Analysis Plan

To answer the three main research questions of the CAPER study, we will estimate the following model:

$$Y_{ic} = \beta_0 + \beta_1 T1_{ic} + \beta_2 T2_{ic} + \beta_3 T3_{ic} + \alpha X_{ic} + \gamma_c + \varepsilon_{ic}$$

where Y_{it} is the primary outcome of child i in classroom c; $T1_{it}$ is an indicator for belonging to treatment arm 1 (tablet only); $T2_{it}$ is an indicator for treatment arm 2 (tablet + reminders); $T3_{it}$ is an indicator for treatment arm 3 (tablet + present bias); X_{ic} is a vector of observable characteristics, including child's baseline test scores, child's and parent's demographics; γ_c is classroom fixed effects since randomization was conducted at that level; and ε_{ic} is the error term. The coefficients β_1, β_2, and β_3 estimate the treatment effects or ITT. This model is estimated with and without observable characteristics.

Similar regression is run for secondary outcomes (time use, parental attitudes and beliefs on reading engagement with children).

We are also interested in heterogeneous effects in four baseline characteristics. We estimate a model of the form

$$Y_{ic} = \beta_0 + \beta_1 T1_{ic} + \beta_2 T2_{ic} + \beta_3 T3_{ic} + \alpha X_{ic} + \theta Z_{ic} + \phi_1 T1_{ic} \times Z_{ic} + \phi_2 T2_{ic} \times Z_{ic} + \phi_3 T3_{ic} \times Z_{ic} + \gamma_c + \varepsilon_{ic}$$

Where Z_{ic} is the characteristic of interest, and the coefficients ϕ_1, ϕ_2, and ϕ_3 tell us whether a specific treatment benefit more certain types of children. The characteristics are: (i) indicator of parental present bias, (ii) indicators for child's baseline scores, (iii) child's sex, and (iv) child's race and ethnicity.