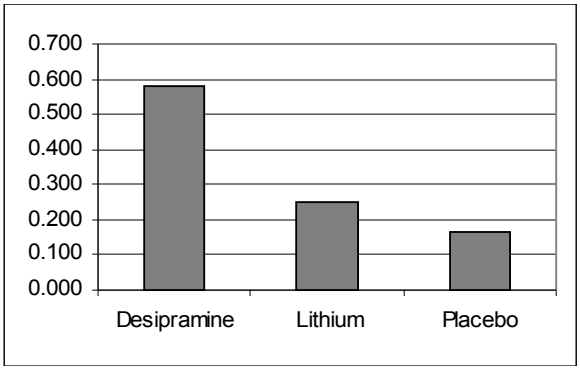
The Chi-Square Test of Homogeneity of Populations

Chronic users of cocaine need the drug to feel pleasure. Perhaps giving them a medication that fights depression will help them stay off cocaine. A three-year study compared an antidepressant called desipramine with lithium (a standard treatment for cocaine addiction) and a placebo. The subjects were 72 chronic users of cocaine who wanted to break their drug habit. Twenty-four of the subjects were randomly assigned to each treatment. Here are the counts and proportions of the subjects who avoided relapse into cocaine use during addiction.

Group	Treatment	Subjects	No relapse	Proportion
1	Desipramine	24	14	0.583
2	Lithium	24	6	0.250
3	Placebo	24	4	0.167



Are these data good evidence that the proportions of successes for the three treatments differ in the population of all cocaine users? That is, is there significant evidence to suggest that the proportions are different among the three populations?

The Hypotheses

A Two-Way Table: The Observed Counts

		Treatment			
		Desipramine	Lithium	Placebo	Total
Relapse	Yes				
	No				
	Total				

A Two-Way Table: The Expected Counts** (See Reverse)

		Treatment			
		Desipramine	Lithium	Placebo	Total
Relapse	Yes				
	No				
	Total				

X^2 =