Empirical Power (how much you had)

\[ \phi = \phi' \sqrt{n} \]

\[ \phi' = \sqrt{\frac{\text{SSbetween}/N}{\text{MSwithin}}} \quad \text{or} \quad [\sqrt{\frac{\text{SSbetween}/N}{\text{MSwithin}}}]^5 \]

\[ \phi = [\sqrt{\frac{\text{SSbetween}/N}{\text{MSwithin}}}] \sqrt{n} \]

From 7/3/03 ANOVA

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>16</td>
<td>6-1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between</td>
<td>6</td>
<td>2-1</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Within</td>
<td>10</td>
<td>6-2</td>
<td>2.5</td>
<td></td>
</tr>
</tbody>
</table>

\[ \phi = [\sqrt{\frac{6/6}{2.5}}] \sqrt{3} = 0.63245 \sqrt{3} = 1.095 \]

1.095 is close to 1 on the p740 power table for df = 4 in the denominator, so Beta is about .80 and power is about 20%

What sample size, with this effect, would give 80% to 90% power?

\[ \frac{\phi^2}{\phi'^2} = n \]

\[ \frac{\phi^2}{.63^2} = n \]

Go to df denominator = \( \infty \) and find Beta closest to .20... it is 2

\[ 2^2/.63^2 = n = 10.078 \]

So, about 10 subjects in each of the two cells would give 80% for this effect size