able to attend classes.

The only exception to this is Week 13, which will be the final exam.

Practical exercises will be set each week for students to undertake in their own time. The following week there will be a demonstration session in addition to the lecture in which the lecturer will show (live) how they would approach the exercises. Students are encouraged to bring their own laptop computers to demonstration sessions to follow-along. Questions are encouraged during this session in particular.

Students are expected to complete readings prior to attending the lecture, and they are expected to participate in class discussions.

Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central. Students should be aware of the following policies in particular with regard to Learning and Teaching:

Academic Honesty Policy http://mq.edu.au/policy/docs/academic_honesty/policy.html

Assessment Policy http://mq.edu.au/policy/docs/assessment/policy_2016.html

Grade Appeal Policy http://mq.edu.au/policy/docs/gradeappeal/policy.html

Complaint Management Procedure for Students and Members of the Public http://www.mq.edu.au/policy/docs/complaint_management/procedure.html

Disruption to Studies Policy (in effect until Dec 4th, 2017): http://www.mq.edu.au/policy/docs/disruption_studies/policy.html

Special Consideration Policy (in effect from Dec 4th, 2017): https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policies/special-consideration

In addition, a number of other policies can be found in the Learning and Teaching Category of Policy Central.

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: https://students.mq.edu.au/support/student_conduct/

Results

Results shown in *iLearn*, or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in eStudent. For more information visit ask.mq.edu.au.

Student Support

Macquarie University provides a range of support services for students. For details, visit http://students.mq.edu.au/support/

Learning Skills

Learning Skills (mq.edu.au/learningskills) provides academic writing resources and study strategies to improve your marks and take control of your study.

- Workshops
- StudyWise
- Academic Integrity Module for Students
- Ask a Learning Adviser

Student Services and Support

Students with a disability are encouraged to contact the Disability Service who can provide appropriate help with any issues that arise during their studies.

Student Enquiries

For all student enquiries, visit Student Connect at ask.mq.edu.au

IT Help

For help with University computer systems and technology, visit http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/.

When using the University's IT, you must adhere to the Acceptable Use of IT Resources Policy. The policy applies to all who connect to the MQ network including students.

Graduate Capabilities

PG - Capable of Professional and Personal Judgment and Initiative

Our postgraduates will demonstrate a high standard of discernment and common sense in their professional and personal judgment. They will have the ability to make informed choices and decisions that reflect both the nature of their professional work and their personal perspectives.

This graduate capability is supported by:

Learning outcomes

- Understand how to calculate both prospective sample size requirements and retrospective: a) Be able to estimate sample size needed for simple research designs b) Be able to calculate statistical power available at the end of a study for simple research designs
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psychological research.

Assessment tasks

- Final examination
- Research Article Review

PG - Discipline Knowledge and Skills

Our postgraduates will be able to demonstrate a significantly enhanced depth and breadth of knowledge, scholarly understanding, and specific subject content knowledge in their chosen fields.

This graduate capability is supported by:

Learning outcomes

- Understand how to calculate both prospective sample size requirements and retrospective: a) Be able to estimate sample size needed for simple research designs b) Be able to calculate statistical power available at the end of a study for simple research designs
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Assessment tasks

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PG - Critical, Analytical and Integrative Thinking

Our postgraduates will be capable of utilising and reflecting on prior knowledge and experience, of applying higher level critical thinking skills, and of integrating and synthesising learning and knowledge from a range of sources and environments. A characteristic of this form of thinking is the generation of new, professionally oriented knowledge through personal or group-based critique of practice and theory.

This graduate capability is supported by:

Learning outcomes

- Understand how to calculate both prospective sample size requirements and retrospective: a) Be able to estimate sample size needed for simple research designs b) Be able to calculate statistical power available at the end of a study for simple research designs
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Assessment tasks

- Final examination
- Research Article Review

PG - Research and Problem Solving Capability

Our postgraduates will be capable of systematic enquiry; able to use research skills to create new knowledge that can be applied to real world issues, or contribute to a field of study or practice to enhance society. They will be capable of creative questioning, problem finding and problem solving.

This graduate capability is supported by:

Learning outcomes

- Understand how to calculate both prospective sample size requirements and retrospective: a) Be able to estimate sample size needed for simple research designs b) Be able to calculate statistical power available at the end of a study for simple research designs
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Assessment tasks

- Final examination
- Research Article Review

PG - Effective Communication

Our postgraduates will be able to communicate effectively and convey their views to different social, cultural, and professional audiences. They will be able to use a variety of technologically supported media to communicate with empathy using a range of written, spoken or visual formats.

This graduate capability is supported by:

Learning outcomes

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