

Psychometrics

Code: 102569
ECTS Credits: 6

| Degree | Type | Year | Semester |
|--------------------|------|------|----------|
| 2502443 Psychology | OB | 3 | 1 |

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Use of Languages

Principal working language: catalan (cat)
Some groups entirely in English: No
Some groups entirely in Catalan: Yes
Some groups entirely in Spanish: No

Teachers

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Albert Espelt Hernandez
Eva Penelo Werner
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Prerequisites

It will be very useful to acquire the competencies of previous methodology subjects: Methods, designs and techniques of investigation, Data Analysis and Statistical Models and Psychometrics. Therefore, students must be able to understand and apply the methodology used in research in psychology, and particularly the concepts of sampling and design with selective methodology. With regard to data analysis, you must know how to use basic descriptive and inferential analysis techniques and in particular, techniques for data reduction and reliability analysis. Other competences previously acquired and especially necessary to study this subject are the application of the APA regulations as regards the writing of texts and references as well as the application of the ethical principles of psychological assessment.

Objectives and Contextualisation

The subject Psychometry is part of the broader subject Methods of research and psychometrics. It is taught in the first semester of the third year of the Degree in Psychology. It is the last subject to be studied. The three previous subjects offer the basics of research methodology and univariable and multivariable data analysis. The formative objectives of the subject are:

1. Know the normative texts on the use and valuation of the instruments of measure in Psychology.
2. Analyze the psychometric properties of the psychological measures.
3. Calculate and interpret scores obtained with measurement instruments in psychology.

It is expected that at the end of the subject the student will be able to:

1. Learn relevant strategies to evaluate the validity and reliability of test scores

2. Know the characteristics of the tests that determine and affect the validity and reliability of their own scores.
3. Correctly interpret the scores offered by the tests.
4. Apply the criteria to select the tests and the guidelines to use and adapt them.
5. Understand scientific reports on the psychometric properties of the scores, with the objective to select tests for their correct use.
6. Use psychometric vocabulary correctly.

This subject has a link of Learning Service (ApS) with the General Council of Psychology of Spain. The ApS is a social commitment of the university and at the same time an educational proposal through which the student can be trained by participating in a teaching project aimed at solving a real need in a given community (for more information <http://pagines.uab.cat/aps>).

Competences

- Distinguish between the design of research, procedures and techniques to evaluate hypotheses, contrast them and interpret the results.
- Maintain a favourable attitude towards the permanent updating through critical evaluation of scientific documentation, taking into account its origin, situating it in an epistemological framework and identifying and contrasting its contributions in relation to the available disciplinary knowledge.
- Recognise and evaluate the procedures and techniques applied to the construction and adaptation of the instruments of evaluation in psychology.
- Recognise the deontological code and act ethically.
- Use different ICTs for different purposes.

Learning Outcomes

1. Correctly interpret the results obtained from the application of psychometric evidence presented.
2. Describe statistical indicators of reliability and validity based on test theory.
3. Draw reasoned conclusions from the results obtained after applying psychometric methods and techniques to respond to a research hypothesis.
4. Draw reasoned conclusions on the results obtained with respect to each of the types of evidence for the quality of psychological assessment instruments.
5. Identify key models and psychometric analysis techniques and interpret the results obtained adequately.
6. Identify research methods and data analysis techniques suitable for providing each of the required quality indicators in psychological assessment instruments.
7. Maintain a favourable attitude towards the permanent updating through critical evaluation of scientific documentation, taking into account its origin, situating it in an epistemological framework and identifying and contrasting its contributions in relation to the available disciplinary knowledge.
8. Recognise the deontological code and act ethically.
9. Select the most appropriate instrument psychological evaluation to solve specific practical problems, taking into account quality requirements.
10. Use different ICTs for different purposes.
11. Use the scoring criteria and interpretation of scores to draw conclusions about the characteristics of the people tested.

Content

Thematic block 1: Introduction

1. What is a test and what is it for?
2. Documentation
3. Selection criteria for tests

Thematic block 2: Interpretation of scores

1. How to interpret the scores of a test?
2. Transformations of the scores
3. Communication of the scores of the people in the tests

Thematic block 3: Validity

1. Definition of validity
2. Content of the tests
3. Response processes
4. Internal structure of the tests
5. Relationship with other variables
6. Consequence of the evaluation
7. Aspects to consider for the evaluation of validity

Thematic block 4: Reliability

1. Definition of reliability
2. Psychometric theories for the study of reliability
3. Designs for the assessment of reliability
4. Estimation of scores
5. Aspects to consider for the assessment of reliability

Thematic block 5: Equity

1. Definition of equity
2. Ways to check the equity of the tests

Methodology

In this course we propose different activities in active learning methodologies focused on students. In this way, a "hybrid" approach is shaping in which we combine traditional teaching techniques with other resources aimed at encouraging meaningful and cooperative learning.

Activities

| Title | Hours | ECTS | Learning Outcomes |
|--|-------|------|-------------------------------|
| Type: Directed | | | |
| Character and tutored work on the project of evaluation of a test that is carried out throughout the course (seminar type and / or computer equipped classrooms) | 26 | 1.04 | 2, 4, 3, 6, 5, 1, 7, 8, 9, 11 |
| Lectures: large-capacity classroom master class with multimedia support | 10.5 | 0.42 | 2, 4, 3, 6, 5, 1, 7, 8, 9, 11 |
| Type: Supervised | | | |
| In-person and virtual tutors | 15 | 0.6 | 2, 4, 3, 6, 5, 1, 9, 11 |
| Type: Autonomous | | | |
| Cooperative learning activities | 10.5 | 0.42 | 2, 4, 3, 6, 5, 1, 11 |
| Critical reading of psychometric material | 20 | 0.8 | 2, 4, 3, 6, 5, 1, 9, 11 |
| Participation in virtual debate forums | 7.5 | 0.3 | 2, 6, 5, 1, 11 |
| Reflective study and integration of matter | 35 | 1.4 | 2, 4, 3, 6, 5, 1, 7, 11 |
| Selection of psychometric material to prepare theoretical thematic blocks | 7.5 | 0.3 | 9, 10 |

Assessment

The assessment of this subject is carried out continuously and has a clear formative function. With this intention, it includes reassessment within the normal course development and there is no special reassessment at the end of the course. Learning evidences must allow three groups of learning outcomes to be assessed:

1. Knowledge (E40.1), the use of score criteria and interpretation of scores (E40.4), the ability to identify appropriate methods and techniques to evaluate the quality of the measures (E40.2), and the ability to identify the results that are obtained and the main models and techniques of psychometric analysis and interpretation (E39.28).
2. The selection on psychological evaluation instruments (E40.5), writing conclusions (E40.3), the correct interpretation of the results obtained from the application of psychometric tests presented (E39.34) and writing reasoned conclusions based on the results obtained after applying the psychometric methods and techniques that provide a response to a research hypothesis (E39.36).
3. Positive attitude to continuous updating of knowledge (T05).

Evidences of continuous assessment

The assessment is divided into two blocks. In the first block the knowledge of the theoretical part (up to 5 points) is assessed and in the second it assesses a project that consists of tasks of development (up to 2 points) and the presentation of a report (up to 4 points). The assessment of the theoretical part is done with face-to-face tests of closed or short answer questions. The project consists of the critical assessment of the manual of a test.

The first block, the TEST, is to demonstrate all psychometric knowledge answering closed response tests with true/false options that can be complemented by one brief argumentation. The closed response tests are scored automatically. The arguments of each student is evaluated by the teaching staff of their group of practical classes. Two tests are done face-to-face (TEST1 and TEST2). In the second, the knowledge shown in the first is re-assessed. A total of 5 points can be scored for this block.

TEST1. Completion of the test that includes all the subject content. It is done individually and in person during week 10 (aprox), at the time and in the classroom decided by the faculty for the purpose of assessment. Maximum 5 points which may be recovered later.

TEST2. Completion of the test that again includes all the subject content. It is done individually in the classroom during week 14 (aprox). The 5 previous points are recoverable. Exceptionally, students with a justified absence, may present this evidence during the second assessment period (week 17-18 aprox) with the agreement of the teaching team.

The second block begins with the project that seeks to consolidate the acquired knowledge of psychometrics by applying them to the assessment of the manual of a test.

It consists in exercising the contents of the manual that are proposed, worked on and delivered during the practical classes. The exercises are presented individually. Four subjects are worked on in the subject at the rate of half point each so that in total 2 points can be added. These points are not recoverable.

This second block is completed with presentation of the project report, which consists in putting in evidence psychometric knowledge by filling out, presenting and defending a document orally (CET-R) on the evaluation of the manual of a test. It is presented in writing twice (PROJECT1 and PROJECT2) and in the second an oral defense is also made. During the second presentation, knowledge shown in the first is reassessed and the grade may be different for each one. In total you can accumulate 4 points.

PROJECT1. Presentation of the draft report of the project, which includes the assessment of sections 1 and 2 of the CET-R, corresponding to all the subjects. This is done as a team and is presented in writing in the online

campus (expected during Week 9). The team receives feedback on their draft and a score on 4 points that is recoverable.

PROJECT2. Final presentation of the project report and oral defense. The level of knowledge is assessed as much from the test manual as the evidences of interpretation of scores, validity and reliability that support it. The text is delivered, a collective presentation is made and finally individual answers are given to the questions of the teachers. The presentation of the written text and the oral defence is given to the practical classes as of the week 12 on the prior agreement of the teaching team. In this evidence the 4 previous points are recoverable. Specifically, 2 of the points correspond to collective defence and the other 2 to individual defences.

These evidences are assessed by the teachers responsible for each project. The best evaluated reports in this part goes to a phase of corrections to be included in the psychological instruments database of the faculty and be sent to the publisher of the test manual if interested.

The criterion for calculating the accumulated score in recoverable evidence (TEST1-TEST2 and PROJECT1-PROJECT2) is the following: if the grade obtained in the most recent evidence exceeds the grade obtained previously, the accumulated grade is the most recent; however, if the grade obtained in the most recent evidence does not exceed the previous one, the accumulated grade is the average of both.

The results of the evidence will be discussed collectively in face-to-face sessions, and they may be personal interviews in the tutorial sessions with the teachers responsible for the group of seminar.

Definition of subject outcome

To pass the subject, two requirements must be met within the same academic year: a) Present at least TEST2 and PROJECT2 evidence, and b) Have accumulated a total of at least 5 points, with a minimum of 2 points in the course of the course presentation of the project report (of 4 possible) and a minimum of 2 points for the TEST evidence (of 5 possible). In the event of not meeting these requirements, the maximum grade to be recorded in the academic record will be 4.9 points.

Reassessment is continual and no separate reassessment system is anticipated.

Management of incidents with the learning evidences, and especially in the case that despite the reassessment planned during the course the required threshold is not reached, is done through face-to-face interviews with him teachers responsible for the group of practical classes.

Definition of non-evaluable students

Student who have given evidence of learning with a weight equal to or greater than 4 points will be considered "assessable". Otherwise, they will not receive an assessment grade.

Students registering for the second time (or more) have the same options as the others to create a new project and present at face-to-face tests. No integrative test is anticipated.

The formal characteristics of the evaluation are summarised in the table below.

| Code EV | Denomination | Weighting | Fo |
|---------|--|-----------|----|
| D | DEVELOPMENT OF PROJECT. Exercises in the classroom about him content of the manual | 2 | Wr |
| P1 | PROJECT1. Report (sections 1 and 2) | 4b | Wr |

| | | | |
|----|---|----|----|
| T1 | TEST1. Answer test closed or Short of all the subjects of the subject | 5b | Wr |
| P2 | PROJECT2. Report (all sections) and oral defense | 4a | Wr |
| T2 | TEST2. Closed answer test of All subjects of the subject | 5a | Wr |

Grade: a) Requirement to pass the subject; b) re-assessable

Link to Faculty assessments criteria: <https://www.uab.cat/web/estudiar/graus/graus/avaluacions-1345722525858>

Assessment Activities

| Title | Weighting | Hours | ECTS | Learning Outcomes |
|--|---|-------|------|----------------------|
| 0 DEVELOPMENT OF THE PROJECT. Exercises in the classroom on the contents of the manual | Maximum of 2 points | 0 | 0 | 2, 4, 6, 5, 7 |
| 1 PROJECT1. Report (sections 1 and 2) | The PROJECT evidences are cumulative and carry a maximum of 4 points. | 0 | 0 | 4, 3, 1, 8, 9 |
| 2 TEST1. Closed or short answer test of all subject | The TEST evidences are cumulative and carry a maximum of 5points. | 1.5 | 0.06 | 2, 6, 5, 11 |
| 3 PROJCT2. Report (all sections) and oral defence | The PROJECT evidences are cumulative and carry a maximum of 4 points. | 0 | 0 | 4, 3, 1, 7, 8, 9, 10 |
| 4 TEST2. Test that includes all the subject content. | The TEST evidences are cumulative and carry a maximum of 5 points. | 1.5 | 0.06 | 2, 6, 5, 11 |

Bibliography

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