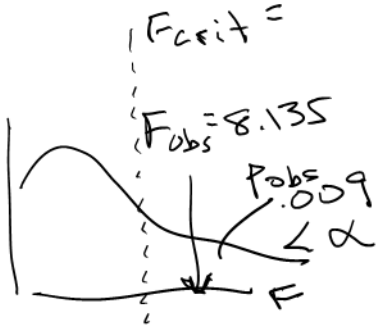
Ch5 Ex1: Anxiety (anx) as a function of amount of stress (str) and strength of coping mechanisms (cop).

```
CORR anx str cop /STAT.
```

	Mean	Std. Deviation	N
anx	47.60	10.050	25
str	24.96	3.422	25
cop	15.16	2.749	25

	anx	str
str	.694	
	.000	
cop	-.136	.315
	.516	.125

$r^2_{as.c} = \frac{339.329}{2424.0} = .140 = .621 - .481$ $\sqrt{\ } = .374$




```
REGRESS /STAT = DEFAULT CHANGE ZPP /DEP = anx /ENTER str /ENTER cop.
```

			Change Statistics				
Model	R	R Square	R Square Change	F Change	df1	df2	Sig. F Change
1	.694	.481	.481	21.352	1	23	.000
2	.788	.621	.140	8.135	1	22	.009

$H_0: \rho_{ac.s} = 0$
$H_a: \rho_{ac.s} < 0$
$F = \frac{339.329}{41.714} = 8.135$
$\sqrt{F} = 2.852$

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1166.966	1	1166.966	21.352	.000
	Residual	1257.034	23	54.654		
	Total	2424.000	24			
2	Regression	1506.295	2	753.147	18.055	.000
	Residual	917.705	22	41.714		
	Total	2424.000	24			

$SS_{ac.s} = 1506.295 - 1166.966 = 339.329$

		Unstandardized Coefficients				Correlations		
Model		B	Std. Error	t	Sig.	Zero-order	Partial	Part
1	(Constant)	-3.269	11.107	-.294	.771			
	str	2.038	.441	4.621	.000	.694	.694	.694
2	(Constant)	9.470	10.682	.887	.385			
	str	2.403	.406	5.919	.000	.694	.784	.776
	cop	-1.441	.505	-2.852	.009	-.136	-.520	-.374

Negative from $b_{ac.s}$

$r_{ac.s}$

$H_0: \beta_{ac.s} = 0$
$H_a: \beta_{ac.s} \neq 0$
$t = \frac{b_{ac.s} - 0}{SE_{b_{ac.s}}} = \frac{-1.441}{.505}$

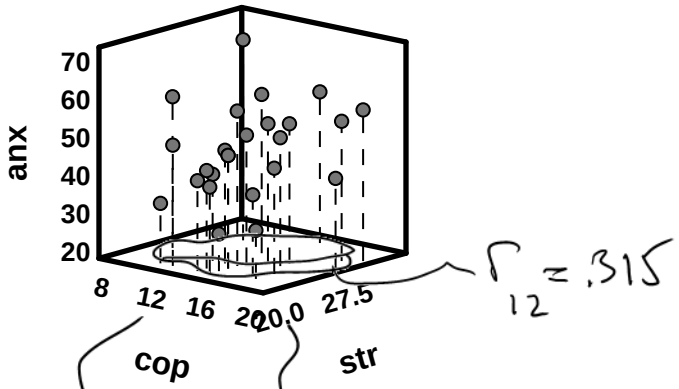
$\sqrt{MSE} = \sqrt{41.714}$
$\sqrt{(1 - r^2_{12}) SS_c} = \sqrt{(1 - .315^2)(181.36)}$
$s_c^2 = \frac{(n-1)s_c^2}{} =$
$= .512$

$t = \frac{1.44135}{\sqrt{\frac{MSE}{(1 - .315247^2)\,181.35998}}}$

$t^2 = \frac{1.44135^2 \times (1 - .315247^2) \times 181.35998}{MSE}$

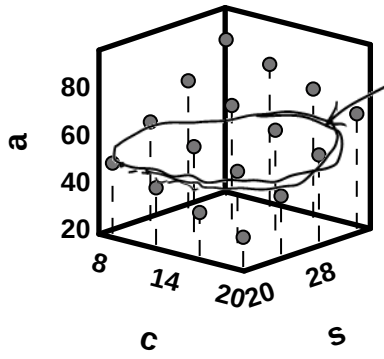
$= \frac{339.329}{MSE} = F$

```
GRAPH   /SCATTERPLOT(XYZ)=str WITH anx WITH cop.
```



$r_{12} = .315$

```
 INPUT PROGRAM.
LOOP c = 8 TO 20 BY 4.
LEAVE c.
LOOP s = 20 TO 35 BY 5.
END CASE.
END LOOP.
END LOOP.
END FILE.
END INPUT PROGRAM.
COMPUTE a = 9.470 + 2.403*s - 1.441*c.
GRAPH   /SCATTERPLOT(XYZ)=s WITH a WITH c   /MISSING=LISTWISE.
```



In data as c ↑, s ↑

$r_{12} = .315$

Commands to generate data for Ch5-Ex2.

```
set seed = 523199243.
input program.
loop subj = 1 to 25.
end case.
end loop.
end file.
end input program.

compute #u = rv.norm(0,1).
compute #s = #u*.5 + rv.norm(0,1)*sqrt(1-.5**2).
compute #c = #u*.5 + rv.norm(0,1)*sqrt(1-.5**2).
compute #a = #s*.5 + #c*-.5 + rv.norm(0,1)*.7071.

compute anx = rnd(50+10*#a).
compute str = rnd(25+4*#s).
compute cop = rnd(15+3*#c).

FORMAT subj anx str cop (F2.0).
LIST.
```