PsyBSc10: Empirisch-experimentelles Praktikum (EXPRA)

Guide for students

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What is EXPRA?

The "EXPRA" (German: *Empirisch-experimentelles Praktikum*) is a practical, hands-on seminar designed to teach you the theoretical and especially the practical aspects of psychological research. This includes (with varying emphasis in each group):

- coming-up with a research question,
- formulating hypotheses,
- designing (and programming) an experiment to test these hypotheses,
- collecting, working with, and analysing data,
- presenting and discussing your research, and
- writing a scientific report on your project.

At the core of EXPRA is the idea that you work on a current research question in small groups under close supervision by a researcher of that field. Very often, the experiment you are carrying out will directly or indirectly feed into the work of the respective research unit. You will thus not only learn to use psychological research methods but also gain insights into the research currently carried out at your institute.

What are the goals of EXPRA?

At the end of EXPRA, you should have learned how to

- critically read and discuss scientific literature,
- design an experiment and "think like a scientist",
- preregister your project,
- carry out psychological research,
- analyse and interpret data using R, and
- communicate your research projects in an oral presentation, scientific poster session, and experimental report.

What do I have to do to pass EXPRA?

To pass EXPRA, you have to

- *actively* participate in the sessions and meetings with your instructors,
- carry out tasks required of you in time (e.g., reading literature, piloting the experiment, collecting stimuli),
- preregister your study and make study materials available on LIFOS (see below),
- submit a demo report as a group (not graded),
- participate in experiments of other EXPRA groups ("collect 10 E", see below),
- collect data for your project from fellow students, friends, family, flat mates, etc.,
- analyse your data using R,
- present your research results in one of the sessions, and
- prepare a scientific poster and present it to other students in the poster session.

Lastly, you'll have to write a scientific report (the "EXPRA report", see below) on your project. This report will be graded and will determine your grade for the entire EXPRA (module PsyBSc10).

How many credit points will I get for completing the EXPRA?

You will receive 8 credit points (CPs) for successfully completing the EXPRA and submitting an EXPRA report. Eight CPs equal 240 hours of work, meaning roughly 80 hours per month in a three-month semester. The EXPRA is therefore among the seminars requiring the most work in your bachelor, but you will get rewarded with a bunch of CPs and hands-on scientific experience.

Who can participate in EXPRA?

To be allowed to participate in EXPRA, you must be enrolled in a psychology bachelor's programme and have passed modules 1, 2 and 7 (PsyBSc1: Einführung in die Psychologie als empirische Wissenschaft, PsyBSc2: Statistik I, PsyBSc7: Statistik II). **Students who took the Statistik II exam (PsyBSc7) but haven't received their grade yet may participate until the grades are officially announced by the examination office. However, once the grades are announced, those students who failed the exam cannot continue to participate in EXPRA.**

How do I share study materials via LIFOS?

As an exercise in open science practices, you are required to share your study materials via LIFOS (local infrastructure for open science for psychology students at Goethe University). For more info on LIFOS see here. Note that sharing materials is part of the grading criteria. The deadline for uploading materials is the same as for submitting the EXPRA reports.

Specifically, you should upload:

- Your preregistration (filling out the template provided by LIFOS as a group; **mandatory**)
- Materials (e.g., stimuli you collected; **optional**)
- Analysis scripts (each student should upload their own analysis script; **mandatory**)
- Data (**anonymized**; one data file for the whole group unless you worked with different datasets; **mandatory** except for data that may not be shared for legal reasons, see here)
- Manuscripts (you may upload your own manuscript **after the EXPRA report submission deadline**; **voluntary**, manuscript **can be anonymized**)

What is the EXPRA report and how is it supposed to look?

The EXPRA report is the final exam ("Prüfungsleistung") you'll have to write on your research project. This report will be graded and will determine your grade for the EXPRA (module PsyBSc10).

Each student writes their own EXPRA report on the research topic they worked on during the EXPRA. Note that the EXPRA projects are usually carried out in groups, but each student must submit their own, individual EXPRA report (no group work in the final reports, no identical titles, figures, etc.)!

The EXPRA reports must

- be written in English (unless stated otherwise),
- be ca. 15 pages long (excluding table of contents, appendix, but including references),

- be formatted in Times New Roman, size 12, double-spaced,
- follow APA Style (publication manual, 7th edition) if not stated otherwise,
- include a link to the preregistration (e.g., on aspredicted),
- include an R script containing code of all analyses you carried out (this can be submitted as a separate file along with the EXPRA report), and
- a signed (!) declaration of originality on the last page of the report (see below).

To make grading of the EXPRA reports transparent, the grading criteria are attached to this document.

The deadline for submitting the EXPRA reports is four weeks after the poster session. The exact date will be announced by your supervisor.

Students must register their EXPRA reports with the examination office (Prüfungsanmeldung via QIS) and append a signed declaration of originality (*Eigenständigkeitserklärung*, for a template see FAQs by the examination office).

What is the DEMO report and how is it supposed to look?

As an exercise and preparation for the EXPRA reports, we ask groups of students (usually the same groups working on an EXPRA project together) to submit a "demo report" on a demo experiment carried out in class. This is usually a simple, well-established experiment in which all students participate. Your instructor will then show you how to analyse and interpret the data gathered in the demo experiment. Afterwards, you're supposed to write a short scientific report on that experiment (usually up to 10 pages, for other requirements see EXPRA report above). This report is written as a group, and your instructor will then give you detailed feedback on this demo report to avoid common mistakes when you write your final reports.

What is the difference between the DEMO and the final EXPRA report?

- The demo reports are not graded, the EXPRA reports are.
- The demo reports are written as a group, whereas each of you must submit your own, individual work for the final EXPRA reports!
- All demo reports are written on the same demo experiment carried out in your class. The EXPRA reports will be written about the specific projects you are carrying out with your tutors.
- You will receive extensive feedback on your demo reports to avoid common mistakes when you're writing your EXPRA reports. You will NOT receive feedback again on your final reports before they are graded!

Can I use AI tools to write code and reports in the EXPRA?

We generally allow the use of AI tools in the EXPRA to rephrase and review text (e.g., using DeepL Write, Grammarly), translate text (DeepL Translator), search for literature and summarize articles (e.g., Elicit), brainstorm on a topic (e.g., ChatGPT), writing code (e.g., GitHub Copilot) and image generation (e.g., DALL-E). Note, however, the following rules:

(1) Your own contribution in writing the reports must exceed the contribution by AI (i.e., having an AI tool write entire parts of your reports is not acceptable).

(2) You are responsible for the reports you submit – we strongly suggest that you double check any output (text, code, etc.) created and sources cited by AI. An unreflective use of AI is likely going to result in errors.
(3) AI tools cannot be used as a citable source (i.e., "According to ChatGPT (2024), priming is a psychological phenomenon…"). Any claims you make must be supported by citations of peer-reviewed publications.
(4) You must provide a list of AI tools you used at the end of your report (after the reference list). This list should include:
    a. Name, version and provider of the tool (company, organization or person that offers or programmed the tool)
    b. Purpose of using the tool (e.g., translation, rephrasing, grammar/spelling check)
    c. Affected text segments (e.g., "Discussion section" or "p. 14-15")
    d. Date of content generation
    e. Address (URL of the tool)
(5) In your declaration of originality (*Eigenständigkeitserklärung*), you must include the following:

    I am aware that the use of machine-generated texts does not guarantee the quality of content and text. I therefore declare that I have only used text-generating AI tools as an aid and that my creative influence predominates in this work. Furthermore, I declare that I have documented all text passages that were written with the aid of AI-supported programs accordingly and provided a reference to the AI-supported program used. I declare that I have not used any AI writing tools whose use the examiner has explicitly excluded in writing.

Where do I find EXPRA studies to participate in?

All EXPRA studies will be advertised on SONA and can be identified by the "[E]" tag at the end of the study name. You will need a student account to access SONA and sign-up for studies (contact sona-support@dlist.server.uni-frankfurt.de in case you forgot your account details). You will receive credits (Versuchspersonenminuten) for all EXPRA experiments. This will automatically be taken care of by SONA.

How do I collect the 10 E?

To ensure that all groups get the chance to collect enough data for their experiments, each student is required to participate in experiments from other EXPRA groups ("collect 10 E"). To do this, you will receive a 6-digit number code at the beginning of EXPRA. In each EXPRA experiment (those identified with the "[E]" tag on SONA), you will be asked to enter this code to count towards the 10 E. At the end of the semester, we check that all students participated in EXPRA experiments and collected 10 E. Note that longer experiments and experiments taking place on campus will be rewarded with more Es than shorter experiments and experiments carried out online.

Note that you will of course still receive credits (Versuchspersonenminuten) in addition to the "E" when you participate in EXPRA experiments. You can also participate in more EXPRA experiments if you still need to collect VPM. Note, however, that you will also have to participate in EXPRA studies even if you already finished collecting your 1800 VPM.

Where do I get software required for the EXPRA?

You'll need to have a current version of R and RStudio installed on your laptops to analyse your data. See here for an installation guide.

You'll also need a presentation software and a design program of your choice to create your scientific posters (PowerPoint does the job, but there are free alternatives like Inkscape, Scribus, etc.).

We further highly recommend using a reference management software such as Zotero, Citavi (free as long as you are a student) or Mendeley for your reports. Most of these tools have plugins for Microsoft Word which makes in-text citations and creating reference lists a matter of a few clicks. Ask your instructor which software they use to get help.

What knowledge is expected of me in the EXPRA?

Since passing statistics I (PsyBSc2) and II (PsyBSc7) is a prerequisite for participating in the EXPRA, **we assume that you have understood and can carry out basic statistical analyses in R**. This includes (among other things) reading data into R, calculating descriptive statistics, aggregating data, correlation and regression analyses, dependent and independent sample *t*-tests, repeated-measure ANOVAs, and assumption tests for the different procedures. If you need a brush-up for these topics, have a look at the PsyBSc2 and PsyBSc7 course materials and work through them before the EXPRA begins. **Important: The EXPRA will NOT include a repetition of basic statistics!** However, if you run into troubles using R, Martin Schultze's department is offering an "R Sprechstunde" for EXPRA students. More information on this will be shared at the beginning of the semester.

APPENDIX

Grading criteria for EXPRA reports

Author:

Title:

	Points				
Abstract	**1**	**2**	**3**	**4**	**5**
Introduction of the general topic/field	☐	☐	☐	☐	☐
Description of the scientific question and/or hypotheses	☐	☐	☐	☐	☐
Description of sample and experimental paradigm	☐	☐	☐	☐	☐
Summary of main results	☐	☐	☐	☐	☐
Outline of central discussion points	☐	☐	☐	☐	☐
Summarizing conclusion	☐	☐	☐	☐	☐
Use of scientific language and expressions	☐	☐	☐	☐	☐
Length (max. 200 words)	☐	☐	☐	☐	☐

Introduction	**1**	**2**	**3**	**4**	**5**
Introduction of the general topic/field	☐	☐	☐	☐	☐
Theoretical foundation	☐	☐	☐	☐	☐
Summary of related studies and core findings	☐	☐	☐	☐	☐
Development of the research question	☐	☐	☐	☐	☐
Description of hypotheses	☐	☐	☐	☐	☐
Amount and relevance of incorporated literature	☐	☐	☐	☐	☐
Appropriate use (and definition of) scientific terms	☐	☐	☐	☐	☐
Clarity and conclusiveness	☐	☐	☐	☐	☐

Method	**1**	**2**	**3**	**4**	**5**
Participants	☐	☐	☐	☐	☐
Materials	☐	☐	☐	☐	☐
Procedure	☐	☐	☐	☐	☐
Design	☐	☐	☐	☐	☐
Consistency with introduction and hypotheses	☐	☐	☐	☐	☐

Results	**1**	**2**	**3**	**4**	**5**
Appropriate cleaning and aggregation of raw data	☐	☐	☐	☐	☐
Use of appropriate statistical tests	☐	☐	☐	☐	☐
Correct report of statistical results	☐	☐	☐	☐	☐
Report of central findings (in text, figures and/or tables)	☐	☐	☐	☐	☐
Evaluation of results with regard to hypotheses	☐	☐	☐	☐	☐
Clarity and readability of figures and tables	☐	☐	☐	☐	☐
Formally correct reproduction of figures and tables	☐	☐	☐	☐	☐

Discussion	**1**	**2**	**3**	**4**	**5**
Short summary of research question, paradigm and core results	☐	☐	☐	☐	☐
Critical evaluation of hypotheses based on descriptive and statistical results	☐	☐	☐	☐	☐
Comparison of results with previous findings and literature	☐	☐	☐	☐	☐
Theoretical and/or applied implications of findings	☐	☐	☐	☐	☐
Critical, data-driven evaluation of plausibility and validity of results, reasons for hypotheses falsification, limitations, etc.	☐	☐	☐	☐	☐
Outlook and follow-up questions or experiments, etc.	☐	☐	☐	☐	☐
Summarizing conclusion	☐	☐	☐	☐	☐
Clarity and conclusiveness	☐	☐	☐	☐	☐

Formal	**1**	**2**	**3**	**4**	**5**
Title page and table of contents	☐	☐	☐	☐	☐
In-text citations (formal correctness and completeness)	☐	☐	☐	☐	☐
Reference list (formal correctness and completeness)	☐	☐	☐	☐	☐
Adherence to APA guidelines (text formatting, layout, etc.)	☐	☐	☐	☐	☐
Language (typing errors, grammar, scientific language, etc.)	☐	☐	☐	☐	☐
Appendix (including analysis script, preregistration, etc.)	☐	☐	☐	☐	☐
Correct preregistration and report of any deviations	☐	☐	☐	☐	☐
Data and materials made openly available	☐	☐	☐	☐	☐

Final grade: ____

Note. Grades are not a mere sum of the points above! Some criteria are more important than others (e.g., the title page is not as important as the theoretical foundation of a report). The grades should rather focus on the overall strengths and weaknesses of the report and reflect whether it is complete, correct, clear, conclusive, and convincing.