

Ch4 - Ex 1 - Child aggression (aggr) as a function of mother's education (educ) and authoritarian parenting style (auth).

$$SS_Y = (25-1) 4.947^2$$

$$\hat{Y} = b_0 + b_1 X_1 + b_2 X_2$$

CORR aggr educ auth /stat.

	Mean	Std. Deviation	N
aggr	39.680000	4.9473899	25
educ	10.400000	1.8708287	25
auth	19.800000	4.6636895	25

$$b_1 = \frac{-467 - .739 \times -712}{1 - .712^2} \times \frac{4.947}{1.871}$$

$$\approx .315$$

$$b_2 =$$

$$b_0 =$$

	aggr	educ
educ	-.467 .019	
auth	.739 .000	-.712 .000

REGR /DEP = aggr /ENTER auth educ /SAVE PRED(prdag.ae) RESID(resag.ae).



$$1 - \sqrt{R^2} = .446$$

$$\sqrt{\quad} = .668$$

Model	R	R Square
1	.744	.554

$$\frac{325.201}{587.440}$$

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	325.201	2	162.601	13.641	.000
	Residual	262.239	22	11.920		
	Total	587.440	24			

$H_0: \rho = 0$   
4.12  
Rej  $H_0$

Model	Unstandardized Coefficients				
		B	Std. Error	t	Sig.
1	(Constant)	19.096	9.137	2.090	.048
	auth	.874	.215	4.065	.001
	educ	.315	.536	.587	.563

sig  
ns

	Mean	Std. Deviation	N
Predicted Value	39.680000	3.6810406	25
Residual	.0000000	3.3055419	25

$$(25-1) 3.681^2 \approx 325.201$$

$$(25-1) 3.306^2 \approx 262.239$$

$$\sum (Y - \hat{Y}) = 0$$

$$= \sum (Y - \hat{Y})$$

LIST /CASES = FROM 1 TO 10.

^  
Y

^  
Y-Y

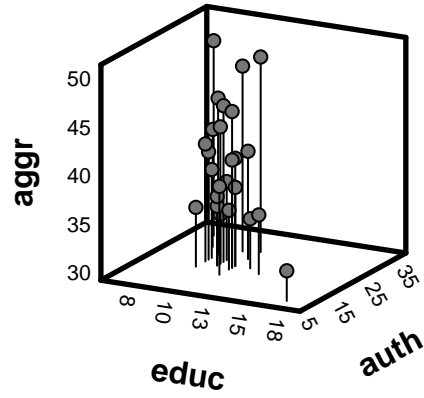
SUBJ	educ	auth	aggr	prdag.ae	resag.ae
1.0000	10.000	20.000	45.000	39.72887	5.27113
2.0000	11.000	23.000	40.000	42.66633	-2.66633
3.0000	11.000	14.000	38.000	34.79870	3.20130
4.0000	11.000	27.000	49.000	46.16305	2.83695
5.0000	11.000	19.000	40.000	39.16961	.83039
6.0000	11.000	17.000	35.000	37.42124	-2.42124
7.0000	9.0000	19.000	41.000	38.53977	2.46023
8.0000	17.000	7.0000	32.000	30.56893	1.43107
9.0000	13.000	17.000	35.000	38.05108	-3.05108
10.000	9.0000	21.000	38.000	40.28813	-2.28813

VARI LABEL prdag.ae '' resag.ae ''.  
CORR aggr auth educ prdag.ae resag.ae.

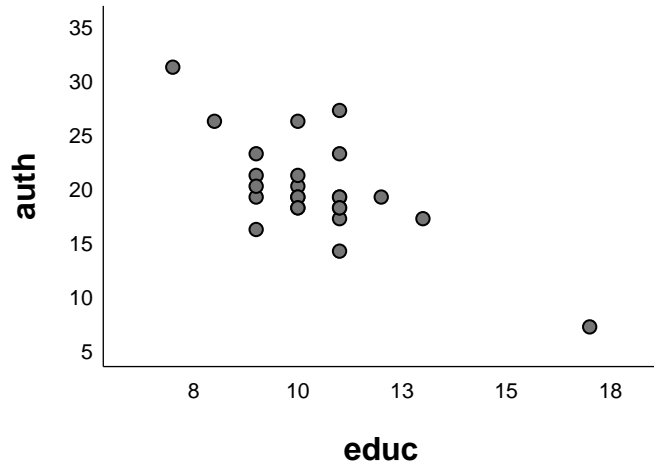
	aggr	auth	educ	prdag.ae
auth	.739			
educ	-.467	-.712		
prdag.ae	.744	.994	-.628	
resag.ae	.668	.000	.000	.000



GRAPH /SCATTERPLOT(XYZ)=auth WITH aggr WITH educ.



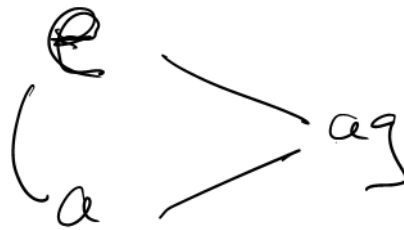
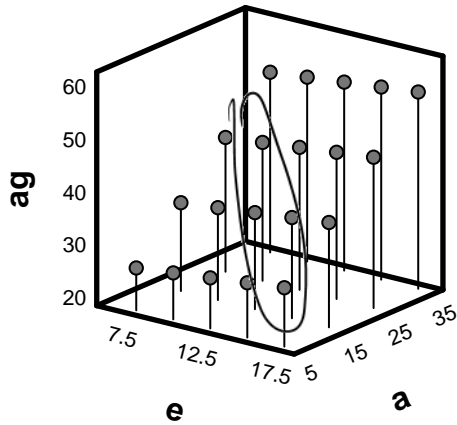
GRAPH /SCATTERPLOT(BIVAR)=educ WITH auth.



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INPUT PROGRAM.
LOOP a = 5 TO 35 BY 10.
LEAVE a.
LOOP e = 7.5 TO 17.5 BY 2.5.
END CASE.
END LOOP.
END LOOP.
END FILE.
END INPUT PROGRAM.
COMPUTE ag = 19.096 + .874*a + .315*e.
GRAPH /SCATTERPLOT(XYZ)=a WITH ag WITH e.

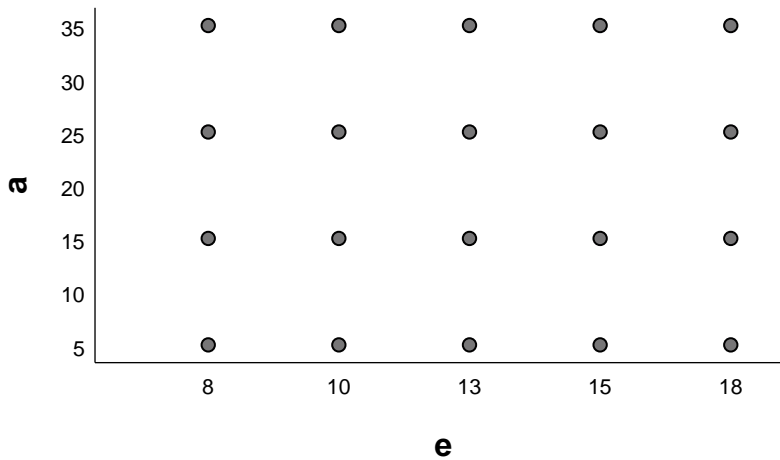
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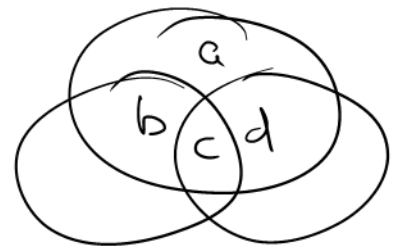
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GRAPH /SCATTERPLOT(BIVAR)=e WITH a.

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REGR /DEP = aggr /ENTER auth /ENTER educ.



$$\begin{aligned}
 SS_{4.12} &= b+c+d & 325.201 \\
 SS_{4.2} &= -(c+d) & 321.089 \\
 \hline
 SS_{4.12} &= b & 4.112
 \end{aligned}$$

Model	R	R Square
1	.739	.547
2	.744	.554

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	$SS_{4.2}$ 321.089	1	321.089	27.727	.000
	Residual	266.351	23	11.580		
	Total	587.440	24			
2	Regression	$SS_{4.12}$ 325.201	2	162.601	13.641	.000
	Residual	262.239	22	11.920		
	Total	587.440	24			

Model		Unstandardized Coefficients			
		B	Std. Error	t	Sig.
1	(Constant)	24.151	3.027	7.979	.000
	auth	.784	.149	5.266	.000
2	(Constant)	19.096	9.137	2.090	.048
	auth	.874	.215	4.065	.001
	educ	.315	.536	.587	.563

Commands to generate data for 4-Ex1.

```
SET WIDTH = 80 SEED = 21234567.  
INPUT PROGRAM.  
LOOP SUBJ = 1 TO 25.  
COMP #z1 = NORMAL(1).  
COMP #z2 = #z1*-.7071 + NORMAL(1)*.7071.  
END CASE.  
END LOOP.  
END FILE.  
END INPUT PROGRAM.  
COMP educ = RND(10 + 2*#z1).  
COMP auth = RND(20 + 5*#z2).  
COMP aggr = RND(40 +5*(#z2*.7071 + NORM(1)*.7071)).  
FORMAT subj educ auth aggr (F2.0).  
LIST.
```