**Psychology Higher level Paper 3**

1 hour

**Instructions to candidates**

* Do not turn over this examination paper until instructed to do so.
* Read the passage carefully and then answer all the questions.
* The maximum mark for this examination paper is **[24 marks]**.

**The stimulus material below is based on a study about the relationship between sleep, smartphones and health.**

Nearly everyone has a smartphone these days and the amount they are impacting our health is becoming a common field of study. One thing they might affect is our sleep quality. In 2019, Wang et al. conducted a study to see if there was a relationship between sleep quality, smartphone dependence and health-related behaviours.

Participants were 409 female students at a junior college in Taiwan (average age 17.5 years old). One reason females were chosen for this study is that previous research has shown that they are more vulnerable to experiencing smartphone dependence and poor sleep quality compared to men.

A research assistant explained the aims of the study before obtaining informed written consent from the participants. The study was approved by the National Cheng Kung University Human Research Ethics Committee and the participants were told they had the right to withdraw at any time.

The researchers gathered their participants by using student information collected from the school’s database.\* They asked specific participants if they wanted to be in the study if they matched the following criteria: (a) owned a smartphone for more than six months, (b) did not work at night, (c) had no mental illness, (d) could communicate in Mandarin or Minnan dialect and (e) had no kids.

The participants filled out structured questionnaires so the researchers could gather data. The questionnaire had four parts:

1. Gathering basic data like age, body mass index, health habits like sleeping, smoking, drinking and hours of smartphone use.
2. Sleep quality was assessed.
3. Smartphone dependence was assessed.
4. Health-related behaviours were assessed, including diet, exercise, stress management, etc.

The researchers then conducted statistical analyses to see how the above factors were related to one-another.

The results showed that 95% of the girls regularly used their smartphones before going to sleep. Another result of the study was that there was a significant positive association between smartphone dependence and sleep quality, “with a greater the degree of smartphone dependence associated with shorter sleep length.” Another finding was that those students with good health-related behaviours (e.g. they eat healthy and exercise) had better sleep quality than others.

This study shows that there is a relationship between smartphone use and sleep quality. It also suggests both positive factors (e.g. healthy eating) and negative factors (e.g. smartphone dependence) can influence sleep differently.

Wang P-Y, Chen K-L, Yang S-Y, Lin P-H. (2019) Relationship of sleep quality, smartphone dependence, and health-related behaviors in female junior college students. PLoS ONE 14(4): e0214769. <https://doi.org/10.1371/journal>. pone.0214769

**Smartphone dependence:** *This was measured in the study by Referring to previous studies [38, 39], this part employed four items to gauge the degree of smartphone dependence: (1) I feel uneasy or anxious without a smartphone by my side. (2) I always involuntarily want to stare at my smartphone screen. (3) The first thing I do when I get up in the morning is to check whether there are any calls or text messages on my phone, and check social networking sites, such as Facebook and Line, for messages. (4) I continue to check my smartphone for calls or social networking messages while in class. The questions in this part were scored on a fivepoint Likert scale (from 1 = do not agree to 5 = completely agree; total score ranging from 4 to 20), with a higher score indicating a greater degree of smartphone dependence.*

*\*This detail has been added for the purpose of the assessment. The rest is taken from the real report.*

Answer **all** of the following three questions, referring to the stimulus material in your answers. Marks will be awarded for demonstration of knowledge and understanding of research methodology.

* 1. **Identify** the method used and **outline** two characteristics of the method. [3]
	2. **Describe** the sampling method used in the study. [3]
	3. **Suggest** an alternative or additional method giving one reason for your choice. [3]
1. **Describe** the ethical considerations that were applied in the study and **explain** if further ethical considerations could be applied.
2. **Discuss** the possibility of generalizing the findings of the study. [9]

**Mark Scheme**

* 1. **Identify** the method used and **outline** two characteristics of the method. [3]
* Correlational study.
* Characteristics:
	+ Tests strength of relationships between variables
	+ No IV and DV but uses co variables
	+ Calculates correlation coefficients

This study calculated Pearsons coefficients as well as regression scores. If a student gave a suitable justification for a natural experiment, I would accept it. However, it would not be accepted in exams.

* 1. **Describe** the sampling method used in the study. [3]
* Purposive sampling
* Characteristics:
	+ Researchers choose people with suitable characteristics
	+ Can involve snowball samples
	+ Researchers approach
	1. **Suggest** an alternative or additional method giving one reason for your choice. [3]
* Accept any well-justified answer.
* I only award 3 marks if they’ve given a reason but also clearly described HOW the method will be applied.
* Possible answers:
	+ Experiment: could have one condition with using a phone for an hour before napping and then use EEG or other measure to measure sleep quality
	+ Interviews: could use semi-structured interviews to find out if participants think there is a link between the two
	+ Case study: could find participants with heavy cell phone addiction and/or sleep problems to study the link.
1. **Describe** the ethical considerations that were applied in the study and **explain** if further ethical considerations could be applied.

Applied:

* Informed consent
* Approval from committee
* Right to withdraw

Additional

* Parental consent
* Anonymity
* Debriefing
1. **Discuss** the possibility of generalizing the findings of the study. [9]

Factors influencing generalizability that could be explained are:

* **Characteristics of the sample**
	+ Females
	+ Taiwanese
	+ Young
	+ No kids, no late work, etc.
* **Procedures**
	+ Construct validity of the questionnaires – they are self-report data.