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EDG500: Educational Research and Statistics: OA

SPSS Chapters 16 and 17, Week 12

➔ **NPar Tests**

[DataSet1]

Chi-Square Test

Frequencies

Candidate

	Observed N	Expected N	Residual
Jane Smith	11	10.0	1.0
John Doe	9	10.0	-1.0
Total	20		

Test Statistics

	Candidate
Chi-Square	.200[a]
df	1
Asymp. Sig.	.655

a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 10.0.

Figure 16.8. Raw SPSS Statistics output for the data in Table 16.1.

Candidate Smith (n = 11) was favored over Candidate Doe (n = 9) in the survey. However, the difference was not statistically significant at the .05 level (X^2= .200, *df* = 1). Thus, the election is too close to call. (page 173)

➔ **NPar Tests**

[DataSet0]

Chi-Square Test

Frequencies

UniformColor

	Observed N	Expected N	Residual
Tan	5	6.7	-1.7
Blue	12	6.7	5.3
Brown	3	6.7	-3.7
Total	20		

Test Statistics

	UniformColor
Chi-Square	6.700[a]
df	2
Asymp. Sig.	.035

a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 6.7.

Figure 16.2. Color Preferences for School Uniforms for Data in Table 16.2

Uniform color blue (*n* = 12) was preferred over tan (*n* = 5) and brown (*n* = 3).
The difference in uniform color is significant at the .05 level as it is less than or equal to .05 and greater than .01. (X^2= 6.700, *df* = 2).

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Gender * Vote	24	100.0%	0	0.0%	24	100.0%

Gender * Vote Crosstabulation

			Vote		Total
			Yes	No	
Gender	Male	Count	8	4	12
		% within Gender	66.7%	33.3%	100.0%
	Female	Count	5	7	12
		% within Gender	41.7%	58.3%	100.0%
Total		Count	13	11	24
		% within Gender	54.2%	45.8%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.510[a]	1	.219		
Continuity Correction[b]	.671	1	.413		
Likelihood Ratio	1.527	1	.217		
Fisher's Exact Test				.414	.207
Linear-by-Linear Association	1.448	1	.229		
N of Valid Cases	24				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.50.
b. Computed only for a 2x2 table

Figure 17.11. SPSS Statistics output for chi-square test of independence.

Males were more likely to vote "yes," while females were more likely to vote "no," as shown in Table 17.2. However, the relationship between gender and voting was not statistically significant at the .05 level (X^2 = 1.510, *df* = 1). Thus, gender and voting are independent of each other.

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Experience * Approval	20	100.0%	0	0.0%	20	100.0%

Experience * Approval Crosstabulation

			Approval		Total
			Approve	Disapprove	
Experience	Experienced	Count	7	3	10
		% within Experience	70.0%	30.0%	100.0%
	Inexperienced	Count	3	7	10
		% within Experience	30.0%	70.0%	100.0%
Total		Count	10	10	20
		% within Experience	50.0%	50.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	3.200[a]	1	.074		
Continuity Correction[b]	1.800	1	.180		
Likelihood Ratio	3.291	1	.070		
Fisher's Exact Test				.179	.089
Linear-by-Linear Association	3.040	1	.081		
N of Valid Cases	20				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.00.
b. Computed only for a 2x2 table

Figure 17.11. SPSS Statistics output for chi-square test of independence.

Experienced teachers were more likely to "approve," and inexperienced teachers were more likely to "disapprove," as shown in Table 17.3. However, the relationship between teacher experience and approval was not statistically significant at the .05 level (X^2 = 3.200, *df* = 1). Thus, teacher experience and approval are independent of each other.

Exercises Chapter 16

    a.   What is the observed value n for Tan?

       The observed value for Tan is $n = 5$.

    b.   What is the observed value n for Blue?

       The observed value for Blue is $n = 12$.

    c.   What is the observed value n for Brown?

       The observed value for Brown is $n = 3$.

    d.   What is the value of chi-square?

       The value of chi-square is 67.00.

    e.   What is the associated probability?

       The associated probability is 0.035.

    f.   Are the observed values significantly different at the .05 level from the expected value of 6.7 for each color?

       Yes, the observed values are significantly different at the .05 level from the expected values of 6.7 for each color.

    g.   Write a statement of the results of the significance test.

       Uniform color blue ($n = 12$) was preferred over tan ($n = 5$) and brown ($n = 3$).

       The difference in uniform color is significant at the .05 level as it is less than or equal to .05 and greater than .01. ($X^2 = 6.700$, $df = 2$).

Exercises Chapter 17

    a.   How many of the experienced teachers approved?

        Seven of the experienced teachers approved of the proposed curriculum. (n = 7)

    b.   How many of the inexperienced teachers approved?

        Three of the inexperienced teachers approved of the proposed curriculum. (n = 3)

    c.   What is the value of chi-square?

        The value of chi-square is 3.200.

    d.   What is the associated probability?

        The associated probability is 0.074.

    e.   Are the results statistically significant at the .05 level?

        The results are not statistically significant at the .05 level.

    f.   Write a statement of the results of the significance test.

        Experienced teachers were more likely to "approve," and inexperienced teachers were more likely to "disapprove," as shown in Table 17.3. However, the relationship between teacher experience and approval was not statistically significant at the .05 level (X^2 = 3.200, *df* = 1). Thus, teacher experience and approval are independent of each other.