

**The British
Psychological Society**
Promoting excellence in psychology

Supplementary guidance for research and research methods on Society accredited undergraduate and conversion programmes

April 2017

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**The British
Psychological Society**
Partnership & Accreditation

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Introduction

In 2012 the Partnership and Accreditation Committee commenced a review of its standards for the accreditation of all programmes, in collaboration with its Training Committees, Divisions, providers of accredited programmes and other relevant stakeholders. A primary aim of the review was to achieve a balance between the need to specify core content, and a wish to produce standards that avoid prescription and encourage a flexible approach to enable providers in the delivery of programmes that more readily reflect their strengths and research expertise. The review also sought to more clearly articulate a common core of requirements across the range of applied psychology practice, and those standards relating to research and research methods have been a particular focus for this. The resultant supplementary guidance for research and research methods for accredited postgraduate programmes was well received and the President of the Society tasked the Partnership and Accreditation Committee to develop similar supplementary guidelines for undergraduate research and research methods.

This document was developed jointly on behalf of the Society's Research Board and the Partnership and Accreditation Committee. It is designed to offer programme providers **supplementary guidance** that will assist them in developing their research methods provision, and the research knowledge and skills that are integral to the provision as a whole. It sets out the Society's minimum expectations of accredited undergraduate level programmes, and **identifies those factors that programmes need to consider** in order to be able to demonstrate achievement of those standards. The document also includes a number of **examples** of the different ways in which programmes might use these supplementary guidelines to inform module/course or programme design.

The guidance contained in this document **is not intended to be exhaustive or prescriptive**, and it is likely that individual students will have different experiences of undertaking research and engaging with research methods depending on factors including: the particular expertise and research priorities of the department or institution in which they are based and their own personal research interests.

Core standards

The core standards around research and research methods for undergraduate programmes are as follows, and should be read in conjunction with the additional standards that are set out in the *Accreditation Handbook*¹:

Students should demonstrate the ability to use a range of techniques and research methods. Students should learn how to conduct qualitative and quantitative research and each student should conduct at least one empirical study. Students should have the appropriate skills and capabilities to collect and analyse relevant data.

Programmes that are designed to meet the requirements for the GBC should equip psychology graduates with the subject-specific skills below, which are outlined in Section 4.4 of the Quality Assurance Agency's *Subject Benchmark Statement for Psychology* (2016), and state that psychology graduates are able to:

- i. apply multiple perspectives to psychological issues, recognising that psychology involves a range of research methods, theories, evidence and applications;
- ii. integrate ideas and findings across the multiple perspectives in psychology and recognise distinctive psychological approaches to relevant issues;
- iii. identify and evaluate general patterns in behaviour, psychological functioning and experience;
- iv. generate and explore hypotheses and research questions drawing on relevant theory and research;
- v. carry out empirical studies involving a variety of methods of data collection, including experiments, observation, questionnaires, interviews and focus groups;
- vi. analyse, present and evaluate quantitative and qualitative data and evaluate research findings;
- vii. employ evidence-based reasoning and examine practical, theoretical and ethical issues associated with the range of methodologies;
- viii. use a variety of psychological tools, including specialist software, laboratory equipment and psychometric instruments;
- ix. apply psychological knowledge to real world problems;
- x. critically evaluate psychological theory and research;
- xi. carry out an extensive piece of independent empirical research that draws on a range of subject-specific skills from planning and acquiring ethical approval through to analysis and dissemination of findings; and
- xii. The project typically involves the collection of original empirical data from participants, or equivalent alternatives such as computational modelling of empirical data or secondary data analysis, such as meta-analysis [section 5.8 Subject Benchmark Statement]. Systematic reviews are not included within the permissible equivalent alternatives.

¹ Accreditation Handbooks may be downloaded from www.bps.org.uk/accreditationdownloads.

Key considerations in programme or module design

One of the key aims of the recent standards review was to ensure that our standards for accreditation promote flexibility in programme design. To that end, programmes are free to design their research and research methods provision in any way they wish, provided that they are able to a) provide evidence that the standards in the *Accreditation Handbook* have been met, and b) provide a rationale for why they have reflected the considerations outlined below in their programme design in a particular way. Programmes are free to highlight ways in which they go beyond these guidelines, should they so wish, and innovative approaches to engaging students with the considerations identified in this document are encouraged.

Programmes should note that whilst the dissertation will provide the main opportunity for students to demonstrate their ability to undertake research at the appropriate level, each of the considerations outlined below may also be addressed in other areas of the programme; for example, this could be achieved through dedicated research methods module(s) or by integrating relevant content across other modules, including those not dedicated to research methods. Programmes' assessment strategies will need to reflect the relevant core standards for accreditation.

This section outlines the different factors that programmes should consider in the context of each of the headings below, which are intended to reflect the overall research journey that individual students will take. **Examples** are provided, but **programmes are not expected to cover each example given**. Additionally, the level of attention that programmes give to each of the headings below will vary.

Research ethics

Students need to understand the ethical considerations that apply to psychological research. They should be able to demonstrate adherence to the general principles outlined in the Society's *Code of Human Research Ethics*, which are applicable to all research contexts and are intended to cover all research with human participants. The Society produces a range of research guidelines and policy documents that will be relevant to individuals undertaking other particular types of research (**for example**, internet-mediated research, and research with animals), and students should be cognisant of these as appropriate². Additionally, students should consider issues of diversity and equality of relevance to the research in which they are engaged (**for example**, access to research, the nature of the research focus or diversity of participants in research). Education providers should also refer to the Society's Guidance on teaching and assessment of ethical competence in psychology education.³

² The research guidelines and policy documents produced by the Society can be downloaded from the Society's website at: www.bps.org.uk/publications/policy-and-guidelines/research-guidelines-policy-documents/research-guidelines-poli

³ The guidance on teaching and assessment of ethical competence in psychology education can be downloaded from the Society's website at: www.bps.org.uk/ethics

Transferrable research skills

Students should be able to search and review literature in order to formulate a research question or hypothesis, whilst being cognisant of ethical considerations in the research process, and being able to engage in academic writing, for example APA style.⁴ Students should also be aware of, and able to critically engage in debates about issues relevant not only to the subject of psychology but to wider scientific research such as replication and reproducibility, good research management including risk assessment as appropriate and open science approaches.

Research design

Students should be equipped with a critical understanding of a variety of research designs including both experimental and non-experimental designs. They should be aware of the different perspectives on these and pertinent issues relating to them such as sampling techniques, reliability and validity. They will need to be able to select and use the most appropriate design to enable them to answer their research question.

Data collection

Students need knowledge and understanding of a range of data collection techniques and methods that they can utilise in university, placement or other research settings as appropriate. They need to have some experience of⁵: individual or group research (**e.g.** 1-to-1 semi-structured interviews; focus groups; interviews conducted on a face-to-face basis, over the telephone or online; observational approaches); experimental methods (**e.g.** laboratory experiments, field experiments, or quasi experiments); and survey approaches (**e.g.** questionnaires, validated instrument). They should have an appreciation of online data collection methods⁶, and of approaches to the use of secondary data. They should also be aware of a range of different methods for both collecting and recording data, and whilst they will be aware of a range of approaches, the in-depth experience they gain **will depend on the programme** and the **research they undertake individually**. Students should have knowledge of a variety of data collection methods and experience in collecting qualitative data using at least two methods. This could include naturally found data such as newspapers, internet forums, and/or traditionally used methods such as interviews, focus groups, etc.

Data preparation

Students will need an awareness of approaches to transcription of qualitative data, and to understand that the method of transcription is appropriate to the method of analysis specified in the research design. They will also need to be able to undertake data screening, data cleaning and exploratory data analysis, and should be aware of the pros and cons of common methods for dealing with missing data.

Analysis

Students will need to know how to conduct qualitative and quantitative research.

This requires an awareness of different types of statistical inference such as hypothesis testing and interval estimation, whether through frequentist approaches (e.g., significance testing, confidence

⁴ In respect to referencing of work, alternatives to the APA style are acceptable.

⁵ Experience may be gained informally (e.g. through practice in-class with peers) and does not need to be assessed.

⁶ Programmes may find it useful to refer to the Society's *Ethics Guidelines for Internet-Mediated Research*.

intervals) or recognised alternatives (e.g., Bayesian inference).⁷ Students will require knowledge of how to plan a study including how to select an appropriate sample and sample size (e.g., statistical power), to detect differences in sample means (e.g., t tests, ANOVA) and relationships between variables (e.g., Chi square, correlation, regression). This should include an appreciation of the philosophy and assumptions underpinning statistical procedures that they use and familiarity with robust alternatives when those assumptions are not met (e.g. non parametric alternatives). They will need to understand issues relating to scale construction (e.g. reliability, factor structure).

Students will need an appreciation of the basic principles of different approaches to qualitative analysis (e.g. thematic analysis, discourse analysis, conversation analysis, IPA, Grounded Theory, narrative analysis, content analysis). They should also appreciate the limitations and strengths offered by different approaches, and the additional considerations involved in producing qualitative research that is of high quality (e.g. reflexivity and appropriate quality criteria). In addition, students should demonstrate appreciation of the philosophical assumptions of different qualitative methods of analysis.

Whilst students will be aware of a range of approaches to analysis using qualitative and quantitative methods, the in-depth experience they gain **will depend on the programme** and the **research they undertake individually**.

Students should be aware of, and (where available) be able to use software packages to support the analysis of different types of data.

The factors outlined above reflect the breadth of knowledge and understanding that students will need to develop in relation to research methods. This reflects an expectation that students will have an awareness and basic understanding of a range of approaches to undertaking research. However, the specific in-depth experience they gain **will depend on the programme** and the **research they undertake individually**. The particular technique(s) adopted will reflect the strengths and expertise of the Department. In some institutions, programmes may wish to work collaboratively with their colleagues in Maths and Statistics departments in delivering the research methods/statistics training. This approach can be beneficial as it can effectively pool resources and allow students the opportunity to work with students from other programmes. However if this approach is taken, previous experience tells us that considerable development and ongoing work is required to ensure that it works effectively and that students on an accredited course see the relevance of the generic training provided to their psychology degree. It is important that even if the training is generic, clear examples of applications within the discipline of psychology need to be provided to support students in making appropriate connections. In addition, it is important that any generic training employs the same software and analytical approaches that are employed by academic staff within psychology so that there is no disjuncture for students and they are well prepared to progress into dissertation supervision with psychology staff.

Dissemination

Programmes are encouraged to consider the different ways in which students might present and further disseminate their research. Dissertations will need to be presented in a way that reflects the particular institution's regulations and other quality management requirements, but alternatives to traditional approaches to presentation may include, but are not limited to: writing the research up as if for publication; producing a journal article and literature review or project management report; or developing a poster presentation in addition to a more formal write-up⁸.

⁷ All students should, however, have sufficient grounding with traditional frequentist methods to be able to engage with and critically appraise empirical research in psychology.

⁸ This may include in-class presentations to peers and/or staff.

Good practice in managing research

- Programmes should have a clear understanding of local ethical guidelines around confidential data storage and retention; for example, questionnaire data, interview recordings, transcripts, consent forms.
- All research projects must conform to the appropriate governance procedures, and address relevant ethical guidelines, including those that are outlined in the Society's *Code of Ethics and Conduct* and *Code of Human Research Ethics*.
- Students should have access to appropriate resources for data analysis and have adequate training in their use, as appropriate, including guidance on data protection and confidentiality.
- As stated in the accreditation standards, to ensure the quality of provision, education providers must have in place adequate discipline specific laboratory space and equipment appropriate to their mode of delivery. This will include facilities to enable students to carry out experimental and other appropriate practical work in a range of GBC curriculum areas, and must include facilities for teaching practical skills to small and large groups, in addition to supporting individual students' empirical work.
- Each student should have a competent research supervisor. The empirical project in psychology must be supervised, taught and examined by psychologists or suitably qualified graduates. The Society considers individuals suitably qualified to supervise the empirical project if they hold, as a minimum, a graduate qualification in psychology and/or a demonstrable track record of research or other scholarly activity of relevance to psychology. Graduate teaching assistants (GTAs), or equivalent, may not carry sole responsibility for project supervision. This is a required standard for accredited programmes.
- There should be a system in place for approving the allocation of research supervisors. Supervisory loads should be monitored and be such that adequate supervision is provided to students.
- There should be a research agreement between the supervisor and the student that covers matters such as a schedule of regular supervision meetings and progress reviews, written feedback on drafts and a timetable for the project. Consideration should also be given to minimum and maximum amounts of supervision available to individual students. Whatever the arrangements in place, programmes should be able to articulate their approach and any policies that support its implementation.
- Great care must be taken to allow students to plan and organise their research project in good time, such that there is the opportunity to complete it successfully. Time must be set aside early on in the programme for discussion of the proposed project.
- Programmes must be sensitive to the problems that may arise in carrying out applied research. Care must be taken to anticipate common difficulties and take preventative action.
- Students should be made aware of any programme-specific guidelines or requirements regarding authorship of publications. In drawing up such guidelines, programmes should take account of the Society's *Statement of Policy on Authorship and Publication Credit*.
- Research methods are transferable to any setting and links to psychological applications.

Examples of different approaches to research and research methods on accredited programmes

The following are offered as examples of the different ways in which accredited programmes engage students with research and research methods as outlined in these guidelines. We would welcome the inclusion of further examples of good practice: if you wish to submit a brief outline of your provision, please contact Lucy.Horder@bps.org.uk.

- a)** Our approach to teaching research methods – BSc Psychology, Aston University
- b)** Case study – University of Glasgow
- c)** Embedding methods within topics for a distance learning programme – BSc (Hons) Psychology, BSc (Hons) Forensic Psychology, BSc (Hons) Psychology with Counselling, BSc (Hons) Social Psychology, Open University
- d)** Research Methods and Statistics Training: An integrated approach: Department of Psychology, Royal Holloway, University of London (RHUL)

Our approach to teaching research methods – BSc Psychology, Aston University

Research methods are included in all years of the programme both within modules dedicated to research methods (levels 4–5) and in topic-based modules (Levels 4–5) and specialist modules (level 6). This is an example of how qualitative methods are integrated across the programme.

In the first year (level 4), there is a *Research Methods and Statistics* module (20 credits) which runs across teaching periods 1–2. This begins with a range of research designs, of which qualitative designs is one (following experimental designs, self-report) and information on the construction of hypotheses and research questions. There are three sessions on qualitative methods: *qualitative research designs*, *qualitative methods of data collection*, and *qualitative methods of analysis*. I deliver these lectures as an introduction to qualitative research and as a showcase of the benefits and strengths of qualitative methods. It goes through case studies of published journal articles in depth to demonstrate how qualitative methods can be applied in different ways and how they can be used to create research that has impact. In the data collection and analysis sessions there are also guides to how we carry out these methods in practice. The assessment for this module is an exam. I have written scenario style short answer questions and some multiple choice questions to test knowledge of qualitative methods.

Students are also asked to undertake a qualitative research practical as part of the *Psychology Practicals* module (20 credits). Following this they also do practicals in psychophysiology, psychometrics and cognitive experiments. The qualitative practical involves running a focus group which is assessed by a report. The students are asked to identify a topic area and to write a research question. They then facilitate the focus group and audio-record it. They are asked to transcribe 5 minutes of the discussion to give them some insight into the (lengthy) process of transcription. In the report they are asked to provide their research question and a commentary of the focus group itself. This might include verbatim extracts or their own interpretation hence giving them an insight into the process of interpretative analysis. In the appendix, students are asked to include the transcription, a blank consent form (since this follows the protocol of a research study), a topic guide, and references.

In year 2 (level 5) qualitative methods are included in more depth in the *Social Psychology* module (10 credits). The module is broken down into 5 lectures which introduce topic areas of social psychology alongside empirical examples that have used qualitative methods and 5 practicals. Essentially, the content is inspired by critical psychology. The research used comes from either a discursive or phenomenological background and so the methods we then cover in further detail are discourse analysis (DA) and interpretative phenomenological analysis (IPA). The assessment is a qualitative methods practical. In this exercise students are asked to identify a research question, carry out an individual semi-structured interview, and determine whether DA or IPA would be most suited to answer that question. This work is carried out in groups but the assessment is an individual assessment. They are then asked to carry out the interview and transcribe 20 minutes of it. The transcript is then analysed using their selected method. The report includes a brief statement of the research question and rationale for the analytic method selected, but the bulk of the report is the presentation of the analysis itself and an annotated transcript plus any diagrams developed during the analytic process submitted as appendices.

At level 6 individual members of staff run specialist (10 credit) modules. Mine is *People and Health Care*, which focuses on the application of experience-focused research using phenomenological methods and health psychology theory in the development of evidence-based healthcare. It focuses on the development of complex interventions and the benefits of developing lifeworld-led healthcare. The assessment is a seen exam. The questions focus on the use of experience-focused research and health psychology theory in the development of healthcare interventions and on the benefits of phenomenological research for the creation of what might be called lifeworld-led care.

Reflection

It has taken some years to develop this profile of coverage at Aston but I am delighted that we now have qualitative methods in every year of teaching. This helps to embed research methods across the programme and convey the importance of research to psychology as an applied science which can have an impact on policy and practice across a number of domains.

Dr Rachel Shaw CPsychol AFBPsS, June 2016

Revising Undergraduate Research Methods Teaching for Grassroots Rigour and Replication – University of Glasgow

Drivers for change

There has been considerable international debate recently about potentially unreliable findings in psychological research (cf. Open Science Collaboration, 2015; Gilbert et al., 2016). A key outcome of these debates has been a call for open, transparent and reproducible research practices within psychology and for psychologists to become more 'intelligent consumers of science' (Diener & Biwas-Diener, 2016). These debates, paralleled with a report by the British Academy (2012/2016) concluding that UK undergraduate social science students have lower levels of achievement in quantitative skills than their international counterparts, have led to numerous calls for action.

One such call has emphasised the need to make improvements at a grassroots level by revising undergraduate training in psychology (cf. Button et al., 2016). Research methods training is a required element of accredited psychology programmes; however, a major challenge facing the teaching and learning of statistics in HE is the high levels of statistics anxiety and low levels of statistics self-efficacy experienced by students and the negative impact of these on academic performance (Macher et al., 2013). As a consequence UK undergraduate provision has potentially been guilty of over-scaffolding learning and using only canned and idealised datasets to try to alleviate student anxieties, with the unintended consequence of de-skilling students.

We aimed to proactively address these issues by reviewing and redesigning our core delivery of research methods training across the four year undergraduate psychology programme to ensure that our graduates had the necessary skills to be both intelligent producers and consumers of research.

Key components of change

One key aim has been to move all data analysis training to the statistical programming environment R. Because R is a programming language, analyses take the form of a sequence of commands stored in a script, and are thus inherently reproducible. Learning R requires development of programming skills, which can be challenging at first; however, such skills increase graduate attributes and attractiveness to employers (DICE 2014). An additional benefit is that R is freely available to download at no cost, allowing students to practice outside of the classroom. The R community is vibrant and there is a wealth of online materials available to support independent learning.

A second key aim has been to get students comfortable and confident with messy data and ensure that all learning activities are reproducible, from data import to the generation of a report. This is essential in giving the next generation of scientists the skills and understanding necessary to overcome the crisis of reproducibility in psychology. What has been inspiring about this development work has been seeing students rise to the challenge of the new approach and to witness their enhanced learning, motivation and engagement.

Process of change

This development work on our core research methods and statistics provision is part of our ongoing commitment, to engage in course development, delivery and review. However we

can already see clear evidence of the positive impact for students and staff.

The first phase of the project began with the redevelopment of the year 3 statistics course on the undergraduate psychology programmes in the academic year 2015–2016. There were a number of reasons why developments began at this level. Firstly within the Scottish University system in the first two years students may engage in a wider range of subject areas but in year three they have committed to, and met the selection criteria to proceed with a single or joint honours degree in psychology. Secondly, we wished to begin impacting the skills of our graduates immediately and beginning in year three meant that the impact would be realised in two rather than four years.

The development of the year three statistics course involved a comprehensive course redesign. This incorporated: new lectures with embedded practical examples and a focus on highlighting contemporary debates within the field (replication/reproducibility/p-hacking etc.); introduction of weekly structured homework activities that actively engaged students in data analysis; phasing in R as the primary software used for analysis; and finally, the innovative use of an open source web conferencing system (Big Blue Button) to guide students through the homework and provide an open forum for questions.

In parallel to this in the first phase of the project, we introduced in-house staff training in R. This training was available to all staff involved in teaching across the programme including those supervising fourth-year research projects. This means that when the current year 3 students progress to year 4, staff expertise will match the students' learning experiences.

An unexpected parallel development in phase one was the design and approval of a new Advanced Statistics year 4 option course in response to a student-led Facebook campaign requesting more statistics input at level 4 which will be available to current year 3 students progressing to year 4 in 2016-2017.

The next phase of the project, which is already underway, is the redesign of research methods and statistics teaching in years 1 and 2. This will be implemented for delivery in 2016-2017. The main change is to emphasise the importance of understanding basic data, in all its untidiness, before even beginning analysis, and to give students the skills they need to explore their data. These changes are meant to encourage critical thinking, independence, and developing students into informed, transparent and thoughtful researchers.

The key outcome to date has been an enhanced student-centred learning experience in a core psychology area that they traditionally find difficult to access. Statistics courses in psychology are not known to attract glowing praise, yet students gave highly favourable comments on the course such as:

I have never programmed computer code in my life. I decided to try R as I believe in open source knowledge; despite my fears of using it. I must admit for a whole day it made me feel really stupid and there may have been tears of frustration. However, I persevered through online lessons... and got the homework answers correct and can now use R to generate graphs. This is the most I have challenged myself academically since I arrived at university and has increased my confidence for the rest of the course. Thank you.

Dr Dale Barr, Dr Phil McAleer CPsychol & Dr Niamh Stack CPsychol

Embedding methods within topics for a distance learning programme – BSc (Hons.) Psychology, BSc (Hons.) Forensic Psychology, BSc (Hons.) Psychology with Counselling, BSc (Hons.) Social Psychology, Open University

The undergraduate degrees in the Open University BPS accredited programme teach methods by embedding them within 60 credit core curriculum modules at level 1, level 2 and level 3, culminating with an independent project at Level 3. There are no methods-specific modules in this distance learning programme. Rather, methods teaching is integrated throughout with topics from core areas of psychology. This means methods are always discussed within the context of concrete examples taken from the topic areas being studied at that point in the module. Optional modules (for example, applied, social, forensic and counselling psychology) contribute to the consolidation of methods teaching but are not the primary site. Teaching is delivered via a distance learning mix of print, audio-visual and interactive online materials, with extensive support from tutors and online forums.

This embedded approach is heavily influenced by the Open University's open entry policy. Open entry means that students come to us with mixed experiences of study, vastly different levels of readiness for university study, and often limited knowledge of psychology. Few are expecting the strong focus on research methods training, and many students lack confidence in anything they may associate with maths skills. This has shaped our approach to embedding research methods within the intriguing and sometimes startling stories from psychology which capture students' attention so well. Inherent interest in the different topics helps take the sting out of research methods and statistics. More importantly, methods are always discussed within the context of the different kinds of topics psychology addresses, the different kinds of questions it asks, and the different kinds of answers that may be derived. Using these examples to teach methods also serves to reinforce students' learning of the topics at hand. This integrative principle runs throughout the curriculum.

At level 1 classic psychological studies are used to introduce sub-disciplines, key concepts and key principles of research design, data and analysis. Developments since the classic study are explored, often accompanied by examples of studies which have adopted alternative methods of addressing the same topic. Distinctions between quantitative and qualitative research designs are grounded in what kinds of questions researchers are asking. Qualitative analyses, and descriptive and inferential statistics are introduced in terms of what kinds of information they provide and what claims they can support. At each stage elements of research methods and report writing are explained and illustrated by reference to actual studies, often with extracts from primary sources for the current topics being studied, and supported by audio-visual resources demonstrating and discussing design decisions and practical implementation.

Level 2 picks up directly from level 1, reminding students of the concepts already studied to establish the foundations for more advanced design and analysis. Again, topics from the core areas of biological, cognitive, developmental and social psychology drive the focus. Topics are explored from different perspectives, and perspectives explored for how they influence the research questions that may be asked. Particular attention is paid to disturbing the conventional boundaries between these areas, hence the core theme of the module – crossing boundaries. Similarly, the common quantitative-qualitative divide is replaced with a focus on research questions and methods of best fit. Topics and methods are interwoven in

each week of the module, with methods teaching supported by comprehensive interactive online tutorials, including extensive interactive SPSS tutorials, online discussion forums, and extensive audio-visual resources such as interviews with researchers discussing the methods they have employed in their own studies. By the end of this core 60 credit module students will have studied design for experiments, correlational studies, observational studies, questionnaires and surveys; used SPSS for univariate and multivariate statistics, and conducted thematic and narrative analyses.

For the level 3 core module the overarching principle is again the integration of methods teaching with topics from core areas of psychology. In this capstone module the focus is on preparing students for completing an independent empirical project. In the first half of the module this is combined with the teaching of core domains from within a framework of critical engagement with methodological issues. Students complete the project in the second half of the module. Research method options include experiments, questionnaires, and language-based qualitative methods such as discourse or phenomenological analyses. Topic choices are constrained to ensure supervisory expertise. Again, extensive print, audio-visual and interactive online materials demonstrate the research process, drawing on interviews with practitioners and encouraging critical engagement with the research process. Extensive ethics teaching supports design development and submission of an ethics form with the research proposal. Each week of the module includes multiple threads for students to engage with according to their chosen research method. Workshops provide further specialist support on developing appropriate design and analytic techniques, such as preparing students for working with online software tools (e.g. OpenSesame, Qualtrics) or techniques for distinct qualitative analyses. A customised interactive timeline visible to supervisors is provided for students to plan their activity.

Practicals and assessment

At each level students engage in practical work through numerous online and paper based activities allowing them to test out and develop their understanding of concepts and practices. Assessment of methods at level 1 includes a combination of short answer questions, online multiple choice questions and a research report of a simple study testing for differences. At level 2, again in addition to extensive online formative and summative activities, students conduct and write up two summative mini-projects – an experiment and a thematic analysis. The core level 3 module sees extensive formative and summative assessment of methods learning, followed by an extended independent project supervised by specialist methods tutors. Assessment of the project consists of the project report and a poster presentation. A major requirement for the programme lies in ensuring appropriate supervisory expertise to accommodate the range of methods and topic specialisms available to students on what are unusually high population modules. The network of associate lecturer staff is an essential requirement for achieving this.

Reflections

One of the overarching aims for the accredited qualifications in the programme was to encourage in students a thoughtful and critical engagement with the inextricable relationship between the kinds of questions psychology asks, the assumptions on which they are based, and the non-neutral methods of knowledge production. At the same time, students are exposed to comprehensive teaching about methodology, design and statistical and other analytic tools. This must all be made accessible for students who may have no prior

knowledge of psychology, scientific study, or statistics, and must be properly prepared for conducting their own independent empirical project.

Disturbing the conventional boundaries between core domains, and quantitative-qualitative methods has been mostly successful; but ultimately students are still required to elect for one or the other for the independent project. This will be an area for us to explore further.

The integrative framework makes systematic and extensive methods teaching accessible and directly relevant to other core topics under study. But, this approach puts considerable pressure on the core modules, particularly at level 2 and level 3 where the methods teaching is extensive and requires considerable skill amongst the module team and the wider tutor team to pace and support students through this ambitious integrated framework. We are now exploring the development of enhanced revision and consolidation materials for independent study.

Dr Jean McAvoy CPsychol MBPsS (Programme Director, Psychology) April 2016

Research Methods and Statistics Training: An integrated approach Department of Psychology, Royal Holloway, University of London (RHUL)

The Research Methods and Statistics (RM&S) training in the Department of Psychology at RHUL was totally redesigned in 2011–12. The provided a unique opportunity to evaluate different teaching and assessment strategies within RM&S, and the new structure was designed with two aims in mind: to provide students with a **fully integrated and linear progression** through the RM&S content for the first two years of their degree, and to make the content both **applied and practical** to fully prepare students for their final year research project and their postgraduate careers.

Structure of the RM&S

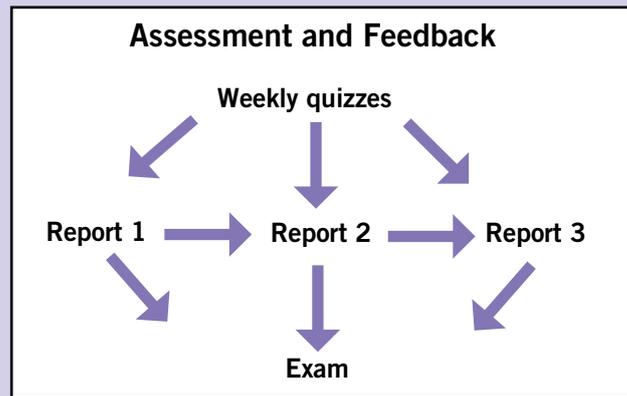
One key aspect to the redesign was that it was led by one individual, in discussion with others, who would then be the module leader for all of the first and second year RM&S teaching provision. This allows for true oversight of the entire curriculum, how research methods and statistics are integrated, and how first year content feeds into subsequent years of study.

There is one year-long module at each year that combines the RM&S teaching. This covers twenty weeks of teaching. Both the first and second year courses are structured in the same way to give the students as much continuity as possible. Each week students have three timetabled classes (see below). Whilst the lectures are taught by a small group of academics (usually three), the workshops and lab classes are taught by a team of PhD tutors. Students are split into classes of about 27 students for workshops and lab classes, and each lab tutor teaches one group, for both classes each week throughout the year. In first year all of the statistics are calculated by hand, and SPSS is introduced at the beginning of second year. Qualitative methods are fully integrated and taught at both years.

Lecture (1 hour)	Workshop (1 hour)	Lab class (2 hours)
<ul style="list-style-type: none"> • Taught by expert academic • Either statistical or methodological content 	<ul style="list-style-type: none"> • Same day as the lecture • Practice lecture content • Occurs in IT suite • Designed by the academic who taught the lecture • Facilitated by PhD tutor 	<ul style="list-style-type: none"> • Interactive class • Problem based learning • Experience designing studies, collecting and analysing data, critical thinking, etc. • Work on assessments

Assessment of RM&S skills

Assessment is kept as similar as possible in both first and second year, and the summative work is a mixture of continual assessment, lab reports and an end of year exam.



Each week, students complete a ten question multiple choice quiz on the virtual learning environment. In total, these quizzes contribute 10 per cent to the module mark. Half of the questions ask about the theoretical content from the lecture, and half ask about the practical exercises completed during the workshop. These quizzes are only available during the week that the relevant content is being taught. At the end of the week students automatically receive their mark and feedback, allowing them to continuously monitor their performance. Quiz performance also allows the course coordinator to monitor performance throughout the year, and to offer additional support to any students who are not completing quizzes, or who regularly gain low marks.

Once content has been taught and assessed through weekly quizzes, this knowledge is then applied through lab reports. These continually develop through the first two years of study, increasing in complexity and the level of independence required.

In the first year, students collect data within the lab classes from the entire cohort. These data are then analysed for their lab reports. The first report uses a frequency design and a chi square analysis, and all students write up the same simple study. The second report uses an experimental design and a t test. For this report there are multiple (4–5) analyses that could be conducted, usually as a result of multiple dependent variables. Students need to select two of the analyses, and this needs to be justified within the report. The final lab report has a similar structure, but with a correlational design and with students having to select two analyses from a range. Consequently, students are able to select analyses that particularly interest them, and they need to think about how to justify their decision within their lab report.

In the second year, students gain far more independence, again developing in complexity through the year. Students work in groups of 4–6 (allocated by course coordinator, changing for each report) and are provided with an incomplete research design. As a group they complete the design, submit a project proposal and ethics application, collect data, give a group presentation and write up an individual research report. For the first report they conduct a simple experiment, where the independent and dependent variables are designed in advance. Each group then needs to design a possible confounding variable for the design, and analyse the dataset using an ANCOVA. For the second lab report they need to run a factorial ANOVA, where one independent variable is already specified, and they need to design a second independent variable and the dependent variable. The third lab report focuses on questionnaire design and multiple regression, whereby students need to design a questionnaire that will predict a specified outcome variable.

Both year groups also complete exams at the end of the year. These are written to fully integrate methodological understanding with statistical knowledge. In the first year there is a three-hour unseen open book exam. The first part gives students a proverb, they need to design a study to test it and answer short answer questions about various aspects of their design. The second part comprises of three datasets, which they have to decide how to analyse, calculate the appropriate statistic, write up their findings in a format suitable for publication in an APA journal, and answer some short methodological questions. The second exam is a similar format, although only two-hours long and not open book. The first part comprises short answer questions that can cover any aspect of the statistical or methodological content. The second part comprises two sets of SPSS output, and they have to write up their findings in a format suitable for publication in an APA journal, and answer a short methodological question.

Providing effective feedback to students

At the end of each week students receive their quiz mark and feedback on their performance, allowing them to continually monitor their progress and achievement.

For lab reports, the course coordinator developed a semi-automated electronic online marking system. Twenty different aspects of a lab report were coded, each with multiple possible feedback responses (identifying both strengths and weaknesses). These are presented electronically to markers, who can simply tick a box for the feedback that best reflects their judgement. Each 'tick box' is associated with text feedback (1–3 sentences, written by the course coordinator) which is compiled into a full and individualised feedback report for each student. There is also space for markers to provide additional and specific feedback. Using this system, a comparable amount of feedback is given to both stronger and weaker reports to ensure that all students benefit from detailed feedback. This system facilitates the marking process and ensures greater consistency in feedback across different markers.

In addition to each student's individual feedback, generic feedback is also provided for the entire cohort. This highlights the important elements to include in a 'good' lab report, and identifies frequently occurring errors, misunderstandings or omissions and explains how to improve their work accordingly. After the marked lab reports have been returned to students, slides are developed that are delivered in lab classes to highlight what students did well and what they can improve upon for each assignment. These feed into interactive class and group exercises to give students further support in developing their skills before working on the next assignment. This provides continuity in the learning experience across lab reports.

Making the courses work effectively

The two RM&S courses cover a great deal of content and assessment, and involves a large team of academics and PhD tutors. To make this all work effectively, we have implemented the following:

- There is a single course coordinator across both first and second year. Whilst this is a high workload for the individual involved, it means that there is a central point of contact for all RM&S teaching matters, and one person has oversight to ensure consistency and continuity.

- There is a strong reliance on the VLE (Moodle) to distribute all course materials and the weekly quizzes. Additionally, forums are used extensively, run by the course coordinator to provide a central point of contact, where questions can be easily asked, and the answers seen by the entire cohort. Students are very strongly encouraged to post all questions on the forum. This reduces the workload of the course coordinator by avoiding frequent emails that ask the same question, and it ensures that no mixed messages can be received as a result of students asking the same question from different people.
- On the VLE, there is a 'Frequently Asked Questions' area and there is a 'Glossary' covering the relevant terminology used within the modules. These allow students to check on some of the simpler questions that often arise more independently.
- The RM&S teaching at each year group is supported by a large team of PhD tutors, typically 10–15 people. To ensure they are fully supported as new tutors, and to create a consistent experience for students across different lab groups, a range of development activities are offered to support, mentor and guide all of the tutors, including guidance on small group teaching and marking. At the beginning of each academic year specific training sessions are provided on teaching small groups where tutors are helped to develop teaching skills that are specific to teaching undergraduate research methods, such as supporting students who find statistics very anxiety provoking, balancing student contributions in small groups and encouraging participation in class discussions. Once the first assignment has been submitted on a course, I hold additional training sessions on marking and feedback for new tutors. After each assignment has been marked and moderated, all tutors are given feedback on their marking.

Reflection on RM&S course design at RHUL

Overall, the transition to a streamlined training for RM&S has been incredibly successful. One of the biggest challenges has been having a single coordinator for both courses. However, the advantages of a single point of decision making and contact has been effective in creating a single stream of training throughout two years of study. The workload has been high, but the extensive use of the VLE has eased some of this pressure.

A central aim of the re-designed programme was to fully integrate the research methods with the statistics in a practical and applied manner. In many ways, this has been successful. By providing students with practical experience, the content is far more tangible, and by setting statistics within the context of the whole research process, students see it as part of the process rather than as a difficult barrier.

Feedback from students has been overwhelmingly positive, especially given that the content is frequently disliked! Some examples of student feedback are given below...

'A very well run and organised course. Use of Moodle was excellent. Workshops and labs complemented the lectures and were very useful in enhancing understanding.'

'I am very pleased with the feedback given. It is inspiring how much work the tutors and lecturers put into the course. It is a clear and well thought out course!'

'The weekly quizzes, as well as counting towards overall grade, are really helpful to test knowledge learned in the workshop and lecture.'

'The clear Moodle online resources made difficult statistics much easier to understand. The discussion forums where the course coordinator answers questions are also really useful.'

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