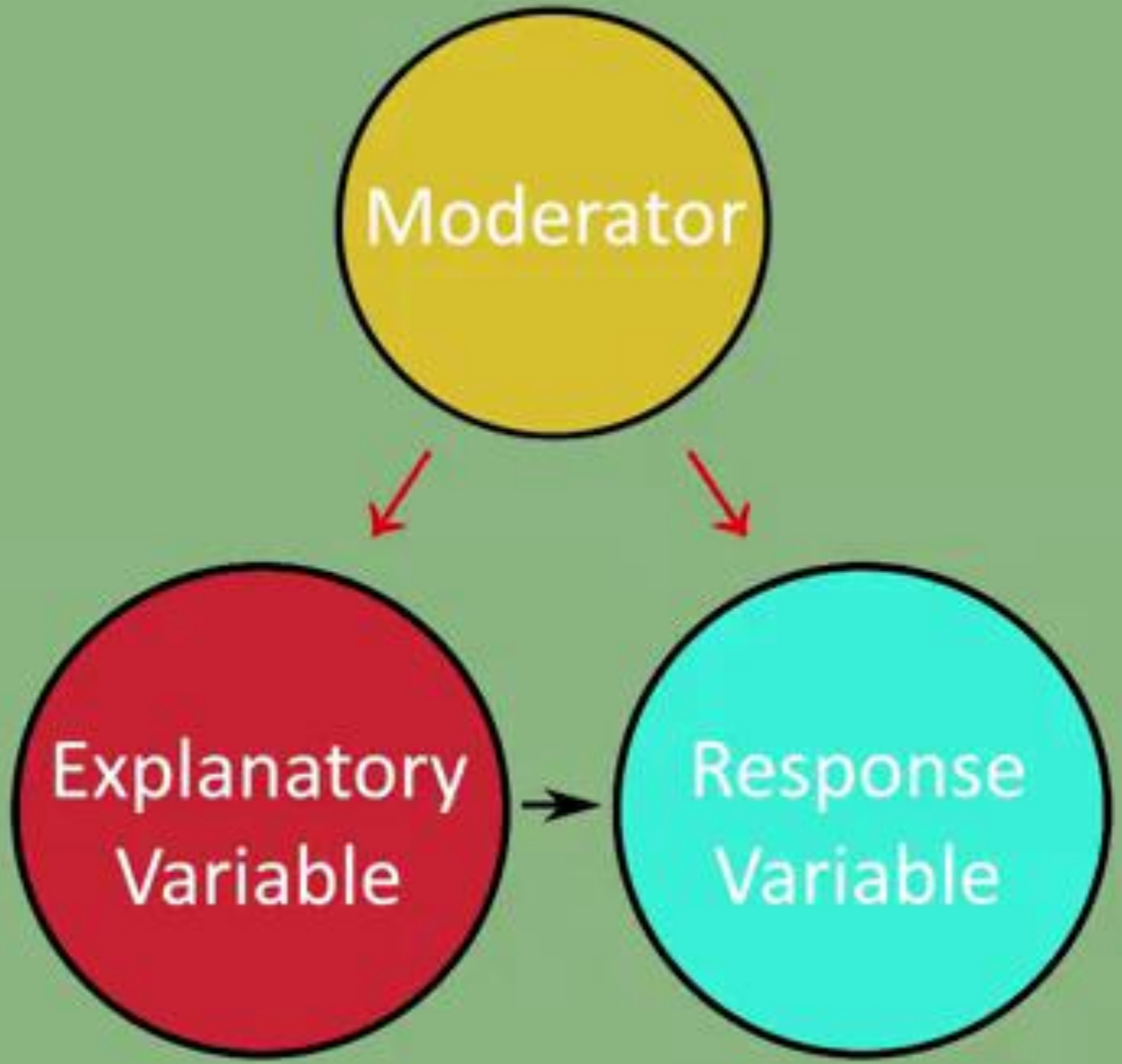
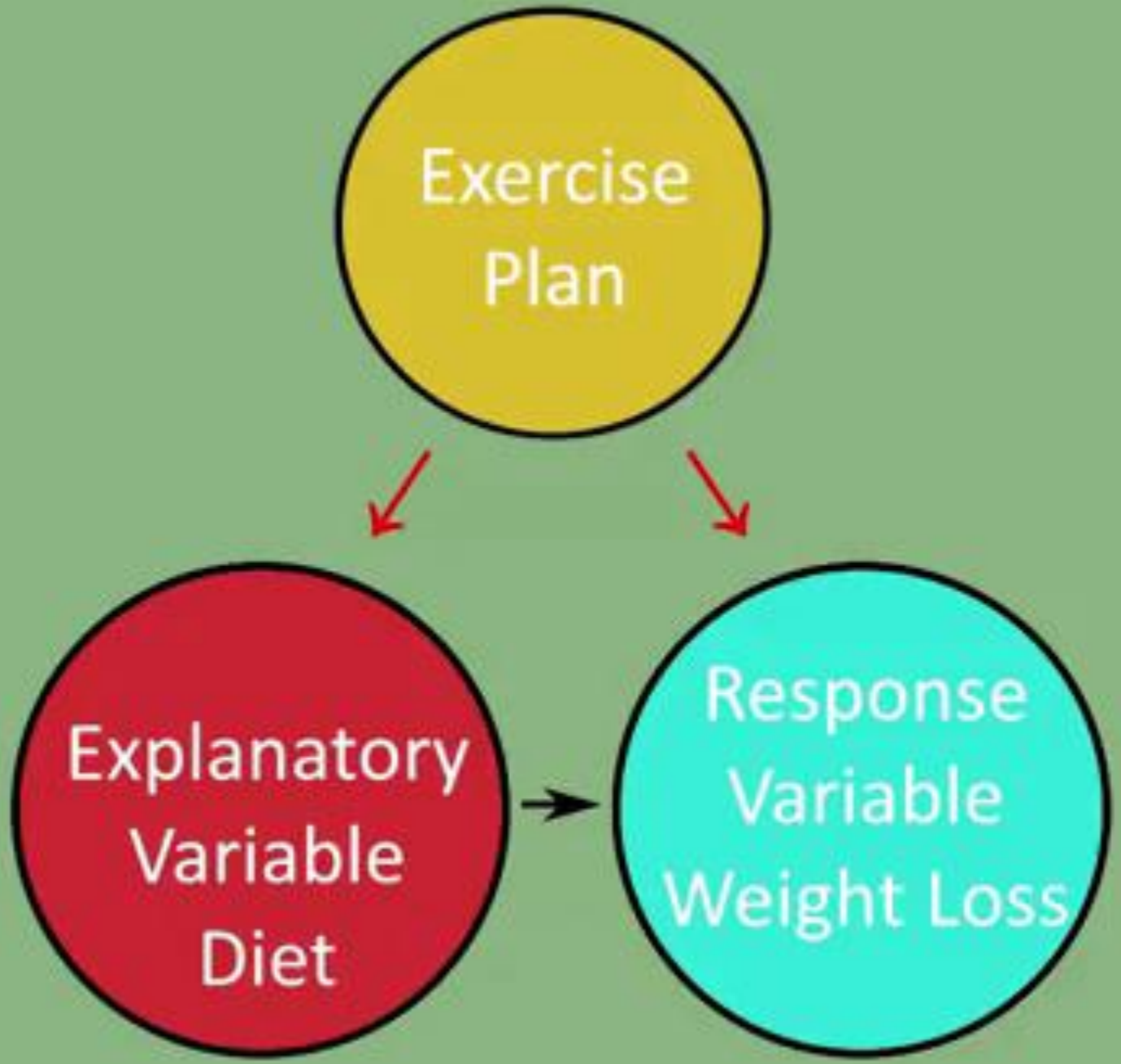
If more than 2, need
1. Post-hoc Test: pair-wise test to find whether which pairs are different (nC2 pair)
2. Confidence Level Adjustment: Bonferroni Adjustment is one of the common tools

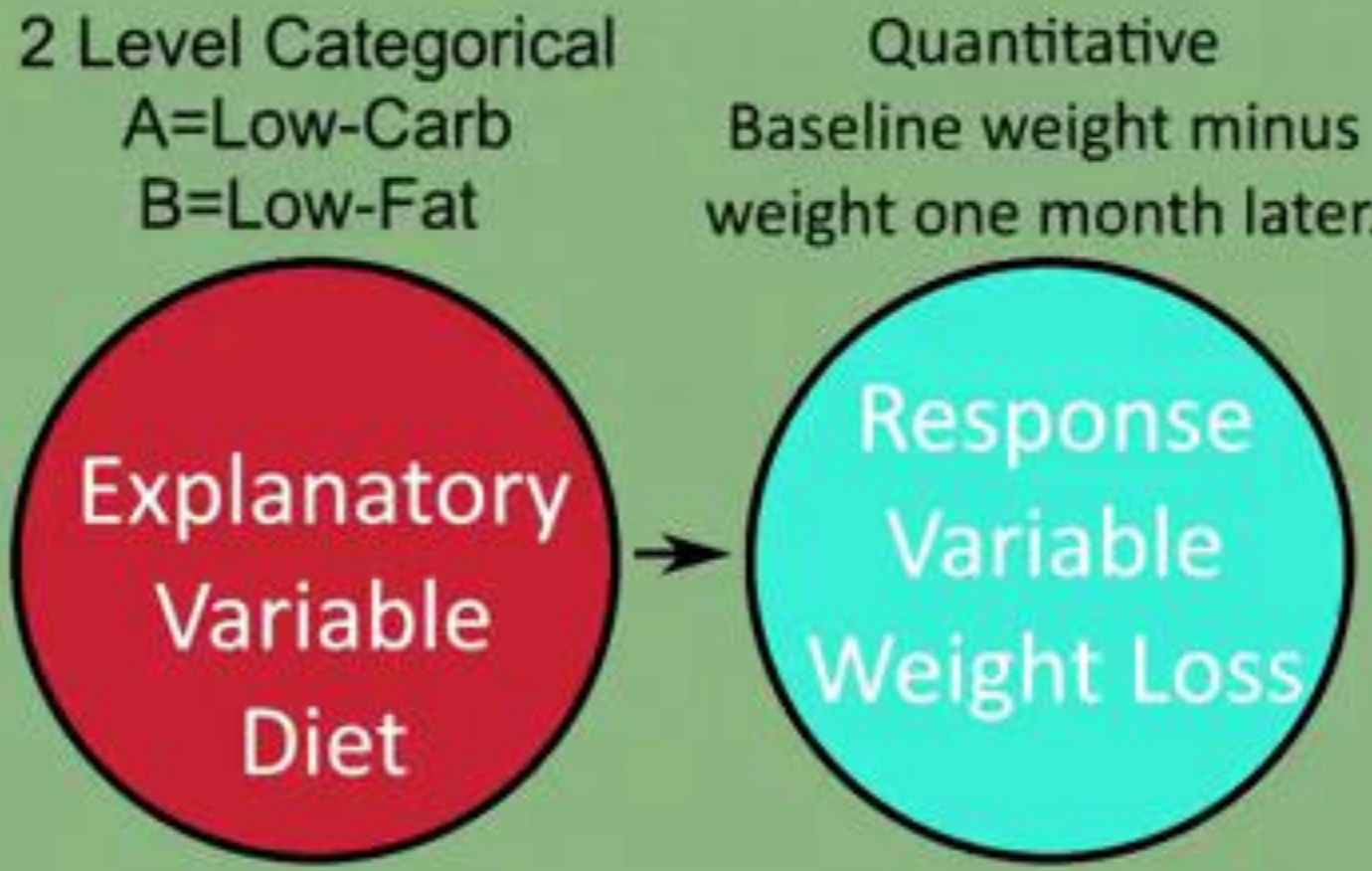
		Response	
		Categorical	Quantitative
Explanatory	Categorical	C→C Chi Square Test of Independence	C→Q Analysis of Variance (ANOVA)
	Quantitative	Q→C	Q→Q Pearson Correlation

1: Change quantitative explanatory to categorical by grouping and perform chi-square
2: Change categorical response to quantitative by recoding and perform correlation


Moderator
Explanatory Variable
Response Variable

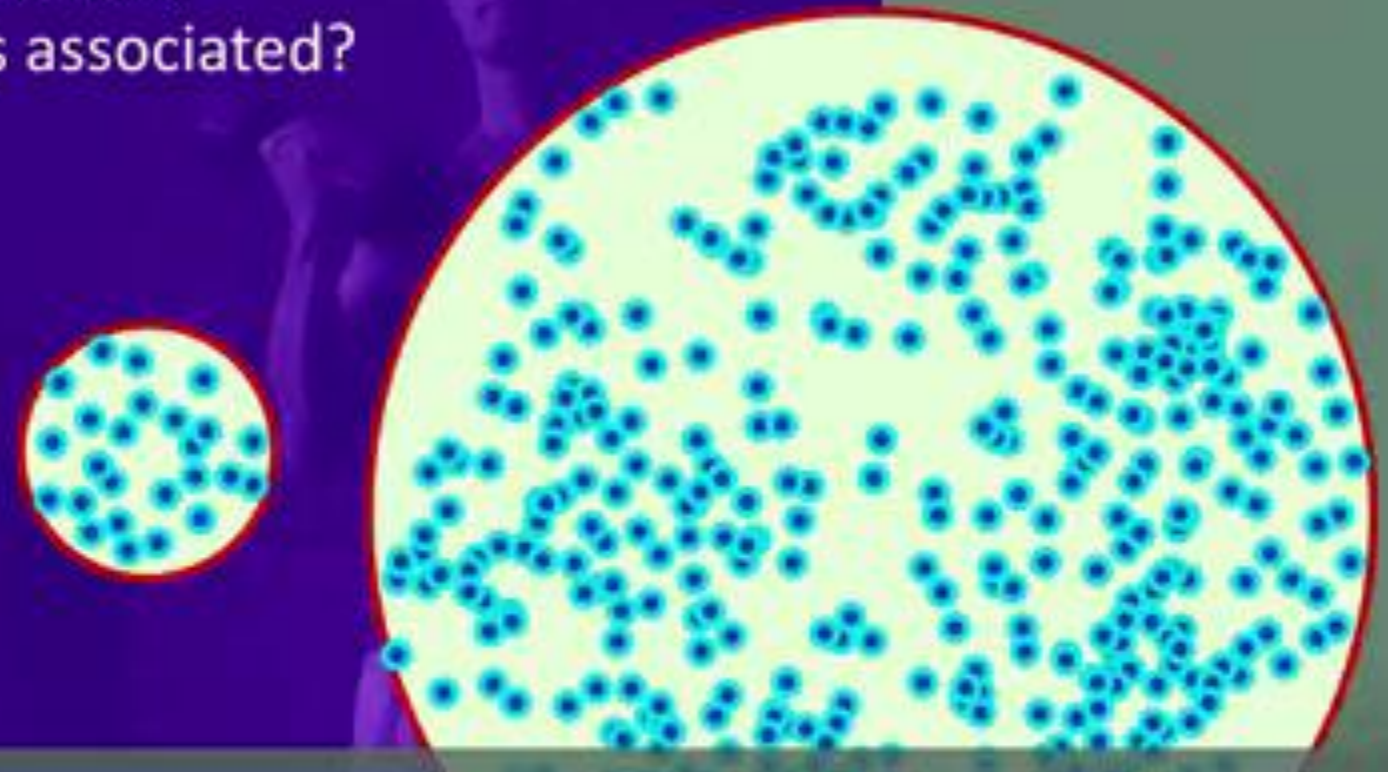

Exercise Plan
Explanatory Variable Diet
Response Variable Weight Loss

What is the association between the explanatory variable and the response variable?

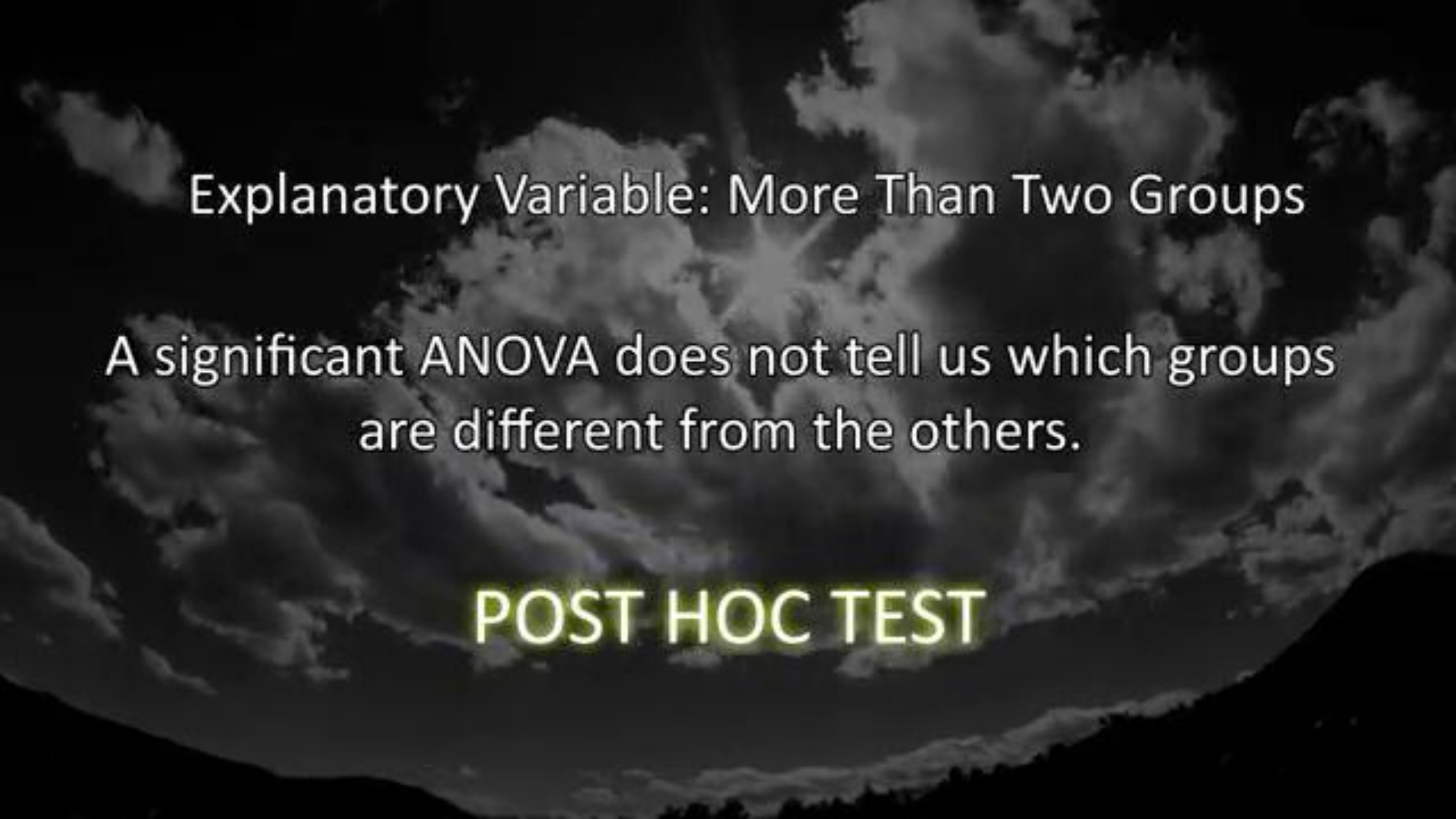


Weight Training
Are diet and
weight-loss associated?

Cardio
Are diet and
weight-loss associated?



Are diet type and weight loss associated for those doing the cardio exercise program? And are diet and weight loss associated for those using the weight-training program?


Explanatory Variable: More Than Two Groups
A significant ANOVA does not tell us which groups are different from the others.
POST HOC TEST

Family-Wise Type 1 Error Rate

# Tests	Comparison α	Family-wise α
1	.05	.05
3	.05	.14
6	.05	.26
10	.05	.40
15	.05	.54

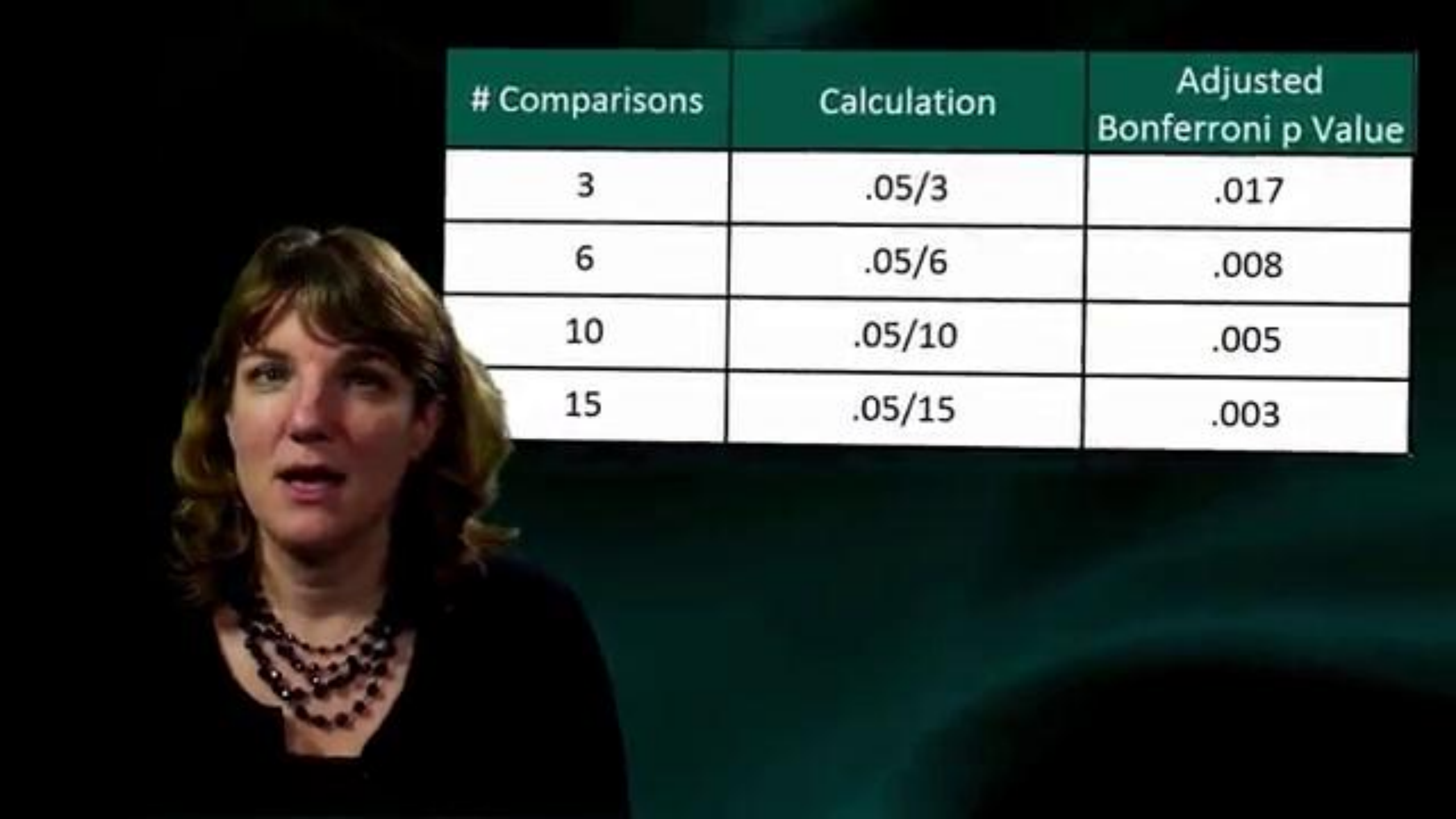
$$\alpha_{FW} = 1 - (1 - \alpha_{PC})^{c}$$

Where c = # of comparisons, α=normal Type 1 Error (.05)

BonferroniAdjustment

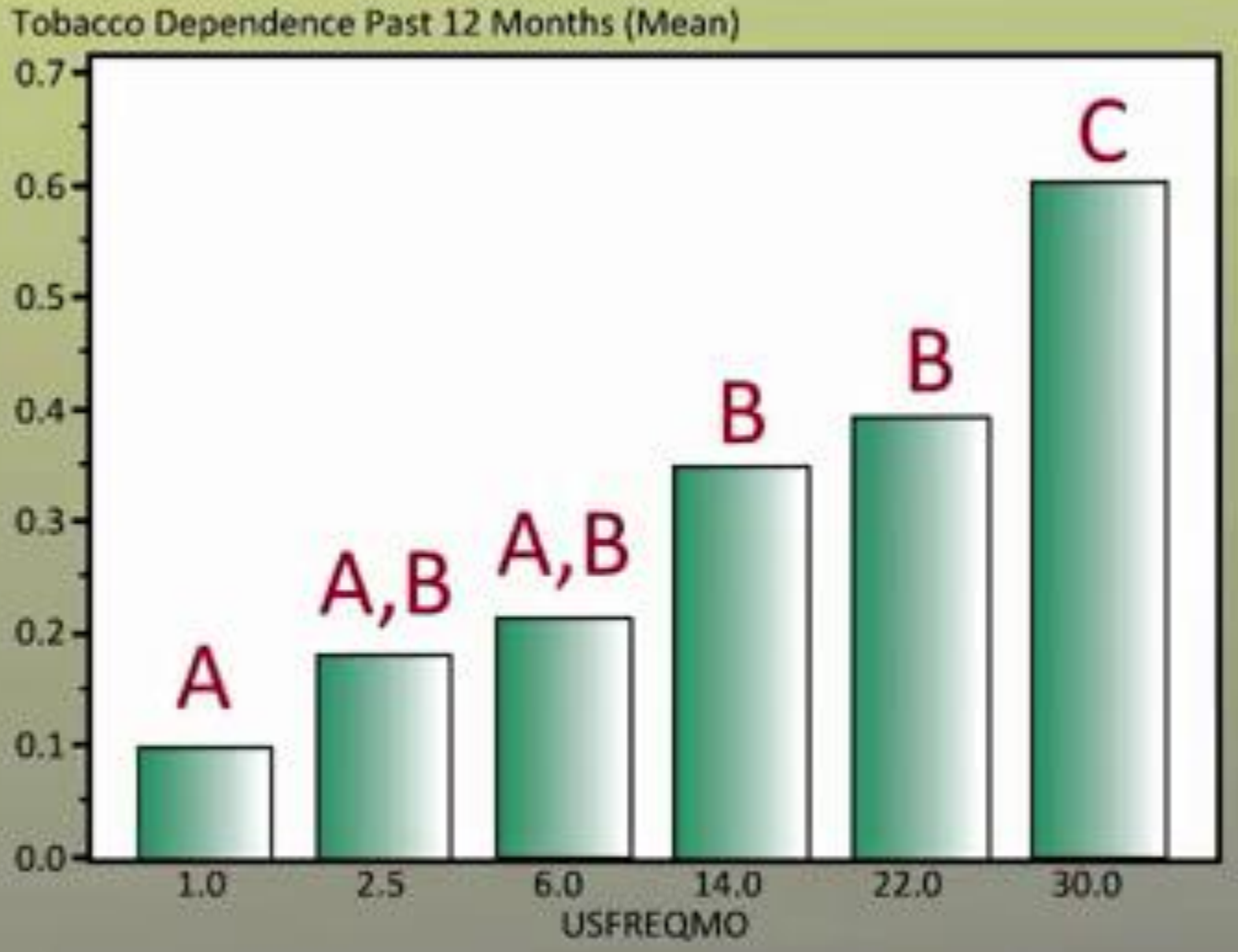
$$\frac{p}{c}$$

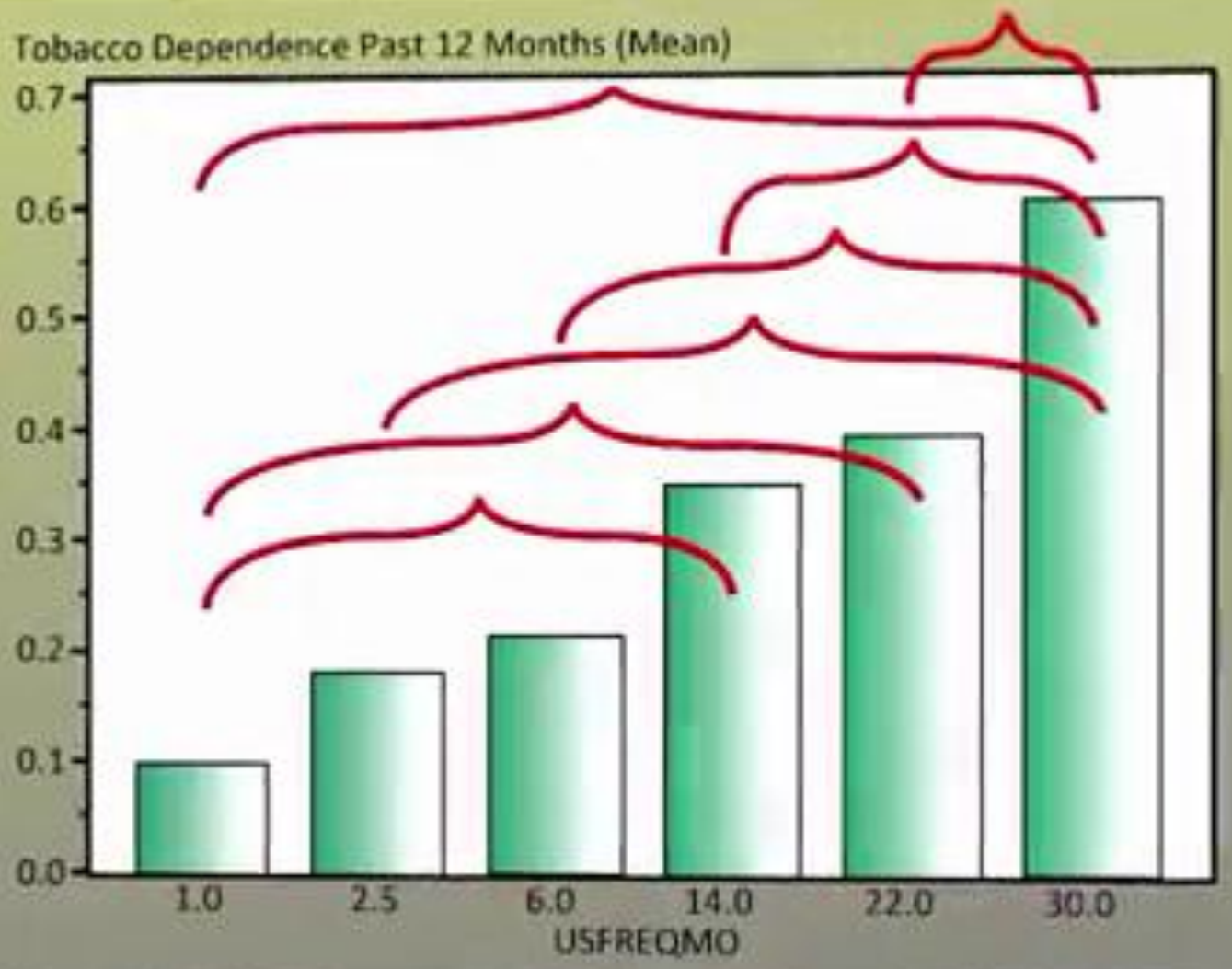
c = number of comparisons



# Comparisons	Calculation	Adjusted Bonferroni p Value
3	.05/3	.017
6	.05/6	.008
10	.05/10	.005
15	.05/15	.003

	1	2.5	5	14	22	30
1	*					
2.5	0.15	*				
6	0.05	0.63	*			
14	0.0002	0.02	0.04	*		
22	0.0001	0.007	0.01	0.56	*	
30	0.0001	0.0001	0.0001	0.001	0.0006	*


Tobacco Dependence Past 12 Months (Mean)
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
A
A,B
A,B
B
B
C
1.0
2.5
6.0
14.0
22.0
30.0
USFREQMO


Tobacco Dependence Past 12 Months (Mean)
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
1.0
2.5
6.0
14.0
22.0
30.0
USFREQMO