psy300 / Bizer
Examination #2
October 31, 2007

Each item is worth 10 points.

1. For each of the following statements, indicate whether the statement is true or false. No need to justify your answers.

A. In the interest of generalizability, it's a good idea to do case studies using "typical" people.

B. When conducting surveys, it's a good idea to provide 5 to 7 response options for each question.

C. In a 2x2 factorial design, participants will be assigned to one of four conditions.

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2. Below is a correlation matrix for six variables. As usual, asterisks indicate $p < .05$. Based upon what you see, indicate (a) how many factors are present and why, and (b) what this number of factors means conceptually.

	var1	var2	var3	var4	var5	var6
var1	--	.65*	.56*	.59*	.87*	.65*
var2		--	.54*	.87*	.56*	.92*
var3			--	.56*	.65*	.43*
var4				--	.44*	.78*
var5					--	.51*
var6						--

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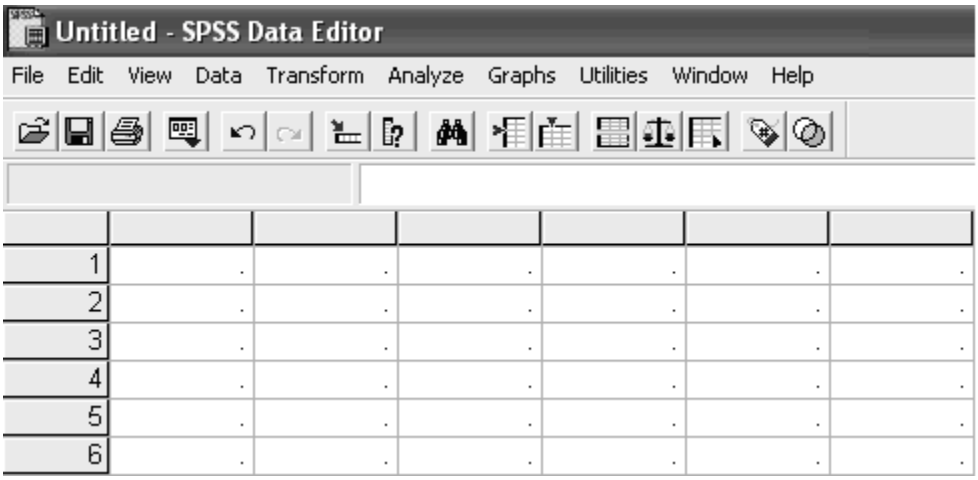
3. For each of the following methodological techniques, identify the most important drawback.

A. Having an extremely sensitive measure of the dependent variable.

B. Having an independent variable with 15 levels.

4. In a driving-simulation study, participants were randomly assigned to one of two conditions: Participants were either sleep-deprived or not. In an orthogonal manipulation, participants either drank five glasses of wine, two glasses of wine, or no glasses of wine. Participants then drove on a driving simulator for 10 minutes. The number of mistakes was recorded. If you had six participants, what would your SPSS data file look like? No need to justify your answers.



5. You have a friend who conducted a senior thesis to test the hypothesis that enhancing student motivation will lead students to like their professors more. She randomly assigned 30 classes on campus to one of two conditions. In the experimental condition, "inspirational posters" were placed in the classrooms, and motivational speakers were brought in on the first day. Classes assigned to the control condition did not receive such treatment. At the end of the term, participants rated their professors on a 7-point scale ranging from "intensely disliked the professor" through "intensely liked the professor." No difference between the groups was found.

A. Assume that the failure to find a difference was due to a ceiling effect. If so, describe what happened.

B. Assume that your friend included a manipulation check in the study. How might this have been done?

C. Analysis on the manipulation check you described above showed a nonsignificant result, $t = 0.21$, $p = .87$. What does this mean conceptually?

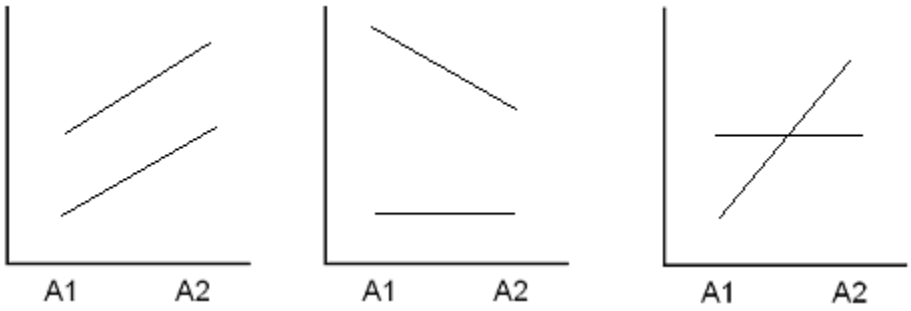
6. I want to learn more about the relation between the number of years of formal education a person has completed (including primary school, high school, college, and grad school) and their annual income.

Correlational analysis:	$r = .50, p = .01$
Regression analysis:	$\beta = .50, B = 3800, p = .01$

A. What is the value of the coefficient of determination?

B. What does the regression analysis tell us that the correlational analysis does not?

7. For each of the following, identify whether there is a main effect of A, a main effect of B, and an interaction between A and B. No need to justify your answers.



Main effect of A?	YES NO	YES NO	YES NO
Main effect of B?	YES NO	YES NO	YES NO
Interaction?	YES NO	YES NO	YES NO

8. For the following stories, indicate whether each main effect was most likely significant or not and whether there was an interaction. No need to justify your answers.

A. A professor wanted to know the effects of tutoring and water consumption on test performance. Students were randomly assigned to either receive intensive tutoring or not. After three weeks, participants took an examination. During the exam, in an orthogonal manipulation, some participants were given a 12-ounce bottle of water, while others were given a 16-ounce bottle of water. Test scores were observed.

B. A professor wanted to know the effects of distraction on reading comprehension. Children in preschool and the seventh grade were given seventh-grade reading-comprehension examinations. Participants were randomly assigned one of two conditions: Whereas some students were distracted during the examination – two television sets with loud music videos were turned on in the laboratory – other students were not. Test scores were observed.

9. Here are some statements about survey research. Identify whether each is accurate or inaccurate. Justify your answers: In doing so, don't just make corrections to the statement: Tell me, why, conceptually, each statement is correct or incorrect.

A. If finances permit, a repeated-cross-sectional survey is better than a panel survey.

B. One should avoid using response options like "strongly agree" through "strongly disagree."

10. You are the headmaster of an elementary school. You're interested to know which of two plans will enhance children's self-esteem more. You obtain a sample of eight-year-olds and five-year-olds, whom you randomly assign to either participate in "Plan A" or "Plan B." At the end of each month, the child's self-esteem is measured on a scale of 1 to 100, with higher numbers indicating higher levels of reported self-esteem. Please see the attached SPSS file. Using that file, fully describe what happened.

```
UNIANOVA
  score  BY age plan
  /METHOD = SSTYPE(3)
  /INTERCEPT = INCLUDE
  /PLOT = PROFILE( age*plan )
  /EMMEANS = TABLES(age)
  /EMMEANS = TABLES(plan)
  /EMMEANS = TABLES(age*plan)
  /CRITERIA = ALPHA(.05)
  /DESIGN = age plan age*plan .
```

Univariate Analysis of Variance

[DataSet0]

Between-Subjects Factors

		Value Label	N
age	3		10
	8		10
plan	1	Plan A	10
	2	Plan B	10

Tests of Between-Subjects Effects
Dependent Variable: score

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	3189.800(a)	3	1063.267	202.527	.000
Intercept	121368.200	1	121368.200	23117.752	.000
age	2784.800	1	2784.800	530.438	.000
plan	145.800	1	145.800	27.771	.000
age * plan	259.200	1	259.200	49.371	.000
Error	84.000	16	5.250		
Total	124642.000	20			
Corrected Total	3273.800	19			

a R Squared = .974 (Adjusted R Squared = .970)

Estimated Marginal Means

1. age
Dependent Variable: score

age	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
3	66.100	.725	64.564	67.636
8	89.700	.725	88.164	91.236

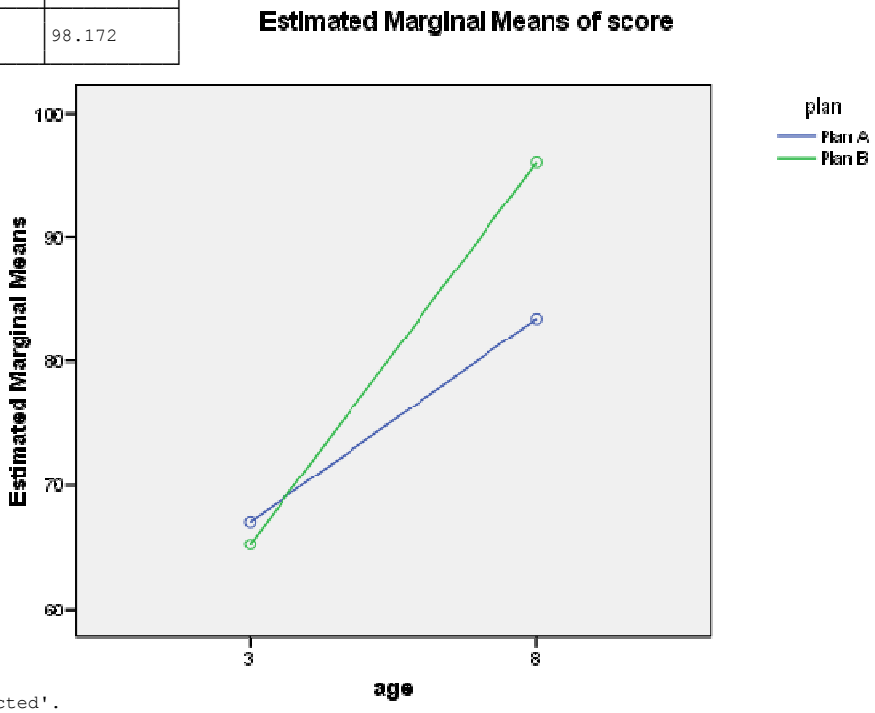
2. plan
Dependent Variable: score

plan	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Plan A	75.200	.725	73.664	76.736
Plan B	80.600	.725	79.064	82.136

3. age * plan
Dependent Variable: score

age	plan	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
3	Plan A	67.000	1.025	64.828	69.172
	Plan B	65.200	1.025	63.028	67.372
8	Plan A	83.400	1.025	81.228	85.572
	Plan B	96.000	1.025	93.828	98.172

Profile Plots




```
USE ALL.
COMPUTE filter_$=(plan=1).
VARIABLE LABEL filter_$ 'plan=1 (FILTER)'.
VALUE LABELS filter_$  0 'Not Selected' 1 'Selected'.
FORMAT filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE .

T-TEST
  GROUPS = age(3 8)
  /MISSING = ANALYSIS
  /VARIABLES = score
  /CRITERIA = CI(.95) .
```

T-Test

Group Statistics

	age	N	Mean	Std. Deviation	Std. Error Mean
score	3	5	67.00	1.871	.837
	8	5	83.40	2.702	1.208

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
score	Equal variances assumed	2.972	.123	-11.159	8	.000
	Equal variances not assumed			-11.159	7.119	.000

```
USE ALL.
COMPUTE filter_$=(plan=2).
VARIABLE LABEL filter_$ 'plan=2 (FILTER)'.
VALUE LABELS filter_$  0 'Not Selected' 1 'Selected'.
FORMAT filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE .

T-TEST
  GROUPS = age(3 8)
  /MISSING = ANALYSIS
  /VARIABLES = score
  /CRITERIA = CI(.95) .
```

T-Test

[DataSet0]

Group Statistics

	age	N	Mean	Std. Deviation	Std. Error Mean
score	3	5	65.20	3.114	1.393
	8	5	96.00	.707	.316

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
score	Equal variances assumed	4.541	.066	-21.564	8	.000
	Equal variances not assumed			-21.564	4.411	.000

```
USE ALL.
COMPUTE filter_$=(age=3).
VARIABLE LABEL filter_$ 'age=3 (FILTER)'.
VALUE LABELS filter_$  0 'Not Selected' 1 'Selected'.
FORMAT filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE .
T-TEST
  GROUPS = plan(1 2)
  /MISSING = ANALYSIS
  /VARIABLES = score
  /CRITERIA = CI(.95) .
```

T-Test

[DataSet0]

Group Statistics

	plan	N	Mean	Std. Deviation	Std. Error Mean
score	Plan A	5	67.00	1.871	.837
	Plan B	5	65.20	3.114	1.393

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
score	Equal variances assumed	.549	.480	1.108	8	.300
	Equal variances not assumed			1.108	6.554	.307

```
USE ALL.
COMPUTE filter_$=(age=8).
VARIABLE LABEL filter_$ 'age=8 (FILTER)'.
VALUE LABELS filter_$  0 'Not Selected' 1 'Selected'.
FORMAT filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE .

T-TEST
  GROUPS = plan(1 2)
  /MISSING = ANALYSIS
  /VARIABLES = score
  /CRITERIA = CI(.95) .
```

T-Test

Group Statistics

	plan	N	Mean	Std. Deviation	Std. Error Mean
score	Plan A	5	83.40	2.702	1.208
	Plan B	5	96.00	.707	.316

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
score	Equal variances assumed	21.138	.002	-10.088	8	.000
	Equal variances not assumed			-10.088	4.545	.000