

Practice Exercises

1. What is a main effect in Factorial ANOVA?
2. What is an interaction effect in Factorial ANOVA?
3. Why is the main effect of an Independent Variable for a given Dependent Variable in Factorial ANOVA generally larger than if we tested the same Independent and Dependent variables in a One-Way Anova.
4. Interpret the charts of plotted means in Figure 13.17. Determine whether the main effects and interaction effect are likely to be significant.

Figure 13.17 Practice Exercise 4

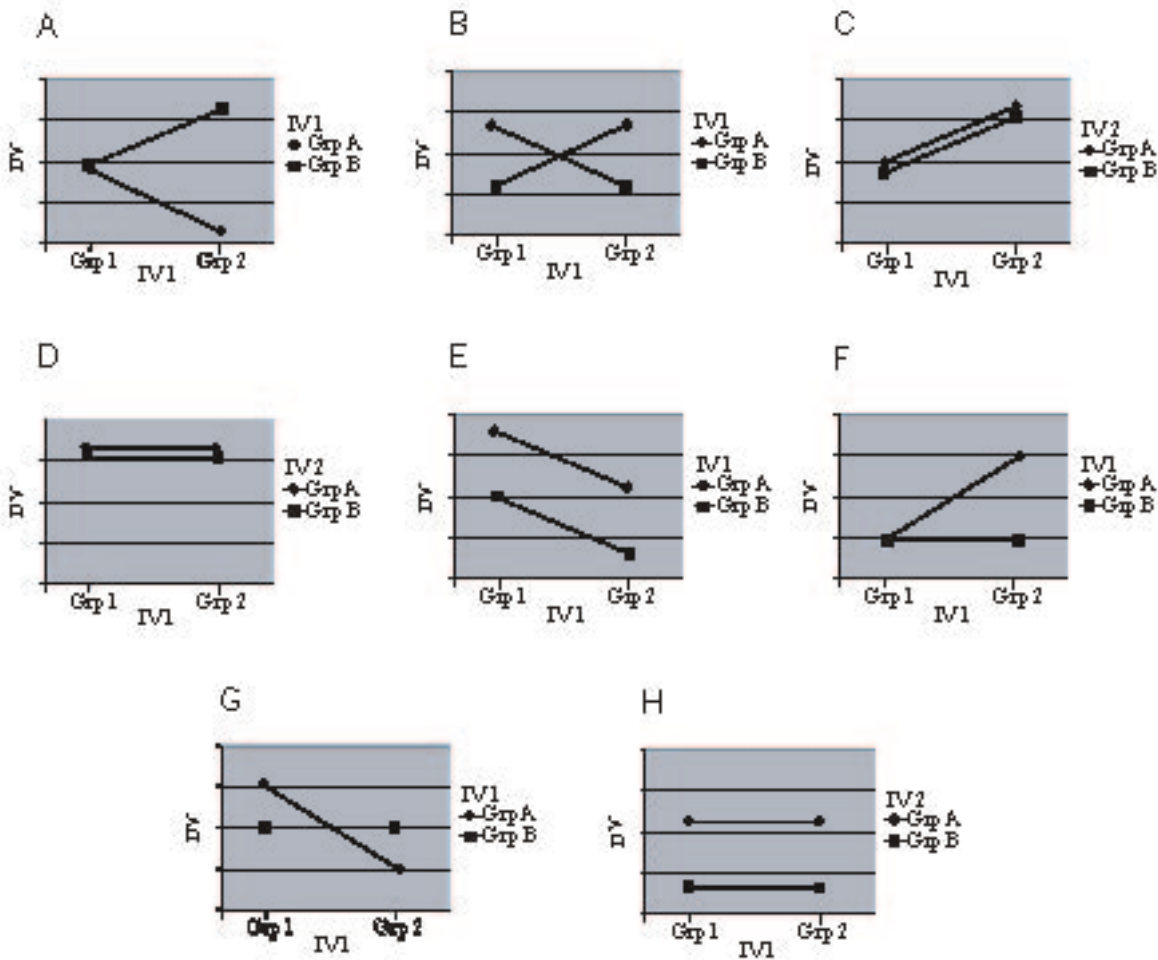


Table 13.11 South Park and Cursing Data Summary Table

Number of Cheezy Poofs Eaten, Separate by Viewing Condition and Beliefs Regarding Cursed Words

(n = 20)		<i>Watched South Park</i>		<i>Watched Cosby Show</i>		
	<i>s#</i>	$X_{.11}$	$X^2_{.11}$	<i>s#</i>	$X_{.21}$	$X^2_{.21}$
<i>Believe</i>	X_{111}	15	.	X_{121}	5	.
<i>In</i>	X_{211}	13	.	X_{221}	2	.
<i>Cursed</i>	X_{311}	12	.	X_{321}	1	.
<i>Words</i>	X_{411}	10	.	X_{421}	1	.
	X_{511}	10	.	X_{521}	0	.

	<i>s#</i>	$X_{.12}$	$X^2_{.12}$	<i>s#</i>	$X_{.22}$	$X^2_{.22}$
<i>Do Not</i>	X_{112}	6	.	X_{122}	13	.
<i>Believe</i>	X_{212}	1	.	X_{222}	12	.
<i>In</i>	X_{312}	1	.	X_{322}	12	.
<i>Cursed</i>	X_{412}	1	.	X_{422}	11	.
<i>Words</i>	X_{512}	0	.	X_{522}	11	.

5. Using another example involving South Park, assume that a researcher wanted to know whether watching South Park will increase the frequency with which individuals use curse words. Further, she suspects that such a relationship may depend on whether one actually believes that such words are in fact cursed or viewed as rightfully taboo by society. From a population of university freshmen, a sample of 20 students were drawn and randomly split into two groups of 10. Half the students were exposed to 24 hours of South Park episodes, while the other half watched reruns of the Cosby Show. Also, beliefs regarding cursed words were assessed and participants further were split into groups accordingly (Believers and Non-Believers). Further, after the 24 hour viewing session the researcher conducted a 25 minute structured interview regarding attitudes toward Cheezy Poof, where the frequency of curse word usage was recorded. Table 13.11 presents the results in an incomplete data summary table.

- Using SPSS conduct a Factorial ANOVA.
- Determine whether either of the Main Effects are significant and report the results in APA format. Interpret the results including the post hoc analyses where appropriate (i.e., if any, which group within each IV cursed significantly more or less than the other group).
- Determine whether the interaction is significant and report the results in APA format. If significant, interpret the interaction.
- Plot the sub-group means in a line chart.

Table 13.12 Subliminally Primed Food Wearing Data Summary Table

Frequency of Food Wearing, Separate by Stimulus Duration and Type of Food Primed.

(n = 36)

		<i>100 ms</i>		<i>1000 ms</i>		
	<i>s#</i>	$X_{.11}$	$X^2_{.11}$	<i>s#</i>	$X_{.21}$	$X^2_{.21}$
<i>Pickles and Spam</i>	X_{111}	14	.	X_{121}	7	.
	X_{211}	13	.	X_{221}	6	.
	X_{311}	11	.	X_{321}	5	.
	X_{411}	10	.	X_{421}	5	.
	X_{511}	8	.	X_{521}	3	.
<hr/>						
	<i>s#</i>	$X_{.12}$	$X^2_{.12}$	<i>s#</i>	$X_{.22}$	$X^2_{.22}$
<i>Mangos and Guac</i>	X_{112}	20	.	X_{122}	15	.
	X_{212}	19	.	X_{222}	12	.
	X_{312}	17	.	X_{322}	10	.
	X_{412}	17	.	X_{422}	10	.
	X_{512}	16	.	X_{522}	9	.
<hr/>						
	<i>s#</i>	$X_{.13}$	$X^2_{.13}$	<i>s#</i>	$X_{.23}$	$X^2_{.23}$
<i>Mackerel and Bacon</i>	X_{113}	13	.	X_{123}	12	.
	X_{213}	13	.	X_{223}	12	.
	X_{313}	11	.	X_{323}	11	.
	X_{413}	9	.	X_{423}	10	.
	X_{513}	8	.	X_{523}	9	.

7. Returning to cartoon 13.1, assume that Oliver Wendell Holmes has is now interested in testing whether other people can be subliminally forced to put other food items on their body or whether the effects are limited to pickles and spam. Further, assume that Oliver suspects that such effects may depend on the amount of time that the subliminal prime is presented (e.g. 100 milliseconds vs. 1000 milliseconds). From the population of a medium sized Midwestern town, Oliver drew a sample of 30 participants, which were split to 6 equal size groups. A third of the sample were exposed to the traditional pickles and spam picture primes. The second third was exposed to a pictures of people putting sliced mangos int their ears and wearing a guacamole mustache. The final third was exposed to pictures of people putting a giant mackerel in their pants and wearing a Canadian bacon necklace. Half of each of these groups was exposed to the primes for only 100 millisecond each time, a duration unlikely to trigger conscious awareness, while the other half of each group was exposed for a full second (1000 milliseconds), which people generally notice. In the 7 day period following the exposure, the frequency of wearing the relevant food items was recorded for each subject. Oliver’s results are presented in the incomplete data summary table found in Table 13.12.
- Using SPSS compute a Factorial ANOVA.
 - Determine whether either of the Main Effects are significant and report the results in APA format. Interpret the results including the post hoc analyses where appropriate (i.e., if any which group within each IV wore significantly more or fewer food items than the other group).
 - Determine whether the interaction is significant and report the results in APA format. If significant, interpret the interaction.
 - Plot the sub-group means in a line chart.