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DSCI549 - HW6

1. Hypothesis: Females (gender assigned at birth) are more talkative than males
    a. No, this hypothesis is not suitable for the experimental method because gender assigned at birth is a pre-existing, non-manipulative variable. Assigning participants a gender for the sake of the experiment would be neither ethical nor feasible.
    b. The independent variable is gender assigned at birth (male/female) and its operational definition is gender recorded based on self-report or birth certificate sex.
    c. The dependent variable is talkativeness, which is the number of words spoken in a given setting, such as a 30-minute group discussion.
    d. The optimal statistical test is an independent sample t-test, which is appropriate for comparing the means of two independent groups on a continuous outcome.
2. Hypothesis: People learn more when they study in a quiet versus noisy place.
    a. Yes, the experimental method would work for this hypothesis as the environment can be randomly assigned, making this a true experiment.
    b. The independent variable of study environment (quiet versus noisy) can be defined as participants randomly assigned to study in a library-like quiet setting or noisy environment.
    c. The dependent variable is the learning outcome, which could be a test score on material studied during the session.
    d. The statistical test would be an independent sample t-test, comparing the mean learning outcomes between two independent groups exposed to different environmental conditions.
3. Hypothesis: Exercising moderately for 30 minutes in a given day helps you sleep better that night.
    a. Yes, the experimental method would work for this hypothesis because participants can be randomly assigned to either a 30-minute moderate exercise group or a control group that does not exercise.
    b. The independent variable is moderate exercise (just a yes versus no), which would be defined by 30 minutes of moderate-intensity cardio, such as jogging or cycling.
    c. The dependent variable is sleep quality at night, which is measured using sleep trackers or validated surveys.
    d. The statistical test would be independent samples t-test, allowing comparison of sleep quality between those who exercised and those who didn't.
4. Hypothesis: People who believe they will die soon are less likely to delay gratification.
    a. No, it would be unethical to manipulate someone's belief about their own death, so the best method to use to test this hypothesis would be a correlational approach.
    b. The independent variable is perceived proximity to death, measured using a self-report scale assessing mortality salience or perceived life expectancy.

    c. The dependent variable is the willingness to delay gratification, defined by a behavioral task offering choice between smaller-sooner versus larger-later rewards.
    d. The statistical test would be a Pearson correlation or simple linear regression, depending on whether the independent variable is continuous. These tests assess the relationship between beliefs about death and delay of gratification.
5. Hypothesis: Sex before marriage improves the marriage.
    a. No, the experimental method would be unethical and impractical to assign individuals to engage or not in premarital sex.
    b. The independent variable is whether or not the individuals have had premarital sex, which would be measured by a self-report.
    c. The dependent variable would be marriage quality, defined by marriage satisfaction score using a validated scale like the Dyadic Adjustment Scale or something similar.
    d. The statistical test would be an independent sample t-test since the independent variable is binary (yes or no).