Faces - Statistical Consulting

Analysis Plan

**Dr. Jamie Pearson (Client)**

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**About the Data**

The dataset we will be analyzing is a collection of survey responses administered by Dr. Pearson and co-investigators in conducting her FACES intervention and training program pilot study. The data was sourced from digital pre and post surveys that were completed by the participants. The survey captured responses pertaining to six different measures including the novel implementation of the FACES program. Participant demographic information was collected during the early stages of the study.

Participant selection criteria specified both parents or guardian and child identified as African-American, the child was between the age of 3 and 14 with a primary diagnosis of ASD, and parents or guardians were both willing to participate in a six week program and at least 20 years old. With the use of flyers, both digital and hard copy, participants were recruited into the program. Additional families were recruited via word of mouth formally implemented as snowball sampling. Once a recruitment pool was created, there was a phone screening process to confirm inclusion criteria was met - specifically that autism spectrum disorder (ASD) diagnoses were confirmed via the Social Communication Questionnaire (SCQ)..

The recruitment process resulted in sixteen families that were then randomly selected for test and control (waitlist) groups. The test group contained ten families while the control group contained six, and both groups took a survey before and after the intervention. The treatment we are testing is the FACES intervention program, which is a multi-part training course that takes place over six-weeks. The response being tested is the difference in the pre and post surveys given to the test and control groups. The test group received these training courses and the control group did not. The survey responses to be tested come from six groupings of multiple questions with all answers ranging from 1-5:

1. Fostering Advocacy, Communication, Empowerment and Support Scale (FACES) -seven questions
2. Family Empowerment Scale (FES) - thirty-four questions
3. School Communication Scale (SCS) - seven questions
4. Family Professional Partnership Scale (FPPS) - eighteen questions
5. Special Education Advocacy Scale (SEAS) - ten questions
6. Autism Knowledge Scale (AKS) - twenty-one questions

Overall, it can seem overwhelming with one hundred different variables and only thirty-two rows of data, however, ninety seven of the columns are the responses to be tested. Only two columns are predictive - the pre/post column and the test/experiment column.

**Statistical Methods for Analysis**

* Power Calculations- This may be the overall most important aspect we will provide for Dr. Pearson. Knowing that this analysis will be used for a grant application, a key metric she will want to know is how many families she will need to find statistical significance.
* Two-Sample T-test- The interesting aspect to this two-sample test is that we do not really have a “continuous” response variable to predict since we are provided with a discrete scale from one to five. However, I think we can mimic a continuous variable by summing up each of the six categories above (FACES, FES, AKS, etc).
* ANCOVA/Modeling- This seems like an interesting option to run. Instead of just comparing the pre data to the post data to determine if the intervention and training led to notable differences in the test and control groups, it could be useful to see if the pre data can be used to predict the post data via ANCOVA and linear regression models. For instance, does a low pre score in the FES category predict a bigger overall change in another category?

While linear regression could lead to an interesting finding, there will most likely be major limitations due to the lack of data. With only thirty-two rows of data, it is likely there will not be enough power to make any inference on these variables’ predictive ability. In either case, the t-tests and power calculations will provide our client with the analysis she needs for her grant request.