

Power, Effect Size & Sample Size*

r ? ? power	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70
.20	124	32	21	15	14	13	11	9	7	5			
.30	208	93	53	34	24	18	14	11	9	8	7	6	5
.40	296	132	74	47	33	24	19	15	12	10	8	7	6
.50	382	170	95	60	42	30	23	18	14	12	9	8	7
.60	488	257	143	90	62	45	34	24	20	16	13	11	9
.70	613	300	167	105	72	52	39	29	23	28	15	12	10
.80	781	343	191	120	82	59	44	33	26	20	16	13	11
.90	1045	459	255	160	109	78	58	44	34	27	21	17	13

* “S” values given for $\alpha = .05$

Values taken from (Friedman, 1982 & Cohen, 1988), with some interpolation.

Calculating **S** to use the power table

Statistical Model	Defining S	Calculate S for <i>post hoc</i> power analyses [^]	Sample size estimates for <i>a priori</i> power [^] analyses
Correlation	Total # of participants	$S = df + 2 = N$	$N = S$
2x2 C²	Total # of participants	$S = S_f = N$	$N = S$
kxk C²	# participants in any 2 groups	$S = N = n^*2 = (N/k)^*2$	$n = S/2 @ \text{condition}$ $N = n^*k$
2-BG ANOVA	Total # of participants	$S = N = df_{\text{error}} + 2$	$n = S/2 @ \text{condition}$ $N = n^*2 = S$
k-BG ANOVA	# participants in any 2 groups	$S = n^*2 = (N/k)^*2 = ((df_{\text{error}}+k)/k)^*2$	$n = S/2 @ \text{condition}$ $N = n^*k$
2-WG ANOVA*	Total # of participants	$S = df_{\text{error}} + 1 = N$	$S @ \text{condition}$ $N = S$
k-WG ANOVA*	Total # of participants	$S = (df_{\text{error}} + (k-1)) / (k-1)$	$S @ \text{condition}$ $N = S$

[^] N = total number of participants, n = average number of participants in each condition

* for WG designs N refers to # of participants, each of which provides data in all design conditions.

Calculating **r** to use the power table

Statistical Model	Intermediate Calculations	r
2x2 C²		$\ddot{O} (C^2 / N)$
kxk C²		$\ddot{O} (C^2 / (C^2 + N))$
2-BG ANOVA		$\ddot{O} (F / (F + df_{\text{error}}))$
k-BG ANOVA		
omnibus-F		$\ddot{O} ((df_{\text{effect}} * F) / ((df_{\text{effect}} * F) + df_{\text{error}}))$
pairwise comparisons	$d = (M_1 - M_2) / \ddot{O} \text{ MSe}$	$\ddot{O} (d^2 / (d^2 + 4))$
2-WG ANOVA		$\ddot{O} (F / (F + df_{\text{error}}))$
k-WG ANOVA		
omnibus-F		$\ddot{O} ((df_{\text{effect}} * F) / ((df_{\text{effect}} * F) + df_{\text{error}}))$
pairwise comparisons	$d = (M_1 - M_2) / \ddot{O} \text{ MSe}$	$d_w = d * \ddot{O} 2$ $\ddot{O} (d_w^2 / (d_w^2 + 4))$