RP: Raschpower method; CF: classical formula for normally distributed variables

\( N_g \): sample size per group associated with a power of 1-\( \beta_R \) for Rasch analysis and 1-\( \beta \) for CTT-based analysis; \( \gamma \): difference between the mean values of the latent trait in the two groups (group effect); \( \delta \): vector of the items parameters; \( \sigma^2 \): variance of the latent trait; \( N_C \): sample size per group associated with a power of 1-\( \beta_R \) for CTT-based analysis; \( Ra \): ratio computed with the Raschpower method; \( \hat{Ra} \): ratio predicted by the linear regression model; \( \Delta_R = \hat{Ra} - Ra \); \( N_R \): sample size per group computed with the Raschpower method associated with a power of 1-\( \beta \) for Rasch analysis; \( \hat{N}_R \): sample size per group predicted by the linear regression model; \( \Delta_N = \hat{N}_R - N_R \).

J: number of items; \( N_R \): sample size per group providing a 1-\( \beta \) power for Rasch analysis.