

THOUGHT EXPERIMENTS FOR MODERATED MODERATION

This document presents a thought experiment for *moderated moderation*, which maps onto a three way interaction in a three factor design. In this case, there are two moderator variables, not one. We give special labels to the four variables involved. As is conventional, X is the focal independent variable, Y is the dependent variable or outcome variable, Z is a *first-order moderator variable*, and Q is a *second-order moderator variable*. The first-order moderator is the variable that is conceptualized as directly moderating the effect of X on Y . The second-order moderator moderates this moderating effect. An example will make this clear.

Let us use our example in the main text where we examined gender differences (X) in relationship quality between mothers and their adolescent child (Y) as moderated by grade (Z) to illustrate moderated moderation. The theory was that gender differences in relationship quality would be stronger for eighth graders than for seventh graders. The following table of hypothetical means was generated, with the two way interaction contrast beneath it (see the main text):

	Grade 7	Grade 8
Female	6.0	6.0
Male	5.0	4.0

$$IC_1 = (6 - 5) - (6 - 4) = -1$$

The gender difference is indeed larger for eighth graders, as reflected in the interaction contrast value of -1 . Suppose that the above table is based solely upon European Americans living in the United States. For Latinos, the table of hypothetical means might look as follows:

	Grade 7	Grade 8
Female	6.0	6.0
Male	6.0	6.0

$$IC_2 = (6 - 6) - (6 - 6) = 0$$

For Latinos, the interaction contrast indicates that the gender difference does not vary as a function of grade. Thus, it appears that the moderating effects of grade depend on the ethnicity of the family. For European American families, grade moderates the effect of

gender on relationship quality, whereas this is not true for Latino families. We can formalize this finding by computing the difference between the two interaction contrasts

$$\text{TWIC} = IC_1 - IC_2 = -1 - 0 = -1$$

where TWIC stands for *three-way interaction contrast*, IC_1 is the interaction contrast value for level 1 of Q (European Americans), and IC_2 is the interaction contrast value for level 2 of Q (Latinos). We use the term “three-way interaction contrast” because the comparison maps onto a three-way interaction in traditional analysis of variance.

The important point is that, theoretically, we are suggesting that the qualifying effects of grade on gender differences in relationship satisfaction differ depending on ethnicity. Note that one could, in principle, suggest a third-order moderator variable in which the qualifying effects of Q are moderated by yet another variable, W . For example, the above dynamics may occur for low-socioeconomic-status families but not for high-socioeconomic-status families. This finding would map onto a four-way interaction in traditional analysis of variance models.