

The ANOVA for Dependent Groups w/ Trend Analysis— Analysis of k-Within-Quantitative-Group Data with a Quantitative DV

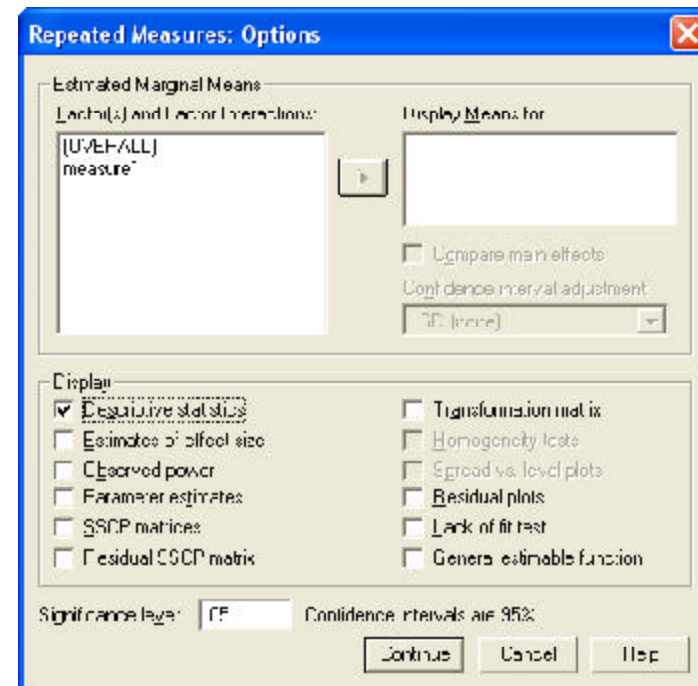
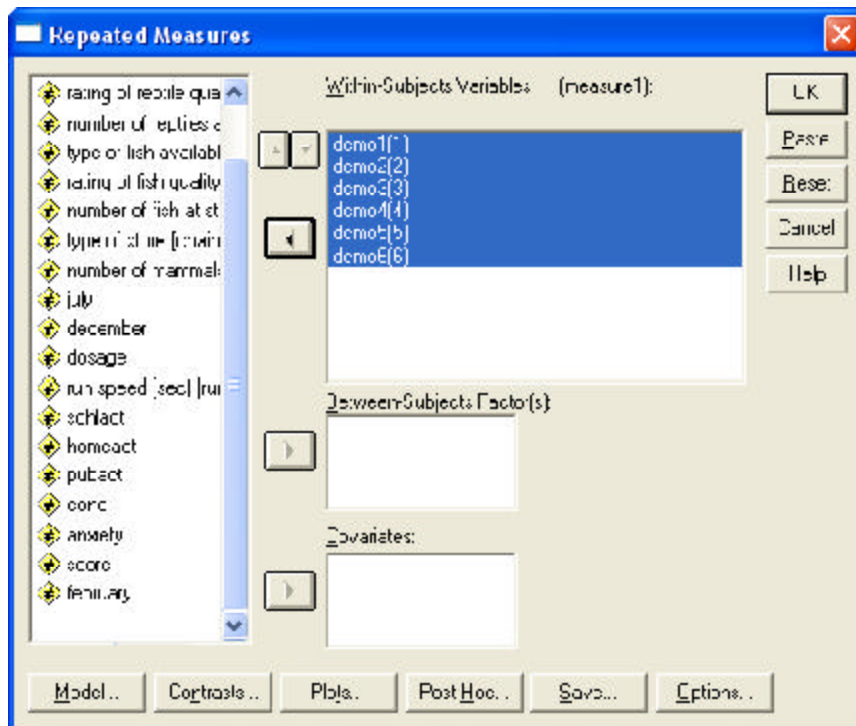
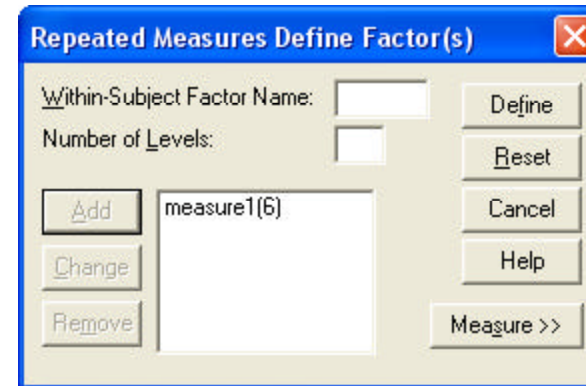
Application: To identify the shape of the IV-DV relationship (linear, quadratic, cubic or combination)

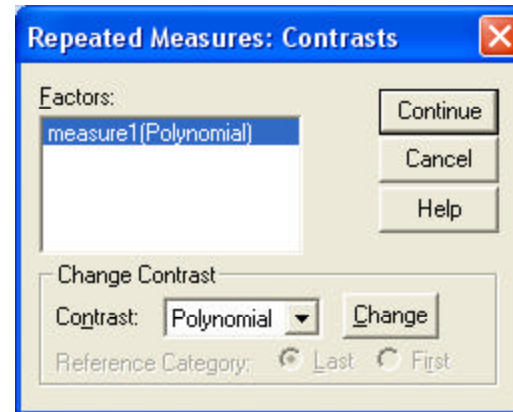
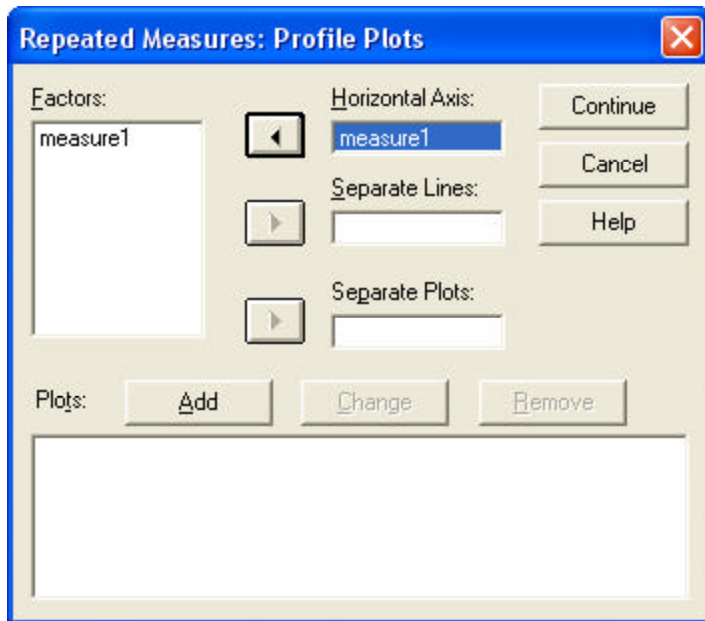
Research Hypothesis: The researcher hypothesized there would be a negative linear relationship between time in therapy and depression scores

H0: for this analysis: There would be no linear trend.

Analyze → General Linear Model → Repeated Measures

- enter your name for the IV in the “Within-subject Factor Name” window
- enter the number of conditions of the IV in the “Number of levels” window
- click the “Add” button
- click the “Define” button
- for each IV condition -- highlight the variable that is the DV score for that condition and click the arrow
- “Options” -- check that you want “Descriptives”
- “Contrasts” -- check that “Polynomial” is highlighted
- “Plots” -- highlight your name for the IV in the drop-down menu and click the arrow to send it to the “Horizontal Axis” window

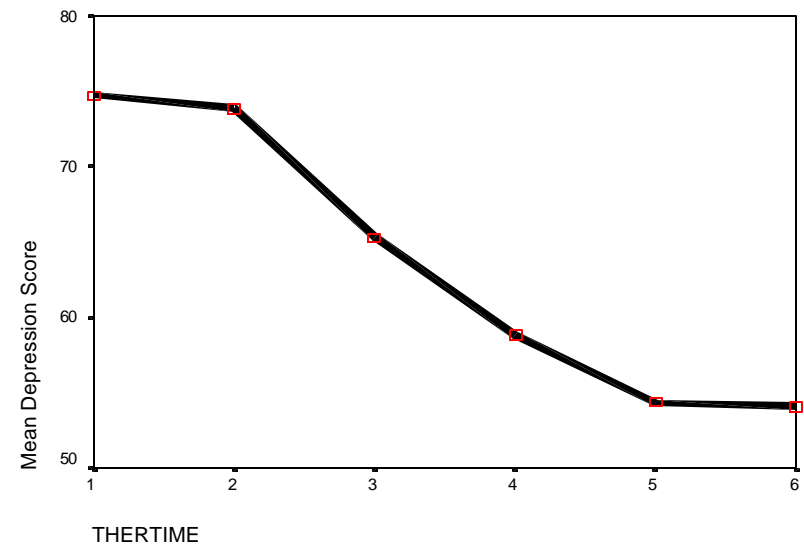




The univariate statistics for each IV condition.

Descriptive Statistics

	Mean	Std. Deviation	N
DCMO1	74.7375	6.8024	80
DCMO2	73.8750	7.4092	80
DCMO3	65.3125	8.1499	80
DCMO4	58.8125	5.3724	80
DCMO5	54.3250	7.7161	80
DCMO6	54.1125	5.1188	80



While the means plot isn't something you'll likely use in a poster or publication, it does provide a quick look at the data pattern.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.
THERTIME	Sphericity Assumed	34518.442	5	6903.688	147.218	.000
	Greenhouse-Geisser	34518.442	4.464	7733.001	147.218	.000
	Huynh-Feldt	34518.442	4.764	7245.437	147.218	.000
	Lower-bound	34518.442	1.000	34518.442	147.218	.000
Error(THERTIME)	Sphericity Assumed	18523.225	395	46.894		
	Greenhouse-Geisser	18523.225	352.639	52.527		
	Huynh-Feldt	18523.225	376.369	49.216		
	Lower-bound	18523.225	79.000	234.471		

This table gives the Omnibus-F test results -- be sure to refer to the "Sphericity Assumed" rows for the **effect** and the

error information to report.

We would reject the H0: that the means of these groups are all the same.

Tests of Within-Subjects Contrasts

Measure: MEASURE_1

Source	THERTIME	Type III Sum of Squares	df	Mean Square	F	Sig.
THERTIME	Linear	32361.686	1	32361.686	692.313	.000
	Quadratic	364.002	1	364.002	1.423	.158
	Cubic	1585.367	1	1585.367	35.358	.000
	Order 4	60.714	1	60.714	1.148	.285
	Order 5	46.672	1	46.672	1.037	.312
Error(THERTIME)	Linear	3692.799	79	46.744		
	Quadratic	3553.379	79	44.979		
	Cubic	3542.211	79	44.838		
	Order 4	4179.571	79	52.906		
	Order 5	3555.265	79	45.003		

This table gives each of the trend analyses. SPSS will automatically perform k-1 trend component analyses, though trend beyond "Cubic" are rarely interpreted in psychological research.

Notice that each specific trend component F-test uses its own specific error term.

Based on these results, we would conclude that there are significant Linear and Cubic components to the shape of the relationship between time in therapy and depression score.

Reporting the Results

The mean depression scores for each amount of time in therapy are shown in Table 1. There was a difference among the group means, $F(5, 395) = 147.22$, $p < .001$, $MSe = 46.89$. As hypothesized there was a linear trend to the data, $F(1,79) = 692.31$, $p = .001$, $MSe = 46.74$ and no Cubic trend, $F(1,79) = 1.423$, $p = .158$, $MSe = 44.98$. However, contrary to the hypothesis there was also a significant Cubic trend, $F(1,79) = 35.358$, $p < .001$, $MSe = 44.838$. In summary, the data show a combined trend including a negative linear and cubic trend such that depression scores changed little from the first to the second session, then decreased consistently through the fifth session and then leveled off.