

Name _____

Ψ 420
Ainsworth

Psy 420 – Midterm 2
Part 1 – In class (50 points total)

True or False (circle T or F) (2 points each)

1. T F Homogeneity of covariance and sphericity are the same thing.
2. T F Any comparison on WS variables requires a separate error term.
3. T F A matched randomized design is treated the same as a WS design.

Multiple Choice (3 points each)

4. When performing an ANOVA through regression, the number of columns for coding is equal to:
 - a. df_T .
 - b. df_{effect}
 - c. df_{error}
 - d. not enough information.
5. Controlling for everything else, BG designs are _____ powerful than WS designs.
 - a. more
 - b. less
 - c. just as
 - d. Not enough information.

Short Answer Question (8 points)

6. You have a study with 4 IVs (A, B, C, D). A is a BG variable, while B, C and D are WS variables. What are the sources of variance and which error terms go with which effects?

A cookie company is interested in whether the amount of butter in a batch of cookies makes them “yummiier”. Five people were randomly selected to taste test three different batches of sugar cookies; one used only one stick of butter, the second used two sticks of butter and the third batch used three sticks of butter. Ratings of “yumminess” were measured by the number of cookies that each person ate from each batch.

	One Stick	Two Sticks	Three Sticks	Case Totals
S ₁	13	22	24	S ₁ = 59
S ₂	7	16	17	S ₂ = 40
S ₃	2	10	13	S ₃ = 25
S ₄	9	17	19	S ₄ = 45
S ₅	5	13	15	S ₅ = 33
	1 stick = 36	2 sticks = 78	3 sticks = 88	T = 202

7. Does amount of butter affect the ratings of “yumminess”? Create a summary table of all effects and perform the appropriate significance test (5 points). Show all work.

8. What is the relative efficiency of this design? (2 points)

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A researcher is interested in finding out who is cuter, his nephew or his niece. So he randomly selects 5 people to rate pictures taken of both kids; one when each is 1-year old, 2 years old and 3 years old. Results of the rating are shown below.

	Nephew			Niece			Case Totals
	1 year	2 year	3 year	1 year	2 year	3 year	
S ₁	10	9	5	12	16	17	S1 = 69
S ₂	12	12	8	16	20	20	S2 = 88
S ₃	10	9	5	14	18	19	S3 = 75
S ₄	13	12	9	16	20	21	S4 = 91
S ₅	8	7	3	12	17	17	S5 = 64
	NephY1 = 30	NephY2 = 49	NephY3 = 53	NieceY1 = 70	NieceY2 = 91	NieceY3 = 94	T = 387
	Nephew = 132			Niece = 255			
	1 year = 123		2 year = 140		3 year = 124		

9. Create a summary table of all effects and perform the appropriate significance tests (8 points). Show all work.

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10. Briefly, describe what you would need to do in order to perform a linear contrast on pictures, no computations (2 points).

11. What are the lower and upper limit eta squared values for nephew/niece effect? (3 points)

A researcher wants to reassess the effects that Electroconvulsive (ECT) therapy has on various psychological disorders. The researcher randomly selects three patients with depression (D), three with schizophrenia (S) and three with dissociative identity disorder (I) and exposes each to three levels of ECT (100 volts, 200 volts and 300 volts) during different sessions (all subjects were exposed to all treatments). Results are measured by the amount of improvement in the disorder as designated by their doctors.

		100 volts	200 volts	300 volts	
Depression	S ₁	1	4	6	S1 = 11
	S ₂	2	5	7	S2 = 14
	S ₃	3	7	9	S3 = 19
		D100 =6	D200 =16	D300 =22	Depression = 44
Schizophrenia	S ₄	11	13	6	S4 = 30
	S ₅	8	11	5	S5 = 24
	S ₆	9	12	5	S6 = 26
		S100 =28	S200 =36	S300 =16	Schiz = 80
DID	S ₇	9	12	14	S7 = 35
	S ₈	5	9	11	S8 = 25
	S ₉	5	9	11	S9 = 25
		I100 =19	I200 =30	I300 =36	DID = 85
		100v = 53	200v = 82	300v = 74	T = 209

12. Create a summary table of all effects and perform the appropriate significance tests (10 points). Show all work.