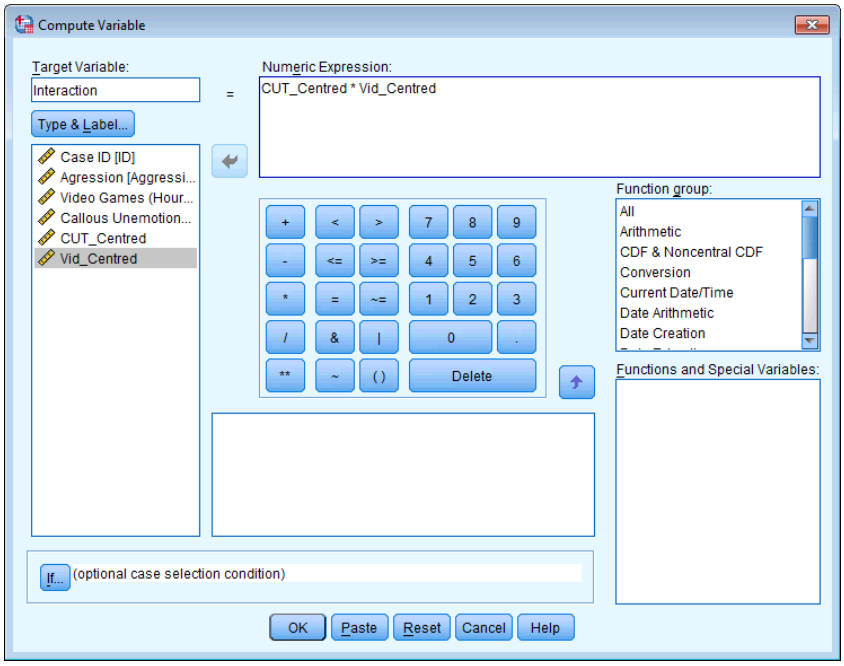
Chapter 10: Moderation, mediation and more regression

Self-test answers

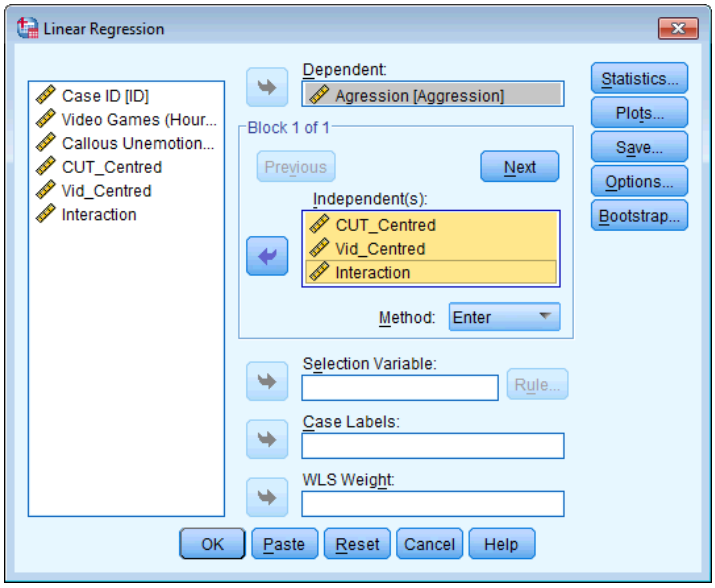
SELF-TEST Follow Oliver Twisted's instructions to create the centred variables **CUT_Centred** and **Vid_Centred**. Then use the *compute* command to create a new variable called **Interaction** in the **Video Games.sav** file, which is **CUT_Centred** multiplied by **Vid_Centred**.

To create the centred variables follow Oliver Twisted's instructions for this chapter. I'll assume that you have a version of the data file **Video Games.sav** containing the centred versions of the predictors (**CUT_Centred** and **Vid_Centred**). To create the interaction term, access the *compute* dialog box by selecting Transform Compute Variable... and enter the name **Interaction** into the box labelled *Target Variable* (click on Type & Label... to give the variable a more descriptive name). Select the variable **CUT_Centred** and drag it across to the area labelled *Numeric Expression*, then click on * and then select the variable **Vid_Centred** and drag it across to the area labelled *Numeric Expression*. The completed dialog box is shown below. Click on OK and a new variable will be created called **Interaction**, the values of which are **CUT_Centred** multiplied by **Vid_Centred**.



SELF-TEST Assuming you have done the other self-test, run a regression predicting **Aggression** from **CUT_Centred**, **Vid_Centred** and **Interaction**.

To do the analysis you need to access the main dialog box by selecting Analyze Regression Linear... . The resulting dialog box is shown below. There is a space labelled *Dependent* in which you should place the outcome variable (in this example **Aggression**). So, select **Aggression** from the list on the left-hand side, and transfer it by dragging it or clicking on . There is another space labelled *Independent(s)* in which any predictor variables should be placed. Our predictors are **CUT_Centred**, **Vid_Centred** and **Interaction**, so select them from the variable list and drag them to the box labelled *Independent(s)* or click on . The default method of *Enter* is what we want, so click on OK to run the basic analysis.



SELF-TEST Assuming you did the previous self-test, compare the table of coefficients that you got with those in Output 10.1.

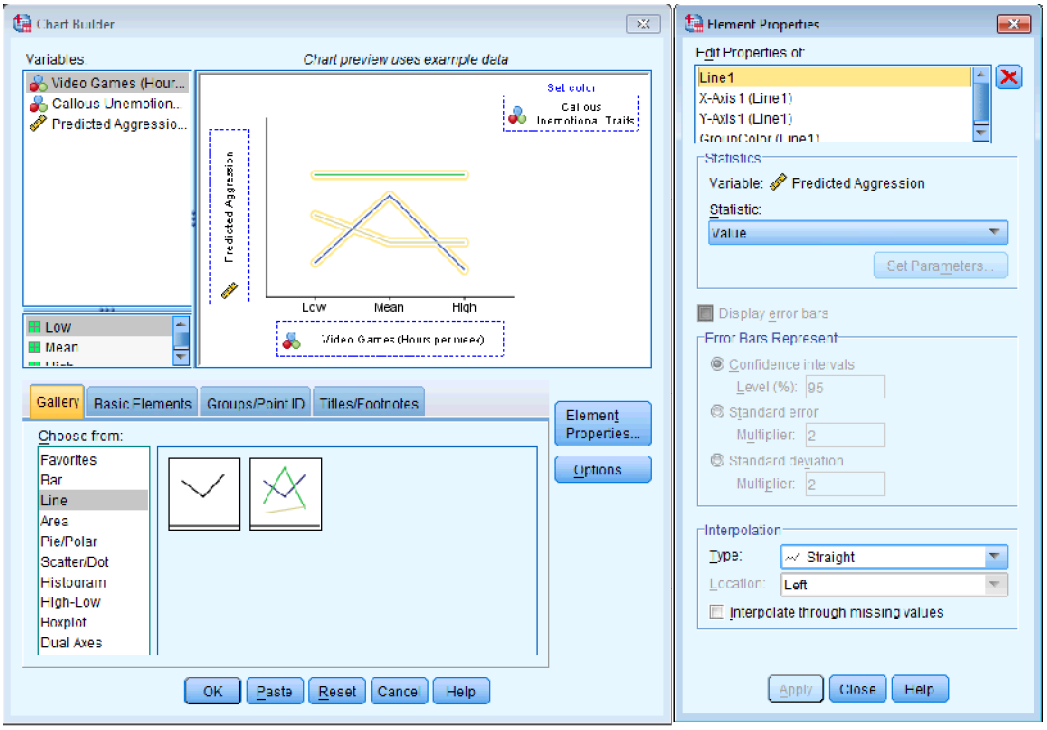
The output below shows the regression coefficients from the regression analysis that you ran using the centred versions of callous traits and hours spent gaming and their interaction as predictors. Basically, the regression coefficients are identical to those in Output 10.1 from using *PROCESS*. The standard errors differ a little from those from *PROCESS*, but that's because when we used *PROCESS* we asked for heteroscedasticity-consistent standard errors, consequently the *t*-values are slightly different too (because these are computed from the standard errors: *b*/SE). The basic conclusion is the same though: there is a significant moderation effect as shown by the significant interaction between hours spent gaming and callous unemotional traits.

Coefficients[a]

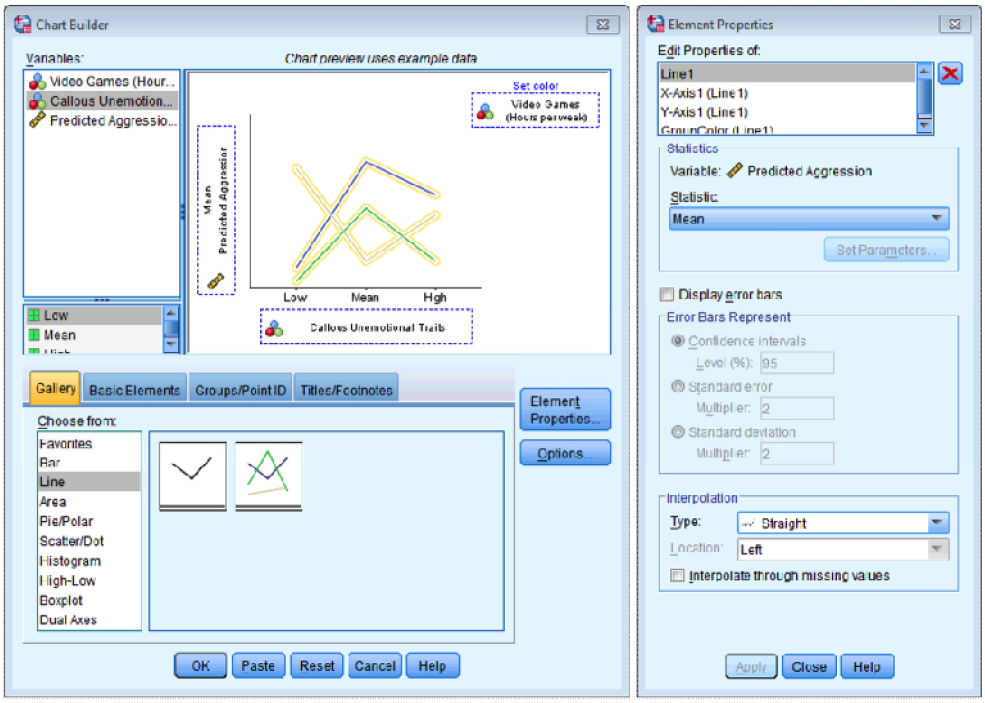
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	39.970	.475		84.138	.000
	CUT_Centred	.760	.049	.580	15.366	.000
	Vid_Centred	.170	.068	.094	2.479	.014
	Interaction	.027	.007	.147	3.877	.000

a. Dependent Variable: Agression

SELF-TEST Draw a multiple line graph of **Aggression** (*y*-axis) against **Games** (*x*-axis) with different-coloured lines for different values of **CaUnTs**.

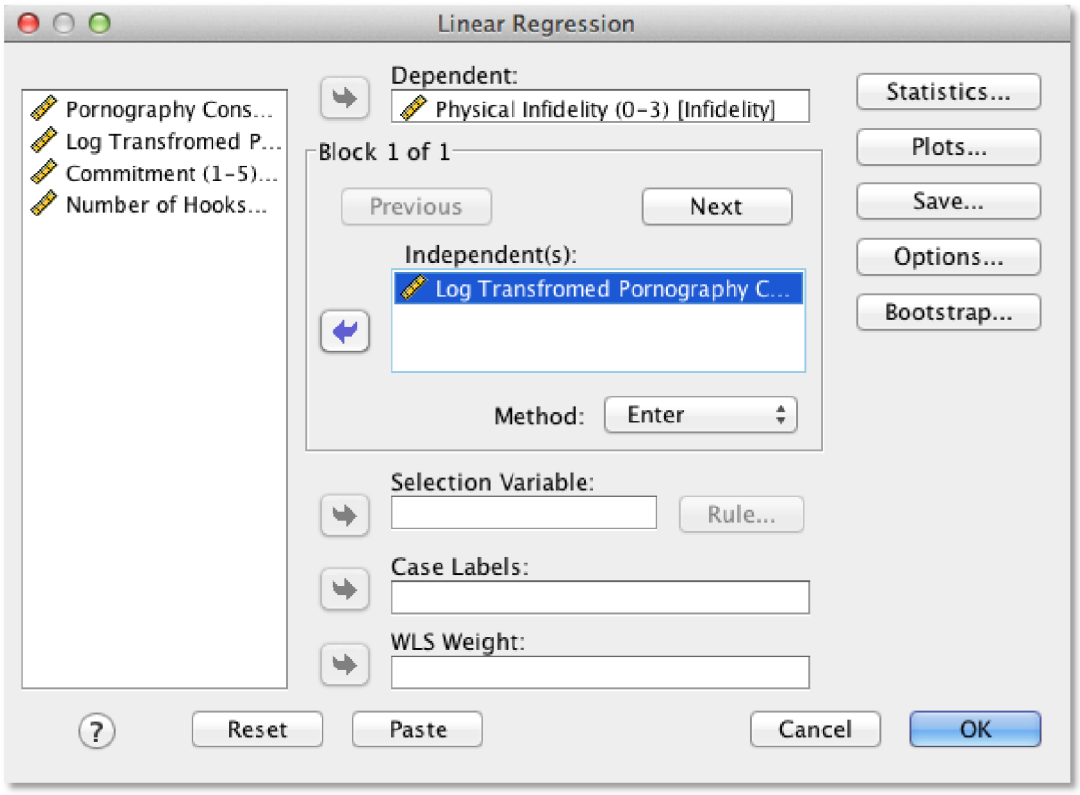


SELF-TEST Now draw a multiple line graph of **Aggression** (*y*-axis) against **CaUnTs** (*x*-axis) with different-coloured lines for different values of **Games**.



SELF-TEST Run the three regressions necessary to test mediation for Lambert et al.'s data: (1) a regression predicting **Infidelity** from **LnConsumption**; (2) a regression predicting **Commitment** from **LnConsumption**; and (3) a regression predicting **Infidelity** from both **LnConsumption** and **Commitment**. Is there evidence of mediation?

Model 1: Predicting **Infidelity** from **Consumption**



Dialog box for model 1

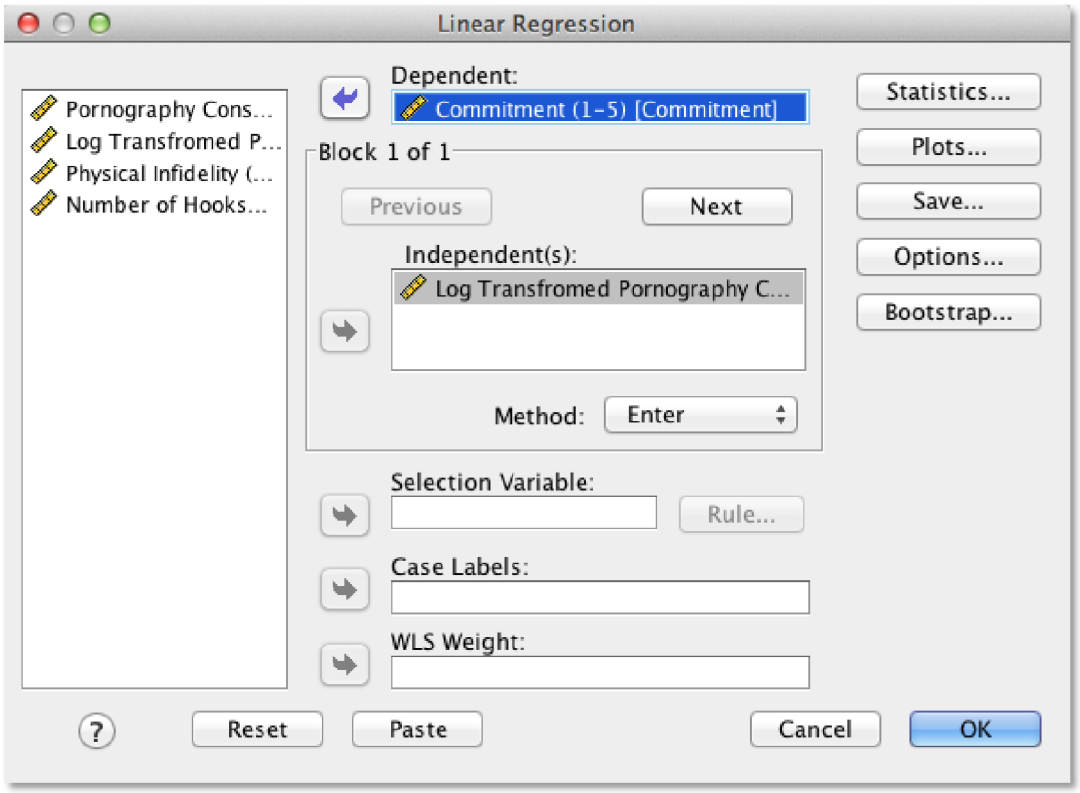
Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	.230	.051		4.508	.000	.130	.331
	Log Transfromed Pornography Consumption	.587	.200	.187	2.933	.004	.193	.981

a. Dependent Variable: Physical Infidelity (0-3)

Output for model 1

Model 2: Predicting **Commitment** from **Consumption**



Dialog box for model 2

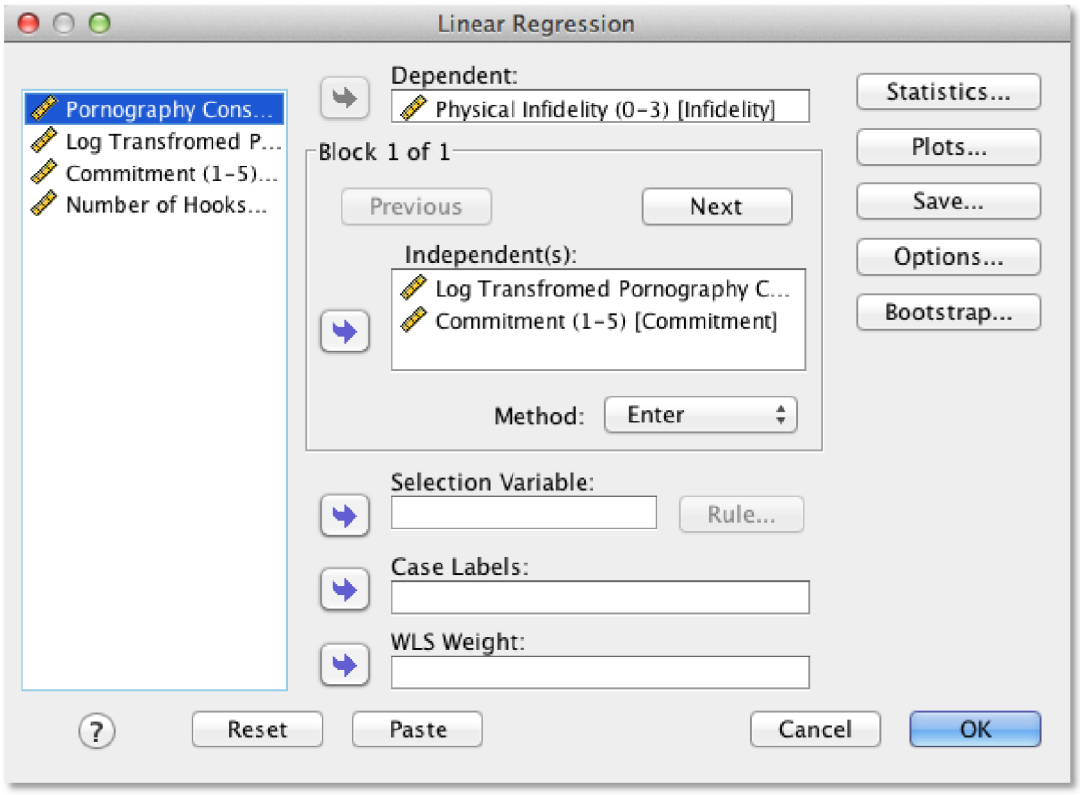
Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	4.203	.054		77.178	.000	4.095	4.310
	Log Transfromed Pornography Consumption	-.470	.213	-.142	-2.205	.028	-.889	-.050

a. Dependent Variable: Commitment (1-5)

Output for model 2

Model 3: Predicting **Infidelity** from **Consumption** and **Commitment**



Dialog box for model 3

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	1.370	.252		5.443	.000	.874	1.866
	Log Transfromed Pornography Consumption	.457	.195	.145	2.350	.020	.074	.841
	Commitment (1-5)	-.271	.059	-.285	-4.613	.000	-.387	-.155

a. Dependent Variable: Physical Infidelity (0-3)

Output for model 3

Is there evidence for mediation?

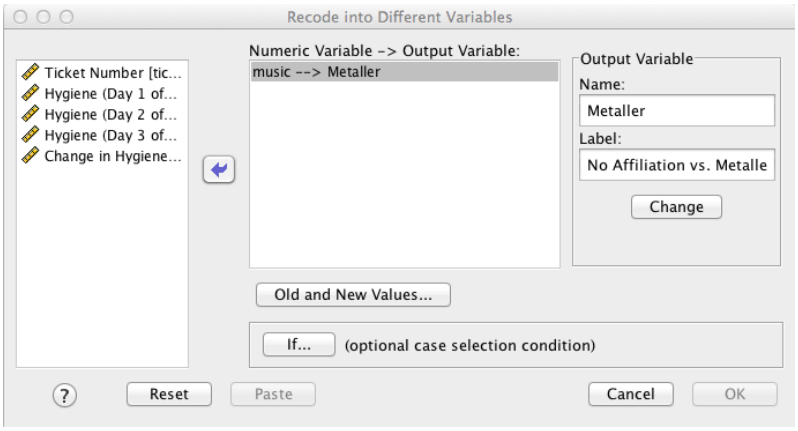
- Output for model 1for model 1 shows that pornography consumption significantly predicts infidelity, $b = 0.59$, 95% CI [0.19, 0.98], $t = 2.93$, $p = .004$. As consumption increases, physical infidelity increases also.

- Output for model 1for model 2 shows that pornography consumption significantly predicts relationship commitment, $b = -0.47$, 95% CI [–0.89, –0.05], $t = -2.21$, $p = .028$. As pornography consumption increases, commitment declines.
- Output for model 1for model 3 shows that relationship commitment significantly predicts infidelity, $b = -0.27$, 95% CI [–0.39, –0.16], $t = -4.61$, $p < .001$. As relationship commitment increases, physical infidelity declines.
- The relationship between pornography consumption and infidelity is stronger in model 1, $b = 0.59$, than in model 3, $b = 0.46$.

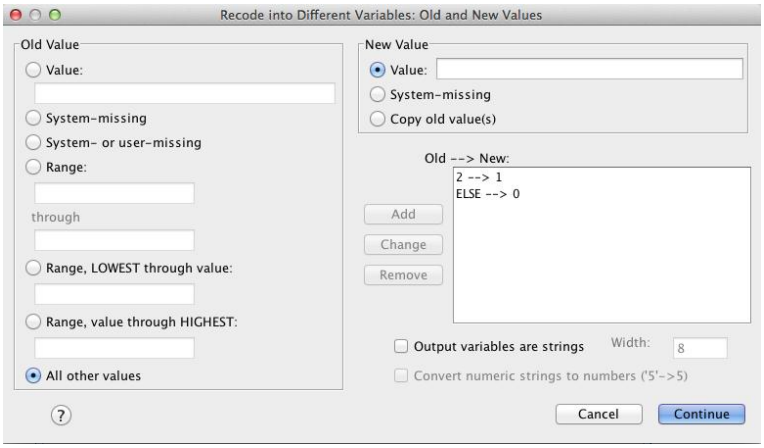
As such, the four conditions of mediation have been met.

SELF-TEST Try creating the remaining two dummy variables (call them **Metaller** and **Indie_Kid**) using the same principles.

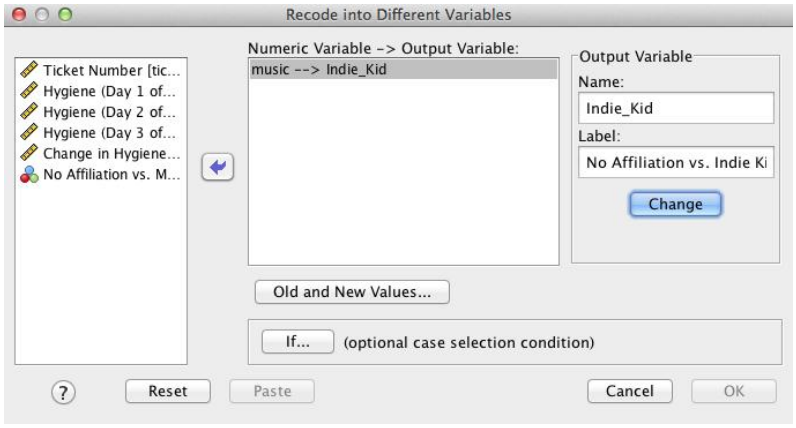
Select Transform Recode into Different Variables... to access the *recode* dialog box. Select the variable you want to recode (in this case **music**) and transfer it to the box labelled *Numeric Variable → Output Variable* by clicking on . You then need to name the new variable. Go to the part that says *Output Variable* and in the box below where it says *Name* write a name for your second dummy variable (call it **Metaller**). You can also give this variable a more descriptive name by typing something in the box labelled *Label* (for this first dummy variable I've called it No Affiliation vs. Metaller). When you've done this, click on Change to transfer this new variable to the box labelled *Numeric Variable → Output Variable* (this box should now say *music → Metaller*).



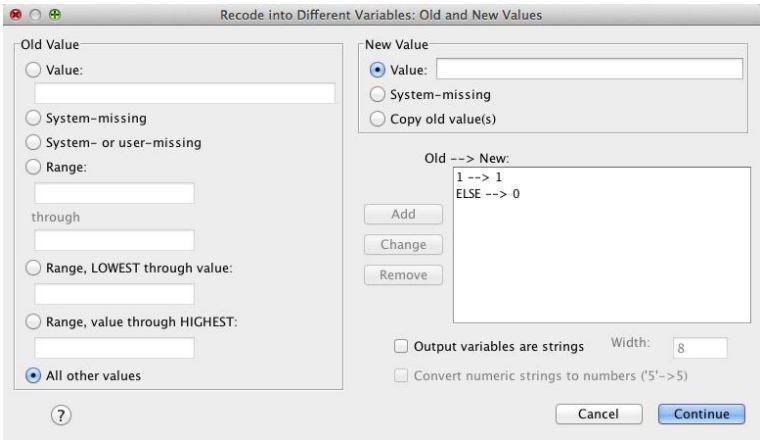
We need to tell SPSS how to recode the values of the variable **music** into the values that we want for the new variable, **Metaller**. To do this click on Old and New Values... to access the dialog box below. This dialog box is used to change values of the original variable into different values for the new variable. For this dummy variable, we want anyone who was a metaller to get a code of 1 and everyone else to get a code of 0. Now, metaller was coded with the value 2 in the original variable, so you need to type the value 2 in the section labelled *Old Value* in the box labelled *Value*. The new value we want is 1, so we need to type the value 1 in the section labelled *New Value* in the box labelled *Value*. When you've done this, click on Add to add this change to the list of changes. The next thing we need to do is to change the remaining groups to have a value of 0 for the first dummy variable. To do this just select All other values and type the value 0 in the section labelled *New Value* in the box labelled *Value*. When you've done this, click on Add to add this change to the list of changes. Then click on Continue to return to the main dialog box, and then click on OK to create the dummy variable. This variable will appear as a new column in the data editor, and you should notice that it will have a value of 1 for anyone originally classified as a metaller and a value of 0 for everyone else.



To create the final dummy variable, select Transform Recode into Different Variables... to access the *recode* dialog box. Select **music** and drag it to the box labelled *Numeric Variable* → *Output Variable* (or click on). Go to the part that says *Output Variable* and in the box below where it says *Name* write a name for your final dummy variable (call it **Indie_Kid**). You can also give this variable a more descriptive name by typing something in the box labelled *Label* (for this first dummy variable I've called it No Affiliation vs. Indie Kid). When you've done this, click on Change to transfer this new variable to the box labelled *Numeric Variable* → *Output Variable* (this box should now say *music* → *Indie_kid*).



We need to tell SPSS how to recode the values of the variable **music** into the values that we want for the new variable, **Indie_Kid**. To do this click on Old and New Values... to access the dialog box below. For this dummy variable, we want anyone who was an indie kid to get a code of 1 and everyone else to get a code of 0. Now, indie kid was coded with the value 1 in the original variable, so you need to type the value 1 in the section labelled *Old Value* in the box labelled *Value*. The new value we want is 1, so we need to type the value 1 in the section labelled *New Value* in the box labelled *Value*. When you've done this, click on Add to add this change to the list of changes. The next thing we need to do is to change the remaining groups to have a value of 0 for the first dummy variable. To do this just select All other values and type the value 0 in the section labelled *New Value* in the box labelled *Value*. When you've done this, click on Add to add this change to the list of changes. Then click on Continue to return to the main dialog box, and then click on OK to create the dummy variable. This variable will appear as a new column in the data editor, and you should notice that it will have a value of 1 for anyone originally classified as an indie kid and a value of 0 for everyone else.



SELF-TEST Use what you learnt in Chapter 8 to run a multiple regression using the change scores as the outcome, and the three dummy variables (entered in the same block) as predictors.

Select Analyze Regression Linear... to access the main dialog box for regression, which you should complete as below. Use the book chapter to determine what other options you want to select. The output and interpretation are in the book chapter.