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Module 5
Discussion Reply

I agree with your methodology for including indicator variables to replace the categorical variables in the model. My model is almost the same with some minor differences. A minor difference is that for x_2 I swapped the "yes" and "no." I also swapped around the variable indices x_1 and x_3 to avoid using something like x_{11} and x_{12} to help make the indicator variable easier to notice. The result is that I used x_3 and x_4 in place of x_{11} and x_{12}, while also moving the quantitative variable to x_1. A major difference however is that I notice you included all the interaction terms. I wasn't sure if this was needed so I skipped it. I mentioned however that an assumption is that the first-order model is sufficient, while also stating that additional terms could be added to reflect interaction effects in the model.

When I was working on this problem, I was looking through the textbook and thought of an answer that seemed to reflect my understanding of the problem. I think it was pretty obvious what to do given the many examples, but I was a bit unsure since it seemed maybe too simple. I admit that I checked the discussion and saw your response to confirm that the methodology of showing different regression models corresponding to all six combinations of levels was correct. Something extra that I did was that I stated the test statistic for the partial F test more explicitly, including the formula and some other details. Furthermore, I understood the problem as being two-part. Therefore, I tried to say explicitly the hypothesis test for the case of x_3's impact on y, and then expand on it by discussing the impact given the other levels of x_1 and x_2. I suppose that you are able to answer both questions by mentioning that you can do a partial F test to test individual regression coefficients. This does seem to imply both "parts" of the question that I had originally interpreted.