

Example Summary

To determine whether family SES and student achievement (both converted to z-scores) predicted the probability that a student would try marijuana (self-reported lifetime use; 0 = never tried, 1 = tried 1–2 times, 2 = tried 3–19 times, 3 = tried 20 or more times), a multinomial model was created with quadratic and cubic terms and all linear, quadratic, and cubic interaction terms were entered into the model in a blockwise fashion. At each stage, likelihood ratio tests evaluated whether the added block of variables significantly improved the model. As you can see in Table 10.6a, prior to data cleaning, the model was significantly improved with the addition of each of the first three blocks, but neither block of interaction terms significantly improved the model. Cook's D was examined for inappropriately influential cases, and cases more than 7.5 *SD* from the mean were removed, resulting in a removal of 0.5% of the cases.

Following data cleaning, as you see in Table 10.6a, the quadratic interaction terms significantly improved the model, but no cubic term was significant, so all cubic terms for both variables were removed from the model. The parameter estimates for the final model are presented in Table 10.6b. Also, the effects are modeled in Figures 10.3a–10.3c. As you can see in the three figures, the general pattern of marijuana use is relatively consistent across all three models. Specifically, family SES seems to have the strongest effect on students who have relatively low achievement scores, with increasing SES generally leading to increased probability of trying and using marijuana until family SES reaches average, and then the probabilities decline rather drastically. In contrast, students with average