

Chapter 9 Problems

1. a.

	a_1	a_2
Contrast	1	-1
Dummy	1	0

b. From SPSS output, $r = -.297$ for both contrast coding and dummy coding. For both, $r^2 = (-.297)^2 = .088$

c. From SPSS output, $F = 1.744$ for both coding systems.

d. From SPSS output, $Y' = 32.85 - 2.25X$ for contrast coding. For dummy coding, $Y' = 35.10 - 4.50X$

e. For contrast coding, the regression intercept (32.85) is the grand mean of all 20 participants. The regression coefficient (-2.25) tells us that, on average, participants in the "do your best" condition (for whom $X=1$) located 2.25 errors fewer than the grand mean, and participants in the "specific goal" condition (for whom $X=-1$) located 2.25 errors more than the grand mean.

For dummy coding, the regression intercept (35.10) is the mean of the 10 participants in the "specific goal" condition (for whom $X=0$). The regression coefficient (-4.50) tells us that, on average, participants in the "do your best" condition (for whom $X=1$) located 4.50 fewer errors than did participants in the "specific goal" condition.

Correlations

Correlations

		Group assignment (contrast coding)	Group assignment (dummy coding)	Number of errors located
Group assignment (contrast coding)	Pearson Correlation	1	1.000**	-.297
	Sig. (2-tailed)		.000	.203
	N	20	20	20
Group assignment (dummy coding)	Pearson Correlation	1.000**	1	-.297
	Sig. (2-tailed)	.000		.203
	N	20	20	20
Number of errors located	Pearson Correlation	-.297	-.297	1
	Sig. (2-tailed)	.203	.203	
	N	20	20	20

** . Correlation is significant at the 0.01 level (2-tailed).

Univariate Analysis of Variance - Contrast Coding

Descriptive Statistics

Dependent Variable: Number of errors located

Group assignment	Mean	Std. Deviation	N
-1.00	35.1000	8.26573	10
1.00	30.6000	6.91536	10
Total	32.8500	7.76819	20

Tests of Between-Subjects Effects

Dependent Variable: Number of errors located

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	101.250 ^a	1	101.250	1.744	.203
Intercept	21582.450	1	21582.450	371.648	.000
contrast	101.250	1	101.250	1.744	.203
Error	1045.300	18	58.072		
Total	22729.000	20			
Corrected Total	1146.550	19			

a. R Squared = .088 (Adjusted R Squared = .038)

Univariate Analysis of Variance - Dummy Coding

Descriptive Statistics

Dependent Variable: Number of errors located

Group assignment	Mean	Std. Deviation	N
.00	35.1000	8.26573	10
1.00	30.6000	6.91536	10
Total	32.8500	7.76819	20

Tests of Between-Subjects Effects

Dependent Variable: Number of errors located

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	101.250 ^a	1	101.250	1.744	.203
Intercept	21582.450	1	21582.450	371.648	.000
dummy	101.250	1	101.250	1.744	.203
Error	1045.300	18	58.072		
Total	22729.000	20			
Corrected Total	1146.550	19			

a. R Squared = .088 (Adjusted R Squared = .038)

Regression - Contrast Coding

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.297 ^a	.088	.038	7.62051

a. Predictors: (Constant), Group assignment (contrast coding)

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	101.250	1	101.250	1.744	.203 ^a
	Residual	1045.300	18	58.072		
	Total	1146.550	19			

a. Predictors: (Constant), Group assignment (contrast coding)

b. Dependent Variable: Number of errors located

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	32.850	1.704		19.278	.000
	Group assignment (contrast coding)	-2.250	1.704	-.297	-1.320	.203

a. Dependent Variable: Number of errors located

Regression - Dummy Coding

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.297 ^a	.088	.038	7.62051

a. Predictors: (Constant), Group assignment (dummy coding)

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	101.250	1	101.250	1.744	.203 ^a
	Residual	1045.300	18	58.072		
	Total	1146.550	19			

a. Predictors: (Constant), Group assignment (dummy coding)

b. Dependent Variable: Number of errors located

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	35.100	2.410		14.565	.000
	Group assignment (dummy coding)	-4.500	3.408	-.297	-1.320	.203

a. Dependent Variable: Number of errors located