PSY 349

Design and Statistics III

S1 Day 2018

Department of Psychology

Contents

General Information

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Credit points
3

Prerequisites
(Admission to BPsych(Hons) or BBABPsych(Hons) or BComBPsych(Hons) or BPsych(Hons)BHumanSc or BPsych(Hons)LLB or BPsych(Hons)BSpHLSc or BPsych(Hons)BHlth) and 18cp in PSY units at 200 level including PSY248(P)) or (18cp from (PSY234 and PSY235 and PSY236 and PSY246 and PSY247 and PSY248) including 9cp(Cr) from (PSY234 or PSY235 or PSY236 or PSY246 or PSY247 or PSY248))

Corequisites

Co-badged status

Unit description
This unit builds on and unifies statistical and design topics introduced in previous units, particularly PSY248 Design and Statistics II. Topics include: repeated measures and mixed design ANOVA, multiple regression (linear and curvilinear); analysis of variance and covariance; and model reduction procedures. The unit also illustrates the links between these different methods through placing them in the context of the generalised linear model; in so doing the unit enhances students' understanding of statistical methods and their relationship with research design. Practical classes utilise the SPSS statistical package.

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:

The ability to clearly and concisely communicate quantitative research results to your peers

The ability to read journal articles of primary research studies and critically review their research design and data analysis

An enhanced awareness of the connection between research design and data analytic methods

An understanding of the peculiar complexities of non-experimental research designs with respect to their data analysis and interpretation

An understanding of the framework of data analysis methods that exist within the Generalized Linear Model

An enhanced awareness of which analysis method to choose for a given research design, type of data and research question

An ability to undertake data analysis using SPSS that answers practical questions in psychology research

General Assessment Information

There are 4 forms of assessment for PSY349: weekly quizzes, which involve data analysis via SPSS and will be submitted online through iLearn; an optional mid-session test which will be held in computer labs and will involve data analysis in SPSS; a major practical project, which will involve data analysis and communication of findings in response to a research question; and the final examination. Overall grades for the unit will be determined by adding together marks for the weekly quizzes, the practical project and the final examination. See the university policy on grading for more information.

In PSY349, we encourage students to form study groups to revise course material and practice using SPSS. However, any work you submit for assessment (quizzes and the practical project) must be your own, including computations and written expression. In recent years we have had a number of problems with students copying other students' work and submitting as their own work. Firstly, we encourage students to discuss their work with each other, and working together can be especially beneficial for statistics. All pratical projects are assessed for plagiarism via Turnitin upon submission.

It is in your interest to keep a (hard or electronic) copy of your submitted work. Firstly, to be able to produce the copy if your original goes missing, and, secondly, to be able to produce an unmarked copy in the case of requesting a re-mark. If you request a re-mark you will need to submit an unmarked copy of your work, which will be marked by a different marker, and you will receive the revised mark which may be either higher or lower than the original mark. If you wish

to request a re-mark you will need to collect a Department of Psychology Application for Re-mark form from the Faculty of Human Sciences Student Office in 4 Wallys Walk (C3A) and follow its directions.

Late Penalties

Late submission of the practical report will attract a penalty of 5% of the maximum mark for every day late. In other words, the assignment is worth 38%, so a penalty of 5% x 38 = 1.9 will be applied. 1.9 marks are subtracted from whatever the student received for the report for each day late. No work can be accepted after marked project reports are handed back to students.

Requests for extensions for assignments are granted by the Faculty of Human Sciences Undergraduate Student Centre.

Examination Policy

You are expected to present yourself for examination at the time and place designated in the University Examination Timetable. The timetable will be available in Draft form approximately eight weeks before the commencement of the examinations and in Final form approximately four weeks before the commencement of the examinations.

http://students.mq.edu.au/student_admin/exams/

The only exception to not sitting an examination at the designated time is because of documented illness or unavoidable disruption. In these circumstances you may wish to consider applying for Special Consideration, through https://ask.mq.edu.au.

If a Supplementary Examination is granted as a result of the Special Consideration process, the examination will be scheduled after the conclusion of the official examination period. The format of a supplementary examination is at each unit convener's discretion and is subject to change from the original final examination.

Supplementary Exams are only offered to students who have satisfactorily completed all other assessments for the unit and were unable to sit the final exam because of documented illness or unavoidable disruption.

All applications for supplementary exams should be submitted as a Special Consideration request, through https://ask.mq.edu.au. It is the student's responsibility to follow the steps outlined in this website and to submit supporting documentations with the request. This must be done within five (5) working days after the exam or test date. An email will be sent to the student advising them of the outcome of their request for a supplementary exam. If a supplementary exam has been granted, it is the student's responsibility to check the date and location of the supplementary exam. Students who are granted to sit for a supplementary exam must make themselves available to sit for the supplementary exam on the specified date. There will only be one time. It is the student's responsibility to email Student Centre to confirm attendance at the supplementary exam.

You are advised that it is Macquarie University policy not to set early examinations for individuals or groups of students. All students are expected to ensure that they are available until the end of the teaching semester, which is the final day of the official examination period.

Assessment Tasks

Name	Weighting	Hurdle	Due
Weekly online quizzes	12%	No	Weekly
Optional Midsession Test	10%	No	05/04/2018
Practical Project	38%	No	TBA
Final Exam	40%	No	University examination period

Weekly online quizzes

Due: **Weekly**
Weighting: **12%**

The unit's tutorial program is vital for students to have a first-hand understanding of the material and its application in psychology research.

Each week (starting week 1) there will be a set of practical tasks to complete. Most weeks this will involve a simple, practical data analysis (involving SPSS) and interpretation task, although some weeks students are given SPSS output to interpret and answer some questions using the output. The requirement to complete a small on-line quiz each week will help ensure that students keep up with the unit material week-by-week. Tutors will then work through the solution during tutorial sessions in the subsequent week. Solutions to quizzes will not be handed out outside of tutorial classes.

Tutorial quizzes will be worth 1% each. The final task in Week 13 will be graded but will not be reviewed in tutorials. The answers will be posted on iLearn rather than discussed in a tutorial.

Quizzes must be completed within iLearn by 5pm on the Friday before the week in which it will be discussed. The one exception to this rule is the quiz for Week 1 which must be submitted via iLearn by 5pm on Sunday 4th March. The iLearn system will not accept submissions after that time and a mark of zero for that week will be recorded if no quiz is submitted on-time without a valid medical certificate or other documented unforseen circumstances. Each quiz is completed via iLearn and you will receive your mark on completion of the quiz. The tasks must be completed individually by each student.

If there are technical problems associated with iLearn (e.g., error message and then being unable to complete the quiz), make sure you take a screen shot of any error messages that occur. If a screen shot of an error occurring within iLearn is sent to both Mike Jones and Naomi Sweller (in a single email) before the quiz deadline, and it is deemed to be an error occurring that was out of the student's control, then a second attempt at the quiz will be granted. No second attempts will be granted under any circumstances without evidence of the glitch. Similarly, no second attempts will be granted if you begin your attempt too late and cannot complete the quiz before 5pm Friday.

It is strongly recommended you complete your quiz well in advance of the 5pm deadline!

On successful completion you will be able to:

- The ability to clearly and concisely communicate quantitative research results to your peers
- An enhanced awareness of the connection between research design and data analytic methods
- An understanding of the peculiar complexities of non-experimental research designs with respect to their data analysis and interpretation
- An understanding of the framework of data analysis methods that exist within the Generalized Linear Model
- An enhanced awareness of which analysis method to choose for a given research design, type of data and research question
- An ability to undertake data analysis using SPSS that answers practical questions in psychology research

Optional Midsession Test

Due: **05/04/2018**
Weighting: **10%**

PSY349 is a unit emphasising practical data analysis for psychologists and hence an assessment on practical data analysis is crucial. This is a one-hour optional e-test, which will cover the content from Weeks 1 – 4 of the unit. The test will involve “live” analysis of datasets in SPSS, and students will be required to answer questions through the test portal relating to their analyses. Questions will be a combination of fill in the blank-style questions and multiple choice questions.

The test is optional in two respects: 1) you are not required to sit it. If you choose not to sit this test it will not affect your ability to pass PSY349. 2) It will count towards 10% of your final grade for PSY349 if performance as a percentage is higher in this test than in the final exam. The final exam will then count towards 40% of your final grade. Alternately it will not be counted towards your final grade for PSY349 (and will therefore constitute 0%) if you either do not sit the test at all, or if your performance as a percentage is lower than in the final exam. The final exam will then count towards 50% of your final grade.

The test will be conducted entirely through iLearn. All internet access on the computers used for the test will be blocked with the exception of access to iLearn. Separate laptops / tablets / mobile phones will not be permitted in the exam room. The test is closed book and no external written or electronic materials will be permitted.

Students are required to enrol in one of the exam slots on eStudent in the same manner as you enrol in tutorials. Students will only be permitted to sit the test in the slot in which they are enrolled and must bring their student ID to the exam room for verification. If you do not enrol in

one of the slots or you do not bring your student ID you will not be eligible to sit the test. Similarly if you miss your timeslot you will not be permitted to sit the test in the subsequent slot.

On successful completion you will be able to:

- An enhanced awareness of the connection between research design and data analytic methods
- An understanding of the peculiar complexities of non-experimental research designs with respect to their data analysis and interpretation
- An understanding of the framework of data analysis methods that exist within the Generalized Linear Model
- An enhanced awareness of which analysis method to choose for a given research design, type of data and research question
- An ability to undertake data analysis using SPSS that answers practical questions in psychology research

Practical Project

Due: **TBA**
Weighting: **38%**

In the practical project, students are asked to address a practical research question and must operationalise it and determine an appropriate course of analysis with only general directions. SPSS commands needed to complete the practical project will not be provided for you. You will be expected to have learnt the required SPSS commands through understanding the demonstration programs used in lectures and practical assignments and through your own practice with SPSS. Details of the practical project including the question and the dataset will be made available via iLearn during the mid-session break.

The practical project report must be submitted online via iLearn/Turnitin. Assignments submitted by post or emailed to tutors/lecturers will not be accepted. Marked assignments will be released via iLearn/Turnitin. Please be sure to proof read your practical project reports, as no unattached "addendums" will be accepted. Please also note that iLearn can lag when large numbers of students are uploading documents at the same time. Submission time for assignments will be counted as the time the assessment was *received*, not the time the uploading began. Because of this, make sure you don't leave your submission to 4:55pm the day it is due! Late penalties will be applied to assignments that are received after the due time.

On successful completion you will be able to:

- The ability to clearly and concisely communicate quantitative research results to your peers
- The ability to read journal articles of primary research studies and critically review their research design and data analysis

- An enhanced awareness of the connection between research design and data analytic methods
- An understanding of the peculiar complexities of non-experimental research designs with respect to their data analysis and interpretation
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- An ability to undertake data analysis using SPSS that answers practical questions in psychology research

Final Exam

Due: **University examination period**
Weighting: **40%**

This will be a 2-hour exam conducted during the official university examination period. The exam period for Session 1, 2018 is from 12th June to 29th June, 2018. This exam will assess all course material that has been covered in PSY349, including lecture content, tutorial content and required readings.

You will be allowed to take into this exam up to 4 single-sided A4 sheets of summary notes (or 2 double-sided A4 sheets of notes), plus a calculator. These summary notes can be in any format (including hand-written, word processed, photocopied, etc - or a combination). Statistical tables will not be required. Overall the final exam will assess knowledge, but not in a rote fashion, your understanding, through interpretative tasks, and ability to apply knowledge gained to practical problem solving in psychology research. Your understanding of SPSS is examinable including use of SPSS syntax.

On successful completion you will be able to:

- An enhanced awareness of the connection between research design and data analytic methods
- An understanding of the peculiar complexities of non-experimental research designs with respect to their data analysis and interpretation
- An understanding of the framework of data analysis methods that exist within the Generalized Linear Model
- An enhanced awareness of which analysis method to choose for a given research design, type of data and research question

Delivery and Resources

Lectures

There are three hours of lectures per week. These lectures will be recorded via Echo360 (which captures the data projector and the lecturer's voice) and will be available on the iLearn page following the lecture.

Tutorials

There is a one hour tutorial each week starting in Week 2.

Managing Classes: Official changes to all units can be done on-line via eStudent, including tutorials. Students will be allowed to informally move between tutorial classes, provided there is space available. Please email the tutor of the class you wish to attend for a particular week to check.

Textbook

Field, A. (2017). *Discovering statistics using IBM SPSS Statistics* (5th ed.). London, UK: SAGE.

Please note that the previous edition of the textbook (4th edition) will be acceptable for use in this unit. Page numbers may differ from those noted for the most recent version, but the content covered will be largely equivalent. Students with previous versions of the text can consult the 5th edition in the library reserve.

Additional Readings

The texts below are useful references. Students are not required to have or read these texts but may find them useful if they are wanting additional material beyond the textbook.

Agresti, A., & Finlay, B. (2014). *Statistical Methods for the Social Sciences* (4th ed.). Essex, UK: Pearson Education.

Howell, D.C. (2012). *Statistical methods for psychology* (8th ed.). Belmont, California: Duxbury Press.

Keith, T. Z. (2006). *Multiple regression and beyond*. Boston, MA: Pearson Education.

Additional readings for Week 5 lecture:

Fox, J. (2008) Bootstrapping regression models. In *Applied regression analysis and generalized linear models* (2nd ed.) (pp. 587-606). Los Angeles: Sage.

Singh, K., & Xie, M. (2008). *Bootstrap: A statistical method.* Unpublished manuscript, Rutgers University, USA. Retrieved from http://www. stat. rutgers. edu/home/mxie/RCPapers/ bootstrap.pdf.

Computing

You are expected to have had prior experience in the use of SPSS before coming into PSY349, and be able to read raw data files, access pre-existing data files and retrieve SPSS sav files. You

are also expected to have some knowledge of syntax in SPSS. There are several ways of accessing SPSS throughout this course, including purchasing the software yourself, using computers on campus or logging in to iLab. These options will be discussed in more detail during the first week of lectures.

You will also be expected to access the PSY349 unit Web Page at least weekly for unit notices and information regarding data files etc.

If you feel you need to brush up on your use of SPSS, Chapters 4 and 5 in your textbook are a good place to start. You can additionally consult the Intro to SPSS (The Red Book) pdf written by Dr. Alan Taylor on iLearn.

Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central (https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- Academic Appeals Policy
- Academic Integrity Policy
- Academic Progression Policy
- Assessment Policy
- Fitness to Practice Procedure
- Grade Appeal Policy
- Complaint Management Procedure for Students and Members of the Public
- Special Consideration Policy *(**Note:** The Special Consideration Policy is effective from 4 December 2017 and replaces the Disruption to Studies Policy.)*

Undergraduate students seeking more policy resources can visit the Student Policy Gateway (https://students.mq.edu.au/support/study/student-policy-gateway). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

If you would like to see all the policies relevant to Learning and Teaching visit Policy Central (https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/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/study/getting-started/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

Capable of Professional and Personal Judgement and Initiative

We want our graduates to have emotional intelligence and sound interpersonal skills and to demonstrate discernment and common sense in their professional and personal judgement. They will exercise initiative as needed. They will be capable of risk assessment, and be able to handle ambiguity and complexity, enabling them to be adaptable in diverse and changing environments.

This graduate capability is supported by:

Learning outcome

- The ability to clearly and concisely communicate quantitative research results to your peers

Assessment tasks

- Weekly online quizzes
- Practical Project

Discipline Specific Knowledge and Skills

Our graduates will take with them the intellectual development, depth and breadth of knowledge, scholarly understanding, and specific subject content in their chosen fields to make them competent and confident in their subject or profession. They will be able to demonstrate, where relevant, professional technical competence and meet professional standards. They will be able to articulate the structure of knowledge of their discipline, be able to adapt discipline-specific knowledge to novel situations, and be able to contribute from their discipline to inter-disciplinary solutions to problems.

This graduate capability is supported by:

Learning outcomes

- The ability to clearly and concisely communicate quantitative research results to your peers
- The ability to read journal articles of primary research studies and critically review their research design and data analysis
- An enhanced awareness of the connection between research design and data analytic methods
- An understanding of the peculiar complexities of non-experimental research designs with respect to their data analysis and interpretation
- An understanding of the framework of data analysis methods that exist within the Generalized Linear Model
- An enhanced awareness of which analysis method to choose for a given research design, type of data and research question
- An ability to undertake data analysis using SPSS that answers practical questions in psychology research

Assessment tasks

- Weekly online quizzes
- Optional Midsession Test
- Practical Project
- Final Exam

Critical, Analytical and Integrative Thinking

We want our graduates to be capable of reasoning, questioning and analysing, and to integrate

and synthesise learning and knowledge from a range of sources and environments; to be able to critique constraints, assumptions and limitations; to be able to think independently and systemically in relation to scholarly activity, in the workplace, and in the world. We want them to have a level of scientific and information technology literacy.

This graduate capability is supported by:

Learning outcomes

- The ability to clearly and concisely communicate quantitative research results to your peers
- The ability to read journal articles of primary research studies and critically review their research design and data analysis
- An enhanced awareness of the connection between research design and data analytic methods
- An understanding of the peculiar complexities of non-experimental research designs with respect to their data analysis and interpretation
- An understanding of the framework of data analysis methods that exist within the Generalized Linear Model
- An enhanced awareness of which analysis method to choose for a given research design, type of data and research question

Assessment tasks

- Weekly online quizzes
- Optional Midsession Test
- Practical Project
- Final Exam

Problem Solving and Research Capability

Our graduates should be capable of researching; of analysing, and interpreting and assessing data and information in various forms; of drawing connections across fields of knowledge; and they should be able to relate their knowledge to complex situations at work or in the world, in order to diagnose and solve problems. We want them to have the confidence to take the initiative in doing so, within an awareness of their own limitations.

This graduate capability is supported by:

Learning outcomes

- The ability to clearly and concisely communicate quantitative research results to your peers
- An enhanced awareness of the connection between research design and data analytic methods

- An understanding of the peculiar complexities of non-experimental research designs with respect to their data analysis and interpretation
- An understanding of the framework of data analysis methods that exist within the Generalized Linear Model
- An enhanced awareness of which analysis method to choose for a given research design, type of data and research question
- An ability to undertake data analysis using SPSS that answers practical questions in psychology research

Assessment tasks

- Weekly online quizzes
- Optional Midsession Test
- Practical Project
- Final Exam

Effective Communication

We want to develop in our students the ability to communicate and convey their views in forms effective with different audiences. We want our graduates to take with them the capability to read, listen, question, gather and evaluate information resources in a variety of formats, assess, write clearly, speak effectively, and to use visual communication and communication technologies as appropriate.

This graduate capability is supported by:

Learning outcome

- The ability to clearly and concisely communicate quantitative research results to your peers

Assessment tasks

- Weekly online quizzes
- Practical Project

Learning and Teaching Strategy

Lecture ethics

In large (statistics) lectures noise can often be a problem. In the interest of your colleagues and the lecturer please remain quiet during lectures. It is impossible to learn while people around you are talking. Questions directed to the lecturer are encouraged but please keep talking between yourselves to an absolute minimum. If you wish to carry on a conversation with another student please leave the lecture. The lectures are electronically recorded using the Echo360 system and will be available on iLearn. If you wish to tape the lectures on your personal tape recorder please

discuss your request with the unit chair. As a general rule, please turn off your mobile phone. It is not required but you may find it useful to bring your laptop to the lectures if you wish to follow along with the practical aspects of the unit.

Tutorial classes

Tutorial classes start in week 2 but there is an online quiz due on the Sunday of the first week of semester. There is a one 1-hour tutorial class each week. Tutorials are not compulsory but tutorial material may be assessed in the final exam. Changes to all units can be done on-line via eStudent. As a general rule students are welcome to attend a tutorial session other than the one to which they are assigned as long as there are spare seats in the alternate class. If there are no spare seats and students who are allocated a seat cannot find one the tutor will ask those not allocated to that class to leave the room.

Tutors will work through the tutorial exercises and please note that solutions to online quizzes are not available from the tutors or unit chair. If you miss a tutorial class, it is your responsibility to arrange to see another student's solution.

Use of computers and SPSS

The practical component of the unit is based on the SPSS statistical package. You will be required to use SPSS outside of class hours for approximately 15-60 minutes per week preparing material for practical classes. Some practical project tasks will require SPSS sessions. SPSS may be used interactively by tutors in practical classes to illustrate the use of the computer for statistical analysis.

Students with their own personal computers can purchase a version of SPSS from the Co-op Bookshop. If you already own a copy of SPSS and it is older than that used in lectures or tutorials do not worry, the SPSS procedures used in this unit have not changed in any meaningful way for many versions. Alternately, SPSS can be accessed for free by all students via the University's iLab system. For more information on the iLab system, see: https://wiki.mq.edu.au/display/iLab/About. Data files for use in tutorials will available for download from the PSY349 iLearn page under "Datasets for quizzes".

Dr Alan Taylor's document "Introduction to IBM SPSS Statistics" which is referred to in the Practical descriptions is available from the PSY349 iLearn page under "Useful links and documents". This document will be helpful for students unfamiliar with SPSS.