



## SPSS Tip 13.1

### Planned contrasts for ANCOVA

There is no option for specifying planned contrasts like we used in the previous chapter (see Section 12.6.2). However, these contrasts can be done if we fit the model using the regression menu. Imagine you chose some planned contrasts as in Chapter 12, in which the first contrast compared the control group to all doses of puppy therapy, and the second contrast then compared the 30- and 15-minute groups (see Section 12.4). We saw in Sections 12.4 and 12.6.2 that we specify these contrasts with codes. For the first contrast we discovered that an appropriate set of codes was  $-2$  for the control group and then  $1$  for both the 30- and 15-minute groups. For the second contrast the codes were  $0$  for the control group,  $-1$  for the 15-minute group and  $1$  for the 30-minute group (see Table 12.4). To do these contrasts when a covariate is included in the model, enter these values as two dummy variables. In other words, add a column called **Dummy1** in which every person in the control group has a value of  $-2$  and all other participants have

## Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.657	.634		5.764	.000
	Love of puppies (0-7)	.260	.193	.246	1.345	.189
2	(Constant)	3.126	.625		5.002	.000
	Love of puppies (0-7)	.416	.187	.395	2.227	.035
	Dummy 1: puppies vs. control	.668	.240	.478	2.785	.010
	Dummy 2: 15 mins vs. 30 mins	.220	.406	.094	.541	.593

a. Dependent Variable: Happiness (0-10)

### Output 13.4

a value of 1. Add a second column called **Dummy2**, in which everyone in the control group has the value 0, everyone in the 15-minute group has the value -1 and those in the 30-minute group have a value of 1. The file **Puppy Love Contrast.sav** includes these dummy variables.

Run the analysis as described in Section 13.3. The model summary and ANOVA table for the model will be identical to Output 13.1 (because we've done the same thing as before; the only difference is how the model variance is subsequently broken down with the contrasts). The *b*-values for the dummy variables will be different than before because we've specified different contrasts. Output 13.4 shows the model parameters. The first dummy variable compares the control group with the 15- and 30-minute groups. As such, it compares the adjusted mean of the control group (2.93) with the average of the adjusted means for the 15- and 30-minute groups ( $(4.71+5.15)/2 = 4.93$ ). The *b*-value for the first dummy variable should reflect the difference between these values:  $4.93 - 2.93 = 2$ . We discovered in a rather complex and boring bit of Section 12.4.2 that this value gets divided by the number of groups within the contrast (i.e., 3) and so will be  $2/3 = 0.67$  (as in Output 13.4).<sup>4</sup> The associated *t*-statistic is significant ( $p = 0.010$ ), indicating that the control group was significantly different from the combined adjusted mean of the puppy therapy groups.

The second dummy variable compares the 15- and 30-minute groups, and so the *b*-value should reflect the difference between the adjusted means of these groups:  $5.15 - 4.71 = 0.44$ . In Section 12.4.2 we discovered that this value gets divided by the number of groups within the contrast (i.e., 2) and so will be  $0.44/2 = 0.22$  (as in Output 13.4). The associated *t*-statistic is not significant ( $p = 0.593$ ), indicating that the 30-minute group did not produce significantly higher happiness than the 15-minute group after adjusting for love of puppies.

