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PSYCHOLOGY ATAR – YEAR 12 2024

Unit 4

Task 7: Sleep Validation

Syllabus points

- Applications of psychology to health
- Ethical guidelines and practices for psychological research
- Formulating research
- Methodology
- Data collection
- Drawing conclusions
- Evaluation of research

Conditions

Reading time: 5 minutes

Working time: 40 minutes

Task Weighting

- 7%

Structure of this paper

Section	Number of questions available	Number of questions to be attempted	Suggested working time (minutes)	Marks	Score
Section One: Short Answer	5	5	40	41	
Total				41	

Part B

(41 marks)

1. Identify the following variables in your study.

(3 marks)

Independent

It was whether or not participants used electronic devices ~~before bed.~~ 30 minutes before bed.

Dependent

Individual's ~~These is variables~~ Cumulative hours slept, Sleep Quality ~~out of 10~~ and Cognitive functions ~~out of 10~~.

Controlled

Variables included age and data collection time and method ~~i.e subjective quantitative at 6am.~~ on a Wednesday.

2. The study you have conducted uses experimental design.

(a) Outline why it is considered experimental research.

(2 marks)

It is considered experimental research because the independent and control variables can be manipulated and changed. Therefore, because a relationship can be ^{also} analyzed and derived between the independent and dependent variable it is experimental.

(b) (i) Identify one feature of experimental research that is missing from this study. (1 mark)

The allocation of participants to control and experimental groups.

(ii) Explain why experimental research should have this feature.

(2 marks)

★ Experimental research should include allocation because it allows for researchers to develop two similar groups of participants, whose results can be compared. This increases the quality and amount of data that can be collected. In addition, it allows for researchers to identify the effect of confounding variables by ~~controlling~~ comparing the two.



add bit about controlling phone use to report.
↑ happier system.

sleep hygiene
- circadian rhythm
- quality & quantity
- blue light
- melatonin

3. Formulate an evidence-based conclusion that explains your findings using psychological theories and concepts.

(6 marks)

The results of this study showed that there was ~~an~~ ^{on average} ^{positive} increase of 20% in ^{mean} cumulative hours slept, sleep quality out of 10 and cognitive functions out of 10 when participants avoided use of electronic devices 30 minutes prior to sleeping. These findings are likely the result of increased production of melatonin. Electronic devices typically emit a type of light called blue light. Blue light inhibits the production of melatonin, a hormone that promotes sleep, through the disruption of the body's natural circadian rhythms. Circadian rhythms refers to a body's 24 hour sleep-wake cycle that among other things controls levels of melatonin. The prohibition of electronic devices ~~is~~ ^{can be} considered a positive sleep hygiene practice due to the evidence, i.e. 20% increase in cumulative hours slept, sleep quality and cognitive functions, demonstrating positive benefits. As such, the results support the hypotheses that the prohibition of electronic devices will increase 16 to 18 year olds cumulative hours slept, sleep quality and ~~the~~ cognitive functions as measured by the self-assessment recovery questionnaire. In conclusion, the prohibition of electronic device usage before bed is a good sleep hygiene practice, promoting sleep quality, quantity and day to day cognitive functions by as much as 20%.

4. The data was collected using a subjective quantitative measure.

(a) With reference to your study, outline a strength of this method of data collection. (2 marks)

A strength of this method is that it allows for easier analysis. This is due to its quantitative nature leading well to the creation of graphs in statistical analysis. Simply, it can be empirically and statistically analysed. For example, in your study it allowed for means and graphs to be created showing the relationship between variables.

(b) Suggest how qualitative data could be collected in a future study. (4 marks)

In the future qualitative data could be collected through surveys. Specifically, the addition of open ended questions to the self-assessment recovery questionnaire is likely to greatly aid this endeavor. This is because it allows for participants to qualitatively record their reactions. Alternatively, a checklist could be utilized including questions such as "Did you experience a nightmare?"

(c) Explain how qualitative data addresses a limitation of quantitative data. (2 marks)

A limitation of quantitative data is that it is close-ended and restricted to a simple series of numbers. Where as qualitative data allows for a greater range of typically more detailed data to be collected.

(d) Assess the reliability and validity of the subjective quantitative measure you created. (4 marks)

2m Reliability: It had relatively high reliability. This is because the method of data collection was standardized, allowing for it to be easily repeated.

2m Validity: It had a relatively low validity. This is because it relied on self-report systems. As such due to demand characteristics and social bias, there was a strong incentive for participants to manipulate their reported results so as to be seen more favourably. This heavily increases the risk of confounding variables.

5. Imagine we were going to run this study again but with the feature identified in 2 (b) (i) and a larger sample with the target population being high school students in Western Australia.

(a) Assess which sampling technique would be most appropriate to get a representative sample of all students in Western Australia. (3 marks)

Stratified Sampling is the most suitable. This is because it sources a ~~popu~~ sample by dividing the population into strata, groups with shared characteristics, and select proportionally from the strata to form a representative sample.

As such due to the student's being proportionally selected based on shared characteristics stratified sampling would be most suitable; rather than other methods such as random or snowball or convenience which do not consider proportion.

(b) You have already written a standardised procedure in a report that could be used in the future study. Explain the purpose of having these in the study. (3 marks)

The purpose of standardised procedures is to ^{increase} ~~allow for~~ reliability. As a standardised procedure is provided, the method can be replicated across multiple studies. However, if it was not given ^{future}, studies would not be able to replicate it, and would have changes in their own procedure change their results.

Additionally, by treating each participant the same, validity is increased, by reducing the effect of the research actions on the individual as they introduce one the way to the study.

(c) Suggest how you would minimise the effects of extraneous and confounding variables other than having a standardised procedure. (3 marks)

In order to minimise these effects another solution is to increase the number of variables controlled. In doing so, the risk of extraneous and confounding variables are minimised because their potential effect has been minimised. For example, in screening for sleep disorders, a ~~can~~ potential confounding variable, and considering them in each study the average population due to their procedure an error may increase the validity of the experiment. This minimises the effects of the variables. The effects would be minimised because they have been adjusted and accounted for.

★ Privacy ★

★ Informed Consent

(d) Explain how you would address two ethical considerations. (6 marks)

One: Informed Consent: This refers to the ~~participants~~ ^{participant's} right to be informed of the potential risks and benefits, have all their ~~questions~~ ^{questions} answered within reason and agree to participate knowing what they are going into. As the sample studied includes minors, as well as making them aware of the intent of the study, answering their questions and gaining their consent, I will also do the same for their legal guardians.

Two: Privacy: This refers to participants' right to have their ~~identity~~ ^{questions} and personal details kept private and secret. One method of ensuring this is by only collecting anonymized data, devoid of identifying features. Another method is by ensuring that any potential identifying information collected is anonymized before publishing only group and publishing data as part of a group, rather than individuals' personal results and details. In implementing both, I would ensure that this ethical principle is considered.

ensuring informed consent is gained. If there is any individuals or guardians who's first language isn't English, I will employ use of a translator and translated resources to ensure that ~~the~~ ^{that} informed consent is obtained.