**PrepGuide/IT-5**

Based on Heath, Ch. 9 (211-230)

**NAME:**

**IMPORTANT:** Deposit a Microsoft WORD document on Moodle in the space provided. We cannot read or accept ANYTHING else, not .pages, not pdfs, nothing else.

**Directions:** Please type your answers below each question. PLEASE leave the question in the document, spacing as needed. *Use your own words*. Recall, we are not as interested in “the correct answer” as we are in clear evidence of the *effort and thoughtfulness* of your attempt. You may be brief, yet still thorough. Try your best.

**1.** For each of these factorial designs, indicate the number of IVS, the number of levels of each IV, and the number of cells in the design What does it mean if you have a:

a. 2 x 2

b. 3 x 4

c. 2 x 2 x 3

**2.** Does reading the Harry Potter books encourage tolerance? It depends. Italian fifth graders were (randomly) split into two groups. Half the students met with researchers and discussed passages from the Harry Potter books that handled prejudice, while the others talked about unrelated sections. They also assessed (with a standard measure) participants’ level of identification with Harry Potter and classified them as either those who highly identified with Potter, or did not (low identification). After reading the passages, participants’ level of (implicit) prejudice toward immigrants was measured. \*\*The data below are fabricated but match the actual results. *\*Higher numbers mean lower prejudice (more positive attitudes/acceptance).*

|  |  |  |  |
| --- | --- | --- | --- |
| **Posttest attitudes toward immigration (7-pt scale)** | **Discussed prejudice-related sections** | **Discussed unrelated sections** | **Marginal Means for Identification** |
| High identification w/ Harry | 6.2 | 5.0 |  |
| Low identification w/ Harry | 4.2 | 4.4 |  |
| Marginal Means for Type of Discussion |  |  |  |

A. What are the IVs in this study?

B. What’s the design type? That is, is it between-subjects, within-subjects, or mixed and what is the proper factorial notation? (Use an x in your answer.)

C. Compute marginal means (you just average them) and include those in the boxes above

D. Assume any difference between marginal means more than 1 is significant. If so, describe in words the two main effects. Use this pattern: There is [is not] a main effect for IV#1 (put that name in), such that \_\_\_\_\_\_\_\_\_\_.” In the blank you’d write, such that one was higher/lower than the other (more or less prejudice). You’ll do this for BOTH main effects.

E. Assuming the interaction is significant try to explain it in words. See the notes below and your text to help with this. No needs to use numbers – just describe it. It may help you to draw a line graph, but you not have to do so.

**Below are notes in case you need them to help you explain main effects and interaction.**

**If not, you can stop here.**

***Main effects:***

* Remember, when you are describing a main effect, you are focusing on only ONE IV at a time and comparing the marginal means for that one IV.
* A useful heuristic way to phrase the outcome for a main effect is, “There was a main effect for Variable X on the DV, such that those in Level A of that variable X (had more, less; expressed higher, lower, etc. – whatever the DV is here) than did those in Level B of variable X*). For MAIN effects you do NOT use cell means; you must use marginal means (the cell means averaged) – rows and columns.*

***Interactions:***

* Describing interactions is more challenging than describing main effects, but we also have a few tricks to help here.
* One quick way to ***estimate*** (not to know for sure) whether a significant interaction may be present is to use graphs. (The only way to know for certain is to look at a statistical analysis.) In a line graph, if the two lines are NOT parallel, you may have an interaction present.
* IMPORTANT: Another tip to keep in mind is that when you are trying to describe an interaction, *you almost always have to refer specifically to ALL the levels of all your variables – that is all four cells in a x 2 x2. If you have a 2 X 2, you’ll need to refer to four data points (in words). In other words, when you describe interaction you DO NOT use marginal mean. You must use the cell means.*
* One way to describe an interaction in words is to start with one level of the first IV and explain what is happening with the 2nd IV, and then move to the next level of the first IV and do the same thing. If you follow this general pattern, you’ll be well on your way. Just as with main effects, you may explain an interaction more than one way.

For example, look at the graph below, which depicts data from a study on how product package size (large versus small bottles of detergent), which is IV #1 and price (on sale versus not on sale, IV #2) influences how much consumers use of a product (how much people poured for a load of laundry), which is the DV.

* ***How would you explain this effect?*** Let’s use our heuristic above. Again, the heuristic is to describe what is happening at one level of the first IV and explain what is happening with the 2nd IV, and then move to the next level of the first IV and do the same thing. So, here’s how to do that:
  + Participants used more detergent when they poured from a *small bottle* that was on sale than when the *small bottle* was regular price. However, when people poured from a *large bottle*, they poured the same amount of detergent when *it (the large bottle)* was on sale as when it was regular price.
  + And again 🡪 When people poured from the *small bottle (one level of the first IV)*, they poured more detergent when it was on sale *(one level of 2nd IV)* than when it was regular price *(second level of 2nd IV).* However, when people poured from a *large bottle (2nd level of the 1st IV)*, they poured the same amount of detergent when it was on sale (oen level of 2nd IV) as when it was regular price (second level of 2nd IV).
* In terms of the graph, notice here how I am making these comparisons. I start at the left side of the graph (small bottle), and then compare the means for the bottom (orange, solid line) to the top (blue, dotted line) within that level of the IV (for small bottles, what happened when the price was regular versus on sale). I then move to do the exact same thing, but for the other level of the bottle-size IV (large – right side of the graph).
* Yes, I could also have said it this way: When the detergent was *regular price*, people poured more from the large bottle compared to what they poured from the regular-priced small bottle. However, when the detergent was *on-sale*, there was little difference in the amount of detergent poured from large compared to small bottles.
  + In terms of the graph, notice here how I am making these comparisons. I start with eone line (the orange, solid line) and comapre the points at each end of that line. That is, I start with one level of the sales-price varialbe (regular) and compare what happens when people pour from large versus small bottles. I then move to do the exact same thing, but for the other level of the sales-price IV (on-sale – the blue, dotted line).

\*\*If you want more help, check out this video: <http://www.thepsychfiles.com/2008/03/episode-52-repost-research-design-part-2-factorial-designs/>