

Regression Moderation Examples

Social Support and Age Example

Does age moderate the relation between social support and depression?

Syntax

```
get file='c:\jason\spsswin\regress\yale1.sav'.
```

* the following three lines give an example of computations needed if macro WAS NOT used.

```
compute cislsum=islsum-12.4228.
```

```
compute cage=age-61.8153.
```

```
compute interact=cage*cislsum.
```

```
compute x=islsum.
```

```
compute z=age.
```

```
compute y=hrs.
```

```
include 'c:\jason\spsswin\regress\simple1.sps'.
```

```
simple1 vars=sex white educ hsuany timeloss totcc physfunc srh .
```

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.498(a)	.248	.218	5.16148

†

a Predictors: (Constant), XZ, SRH, TIMELOSS, WHITE, SEX, EDUC, HSUANY, Z, X, TOTCC, PHYSFUNC

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2417.414	11	219.765	8.249	.000(a)
	Residual	7326.244	275	26.641		
	Total	9743.659	286			

†

a Predictors: (Constant), XZ, SRH, TIMELOSS, WHITE, SEX, EDUC, HSUANY, Z, X, TOTCC, PHYSFUNC

b Dependent Variable: Y

Model		Unstandardized Coefficients		Standardized Coefficients		t	Sig.
		B	Std. Error	Beta	Std. Error		
1	(Constant)	8.200	3.017			2.718	.007
	SEX	2.019	.725	.152	.054	2.786	.006
	WHITE	2.739	1.187	.125	.054	2.308	.022
	EDUC	-.091	.111	-.046	.056	-.816	.415
	HSUANY	-.610	.779	-.043	.055	-.782	.435
	TIMELOSS	-.047	.043	-.058	.053	-1.092	.276
	TOTCC	.116	.269	.031	.072	.431	.666
	PHYSFUNC	.712	1.745	.032	.077	.408	.684
	SRH	-7.923	2.072	-.298	.078	-3.823	.000
	X	-.518	.148	-.204	.058	-3.512	.001
	Z	-.058	.027	-.137	.063	-2.175	.031
	XZ	.004	.009	.025	.054	.459	.646

a Dependent Variable: Y

Correct Standardized Slope for XZ
 .023

Unstandardized Simple Slopes for X

b
 at low Z: -.58
 at mean Z: -.52
 at high Z: -.46

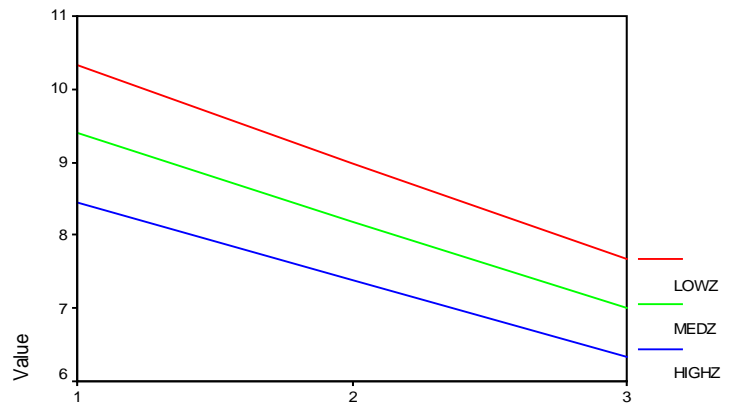
Standardized Simple Slopes for X

beta
 at low Z: -.23
 at mean Z: -.20
 at high Z: -.18

Significance

	SE	t-value	p-value
at low Z:	.21	-2.76	.006
at mean Z:	.15	-3.51	.001
at high Z:	.18	-2.51	.013

Simple Slopes for Y on X at Values of Z



LOWZ = -1SD below mean, MEDZ = at mean, HIGHZ = +1SD above mean

*** NOTE: You would not examine or report simple slopes if the interaction is not significant, as is the case in this example ($b_{xz} = .646$, ns).

Satisfaction with Housing Location and Commute Example

Does the effect of distance to work on satisfaction with housing location depend on the amount of traffic congestion? A hypothetical example.

```
get file='c:\jason\spsswin\da2\congestion.sav'.
```

```
compute x=distance.  

compute z=congest.  

compute y=satis.
```

```
INCLUDE 'c:\jason\spsswin\macros\simple1.sps'.  

SIMPLE1 VARS=.
```

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients		t	Sig.
		B	Std. Error	Beta	Std. Error		
1	(Constant)	6.799	.104			65.623	.000
	x	-.497	.048	-.540	.053	-10.266	.000
	z	-.042	.004	-.506	.049	-10.392	.000
	xz	-.012	.002	-.343	.052	-6.527	.000

a. Dependent Variable: y

Correct Standardized Slope for XZ
 -.344

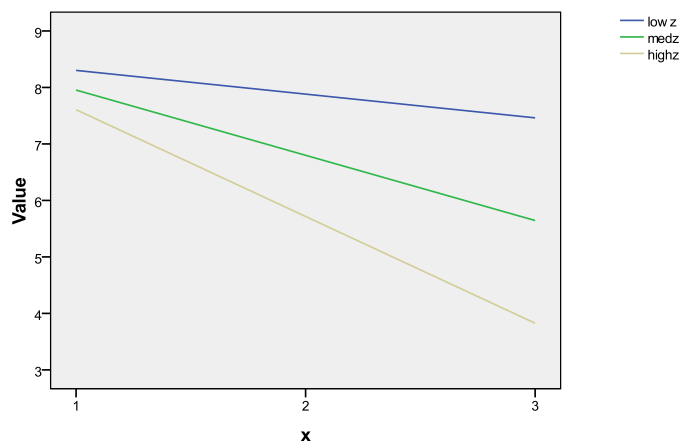
Unstandardized Simple Slopes for X
 b
 at low Z: -.18
 at mean Z: -.50
 at high Z: -.81

Standardized Simple Slopes for X
 beta
 at low Z: -.20
 at mean Z: -.54
 at high Z: -.88

Significance

	SE	t-value	p-value
at low Z:	.08	-2.25	.027
at mean Z:	.05	-10.27	.000
at high Z:	.05	-15.07	.000

Simple Slopes for Y on X at Values of Z



LOWZ = -1SD below mean, MEDZ=at mean, HIGHZ=+1SD above mean

A multiple regression model was tested to investigate whether the association between distance to work and satisfaction with housing location depends on the amount of traffic congestion in the area. After centering distance to work and traffic congestion and computing the distance-by-congestion interaction term (Aiken & West, 1991), the two predictors and the interaction were entered into a simultaneous regression model. Results indicated that greater traffic congestion ($b = -.497$, $SE_b = .048$, $\beta = -.540$, $p < .001$) and farther distance to work ($b = -.042$, $SE_b = .004$, $\beta = -.506$, $p < .001$) were both associated with lower satisfaction with housing location. The interaction between distance to work and traffic congestion was also significant ($b = -.012$, $SE_b = .002$, $\beta = -.344$, $p < .001$), suggesting that the effect of distance on satisfaction depended on the level of traffic congestion. Simple slopes for the association between distance and satisfaction were tested for low (-1 SD below the mean), moderate (mean), and high (+1 SD above the mean) levels of traffic congestion. Each of the simple slope tests revealed a significant negative association between distance to work and satisfaction with housing location, but the distance to work was more strongly related to satisfaction for high levels of traffic congestion ($b = -.81$, $SE_b = .05$, $\beta = -.88$, $p < .001$) than for moderate ($b = -.50$, $SE_b = .05$, $\beta = -.54$, $p < .001$) or lower levels ($b = -.18$, $SE_b = .08$, $\beta = -.20$, $p < .05$) of traffic congestion. Figure 1 plots the simple slopes for the interaction.