University of
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COLLEGE FOR
HUMANISTIC
SCIENCES
ICPS

PS4700: Research Methods and Statistics for Clinical Psychologists – Research Design and Statistics Portfolio

Assignment Weighting = 40%

Assignment Deadline: **Tuesday 23th February 2021 – 16.59pm**

via Blackboard Link

INSTRUCTIONS

- Please see the assessment brief below – this gives an outline of all the instructions for the assessment including the set questions, the total marks available for reporting the analyses for each section and the total marks available for the questions requiring interpretation. The assessment brief indicates the relevant questions that require the reporting of statistics and those that include interpretation and additional reading. Please follow guidelines provided in lectures and ensure you follow APA guidelines.

- In the assessment, we are looking for learners to provide an accurate reporting of the relevant statistics (e.g., t-tests, Factorial ANOVA, Tukey test and hierarchical linear regression). We are also looking for a clear interpretation of the results for the questions that ask about interpretation (see assessment brief). You will need to present Tables and Figures in line with APA guidelines along with references where indicated.

- The module handbook and the separate assessment brief indicate the percentage weighting for this work (40% of the module grade). Please see the separate assessment brief for marking criteria – marks are provided for accurate succinct reporting of statistics, presentation of Tables/Figure, a clear interpretation of the findings for the relevant questions, and engagement with relevant literature to support the relevant questions. Please see the assessment brief for a breakdown of the marks available for reporting and interpreting the results for each section – this shows the specific questions that require accurate reporting of statistics (in the correct format) and those that require understanding by interpreting the results.

- The assessment tests the following learning outcomes:

- Enter and manipulate data, perform a range of statistical analyses and graphically illustrate statistical output using SPSS for windows (Learning Outcome 2).

- Demonstrate an understanding of the rationale for, and appropriateness of, the univariate and multivariate analytical techniques introduced in the module by selecting the appropriate analyses for different areas of application (Learning Outcome 3).

- Interpret the output of SPSS analyses introduced in the module and report the results appropriately (Learning Outcome 4).
- Demonstrate a technical and critical knowledge of methodologies introduced in the module, such as: qualitative; longitudinal; structural equation modelling and regression techniques (Learning Outcome 5).

PREPARATION FOR THE ASSESSMENT
- In order to prepare for the assessment, you should have engaged with all the lecture materials, workshop handouts and practice tasks provided including the interactive tasks used in lectures (e.g., tasks related to t-tests, ANOVA, interactions, calculating Tukey test and regression analyses).
- The lectures/workshops relating to t-tests, ANOVA, interpreting interactions, and regression analysis all support this assessment.
- Please see Moodle for suggested reading related to the topic/assessment.

SUBMISSION DETAILS

Please include the appropriate cover sheet with your assessment – this is available on Blackboard. You should format the assessment using 1.5 line spacing and either Times New Roman or Arial font (12 point). Each question should be clearly numbered for both sections and where word counts are indicated on the assessment brief these should be followed. There are no formal penalties for exceeding a word count of a few words (e.g., up to 20 words over is fine), yet if answers exceed word counts substantially then marks are likely to be reduced as this may reflect reporting that is not succinct and may contain irrelevant information indicative of lack of understanding. Please follow APA guidelines for referencing studies and for formatting tables and figures. You should submit your work to Blackboard electronically using the Turnitin link provided on the module space.

HELP AND SUPPORT

- You will find links to lots of useful resources in the My Library tab on Blackboard.
- If you have not yet made the college aware of any disability, specific learning difficulty, long-term health or mental health condition, please contact e-aitima@icps.edu.gr.
- If you have any other query or require further support you can contact the module leader: c.fountoulakis@icps.edu.gr.
- If you have any valid mitigating circumstances that mean you cannot meet an assessment submission deadline and you wish to request an extension, you will need to contact e-aitima@icps.edu.gr prior to the deadline.

Section A: Factorial ANOVA and Interactions
Section B: Hierarchical Linear Regression
Assignment Deadline: **Tuesday 23th February 2021 – 16.59pm**
via Blackboard Link
Assignment Return: 15 working days after submission

Note: Please submit the assignment using the Blackboard submission link on your respective module.

The assignment comprises two sections and assesses your understanding of quantitative analyses (e.g. ANOVA & hierarchical regression). Please try to answer all questions – some of these can be answered based on lecture materials and others require additional reading. Engaging in additional reading will help to consolidate your understanding regarding this assignment. Support your answers with references wherever possible. When presenting your portfolio please label the two sections as indicated above and include the respective numbers for questions. Present all your answers in a narrative – do not use bullet points otherwise marks will be lost for that question. It is important to organise your time effectively in completing this work to allow you to meet the deadline – and to gain support from staff during academic support hours and taught sessions where needed. The questions will be easier to address once you have engaged with the relevant lectures, the workshop and lecture tasks provided as well as additional reading. You can use the taught sessions to raise questions that you may have about aspects of the portfolio.

Section A carries 70 marks (40 marks for reporting values and 30 marks for interpretation). Section B carries 30 marks (12 marks for reporting values and 18 marks for interpretation/understanding). Marks are obtained for reporting descriptive information (means and SDs) and statistics (ANOVA and regression values) – these marks are easier to obtain than those requiring interpretation. For the questions that require interpretation/understanding, more work will be required to gain these marks and additional reading will be key for these questions.

Section A: Reporting Results – 40 marks (See Questions 1 – 3 & 5 & 8).

Section A: Interpretation – 30 marks (see Questions 4, 6, 7 & 9).

Section B: Reporting Results – 12 marks (see Questions 1 – 2).

Section B: Interpretation – 18 marks (see Questions 3, 4 & 5).

Note that you will receive an overall grade for the assignment, but the breakdown here should guide you in how we assign marks.

Section A: Factorial ANOVA and Interactions

1. The SPSS data on blackboard are from a study that examined sentence reading times. Sentences were either long (15 words per sentence) or short (8 words per sentence). The second factor was space information – sentences either contained a space between each word or the spaces were removed between the words. Sentence reading times were recorded in milliseconds. Participants read the sentences under all conditions – two sleep groups took part in the study (good sleep quality group versus poor sleep quality group). Conduct a three-way Factorial ANOVA on the data provided (see Blackboard for SPSS data file) and produce an APA formatted table of means and standard deviations showing the values for all levels of all factors. Include a table number and a meaningful title and show consistency in reporting decimal places. You can round up to two decimal places if you prefer or report to three decimal places. See the example table on the lecture slides and Table 1 on this handout for format. **[100 words].**

Table 1

Means (ms) and standard deviations (in parentheses) for target present and absent trials for letters and digits in low and high working memory groups

Trial Types	Letters	Digits
	Low Working Memory	
Target Present Trials		
Target Absent Trials		

	High Working Memory
Target Present Trials	
Target Absent Trials	

Note: This table is an example of how you should format the table for Question 1. You can copy and paste this into your assignment to ensure that you have followed the correct format in line with APA guidelines. The table title will need to be amended to fit in with the factors and levels of the study described in Question 1 and heading names will need to be changed.

2. Report the results from the ANOVA you have conducted in a succinct narrative. Describe the ANOVA conducted using the correct design notation and make it clear whether the factors are between or within-participant factors. You must report the results for all effects (3 main effects and 4 interactions) and ensure that they are all accurate to enable you able to gain maximum marks for this question. Report the F ratio, degrees of freedom, MSE, p value and effect size for all effects. Marks will be lost if reported as bullet points – check lecture slides if you are unsure about the reporting. Please follow convention when reporting p values – report p as either p < .001 (less than .001) or state the exact p value. **[250 words].**

3. Introduce and present a table of means and means differences to show the descriptive information for the sentence length x space information interaction. Follow the format and example used in the lecture (e.g., arrange means from lowest to highest along vertical and horizontal axis; compute mean differences for the comparisons involved in the interaction). Conduct the Tukey HSD test by hand showing your calculations in an Appendix and use this information to indicate the significant comparisons in your table of means/mean differences (use an asterisk if they reach significance). Report the results of your comparisons – you should refer to each comparison along with the correct Tukey and p value for each effect. You should interpret the direction of effects. **[150 words].**

4. Summarise the sentence length x space information interaction and use the appropriate descriptive information to support your interpretation (e.g., means and/or mean differences). **[250 words].**

5. Using the SPSS data file on Blackboard, conduct the appropriate t-tests to examine the sentence length x sleep group interaction and report the results of your t-tests. Ensure you make it clear what type of tests you have conducted (independent/paired t-tests) and the comparison that each t-test refers to along with a statement of direction (you can use means and SDs to support this). **[150 words].**

6. Summarise the sentence length x sleep group interaction and use the appropriate descriptive information to support your interpretation (e.g., means and/or mean differences). **[250 words].**

7. Summarise the descriptive data provided in Appendix A – you should outline whether any of the patterns are consistent with an interaction and note your reasons for this. You will want to use the respective means to support your answer. **[350 words].**

8. Produce an APA formatted Figure to display the data presented in Appendix A. **[100 words].**

9. Provide a brief discussion of the advantages and disadvantages of using planned comparisons and post hocs tests. This should include comments on when to use either set of tests – you should refer to specific tests. Please support your answer with references. **[300 words].**

Section B: Hierarchical Linear Regression

The SPSS data file on Blackboard includes variables from a study on impulsivity (criterion) measured using a self-report inventory. Several predictors of impulsivity were explored including age, polydrug use, emotion regulation, working memory and problem gambling behaviour (see Appendix A). Participants also completed a measure of full-scale IQ.

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1. Conduct a hierarchical multiple regression analysis to explore the impact of the predictors on impulsivity. Enter impulsivity as the criterion, and on step 1 enter full-scale IQ and polydrug use as predictors. On step 2, enter age and emotion regulation as predictors and then enter working memory and problem gambling as predictors on your final step (step 3). You must enter the predictors as stated. Report the results in a narrative (this should include an introduction to the analysis – stating the criterion and predictors entered). Ensure that you report the results from the ANOVA model for all steps of the analysis and comment on the percentage of variance explained as well as the F change statistics and extra variance explained on subsequent steps. Include the beta values for all models. **[400 words].**

2. Present an APA formatted table to show the B, SE of B and Beta values for your data. Remember to number the table and to provide an appropriate/meaningful table title. **[150 words].**

3. Provide an interpretation of your results – explain what beta values represent and interpret the beta values for your results for all steps of the analysis (see lecture slides). What do the beta values show for this study? **[250 words].**

4. Supporting your answer with references, provide a brief discussion of the influence that residuals play in multiple regression analysis and the extent to which they may compromise the integrity of the results. **[300 words].**

5. Explain the difference between mediation and moderation analysis and outline the type of research questions these analyses allow you to address. You should support your answer with references. **[300 words].**

Note: All work is marked in line with our assessment and moderation procedures to ensure consistency across markers, and only returned once the moderation process is complete. All grades are provisional until confirmed at the exam board.

Appendix A: Descriptive Data – Question 7

A psychologist conducted a study to investigate how attentional focus instructions influence learning of a stitching task among student nurses. Ninety student nurses were taught to perform a stitching task on a mannequin during a four-week course. Nurses were assessed by a course tutor on their performance at the start of the course (baseline), the end of the course (post-test) and three months after completion of the course (retention-test). Performance was assessed by the tutor on the scale 0 (poor) -100 (excellent). Participants were randomly allocated to either an internal focus condition (focus on keeping hand steady), an external focus condition (focus on keeping needle steady) or no attentional focus condition. The relevant attentional focus cues were emphasised throughout the four-week course by the tutor. A 3 (time) x 3 (condition) mixed ANOVA was conducted to establish if stitching performance changed over time as a function of experimental condition. Table 1 displays the means for stitching performance at Baseline, Post-test, and Retention-test for each condition.

Table 1. Mean stitching performance (accuracy) as a function of condition and time.

Trial Types	Baseline	Post-test	Retention-test
No-focus	42	63	58
Internal-focus	45	65	60
External-focus	43	78	74

Appendix B: Summary of Measures used for Regression

Table 3. Summary of measures

Variable Name	Measure	Score
Impulsivity(criterion)	Self-report inventory	High score = greater impulsivity
Age (predictor)		
Polydrug use (predictor)	Self-report	Higher score shows more incidents of drug use
Emotion regulation (predictor)	Self-report	Higher score shows better emotion regulation
Problem gambling (predictor)	Self-report	Higher score shows more evidence of problem gambling
Working Memory (predictor)	Digit Span (forward/backward)	Accuracy score = higher score shows better performance
Full-Scale IQ	WASI	Standard score