

# Answers to additional health exercises

## Chapter 19 Two-way ANOVA

Conduct a two-way ANOVA with post hoc tests (if appropriate) to compare male and female (*gender*) mean sleepiness ratings (Sleepiness and Associated Sensations Scale total score : *totSAS*) for the three age groups defined by the variable *agegp3* ( $\leq 37$ , 38-50, 51+).

Between-Subjects Factors

		Value Label	N
gender	0	female	140
	1	male	90
agegp3	1	$\leq 37$	79
	2	38 - 50	79
	3	51+	72

Descriptive Statistics

Dependent Variable: sleepy& assoc sensations scale

gender	agegp3	Mean	Std. Deviation	N
female	$\leq 37$	29.86	9.483	43
	38 - 50	27.67	11.569	58
	51+	26.18	10.445	39
	Total	27.93	10.673	140
male	$\leq 37$	25.28	10.812	36
	38 - 50	21.67	8.845	21
	51+	23.91	8.773	33
	Total	23.93	9.652	90
Total	$\leq 37$	27.77	10.303	79
	38 - 50	26.08	11.180	79
	51+	25.14	9.715	72
	Total	26.37	10.449	230

Levene's Test of Equality of Error Variances<sup>a</sup>

Dependent Variable: sleepy & assoc sensations scale

F	df1	df2	Sig.
2.064	5	224	.071

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

<sup>a</sup>. Design: Intercept+gender+agegp3+gender\* agegp3

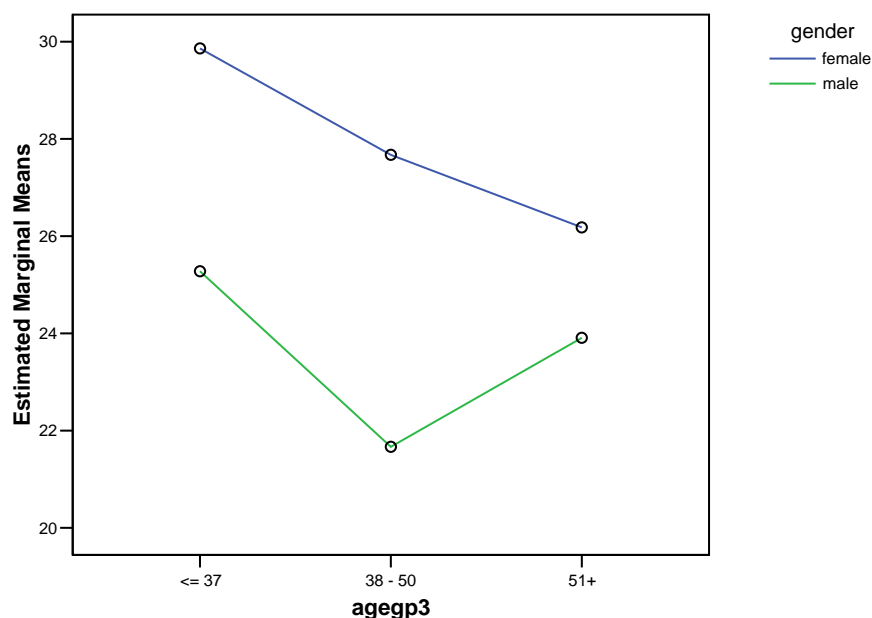
### Tests of Between-Subjects Effects

Dependent Variable: sleepy & assoc sensations scale

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	1331.023 <sup>a</sup>	5	266.205	2.519	.030	.053
Intercept	139029.828	1	139029.828	1315.686	.000	.855
gender	962.240	1	962.240	9.106	.003	.039
agegp3	363.906	2	181.953	1.722	.181	.015
gender * agegp3	119.684	2	59.842	.566	.568	.005
Error	23670.298	224	105.671			
Total	184880.000	230				
Corrected Total	25001.322	229				

a. R Squared = .053 (Adjusted R Squared = .032)

### Estimated Marginal Means of sleepy & assoc sensations scale



*There is no significant age by gender interaction effect [ $F(2,224)=.566$ ,  $p=.568$ ]. The main effect for gender is statistically significant [ $F(1,224)=9.11$ ,  $p=.003$ ], with females reporting higher sleepiness scores across all age levels. There was no main effect for age [ $F(2,224)=1.722$ ,  $p=.181$ ].*