LING 411 Linguistic Methodology

Midterm Review Problem Session

Name: _____

Part A. Matching (about 5 min)

A1. Sampling. Match each study to a sampling method. Some methods are not used.

A. simple random	B. systematic	C. stratified random	D. cluster random
E. two-stage random	F. convenience	G. purposive	H. snowball (social network)

1. ____ The researcher draws names by lottery from the full list of registered voters in Kars.
2. ____ Laz speakers are divided into three age groups, and 20% of each group is randomly selected.
3. ____ Five village schools in Mardin are randomly selected, and all fourth-graders in them are tested.
4. ____ Five village schools are randomly selected, and then 10 pupils are randomly selected in each school.
5. ____ A deaf signer introduces the researcher to other TİD signers she knows, and they introduce others.

A2. Choosing a test. Match each study to a test. A test may be used more than once or not at all.

A. z-test B. one-sample t C. independent-samples t D. related-samples t

1. ____ The same 15 participants rate sentences with and without a supporting context.
2. ____ The mean MLU of 20 three-year-olds is compared to a published norm of 3.2. The population SD is not known.
3. ____ A national Turkish reading test has $\mu = 50$ and $\sigma = 10$. A teacher tests 25 pupils who used a new reading program.
4. ____ Each L2 learner is paired with a native speaker of the same age and education level, and the pairs are compared.

Part B. Short answer (about 10 min)

B1. Variables and hypotheses. A researcher predicts that Turkish speakers read scrambled OSV sentences more slowly than canonical SOV sentences. She measures reading times (ms) at the verb in a self-paced reading task. The same 24 participants read both sentence types.

(a) Name the independent variable (with its levels) and the dependent variable. Is each categorical or quantitative?

(b) Is this a between-subjects or a within-subjects design? Give one disadvantage of this design and one way to deal with it.

(c) Is the research hypothesis directional? Write H_0 and H_1 in symbols.

B2. A judgment experiment. A researcher tests Turkish sentences in a 2×2 design: Word order (SOV, OSV) $\times$ Object case (accusative *kitab-ı*, bare *kitap*). Mean ratings (1–7):

	Accusative object	Bare object
SOV: *Ali kitab-ı / kitap okudu.*	6.4	6.2
OSV: *Kitab-ı / Kitap Ali okudu.*	5.9	2.1

(a) How many lists are needed with a Latin-square design? Does each participant see every item in all conditions?

(b) Is there an interaction? Explain in one sentence.

(c) The researcher wants to know *how much* worse the OSV-bare sentences are. Which task is better for this: forced choice or a Likert scale? Why?

Part C. Calculation (about 20 min)

C1. Descriptive statistics. Number of speech errors produced by 6 participants in a tongue-twister task:

$$5, \quad 19, \quad 2, \quad 7, \quad 5, \quad 10$$

(a) Find the mean, median and mode.

(b) What is the shape of the distribution? Which measure of central tendency describes these data best, and why?

(c) Compute SS, s^2 and s (treat the data as a sample).

(d) What is the z-score of the participant with 19 errors?

C2. Independent-samples t-test. An educational psychologist would like to determine whether access to computers has an effect on grades for high school students. One group of $n = 16$ students has home room each day in a computer classroom in which each student has a computer. A comparison group of $n = 16$ students has home room in a traditional classroom. At the end of the school year the average grade is recorded for each student. The data are as follows:

	Computer	Traditional
n	16	16
M	86	82.5
SS	1005	1155

	proportion in two tails		
df	.10	.05	.01
28	1.701	2.048	2.763
29	1.699	2.045	2.756
30	1.697	2.042	2.750
31	1.696	2.040	2.744
32	1.694	2.037	2.738

(a) Is there a significant difference between the two groups? Use a two-tailed test with $\alpha = .05$.

(b) Compute Cohen's d to measure the size of the difference.

(c) Write a sentence that demonstrates how the outcome of the hypothesis test and the measure of effect size would appear in a research report.

(d) Compute the 90% confidence interval for the population mean difference between a computer classroom and a regular classroom.