Topic 1: Single-Factor Designs

For each of the following, identify the independent variable and its levels, and the dependent variable. For the independent variable, indicate whether it is (a) a between- or a within-subjects variable, and (b) a manipulated or a subject variable. For the dependent variable(s), identify the measurement scale. Finally, identify the experimental design for each study. When you have completed the identification phase, check your answers and process and correct any errors.

In a study of food preferences, participants taste a series of six different rice dishes, each seasoned differently, and rate each (on 5-point scales) for (a) intensity of the taste and (b) the pleasantness of the taste.

Answer: IV: food type (levels = the six different types of rice)

within-subjects; manipulated

DV: ratings for intensity and quality (both interval)

Design: single-factor, multilevel, repeated-measures design

**Post:**

I have to admit that after completing this assignment I was quite happy to discover that the course content provided enough information thus far to allow me to successfully do this assignment with some ease. I did make one tiny error, which was an oversight on my part, but after seeing the answer realized it was a simple mistake. That situation came in question 3, which is the one I spent the most time and consideration on.

Food preference study, which compares the intensity and pleasantness of taste between six dishes of rice and seasoning via a 5-point scale. Since the researchers interest revolved around the rice and seasoning they were easily identifiable as the independent variable, which was manipulated each time. The variable itself was a within-subject variable as it depended on their preference of taste and how participants rated the dish on the 5-point scale. The rating itself was the dependent variable and both dependent variables relied on the intensity and pleasantness according to the participant.

This specific test was a single-factor design, but since it consisted of six dishes it was a repeated measure design. The measurement scale was an interval scale as opposed to an ordinal scale since the dishes were scored and not ranked (Goodwin, 2010).

References:

Goodwin, C. (2010). Research in Psychology: Methods and design (6th ed.). John Wiley & Sons.

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Topic 2: Factorial Designs

For each of the following descriptions, identify the independent and dependent variables (and the measurement scale for the dependent variables), indicate the levels of the independent variables and their attributes (between- or within-subjects; manipulated or subject; if manipulated, situational, task, or instructional), and identify the type of factorial design, including the notation system (e.g., 2x3).

Include the rationale for your choices and discussion of any features that you had trouble identifying.

In a cognitive mapping study, a researcher wants to determine if experience on campus and building usage will help students identify the locations of buildings on campus. A map of the campus is prepared that includes only the border of the school and the location of the psychology building (the experiment takes place in the psych building). Participants (freshman and sophomores, who are assumed to differ in overall familiarity with the campus) are asked to mark on the map the locations of three campus buildings that are assumed to vary in frequency of usage: the chapel (least visited), the gym (intermediate), and the dining hall (most visited). After placing each location on the map, participants indicate how confident they are of their decision (1-5 scale).

Answer: IV#1: class (freshman, sophomore)

between-subjects; subject variable

IV#2: campus location (chapel, gym, dining hall)

within-subjects; manipulated variable; task

DVs: location accuracy (ratio); confidence (interval)

Design: 2x3 PxE mixed factorial design

**Post:**

IV1: university level (freshman or sophomore)-- between subjects, subject variable

IV2: map locations (chapel, gym, dining hall)—within subjects, manipulated, task variable

DV: actual location (ratio), confidence (interval)

Design: 2x3 mixed PxE factorial design

I found these much more challenging than the single factor experimental design questions. I was originally incorrect on my design choice: I said it was a 2x3 non-equivalent groups design; however, this is mostly in part to me skimming through the text too quickly and not understanding what P & E designs were. I thought any design which had opposing designs (between subjects and within subjects) was considered non-equivalent. Wrong. Non-equivalent simply meant that the groups were not matched based on ability or some other factor; this does not apply for this example. So, once I figured out that participant by environment (PxE) variables was the right choice, then I had to figure out the difference between mixed and non-mixed PxE. Gratefully, there is an amazing graph on pg. 271 of the text which was extremely helpful. It asks if the IVs are between or within subjects; if there is one of each, then you answer if the between subject variable(s) are classified as manipulated or subject variables (Goodwin & Goodwin, 2013). If it is a subject variable (like it is in this example) then it is a mixed PxE factorial. If it is manipulated, then it is only a mixed factorial. I will definitely be bookmarking this page for future reference!

References

Goodwin, C. J. & Goodwin, K. A. (2013). Research in Psychology: Methods and Designs (7th ed.). John Wiley & Sons.

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**Topic 3: Correlational Research**

As a researcher, suppose you are interested in the extent to which biological factors are associated with shyness in females. Assume you have access to 20 adopted children, all females, and you give each a shyness test. The test yields scores from 0-20 and the higher the score, the greater the degree of shyness. You also test the biological mother and the adoptive mother.

**Post:**

Correlational research indicates whether two variables are associated or related to one another. If it has positive correlation, it means that two variables have positive relationship with one another. For instance, when one variable scored high, then the other variable would score high. On the other hand, the two variables can have negative correlation. Two variables would be opposite to each other. When one variable scored high, then the other variable would score low. Through examining the correlations between two variables, researchers are able to study the relationship between two. If we found that more study hours indicate higher grade point average (gpa), then we can claim that study hours and gpa has positive correlation. If more goof-off hours indicate lower gpa, then good-off hours and gpa have negative correlation (Goodwin & Goodwin, 2013). With strong correlations, the predictions about behaviour can be made. Also, since correlation study do not have a control group and an independent variable to manipulate, it is easier for experimenters to conduct a research. The primary weakness is the relationship between two variables might not be clear- whether they happens one after the other. Also other variables might be undertaken in correlational research.

For shyness to be at least partially inherited, there should be a positive correlation between the shyness scores of biological mother and the adopted children. Since positive correlation shows 0.00< r ≤ 1.00 and the shyness is concluded as ‘partially inherited’, correlation coefficient (r) can be around 0.5.

For shyness seems to be primarily a function of the environment, there should be negative correlation between the shyness scores of biological mothers and the adopted children but positive correlation between the adoptive mothers and adopted children. For the negative correlation, negative correlation coefficient (r) would be -1.00≤ r <0.00. Since shyness is primarily a function of the environment, the negative correlation coefficient would be close to -1.00 between biological mothers and the adopted children. On the other hand, the correlation coefficient between the adoptive mothers and adopted children would be close to 1.00.

Goodwin, C.J. & Goodwin, K.A. (2013). Research in psychology: methods and designs (7th ed.). John Wiley & Sons.

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