Reading Descriptive Statistics - Answers

Below you will review presentations of descriptive statistics in published research. Often such information is presented in two locations within research reports, the Participants section and Results section. If in the participants section, such statistics are used to describe the sampled participants. If in the results section, the statistics are usually to describe data collected for variables studied.

(a) The next two sets of questions - (a) and (b) - use Hoffman and Nadelson's (2010) study.

Find the two paragraphs used to describe Participants in the Hoffman and Nadelson (2010) study. These two paragraphs are preceded with the sub-title "Participants and design."

Hoffman, B., & Nadelson, L. (2010). Motivational engagement and video gaming: A mixed methods study. *Educational Technology Research and Development*, *58*(3), 245-270.

http://www.bwgriffin.com/gsu/courses/edur7130/readingstudies/2010-Hoffman-Motivational-engagement.pdf

1. Which, and how many, variables are used to describe, statistically, the Participants in these two paragraphs?

A total of five variables used to describe study participants:
- **Years of College Education (M = 3.57)**
- **Race (African-American 4.2%, Asian 3.6%, Hispanic 12.1%, White 77.9%, Other 2.2%)**
- **Sex (75.3% female, 24.7% non-female)**
- **Age (M = 24.4)**
- **House per week playing video games**

2. What do the numbers 9.61 and 13.39 in the following sentence mean?

> "The total population of 189 was 75.3% female with an average age of 24.4 years who reported playing video games an average of 9.61 hours per week (M = 13.39, F = 8.35)."

Overall Females and Males, combined, averaged about 9.61 hours of video games per week.
Males played a mean of 13.39 hours of video games per week.

(b) Find Table 3 in the Hoffman and Nadelson (2010) study.

3. What is the difference between "Observed range" and "Possible range?"

It is common in research to use scales for which respondents do not provide scale minimum or maximum scores. These minimum and maximum scores are presented as the possible range for that scale. For example, in this course, EDUR 7130, tests are graded as percentage correct, so the minimum possible is 0% and the maximum possible is 100%. This does not mean students in a given section of EDUR 7130 will score the minimum or maximum.

The scores values obtained represent the Observed Range. For example, suppose on Test 1 in EDUR 7130 the lowest score obtained was 78% and the high score obtained was 98%. In this example, the "observed range" would be 78 to 98, and the "possible range" would be 0 to 100.

4. Did any variables measured demonstrate the same observed and possible ranges?

Yes, each of the following variables had obtained scores that equal the minimum possible and the maximum possible:

- **Performance orientation**
- **Ego scores**
- **Task scores**
- **Plays with others**

5. What do the symbols "n/a" and ∞ indicate in Table 3?

> **When measuring variables with scales often there are practical limits to the possible range, such as scores 1 to 5 for Likert items on a questionnaire, or 0% to 100% with percentage grading on a test. For example, we know from Table 3 that the variable Ego has scores that can range only from 6 to 30.**
> **For some variables there are no arbitrary, confined lower or upper limits, especially for a given sample of participants. The authors opted to report possible ranges for these variables as "n/a" (not applicable) because, likely, the authors were uncertain at the outset what they would find in the sampled participants in terms of age and years of college education. For Hours of play, they authors expected that some may not play, for whatever reason, so they reported the minimum Hours of play as 0, but they could not place an upper bound so they used the infinity symbol instead (∞).**

(c) Find Table VI in Davies and Brember (1999) study.

Davies, J., & Brember, I. (1999). Reading and mathematics attainments and self-esteem in years 2 and 6-an eight-year cross-sectional study. *Educational Studies*, *25*(2), 145-157.

http://www.bwgriffin.com/gsu/courses/edur7130/readingstudies/1999-Davies-Reading-and-Mathematics.pdf

6. How many and which variables are presented in Table VI?

Total of 13 variables presented, each identified below.
- **Cohort Year**
- **Pretest Data - 6 Scales**
  - **Raw Math**
  - **Standardized Math**
  - **Reading Score**
  - **Reading Age**
  - **Standardized Comprehension**
  - **Lawseq**
- **Posttest Data - 6 Scales**
  - **Raw Math**
  - **Standardized Math**
  - **Reading Score**
  - **Reading Age**
  - **Standardized Comprehension**
  - **Lawseq**

7. Which set of data displayed the most variability for Reading Scores?

Year 2, Pre-national tests had the highest standard deviation at 6.77 so that set of scores demonstrated the most variability as compared to Year 2 Post, Year 6 Pre, and Year 6 Post.

(d) Find Tables 1 and 2 in Mattox et al.'s (2005) study.

Mattox, K., Hancock, D. R., & Queen, J. A. (2005). The effect of block scheduling on middle school students' mathematics achievement. *NASSP Bulletin*, *89*(642), 3-13.

http://www.bwgriffin.com/gsu/courses/edur7130/readingstudies/2005-Mattox-Block-Scheduling.pdf

8. How many and which variables are presented in Table 1?

Six variables:
- **School (categories are A through E, and District mean)**
- **Average Daily Enrollment**
- **Racial composition (Black, Latino, White, Other - note these are categories, not variables)**
- **Percent eligible for Free/Reduced lunch**
- **Percent Academically/Intellectually Gifted**
- **Percent with Disabilities**

9. Among the following three variables in Table 1, which has the greatest range of values reported?

- **Percent eligible for Free/Reduced lunch**
- **Percent Academically/Intellectually Gifted**
- **Percent with Disabilities**

The percent eligible for free/reduced lunch had the greatest range at 57 = 60 - 3.

10. How many and which variables are presented in Table 2?

Seven variables:
- **School (categories are A through E, and District mean)**
- **Total number of teachers**
- **Number of teachers with National Board Certification**
- **Percent of teachers who are fully licensed**
- **Percent of teachers with advanced degrees**
- **Years of teaching experience (with three categories, 0-3, 4-10, 10+)**
- **Teacher Turnover Rate in Percentage**

11. Which schools have teacher turnover rates below the district average?

Schools B C and D.

12. Which schools have total number of teachers below the sample average?

School A and B.

13. How can the district average for total number of teachers differ from the sample average?

There are schools in the district that were not sampled and including their numbers with those sampled changes the district average from the sample average.