Matched Pairs vs 2 Sample

Basic Simulation Model:
Sample Size n=10
Control Mean = mu, mu = 10
Test Mean = mu + tau, tau = 3
N1, N2, and N3 are standard normal.

Control entries c[i] = mu + alpha N1[i] + beta N3[i]
Test entries t[i] = mu + tau + alpha N2[i] + beta N3[i]
alpha = 3, beta = 4

Thus in the limit of large sample size:
Control and Test entry means differ by tau.
Each entry has 2 sources of error. One of them follows N(0,alpha) and is independent of pairing. The other follows N(0,beta) and is the same for each element in a matched pair.

No Selector

Summary statistics for Contr

Mean 10.417109
Numeric 10
StdDev 6.3010523

Summary statistics for Test

Mean 14.336579
Numeric 10
StdDev 6.1531286

Paired t-Test of μ(1 - 2)

Matched Pairs Result Using Natural Matchi

No Selector

Individual Alpha Level 0.10

Ho: μ(1 - 2) = 0 Ha: μ(1 - 2) ≠ 0

Control - Test:

Test Ho: μ(Control-Test) = 0 vs Ha: μ(Control-Test) ≠ 0
Mean of Paired Differences = -3.9194705 t-Statistic = -2.133 w/9 df
Reject Ho at Alpha = 0.10
p = 0.0617