AS2: Choosing the Appropriate Hypothesis Test

SECTION I:

SCENARIO #1

A researcher hypothesizes that background music will have an effect on classroom performance. He selects a sample of n=50 students and randomly assigns the sample to either a non-music condition or a meditative music condition. He measures performance and is ready to analyze the data to conclude whether or not the data support his hypothesis.

What is the appropriate test? _____

Why did you choose this test?

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SCENARIO #2

Childhood participation in sports, cultural groups, and youth groups appears to be related to improved self-esteem for adolescents. In a representative study, a sample of n= 100 adolescents with a history of group participation is given a standardized self-esteem questionnaire. For the general population of adolescents, scores on this questionnaire form a normal distribution with a mean of $\mu = 50$ and a standard deviation of $\sigma = 15$. The sample of group-participation adolescents had a mean of M= 54.

What is the appropriate test? _____

Why did you choose this test?

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SCENARIO #3

Researchers have noted a decline in cognitive functioning as people age. However, the results from other research suggest that the antioxidants in foods such as blueberries may reduce and even reverse these age-related declines. To examine this phenomenon, suppose that a researcher obtains a sample of n=16 adults who are between the ages of 65 and 75. The researcher uses a standardized test to measure cognitive performance for each individual. The participants then begin a 2 month program in which they receive daily doses of a blueberry supplement. At the end of the 2-month period, the researcher gain measures cognitive performance for each participant.

What is the appropriate test?

Why did you choose this test?

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SCENARIO #4

When people learn a new task, their performance usually improves when they are tested the next day, but only if they get at least 6 hours of sleep. A researcher has a set of data that demonstrates this phenomenon. He had participants learn a visual discrimination task on one day, and then tested them on the task the following day. Half of his participants were allowed to have at least 6 hours of sleep and the other half of his participants were kept awake all night.

What hypothesis test did the researcher likely use to analyze the data?

Answer: _____

Why did you choose this hypothesis test?

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SCENARIO #5

Researchers wanted to investigate whether soccer players (who can sometimes get hit in the head with the ball) suffered any neurological deficits. These researchers measured neurological deficits in soccer players and compared the soccer player data to the data of non-soccer players believed to not engage in any other activity that could deliver blows to the head. The researchers did find significant differences between the soccer players and the non-soccer players.

What hypothesis test did the researchers most likely use to analyze the data?

Answer: _____

Why did you choose this hypothesis test?

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SCENARIO #6

A researcher was interested in studying whether watching television, especially medical shows such as Grey's Anatomy and House, can result in increased concern about personal health. She randomized a sample of n=75 to three conditions: little or none medical show television watching, moderate medical show television watching, and substantial medical television watching for six months. After six months, all participants were measured on a hypochondriac scale.

What hypothesis test should the researcher use to analyze her data?

Answer: _____

Why did you choose this hypothesis test?

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SECTION II:

This section requires that you choose the appropriate hypothesis test for each data set, run the test on SPSS, and write up your conclusions in APA format.

1. Analyze the following data from a randomized two group experiment, using the appropriate hypothesis test:

Control	Experimental
2, 3, 5, 7, 4, 3, 2, 1, 5, 3,	4, 6, 5, 7, 8, 9, 7, 6, 8, 7

Cut and paste your SPSS results here:

Write up your research results here:

_____
_____
_____
_____

2. Analyze the following data from a within-subjects design measuring heart rate before and after watching a horror film:

Before	After
60	70
72	74
75	78
80	85
71	78
62	65
64	72

Cut and Paste your SPSS results here:

Write up your research results here:

_____
_____
_____
_____

3. Analyze the following data from a randomized experiment that examined the effect of hours of sleep on happiness.

6 hours	8 hours	10 hours
18	6	4
13	11	9
19	7	5
12	9	6
16	8	5
12	13	7

Cut and paste your SPSS results here:

Write up your research results here:

_____
_____
_____
_____