Example Exercise 2

Scenario:

A pediatric obesity researcher is interested in developing an intervention for families in which a child is obese. The researcher wishes to estimate the effects of five intervention components: (1) **activity**, aimed at increasing family physical activity levels; (2) **education***,* nutritional education for parents and children; (3) **dinner***,* aimed at increasing frequency of homemade family dinners; (4) **veggie**, a component aimed at increasing the target child’s vegetable intake; and (5) **checkup**, a home visit in which the nutritional habits of the household are reviewed and suggestions are made for healthier eating. The researcher decides to use the $2^{5} $factorial design for the experiment. Each of the first four factors has 2 levels: *yes* (Y; in other words, the family receives the intervention component) and *no* (N; the family does not receive the intervention component). The last factor, checkup, has the following 2 levels: *minimal* (home visits occur once per month) and *intensive* (home visits occur biweekly). The participants in this study are 256 families with obese four-year-old children. The outcome variable is percent change from pretest to posttest in the child’s body mass index.

Below are the results of the ANOVA. Use these results and the accompanying interaction plots to practice the decision-making procedure within the MOST framework. Assume the goal is to build an intervention with no inactive components.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Parameter** | **Estimate** | **t** | **p** | **MSE** | **Cohen's d** |
| Intercept | -4.137521019 | -33.87 | <.0001 | 3.820959 |  |
| VEG | -1.673004189 | -13.69 | <.0001 |  | -1.711751966 |
| ACT | 0.166661031 | 1.36 | 0.1739 |  | 0.170521 |
| EDU | -2.854207152 | -23.36 | <.0001 |  | -2.920312295 |
| DIN | -2.280084 | -18.66 | <.0001 |  | -2.332892108 |
| CHK | 0.192795407 | 1.58 | 0.116 |  | 0.197260664 |
| VEG\*ACT | -0.003898778 | -0.03 | 0.9746 |  | -0.003989076 |
| VEG\*EDU | 0.060338193 | 0.49 | 0.6219 |  | 0.061735662 |
| VEG\*DIN | -0.979264064 | -8.02 | <.0001 |  | -1.001944405 |
| VEG\*CHK | -0.019557983 | -0.16 | 0.873 |  | -0.020010958 |
| ACT\*EDU | 0.164065744 | 1.34 | 0.1807 |  | 0.167865605 |
| ACT\*DIN | -0.0198071 | -0.16 | 0.8714 |  | -0.020265844 |
| ACT\*CHK | -0.158384751 | -1.3 | 0.1962 |  | -0.162053036 |
| EDU\*DIN | 0.191254086 | 1.57 | 0.1189 |  | 0.195683645 |
| EDU\*CHK | -1.488763411 | -12.19 | <.0001 |  | -1.523244061 |
| DIN\*CHK | -0.015334082 | -0.13 | 0.9002 |  | -0.015689229 |
| VEG\*ACT\*EDU | -0.130156611 | -1.07 | 0.2879 |  | -0.133171116 |
| VEG\*ACT\*DIN | -0.037843871 | -0.31 | 0.757 |  | -0.038720358 |
| VEG\*ACT\*CHK | -0.140184766 | -1.15 | 0.2524 |  | -0.143431529 |
| VEG\*EDU\*DIN | 0.112895442 | 0.92 | 0.3564 |  | 0.115510168 |
| VEG\*EDU\*CHK | -0.111521484 | -0.91 | 0.3623 |  | -0.114104388 |
| VEG\*DIN\*CHK | -0.096108311 | -0.79 | 0.4323 |  | -0.098334237 |
| ACT\*EDU\*DIN | -0.165876074 | -1.36 | 0.1759 |  | -0.169717863 |
| ACT\*EDU\*CHK | -0.025757863 | -0.21 | 0.8332 |  | -0.02635443 |
| ACT\*DIN\*CHK | 0.123047879 | 1.01 | 0.3149 |  | 0.125897741 |
| EDU\*DIN\*CHK | -0.47157491 | -3.86 | 0.0001 |  | -0.482496867 |
| VEG\*ACT\*EDU\*DIN | -0.256992765 | -2.1 | 0.0365 |  | -0.262944871 |
| VEG\*ACT\*EDU\*CHK | 0.256760213 | 2.1 | 0.0367 |  | 0.262706933 |
| VEG\*EDU\*DIN\*CHK | -0.127269691 | -1.04 | 0.2987 |  | -0.130217333 |
| VEG\*ACT\*DIN\*CHK | -0.148166145 | -1.21 | 0.2265 |  | -0.151597761 |
| ACT\*EDU\*DIN\*CHK | -0.175360182 | -1.44 | 0.1526 |  | -0.179421629 |
| VEG\*ACT\*EDU\*DIN\*CHK | -0.025679408 | -0.21 | 0.8337 |  | -0.026274158 |