EDU. 7211 Educational Research and Data Analysis II

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Introductory Concepts

- Descriptive Statistics
  - These are statistical measures that describe the general characteristics of a population and/sample of that population, (I.e.) *college majors and SAT scores, and GPA.*
- Inferential Statistics
  - Are the tools that are selected to make comparisons from the results based on a sample to a population. (*I.e.) based on the above if the students with higher SAT or GPA take on more challenging majors, (Pre-Med, Physics).*

COMPUTING AND UNDERSTANDING AVERAGES

Average

- Is the value that represents an entire group of scores

Measure of Central Tendency

- Another term for an average which includes the following three measures used to calculate average from different perspectives

Mean

- The sum of the values of the group , divided by the number of values in the group.(I.e.) *If I wanted to find the mean of my students grade on a test I would add the total number of overall scores from each test and divided by the number of students who took the test*

Median

- The Median is the middle score when all results are ranked from one extreme to the other. Basically it's the 50% midpoint of all grades occurring. (I.e.) *The Median of the following test scores would be 80% - 90, 85, **80**, 75, 70*

Mode

- The mode is the most commonly occurring value that is represented from a group of values.

  (I.e.) *Of the following scores the mode is 85- 90, **85**, 80, **85**, 95, 75, **85***

MEASUREMENT OF CENTRAL TENDENCY-

Chap 2 Data set 1

Statistics

PREJUDIC

N	Valid	20
	Missing	0
Mean		84.70
Median		87.00
Mode		87

Variability

- **Variability** is a descriptive tool that reflects how scores differ from one another. The following are types of variability:

  Range-

  - Finding the difference between the highest and lowest score in a numerical distribution. (I.e.) *The range for today's weather could be 58- 41 degrees*

  Standard Deviation-

  - Is the average amount of variability in a set of scores. (I.e.) *The standard deviation of most I.Q. tests is 15 based on a bell shape distribution.*

  Variance

  - Is the standard deviation squared. I.e. *The variance of most I.Q. tests would be 225, (15 x 15).*

VARIABILITY

CH 3- Data set 1

Statistics

REACTION

N	Valid	30
	Missing	0
Std. Deviation		.7025
Variance		.4936
Range		2.60

FREQUENCY DISTRIBUTIONS

- Histogram-
  - A visual representation of the frequency distribution represented by bars.
    - Average value- The average of two or more frequency distributions.
    - Variability- The amount of dispersion in a frequency distribution.
    - Skewness- The visual effect of a distribution of scores. They can be described as + or – skewed depending on where the distribution occurs.
    - Kurtosis- The appearance of a distribution when compared to a bell-shaped distribution. *(I.e.)* ***platykurtic****- is a relatively flat distribution and* ***leptokurtic*** *is a relatively pointed or peaked distribution.*

FREQUENCY DISRIBUTION CHARTS

Bar-

- A column chart where categories are organized vertically and values are shown horizontally.

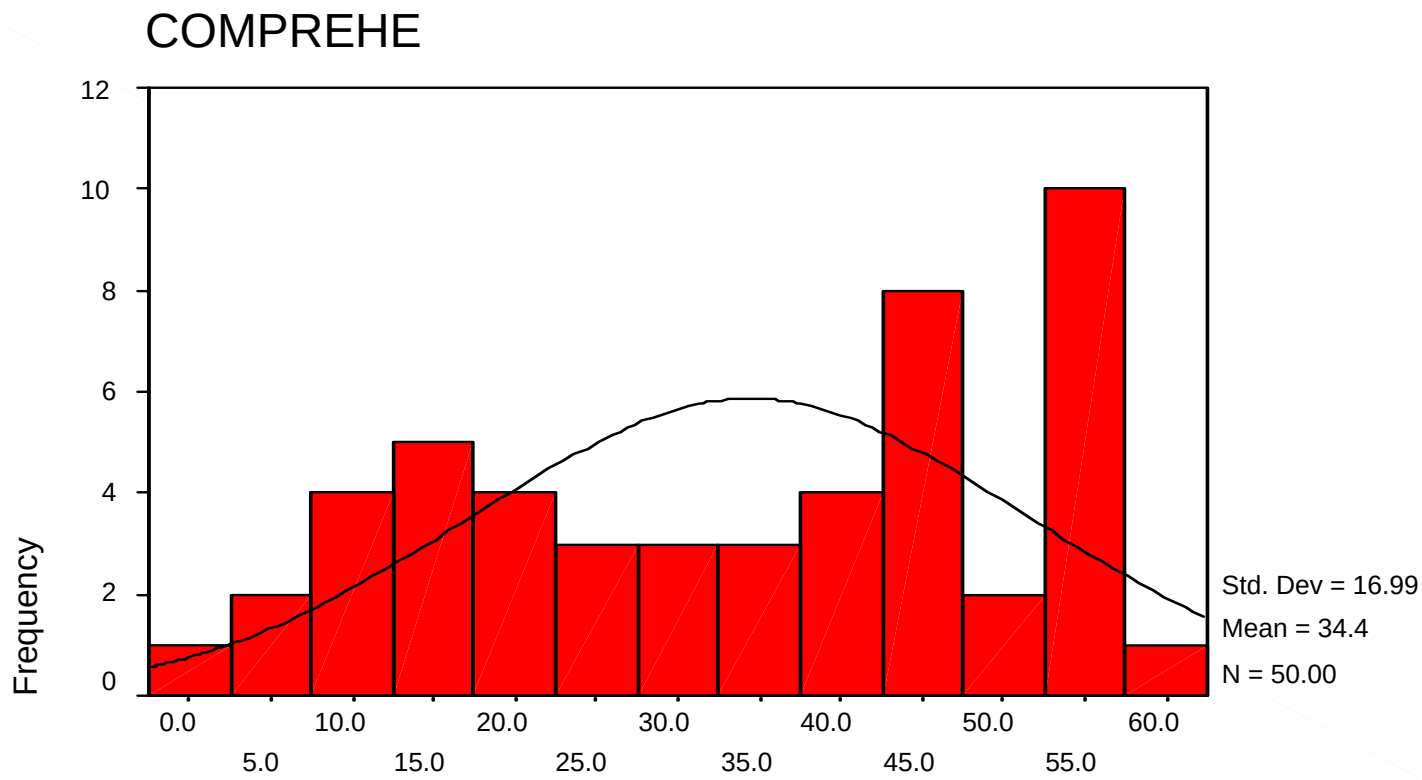
Line-

- Is generally used to show a trend of data at equal intervals.

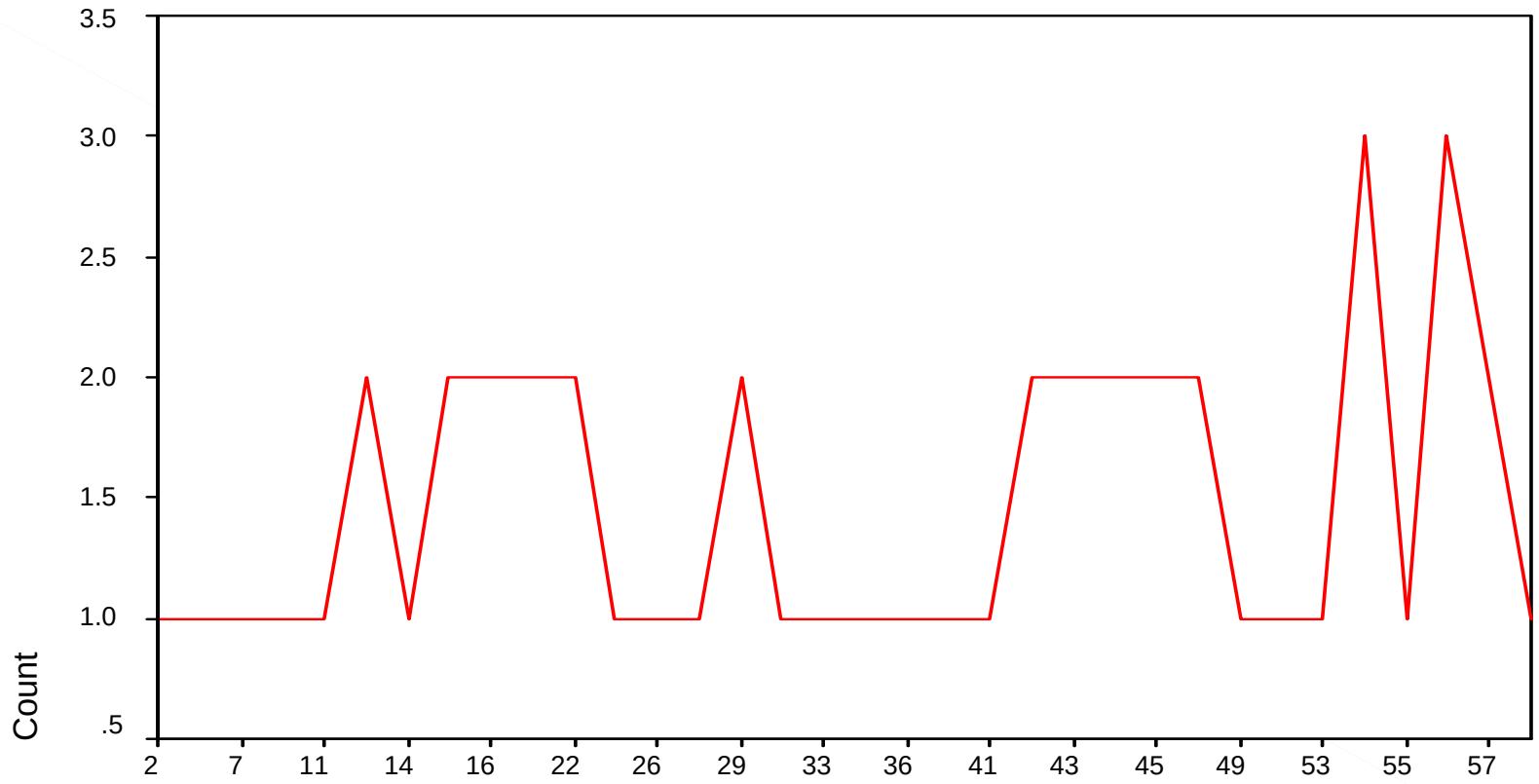
Pie-

- Used to reveal the proportion of an item that makes up a series of data points.

HISTOGRAM WITH NORMAL CURVE DISTRIBUTION CHAP4. DATA SET 1



LINE GRAPH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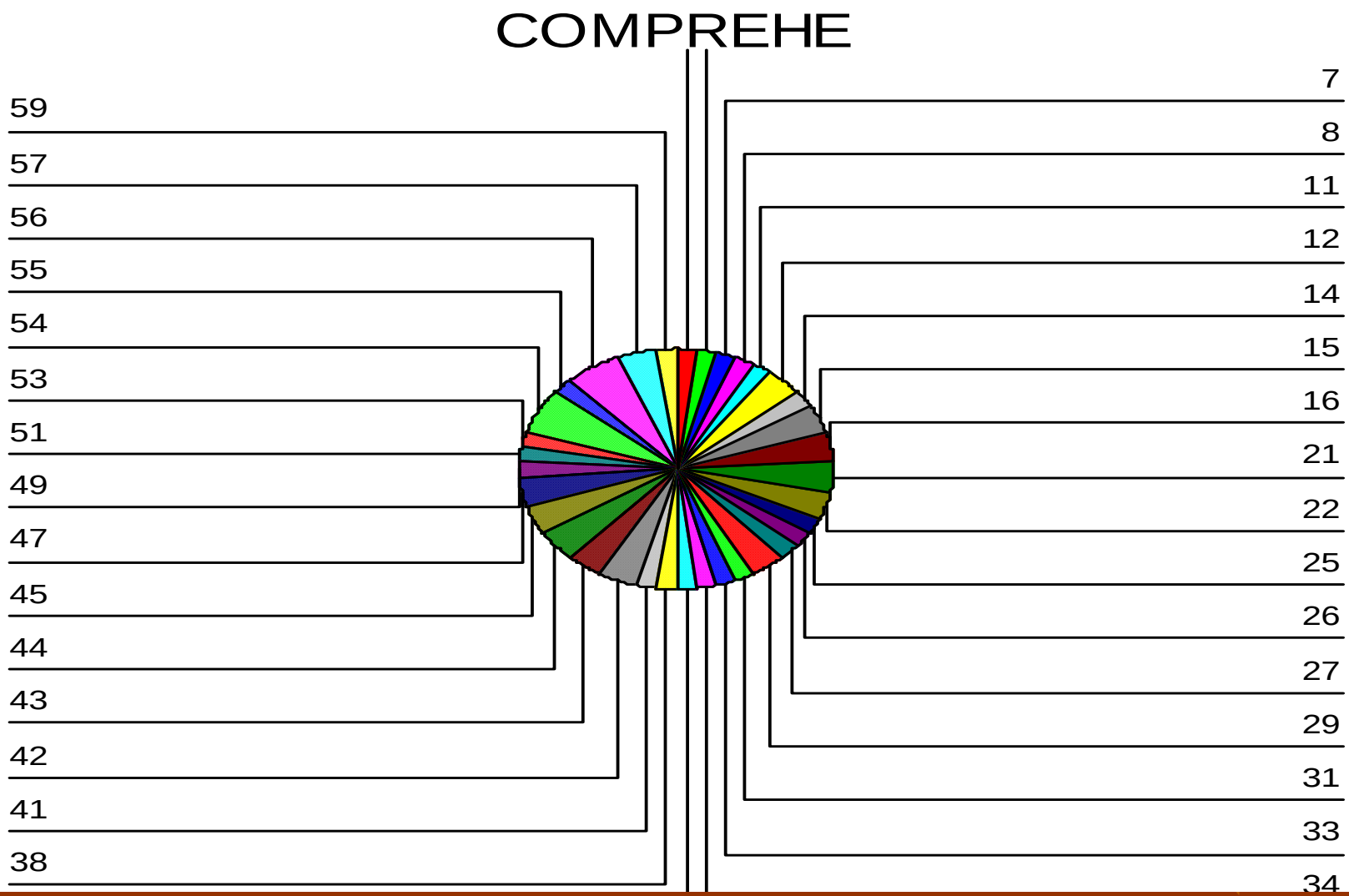
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RESEARCH STUDYARTICLE #1

- *Gloeckler, Lawrence C. (1999)* The post school status of former special education students in the big five cities: presented to members of the board of regents *Committee on Vocation and Educational services for Individuals with Disabilities.*

- This article is a research article that provides information on how transition policies are being implemented in five major New York cities, (Buffalo, New York City, Rochester, Syracuse and Yonkers).
- Researcher looked at 1,037 former special education students one year after graduation

FINDINGS

based on number of students measured

- 62% of former special education students were either working or attending postsecondary education.
- 9% were attending day training or day treatment.
- 38% were working in paid competitive jobs in the community.
- 53% were working part time
- 57% were earning more than minimum wage.
- 83% live with their families

DISCUSSION

- Although more than ½ of post Special Education students are working one year after graduation, more than ½ only work part time and slightly more than ½ were earning more than minimum wage indicating that more intervention is needed in follow-up of post graduate Special Education students.
- In addition, over 80% of graduates still lived at home indicating the need for training in independent living and necessary adaptive level skills.

VISUAL REPRESENTATIONS

- The researcher used numerous Bar Graphs to compare Special Education students against regular education students and their post graduate activities. By doing so it provided an easy visual representation to see the difference in how the two groups compare and contrast.

CRITIQUE

- The study did not include the most seriously impaired students only those who were deemed to benefit from Transition Planning.
- Special Education students from smaller communities typically do not have the community resources to succeed in obtaining employment or continued education thus the findings cannot be applied to all students who graduate with a disability.

CORRELATIONS

Correlation of coefficients

- A numerical index that reflects the linear relationship between two variables (I.e.) *education and future earning potential.*

Pearson product-moment

- A type of correlation of coefficient that looks at variables that are continuous in nature, *(I.e.) height, weight, income.*

Direct Correlation

- Also known as a Positive Correlation where variables change in the same direction, (I.e. Ht/Wt)

Indirect Correlation

- Also known as a Negative Correlation where variables change in the opposite direction, *(I.e.) Unemployment and income*

Scatterplot

Also know as a scattergram it is a plot of each set of scores on separate axes,(*I.e.) how it appears on a graph*

Rule of thumb

- Generally a term used to making reference of the data by looking at the coefficient correlation and using the information based on a visual interpretation (I.e.) *what general trend is the data showing*.

Chap.5 Data Set 2

Correlations

		CORRECT	ATTITUDE
CORRECT	Pearson Correlation	1.000	.596
	Sig. (2-tailed)	.	.069
	N	10	10
ATTITUDE	Pearson Correlation	.596	1.000
	Sig. (2-tailed)	.069	.
	N	10	10

RELIABILITY AND VALIDITY

Independent Variable –

- The research variable that is manipulated by the experimenter (I.e.) *Applying a new method to increase reading scores for 3rd. grade students.*

Dependent Variable

The results that occur from an experimental design. (I.e.) *The 3rd. grade reading scores that are reported after completion of the program*

TYPES OF MEASUREMENT

Nominal-

- A characteristic that applies to one type of classification *(I.e.) Sex, ethnicity, political affiliation*

Ordinal-

- Refers to the order or list of items being measured *(i.e.) ranking test grades from highest to lowest in numerical order*

Interval-

- A scale of measurement that describes specific equal distances between points from acquired data

Ratio-

- Characterized by the presence of an absolute zero on a scale (I.e.) *In a case of observed verbal responses of a student, a case where there is no response or “o” times*

RELIABILITY

- A determination of the value of a measure being utilized. Generally means “consistency” of results as well as the format and application of technique being used.

TYPES of RELIABILITY

Test-Retest-

- A factor that reveals little if any variable change in results over time (I.e.) *I.Q. test scores of an individual from the same test instrument usually remain consistent over years.*

Parallel Forms-

- Using two alternate tests that measure the same factors and comparing for "likeness" in results *(I.e.) A teacher that has two or more types of the same exam to guard for cheating.*

Internal Consistency-

- When all the items of a particular measure all pertain to the same factor *(I.e.) All the items on the math test were geared for the same grade level tested*

Interrater-

- The effect, if any between those evaluating or administering the test measure (I.e.) *teacher A was more liberal in his scoring criteria than teacher B*

VALIDITY

In general terms it is to determine if a test measures what it's designed to measure, (I.e.) *the ability to fix a broken down car is a valid test for a car mechanic but not necessarily a sign of intelligence as some theorize I.Q. tests are.*

TYPES of VALIDITY

Content-

- Does the test apply to the information needed to answer correctly, *(I.e.) the history test does not include biology questions.*

Criterion-

- Does the test predict or reflect a specific factor, *(I.e.) the view that SAT scores predict academic ability as well as future scholastic success.*

Construct-

- Does the test measure some underlying issue or factor, *(I.e.) students in cohorts have a higher program retention than traditional programs.*

THE RESEARCH HYPOTHESIS

Hypothesis-

- Generally means an educated guess of the problem statement that you intend to explore in the following research.

Null Hypothesis-

- When no relationship is expected to be found to exist between the variables in question. (I.e.) *There will be no difference between the average I.Q's of left vs. right handed people. (Creativity maybe but not intelligence.)*

Research Hypothesis

- A statement suggesting when a relationship between two variables *is* expected, (I.e.) *The average I.Q's of graduate college students is different than the I.Q.'s of high school dropouts*.

Non- Directional Research Hypothesis

- When a difference between two groups is expected but the direction of the difference is not stated.

Directional Hypothesis

- When a difference between two groups is expected and a direction is stated, (I.e.) *The average I.Q.'s of graduate college students* ***will be*** *greater than the average I.Q.'s of high schools dropouts.*

WHAT MAKES A GOOD HYPOTHESIS

1. Be stated in declarative form

   Use a clear and forceful statement, (I.e.) *Students who participate in transition planning are less likely to be involved in violations of the law and/or imprisonment.*

2. States an expected relationship between two variables, (as stated above).

3 Can be related to existing literature that has previously been completed.

   In the above topic research has been done in the area of transition planning however not necessarily in the exact area.

4. Be brief and to the point

Keep it simple, rational and coherent.

5. Be testable

Stay away from vague or un-measureable objectives, (I.e.) *College graduates have "more fun" than high school dropouts.*

THE NORMAL DISTRIBUTION

Also known as the “bell shaped curve” it is a symmetrical curve. In such a curve the mean, median and mode are equal to each other. (I.e.) *Intelligence is theorized to be equally distributed along such a bell shaped curve.*

Standard Deviation

- The average deviation from the mean

Z-Scores

- An adjusted raw score divided from the mean of the distribution by the standard deviation.

SPSS Figure 8.6

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Zscore(VAR00001)	10	-1.55703	1.19821	1.665E-16	1.0000000
VAR00001	10	33.00	76.00	57.3000	15.6066
Valid N (listwise)	10				

RESEARCH STUDY ARTICLE #2

- Wehmeyer, Michael l., Palmer, Susan B., Soukup, Jane H., Garner, Nancy W. & Lawrence, Margaret (2007). Self-Determination and Student Transition Planning Knowledge and Skills: Predicting Involvement. Exceptionality,15(1) 31-44.

This article examined the contribution of self-determination to transition planning knowledge and skills for students with disabilities

Sample Size

- 180 students receiving special education services from 25 school districts in four states. The mean age for the sample was 17.73 years (range 14.4-21.8), Standard Deviation 1.5.

Measuring Device-

- Researchers used a 20-item questionnaire from a criterion reference tool to determine the impact of a self-directed transition planning program.

Analysis-

- A Factor Analysis was utilized to examiner the relationship between student transition planning knowledge and skills relative to self-determination.
- Researchers also reported results acquired from Descriptive Analyses, Regression Analyses, and Factor Analysis.

STATISTICS

- The statistics utilized allowed for the multiple comparisons for Disability by group. Correlations were presented that compared the mean difference between groups at the 95% confidence interval.

FINDINGS

- This study provided evidence of the importance of self-determination to the transition planning process for students with intellectual and developmental disabilities.
- The researchers also found that self-determination was a significant predictor of Transition Planning factors related to knowledge and skills about the individualized education process, goals and decision making.

CRITIQUE

- Subjects included students classified as Mentally Retarded, Learning Disabled, or Autistic. I feel future researchers should include other disabled groups including Physical Disabilities, Visual or Auditory impaired students and those classified as Emotionally Disturbed, including A.D.H.D. students.

SIGNIFICANTLY SIGNIFICANT

Statistical Significance-

Basically means the risk a researcher is willing to go in rejecting the null hypothesis when it's true

ERRORS REGARDING THE NULL HYPOTHESIS

- 1. The Null Hypothesis is true and you reject the Null Hypothesis, Type I error (I.e.) *thus you make the claim that there is a significant difference between the groups when there is not.*
- 2. The Null Hypothesis is false and you accept the Null Hypothesis, Type II error (I.e.) *thus there was a significant difference between the groups and you believe there was not*

INFERENTIAL STATISTICS

- Are used to make conclusions about the population under study that is largely based on the sample's characteristics, (I.e.) *A well represented sample of the United States population can accurate predict how the country will vote in a Presidential election, (plus or minus a numerical margin or error) as it did this past election*

TESTS OF SIGNIFICANCE

T-tests-

- Looks for a significance difference between two researched groups

Degrees of freedom-

- A value that changes depending on the statistical test instrument utilized and is approximately the sample size of number of individual cells in a particular experimental design

- Effect Size-
  - A measure of the magnitude of a particular outcome, (I.e.) *in other words how different two groups are from one another*

SPSS CHAP 10 DATA FILE SET 1

Group Statistics

	GROUP	N	Mean	Std. Deviation	Std. Error Mean
MEMTEST	1	30	5.43	3.42	.62
	2	30	5.53	2.06	.38

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
MEMTEST	Equal variances assumed	4.994	.029	-.137	58	.891	-1.00E-01	.73	-1.56	1.36
	Equal variances not assumed			-.137	47.635	.892	-1.00E-01	.73	-1.57	1.37

T-TESTS for DEPENDENT MEANS

- The T-Test for Dependent means involves comparing the means from each group evaluated and directs the experimenter to view the differences between the scores obtained

PAIRED SAMPLES TEST

Paired Samples Test

		Paired Differences							
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
Pair 1	PRETEST - POSTTEST	-1.20	2.45	.49	-2.21	-.19	-2.449	24	.022

SPSS Chap.11 Data set 1

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	PRETEST	6.32	25	1.73	.35
	POSTTEST	7.52	25	1.83	.37

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	PRETEST & POSTTEST	25	.051	.810

RESEARCH ARTICLE # 3

- Trainer, Audrey A. (2007). Perceptions of Adolescent Girls With LD Regarding Self-Determination and Postsecondary Transition Planning Learning Disability Quarterly, 30, 31-45.

- This Qualitative Research article examined the perceptions of adolescent females with Learning Disabilities regarding self-determination during transitioning from high school to postsecondary settings.

METHOD

- The researcher utilized a qualitative approach analyzing comments made by adolescent women with Learning Disabilities.
- The researcher interpreted plausible meanings of the content of the interviews conducted and constructed theoretical relationships relevant to the research questions.
- The protocol utilized 13 questions that addressed knowledge, attitudes, skills and attitudes from a previously published theoretical model of self-determination.

PARTICIPANTS

- The participants were seven racially/ethically diverse adolescent girls age 16 or older and were receiving services as students with Learning Disabilities using state criteria and were eligible for free or reduced lunch programs.

RESULTS

- Key Themes:
  - Participants expressed beliefs that they were self-determining young women based on some personal experiences.
  - Participants lacked a connection between their understanding of personal strengths and needs and their goals (I.e.) *One student felt she would make a good lawyer because she liked arguing with people.*
  - Participants were unfamiliar with the formal transition planning process (I.e.) *None were able to define the term "transition plan".*

CRITIQUE

- The lack of a graph or table grouping patterns, themes and discrepancies made it difficult to analyze the results objectively and the reader was left to the authors interpretation from the narratives the researcher evaluated.
- The small sample size and subjects profile, *(7 adolescent girls classified as Learning Disabled)* make it difficult to generalize conclusions not just for adolescents girls with learning problems but with all adolescents as the population was relatively small and very specific.

ANALYSIS OF VARIANCE

ANOVA-

- A test that evaluates the difference between two or more means. The less complicated ANOVA is one that involves only one independent variable.

One way ANOVA-

- Utilized when the researchers are evaluating the differences between the means of *two or more groups.*

SPSS CHAP.12 Data Set 1

One way

Descriptives

LANG_SC

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
5 Hours	10	76.60	11.96	3.78	68.04	85.16	56	98
10 Hours	10	85.20	6.20	1.96	80.77	89.63	78	99
20 Hours	10	91.60	3.41	1.08	89.16	94.04	87	96
Total	30	84.47	9.95	1.82	80.75	88.18	56	99

ANOVA

LANG_SC

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1133.067	2	566.533	8.799	.001
Within Groups	1738.400	27	64.385		
Total	2871.467	29			

RESEARCH ARTICLE # 4

- Nelson, Betty (2005) Creating Positive Outcomes for Deafblind Youth and Young Adults: A Personal Features Planning Transition Model. Heldref Publications, 36, 173-180.

METHODOLOGY

- In this article the author researched a model framework program *(The University of Alabama at Birmingham Alabama Deafblind Project)* for young people who are deafblind and incorporates transition planning
- The program described utilized a planning process of people with a first hand knowledge of the individual with disabilities to create an outline of a purpose – driven, coordinated and progressive plan for a fulfilling future for the individuals

PARTICIPANTS

- The participants were 17 individuals across different disciplines, agencies, and geographic areas to develop a viable working model for deafblind students.

RESULTS

The commonality of results found that those involved in Transition Planning included the folllowing main factors:

- Planning a person-centered creative planning process
- Provide people with multiple disabilities an opportunity for self-determination that is not found in other educational planning processes.

VISUALIZATIONS

- The author provided visualization maps of how the process would work with the student as the focal point in the process.
- The two figures gave the reader an easy to understand model as it relates to the students needs within and outside the school community.

CRITIQUE

Although qualitative in presentation, the author was able to provide visualizations as representations of the model utilized that were acquired from the perspective from those participants involved.

However, it did not include input from those who would benefit directly from the conclusions drawn, namely the *deafblind*. Thus, the authors are working under an assumption (right or wrong) that they know what's best for students with multiple disabilities.

END OF PRESENTATION