<table>
<thead>
<tr>
<th><strong>Title of Resource</strong></th>
<th>Measuring Dependent Variables: Types and Scales of Measurement</th>
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<tbody>
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<td><strong>Brief Description:</strong></td>
<td>This is a brief in-class activity to help students review different types of measurement for dependent variables as well as identify scales of measurement.</td>
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<td>Scale of Measurement Exercises are from Wadworth's Scale of Measurement Online Workshop (<a href="http://www.wadsworth.com/psychology_d/templates/student_resources/workshops/stat_workshop/scale/scale_01.html">http://www.wadsworth.com/psychology_d/templates/student_resources/workshops/stat_workshop/scale/scale_01.html</a>)</td>
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Instructors:
I recommend teaching about the different ways to measure a dependent variable before giving students the opportunity to review using this brief worksheet. Definitions are provided on Handout 1, but they are not too detailed. You can allow students to work individual or in pairs. Approximately 10-15 minutes.

*Please note: Handouts are formatted for accessibility.
Types of Dependent Variable

In psychological research, there are several ways that a dependent variable can be measured. Most commonly, researchers choose one of the following types of measurement:

- *Behavioral Measures*: Measurement or assessment of a person’s behavior
- *Attitudinal Measures*: Measurement or assessment of a person’s feelings toward a particular topic
- *Cognitive Measures*: Measurement or assessment of a person’s mental ability (e.g., memory or intelligence)
- *Physiological Measures*: Measurement or assessment of a biological characteristic (e.g., heart rate, galvanic skin response)

Type of Measurement

In addition, there are common ways to measure the above types of dependent variables.

- *Percent Correct*: an average of correct response to overall responses represented as a percentage
- *Frequency of response*: sum of the number of times a person or group responds to a question
- *Degree of response*: measure of the intensity of the response an individual has to a question

Scales of Measurement

There are also different scales used to characterize measurements.

- *Nominal scale*: used when data are classified into one of two or more categories
- *Ordinal scale*: used when data are classified into an order or rank of magnitude
- *Interval scale*: used when data are classified on a scale that assumes equal distance between numbers
- *Ratio scale*: used when data are classified on a scale that assumes equal distance and a true zero value
Handout 2: Practice Measuring the Dependent Variable

For each of the examples below, identify which type of measure is being used (behavioral, attitudinal, cognitive, or physiological) and also the way the measure is being assessed (percent correct, frequency of responding, or degree of response).

1. Prof. Johns wanted to measure the way his students feel about various student resources on campus, especially the Learning and Resource Center (LRC). As a preliminary step, Prof. Johns measures the percent of students who know where the LRC is located.
   Type of Measure: ______________________________________________________________
   Assessed using: _______________________________________________________________

2. Next, Prof. Johns measures how often students use the LRC.
   Type of Measure: ______________________________________________________________
   Assessed using: _______________________________________________________________

3. Lastly, on a scale of 1-10, Prof. Johns asks the students to rate how positively they feel about their experiences at the LRC.
   Type of Measure: ______________________________________________________________
   Assessed using: _______________________________________________________________

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Scales of Measurement

Nominal scales = name things          Interval scales = equal intervals
Ordinal scales = put things in order  Ratio scales = equal intervals, true zero

For each of the scenarios below, identify which scale of measurement is being used.

1. As part of a test preparation course, students are asked to take a practice version of the Graduate Record Examination (GRE). This is a standardized test. Scores can range from 200 to 800 with a population mean of 500 and a population standard deviation of 100.

   ____________________________________________________________________________

2. Children in elementary school are evaluated and classified as non-readers (0), beginning readers (1), grade level readers (2), or advanced readers (3). The classification is done in order to place them in reading groups.

   ____________________________

3. During a clinical interview, survivors of a tornado are asked to state “no” or “yes” to whether they have experienced specific symptoms of Post-Traumatic Stress Disorder (PTSD) in the past week. The number “0” is assigned to “no” and the number “1” is assigned to “yes”.

   ____________________________________________________________________________
4. Emory University wants to know which dormitories the students prefer. The administration counts the number of applications for each dorm. Administrators assign a rank to each dorm based on the number of applications received.

5. During a clinical interview, survivors of a tornado are asked to state “no” or “yes” to whether they have experienced specific symptoms of Post-Traumatic Stress Disorder (PTSD) in the past week. The interviewer adds up the total number of “yes” responses to create a Total PTSD Symptoms scale.

6. Interviewers ask research subjects to describe in some detail their relationships with important people in their lives. Using established criteria, raters review these personal descriptions and assign a dominant attachment category (Secure - 1, Preoccupied - 2, Fearful - 3, Dismissing - 4).

In the next set of exercises, you will create your own measurement of the dependent variable based on the scale indicated.

1. For this problem, use the research question “Are students satisfied with the academic advising process on their campus?”. How could you measure student satisfaction with advising using a nominal scale?

2. For this problem, use the research question “What type of foods do college students prefer?”. You are interested in the following types of food: pizza, lasagna, steak, chicken, and seafood. How could you measure food preferences using an ordinal scale?

3. For this problem, use the research question “To what extent do people prefer salty snacks?”. How could you measure snack preference on an interval scale?

4. For this problem, use the research question “How often do college students read books other than those assigned in classes?”. How could you measure this on a ratio scale?