PSYC 5143
Spring 2024
Problem Set #10

This is due at 2:00 p.m. on Monday, April 22 on Blackboard, preferably in an R file.

1) An experimenter asks subjects to read a story about an incident and to rate how much the major character in the story is to blame for the events described. Four stories are constructed by modifying the same basic plot. In two of the four stories the events are intentional, and in two they are accidental (factor A); for one of each set of two, the consequences are minor, and for one serious (factor B). Eight subjects reach each of the four stories (in a different random order to try to control for carryover effects) and rates them for how much blame should be assigned to the major character, on a scale from 0 (completely blameless) to 20 (completely to blame). The data are below and are replicated in blame.csv.; they're in long form, but *might* best be in wide form for part b. Before asking me for help, see if you can get `pivot_wider` to work to take this long form data to pivot it to wide form.

	accidental (A1)		intentional (A2)	
Subject	minor (B1)	serious (B2)	minor (B1)	serious (B2)
a	9	10	17	9
b	9	7	16	8
c	1	9	14	12
d	4	11	18	16
e	3	13	12	13
f	4	14	13	13
g	5	5	17	11
h	5	5	16	9

   a. Carry out the omnibus two-factor repeated-measures ANOVA on these data; use `ezANOVA` or `aov_ez` (or some other package and function you like). Report the *F*-ratios (or *t* values, with *df*s and *p*-values) for each effect – the main effects and the interaction – along with a very brief interpretation of each effect based on the marginal or cell means. The results may not be especially sensible.

   b. You should find that the interaction is significant. Perform single-*df* contrasts (i.e., paired-sample *t*-tests or single-sample *t*-tests based on difference scores; please briefly note – in your mind! – that these *are* simple effects tests) to compare accidental vs intentional separately for the minor and the serious conditions to explore the interaction. Assuming that these two contrasts were planned, use the Bonferroni procedure to determine statistical significance, report *F* (or *t*), the correct *df*, the *p*-value, and a brief conclusion.

   c. Fit the data using a linear mixed model (that is, fit `lmer(blame ~ A*B, data = d)`; make sure that A and B are factors). Compare the summary (the *F*-ratios and the *SS* values in particular) for this analysis compared to that in part a. What's different? What's the same?