1014-00-440   **Wei Ning*** (`wning@syr.edu`), 215 Carnegie Hall, Syracuse, NY 13244, and **Hyune-Ju Kim** (`hjkim@mailbox.syr.edu`), 215 Carnegie Hall, Syracuse, NY 13244. *A new approach to test for interactions in Two-way ANOVA models.*

The F-test has been used to detect interactions in Two-way ANOVA models. However, the F-test for the interaction is not as powerful as the F-test for the main effects, and its power is often very low if there are only a few disturbances in the data under the typical restrictions. Daniel (1978) and Terbeck (1998) reparameterized the model and proposed new statistics to detect the interactions under unconditionally identifiable patterns. They showed that their tests are better than the classical F-test and also can identify the locations of the non-zero disturbances. However, their methods do not work well for the model with non-unconditionally identifiable patterns. In this paper, we use the parameterization same as the one used in Terback and Daniel, and propose a new test statistic to detect non-zero interactions. We show that our test is more powerful than the classical F-test and can deal with both situations; unconditionally identifiable and non-unconditionally identifiable cases. (Received September 15, 2005)