INL2.1 – Critical appraisal – Experiment

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| Student Name | P. No. | Contribution in the assignment (50 % for equal contribution) |
| Peter Andersson |  | 50% |
| Staffan Brickman |  | 50% |

Results of applying the checklist:

Table 1

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| --- | --- | --- | --- |
| ID | Evaluation item | Answer  (Yes/No/NA)[[1]](#footnote-2) | Justification (please elaborate) |
| 1 | What is the population in the experiment? | N/A | 50 graduate students. The students attend a course for system security. |
| 2 | Is the sample used representative of the population? | Yes | The article shows a lack of relevant experience in the population. However, all participants are studying a relevant field. |
| 3 | Are the dependent and independent variables clearly defined? | Yes | The result is the dependent variable, which depends on the independent variables, which are:   1. The provided security requirements templates or not. 2. Use case 1 or 2. |
| 4 | Are the hypotheses clearly formulated? | Yes | The authors formulated four hypotheses to come up with relevant research questions regarding the goal of the experiment. |
| 5 | Is the type of design clearly stated? | Yes | They use a 2x2 between-subject design. |
| 6 | Is the design correct? | Yes | Participants were assigned a level in each independent variable. |
| 7 | Is the instrumentation described properly? | Yes | The efficiency were measured checking when the participant pressed on save or resume. |
| 8 | Is the validity of the experiment treated carefully and convincing? | Yes | Participants did not know that they were divided into different groups. Double-blinding could not be utilized. However, an oracle was created before the experiment, to minimize biases. |
| 9 | Are different types of validity threats addressed properly? | Yes | The authors dedicated a whole section to the examination of threats. In this section they properly go through all four threats. |
| 10 | Has the data been validated? | Yes | They went through the data independently from each other, and conformed to a standard to validate it. |
| 11 | Is the statistical power sufficient, are there enough subjects in the experiment? | Yes | The hypotheses were not all rejected. However, they are relevant to the goal of the experiment and therefore sufficient for a good experiment. |
| 12 | Are the appropriate statistical tests applied? Are parametric or non-parametric tests used and are they used correctly? | Yes | Weighted kappa for RQ1.  Mean coverage score in per cent for RQ2.  Per cent of relevant requirements for RQ3.  How many requirements found per minute for RQ4.  Parametric tests were used correctly. |
| 13 | Is the significance level used appropriate? | Yes | In this experiment it is. The participants have quite equal experience divided through the groups. |
| 14 | Is the data interpreted correctly? | Yes | We think that they have interpreted it correctly and thoroughly using statistics and reasoning. |
| 15 | Are the conclusions correct? | Yes | The conclusion was drawn from the proving or disproving of the hypotheses. |
| 16 | Are the results overstated? | No | We don’t think they are. Because the results are to-the-point and they recommend further work. |
| 17 | Is it possible to replicate the study? | No | Not generally. But in this specific environment. The population is kind of unique and we think that it could be hard to find it again. |
| 18 | Is data provided? | No | No raw data is provided |
| 19 | Is it possible to use the results for performing a meta-analysis? | No | We didn’t find a weighted average to compare the study to other studies. |
| 20 | Is further work and experimentation in the area outlined? | Yes | Ideas of how to motivate the students to put more effort in the study were explained. As well as ideas on how to minimize missing information. |

Briefly answer the following questions (where possible support your answer with results of the checklist based evaluation):

1. Does the chosen research method (experiment/case study) address the objectives in the study? Which other research methods could address the same objectives?

1. Which, if any, are the unaddressed ethical issues/concerns in the study?   
   None, we didn’t find any. The study was done on anonymous answers.

1. What is your overall assessment about the quality of the experiment? What do you consider are the main strengths and major limitations of the study?

1. Please answer the following questions regarding the use of the given checklist:

a. Please respond to what extent do you agree or disagree with the following statement:

Overall, the checklist was easy to use.

strongly agree

agree

n

eutral

d

isagree

s

trongly disagree

b.

Please respond to what extent do you agree or disagree with the following statement:

The questions

were easy to understand.

strongly agree

agree

n

eutral

d

isagree

s

trongly disagree

* 1. Please write the question numbers (from Table 1), if any, which were difficult to understand.

* 1. Please respond to what extent do you agree or disagree with the following statement: The questions were easy to answer.

strongly agree

agree

neutral

disagree

strongly disagree

* 1. Please write the question numbers (from Table 1), if any, that were difficult to answer.

* 1. What made it difficult to answer these questions?

* 1. Does the checklist cover all the important aspects for high quality experiment research?

1. Please note for item with ID 1, in the first row of Table 1, will be the population used in the study and not a yes/no. [↑](#footnote-ref-2)