Case 21: Cognitive Training on Test Scores

Table 5.7 summarizes three existing studies that investigated the effects of short cognitive training programs on standardized test scores. Each study reports the sample sizes, means, and standard deviations for both the treatment (cognitive training) and control (no training) groups, along with the mean age of participants and a quality rating (high / low) for each study.

TABLE 5.7: Existing Studies of Cognitive Training on Test Scores.

Study	Year	n_t	$\overline{X}_t$	SD_t	n_c	$\overline{X}_c$	SD_c	Mean Age
Wong_2017	2017	33	84.5	7.5	32	80.3	8.2	27.6
Patel_2018	2018	38	79.0	9.8	36	74.2	10.1	23.8
Lopez_2019	2019	60	81.4	8.9	58	78.0	9.2	33.9

Research question: Do short cognitive training programs improve standardized test scores compared to no training (control)?

Case:

Initial Questions

1. What are the research objectives?

2. What are the statistical questions?

3. What is the response variable, and what is the data type of the response variable?

4. What are the explanatory variables of interest?

5. Are there covariates?

6. What is the population of interest?

7. What is the subject, and what is the number of distinct subjects?

8. Are there subject-level data?

9. Are response variables dependent (repeated measures / clustered subjects)?

10. Are the subjects selected randomly?

11. Are the subjects randomly assigned to different groups?

Initial Thoughts

