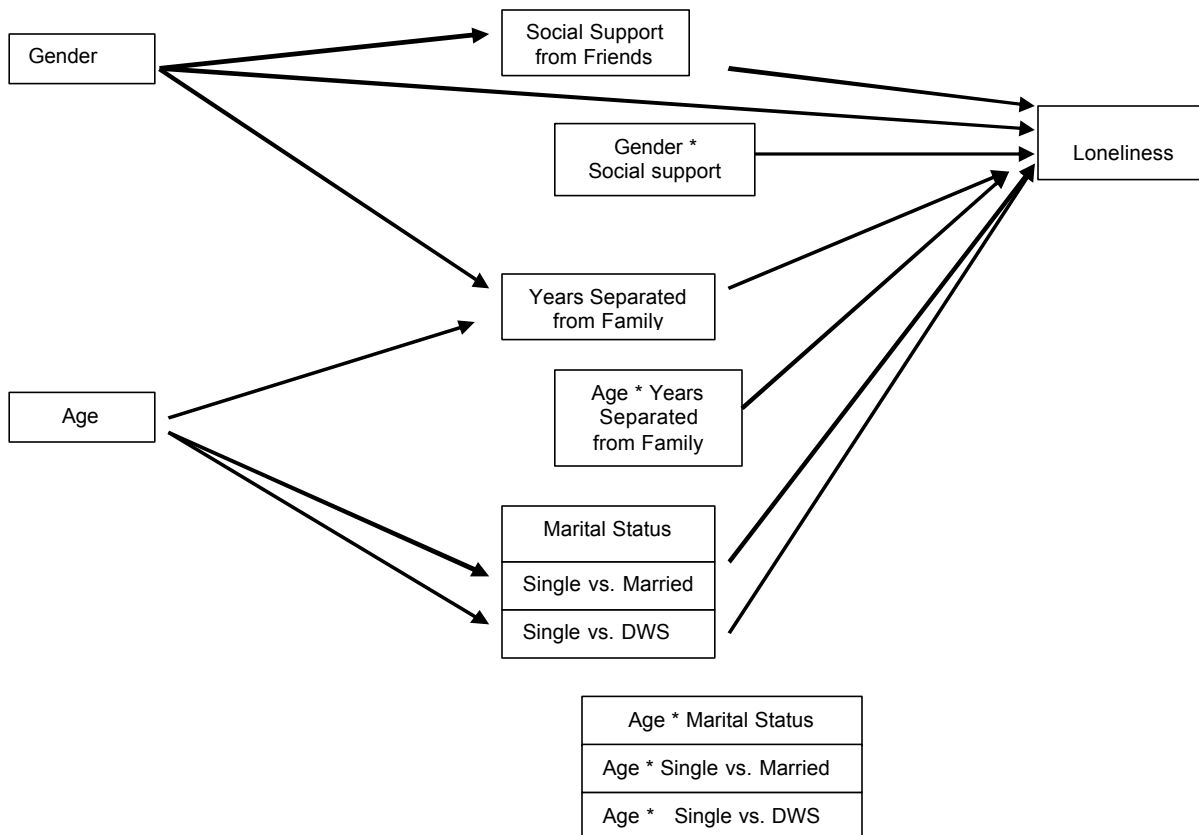


A Slightly More Interesting Path Model w/ Interactions

Here's the proposed structural model for how these variables relate to reports of Loneliness (RULS) of young adults, including a few interactions.

Interactions are assumed to “emerge” as a causal variable only after both of the related main effects are in effect.

Notice that the interactions of Age * Marital status don't have arrows. Then why include the interaction term in the depiction of the model? This is likely to happen when there is a specific RH: that a particular interaction *does not* contribute to a model, rather than that there isn't sufficient basis for hypothesizing about it. In order to test the hypothesis that this interaction does not contribute to the model, we have to include in the full model, but exclude it from the hypothesized model.



“Preparing” Interaction Variables for the Analysis

There are three interaction terms involved in the model. For demonstration purposes, there is one each of: 1) an interaction between a quant variable and a dummy-coded binary variable, 2) an interaction between a quant variable and a dummy-coded multiple-category variable, and 3) an interaction between two quantitative variables.

We will need to center each of the quantitative variables involved in an interaction.

Centering variables reduces the colinearity among the main effects and the related interaction components of a multiple regression model.

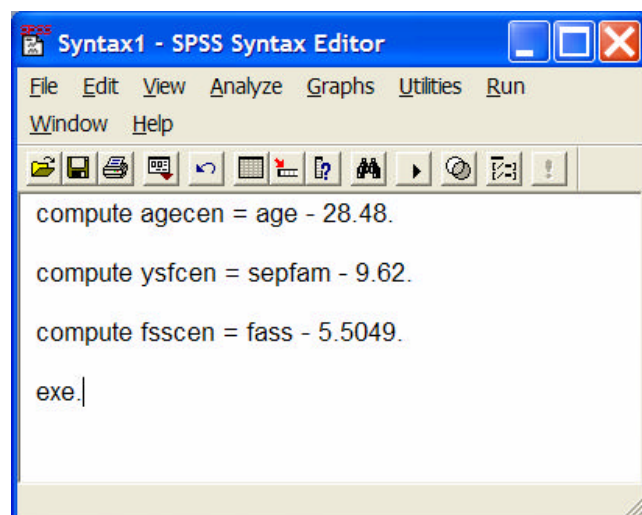
In order to center a quantitative variable we need to know its mean.

Centering a variable involves subtracting the mean of the variable from each person's score.

Here are the compute commands to create each of the centered variables.

Descriptive Statistics

	N	Mean	Std. Deviation
AGE	405	28.48	10.885
years separate from family	405	9.62	10.448
family social support	405	5.5049	1.45084
Valid N (listwise)	405		



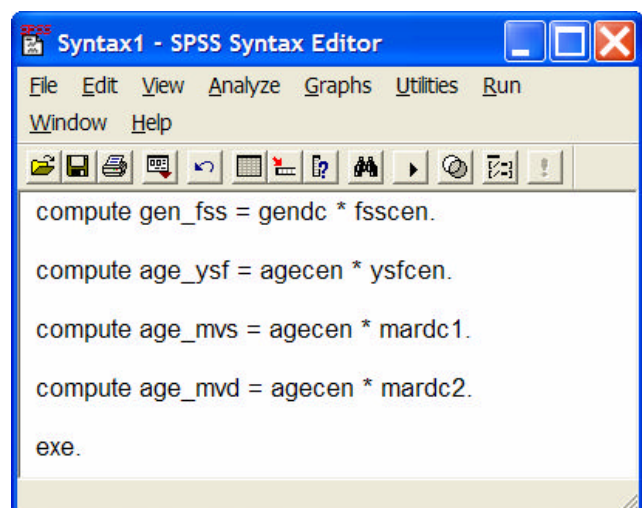
```
Syntax1 - SPSS Syntax Editor
File Edit View Analyze Graphs Utilities Run
Window Help
compute agecen = age - 28.48.
compute ysfcen = sepfam - 9.62.
compute fsscscen = fass - 5.5049.
exe.
```

Next we have to compute the interaction terms.

Each interaction term is computed as a product of the related main effect terms.

Interaction terms for multiple-category variables that are represented by dummy codes are formed for each of those dummy codes, by multiplying that dummy code with the centered

Here are the compute statements to create each of the interaction terms we need for this model.



```
Syntax1 - SPSS Syntax Editor
File Edit View Analyze Graphs Utilities Run
Window Help
compute gen_fss = gendc * fsscscen.
compute age_ysf = agecen * ysfcen.
compute age_mvs = agecen * mardc1.
compute age_mvd = agecen * mardc2.
exe.
```

Getting the Full Model w/ Interactions

The 1st layer of the model will be the same as the earlier model. The second layer requires a new analysis.

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	15123.42	10	1512.342	16.030	.000 ^a
	Residual	37170.89	394	94.342		
	Total	52294.31	404			

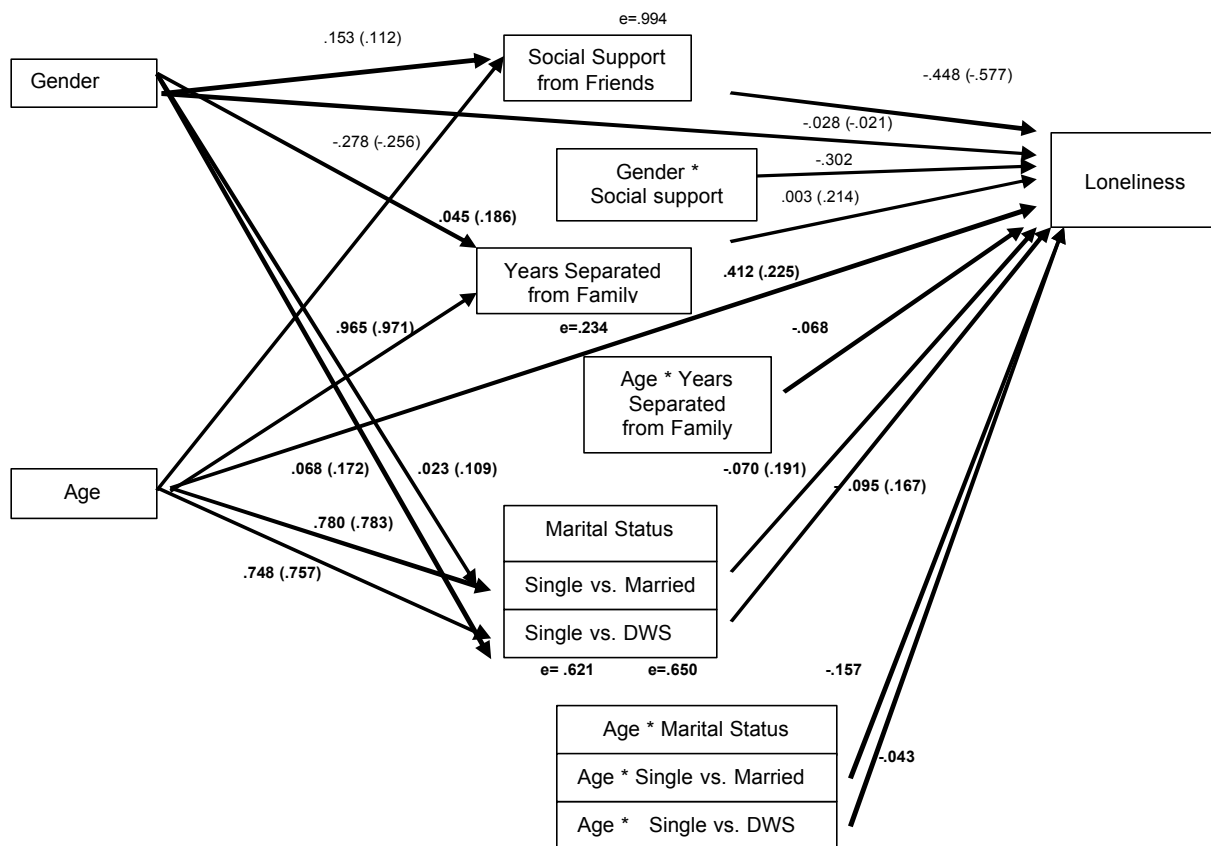
a. Predictors: (Constant), AGE_MVD, GEN_FSS, GENDC, AGE_MVS, MARDC1, FSSCEN, AGE_YSF, YSFCE, MARDC2, AGECE

b. Dependent Variable: Loneliness

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	40.117	1.308		30.659	.000
	GENDC	-.631	1.005	-.028	-.628	.530
	AGECE	.430	.226	.412	1.901	.058
	FSSCEN	-3.515	.553	-.448	-6.359	.000
	GEN_FSS	-.213	.030	-.302	-7.123	.001
	YSFCE	.003	.229	.003	.013	.990
	AGE_YSF	-.006	.010	-.068	-.583	.561
	MARDC1	-1.729	2.244	-.070	-.770	.442
	MARDC2	-3.532	4.346	-.095	-.813	.417
	AGE_MVS	-.300	.285	-.157	-1.052	.294
	AGE_MVD	-.108	.429	-.043	-.252	.801

a. Dependent Variable: Loneliness



Evaluating the Hypothesized Model Based on the Full Model

This is useful but somewhat tentative, because of colinearity changes between the full and hypothesized models.

“Paths that Support the Hypothesized Model”

Sig. hypothesized paths

Non-sig null paths:

“Paths that are Contrary to the Hypothesized Model”

Nonsig hypothesized paths:

Sig. null paths:

Hypothesized Model

Again, the 1st layer of the model will be the same as the earlier model. The second layer requires a new analysis.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.530 ^a	.281	.268	9.734

a. Predictors: (Constant), MARDC2, GEN_FSS, GENDC, MARDC1, AGE_YSF, FSSCEN, YSFCEN

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	40.256	1.278		31.496	.000
	GENDC	-.886	.994	-.039	-.891	.373
	FSSCEN	-3.613	.552	-.461	-6.543	.000
	GEN_FSS	.119	.695	.012	.171	.864
	YSFCEN	.376	.101	.345	3.706	.000
	AGE_YSF	-.013	.005	-.150	-2.587	.010
	MARDC1	-2.967	1.828	-.119	-1.623	.105
	MARDC2	-2.519	2.294	-.068	-1.098	.273

a. Dependent Variable: loneliness

