

## ISU 580 Midterm Exam

Name \_\_\_\_\_

1. What are the types of the following measures (using the four categories from Bordens & Abbott)?

1a. Time to perform a task (seconds) \_\_\_\_\_

1b. Software category (business, design, 3D modeling, word-processing, etc) \_\_\_\_\_

1c. Percent tasks completed \_\_\_\_\_

1d. School year (senior, freshman, middler, etc) \_\_\_\_\_

1e. Likert score (1-7) \_\_\_\_\_

2. You are interested in studying how one or more different input devices (Wacom tablet, mouse, etc.) affect artist productivity.

2a. What would a suitable outcome measure be?

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2b. Describe a correlational study relevant to your phenomenon of interest (for one type of input device). Include a research model, description of variables, and a list of the statistics you could use to analyze your data. Hint: you may need to introduce a new measure.

2c. Describe a descriptive study relevant to your phenomenon of interest. Include a research model, description of variables, and a list of the statistics you could use to analyze your data.

2c. Describe an experimental study relevant to your phenomenon of interest. Include a research model, description of variables, and a list of the statistics you could use to analyze your data. Describe all procedures related to your use of experimental participants.

2d. As part of your study, you visit several artists and ask them how much they paid for their input device, and you also assess their productivity. You collect the following data. Describe all appropriate statistical analyses and perform those enumerated in class. If you do not compute a statistic, at least describe it and how you would organize the data for it.

<b>Artist</b>	<b>DeviceCost</b>	<b>Productivity</b>
Joe	\$9	2
Sally	\$5	6
Bill	\$4	3

2e. You visit a different group of artists and ask them whether they use Windows, Mac, or Unix. You collect the following data. Describe all appropriate statistical analyses and perform those enumerated in class. If you do not compute a statistic, at least describe it and how you would organize the data for it.

<b>Artist</b>	<b>OS</b>
Fred	Mac
Fannie	Mac
Fay	Windows

3. A study, based on a survey of high school seniors, concludes that PC users score higher on the quantitative portions of the SAT, compared to Mac users. In response, the department of education banishes all Macs from elementary schools.

3a. What kind of study is this? \_\_\_\_\_

3b. What is an example of a 'third'/extraneous variable that might invalidate the conclusion reached by the dept of education? Explain using words and/or diagram.

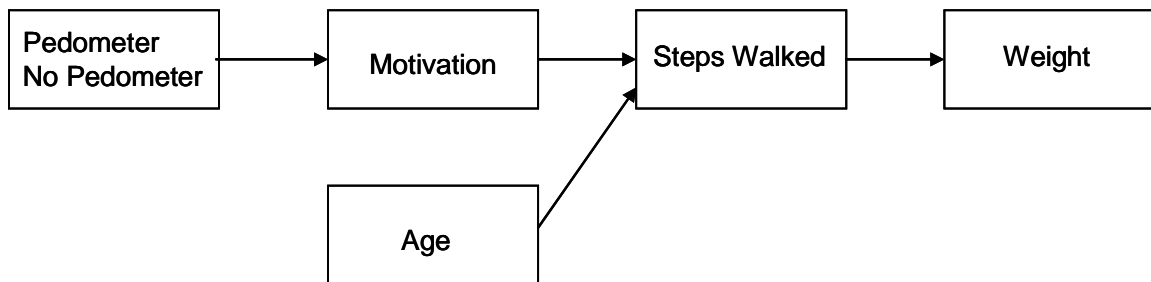
3c. What kind of study would resolve this issue? Why?

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4. Below is a research model for a study evaluating a pedometer that delivers electric shocks whenever users stay still for too long. We are primarily interested in the effect of the pedometer on the amount of walking users do. Label the boxes with the type of variable each represents (describing the role it plays in the model, not the data type).



5. You want to do a study of computer use among the U.S. elderly, so you ask your friends if their grandparents use computers. What are some problems with this methodology?

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6. You conduct a study of user satisfaction with a new web site design by comparing it to the old site. The results of the SPSS run are shown below. State what kind of statistical test this is and what the study conclusions are both in English and in publication format.

**Group Statistics**

	Condition	N	Mean	Std. Deviation	Std. Error Mean
Satisfaction	Old Site	11	1.704	.7775	.2344
	New Site	9	2.389	.7817	.2606

**Independent Samples Test**

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Satisfaction	Equal variances assumed	.018	.895	-1.956		.066	-.6853	.3503	-1.4212	.0507
	Equal variances not assumed			-1.955		.067	-.6853	.3505	-1.4242	.0537

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7. Fill in the blanks.

**Tendency to Whine** will be measured by a 12 \_\_\_\_\_ self report survey instrument. This instrument assesses 3 underlying \_\_\_\_\_ that are hypothesized to be associated with whining. In a validation study involving 1,242 teenagers, the instrument showed good \_\_\_\_\_ with Cronbach's  $\alpha=8.2$ , and good \_\_\_\_\_ when administered again at two weeks with a correlation of 0.91. \_\_\_\_\_ was established by comparing TTW results with the incessant complaining subscale of the APA's standard Annoying Teenager Battery.

8. Why randomize subjects across conditions in an experimental study?

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9. Sketch example scatterplots for each of the following.

9a.  $r=1.0$

9b.  $r=-0.8$

9c.  $r=0.1$

9d. If SPSS tells you that the "Sig." for the Pearson correlation coefficient is 0.21, what does that mean (i.e., what would you tell your boss about the result)?

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