Introduction to Statistics in Human Performance 1st edition Mood Solutions Manual

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Chapter 2 Review Questions and Practice Problems

Part A (Answers also provided in Appendix C)

1. Which of the following attributes can be measured most precisely?

   * *A. Reaction time*
   B. Self-confidence
   C. Physical fitness
   D. Muscle soreness

2. The score that you achieve on an examination is an example of what scale of measurement?

   A. Nominal
   B. Ordinal
   * *C. Interval*
   D. Ratio

3. What kind of evidence is most indicative of a *reliable* measuring instrument?

   A. That it actually measures what it is designed to measure
   * *B. That it measures whatever it does measure consistently*
   C. That the scores it determines are the same no matter who administers it
   D. That the scores are relevant

4. Which of the following is a special condition (i.e., type) of measurement reliability?

   A. Efficiency
   * *B. Objectivity*
   C. Relevance
   D. Validity

5. What is necessary for a measure to be valid?

   A. It must be measured on at least an interval level.
   B. It must be based on a large amount of data.
   C. It must contain little measurement error.
   * *D. It must measure what it is supposed to measure.*

6. What is the possible range for a reliability coefficient?

   * *A. 0 to +1.00*
   B. –1.00 to +1.00
   C. –1.00 to 0
   D. > .80
   E. It depends on test length.

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Part B

7. Which level of measurement provides the *least* amount of information?

   * *A. Nominal*
   B. Ordinal
   C. Interval
   D. Ratio

8. What type of research has as its main purpose the establishment of baselines?

   * *A. Descriptive*
   B. Correlational
   C. Inferential
   D. Experimental

9. In human performance studies, what value of the reliability coefficient is usually considered the lower limit for a test to be considered reliable?

   * *A. .70*
   B. .75
   C. .80
   D. .85

10. We sometimes rank measurements into categories of nominal, ordinal, interval, and ratio based on the amount of information they provide. What level of measurement does this categorization itself represent?

    A. Nominal
    * *B. Ordinal*
    C. Interval
    D. Ratio

11. What type of measurement validity is normally assessed qualitatively?

    * *A. Content validity*
    B. Concurrent validity
    C. Predictive validity
    D. Convergent validity

12. Which of the following is *not* considered research-related validity?

    A. Construct validity
    * *B. Concurrent validity*
    C. Convergent validity
    D. Discriminant validity

Chapter 3 SPSS Activities – Answer Key

Activity 1—Examining Data

Step P: Answer these questions:

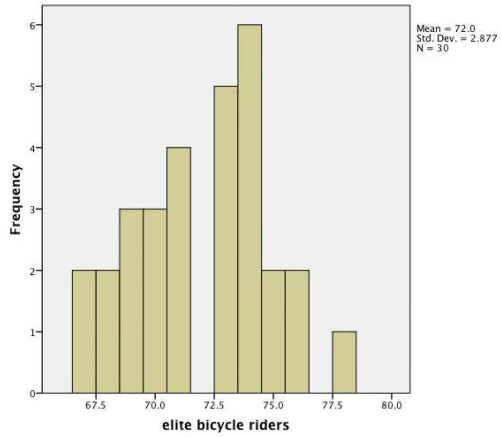
1. What percentage of the subjects scored exactly 50 on the questionnaire? *7.7%*
2. What percentage of the subjects scored 42 on the questionnaire? *1.5%*
3. What questionnaire scores correspond to the 10th, 25th, 50th, 75th, and 90th percentiles, respectively? *40.6, 45, 48, 49.5, 52*

Step Q: Answer the following questions:

4. What are the values for the standard deviation, variance, and standard error of the mean? *4.22, 17.81, .523*
5. Describe the data in terms of skewness and kurtosis. *negative skew (–831); Leptokurtic (.876)*
6. What is the value of the mean? *46.97*
7. What is the value of the median? *48*
8. Do your answers to questions 6 and 7 agree or disagree with your observation about the skewness from above? Why or why not? *Agree, because the mean is smaller than the median.*
9. What score does SPSS equate with a percentile rank of 100? *55*
10. What score does SPSS equate with a percentile rank of 0? *No score*

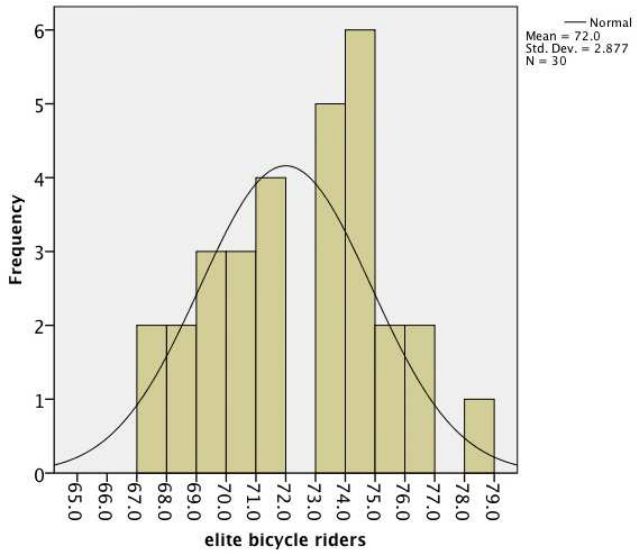
Activity 2—Calculating Descriptive Statistics

Step B: (Histogram of elite values)



Step F: (Graph with appropriate changes specified in C thru F; provide an appropriate name.)

VO_2max Scores for Thirty Elite Bicycle Riders



Step G:

	Elite	Sedentary	Combined
11.	78	43	78
12.	67	24	24
13.	11	19	54
14.	72.0	34.07	53.03
15.	2.88	5.40	19.60
16.	2160	1022	3182
17.	8.28	29.17	384.23
18.	–.056	.194	–0.078
19.	–.781	–1.165	–1.88

Step I:

20. If you graphed these data, what word would best describe the shape of the curve? *Bimodal*

21. Describe in words the main differences between the two distributions (elite vs. sedentary), basing your comparison on appropriate descriptive statistics.

    Look for various descriptive statistics (e.g., range, mean, variance, standard deviation, skewness, kurtosis, and so forth).



Introduction to Statistics in Human Performance

Chapter 2

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Some Issues to Consider

- Who do the subjects used in a study represent?
- How were they selected?
- What other variables might cause something to change?
- Have these variables been controlled or accounted for in any way?
- How many subjects should be used?
- How should something be measured?
- How accurate is the measurement used?
- To whom do the results of this study apply?

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Levels of Measurement

- Nominal
- Ordinal
- Interval
- Ratio

} Continuous or scalar measurements

Levels of measurement are hierarchical, and a researcher should always choose the highest level of measurement available.

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Video 2.1



- Introduction to Measurement

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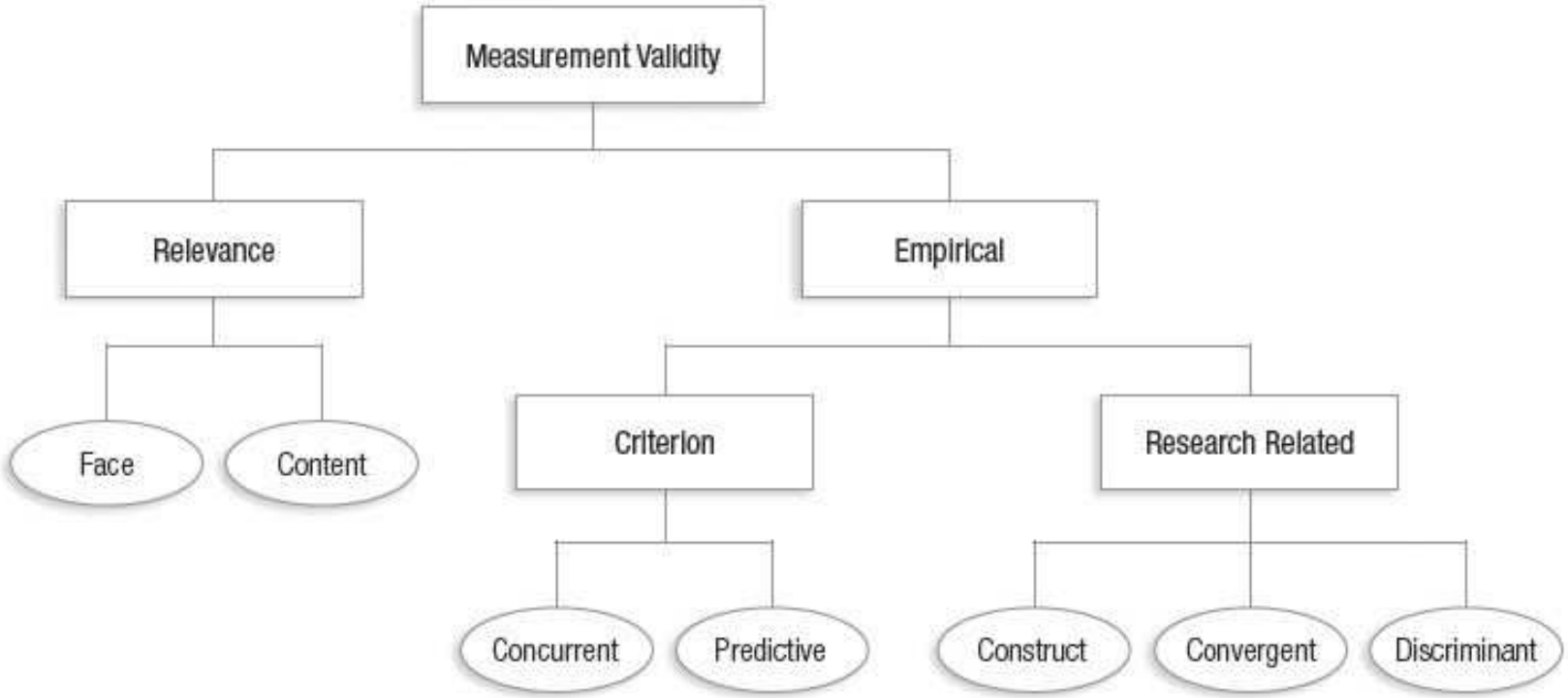
Accuracy of Measurement

- Validity and reliability.
- No method is completely valid or reliable.
- Examining sources of errors is vital to statistical reasoning.

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Measurement Validity



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Video 2.2



- Measurement Validity

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Measurement Reliability

- Consistency of measurement
- Variety of interpretations/statistics:
  - Stability reliability
  - Equivalence reliability
  - Internal consistency

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Video 2.3



- Measurement Reliability

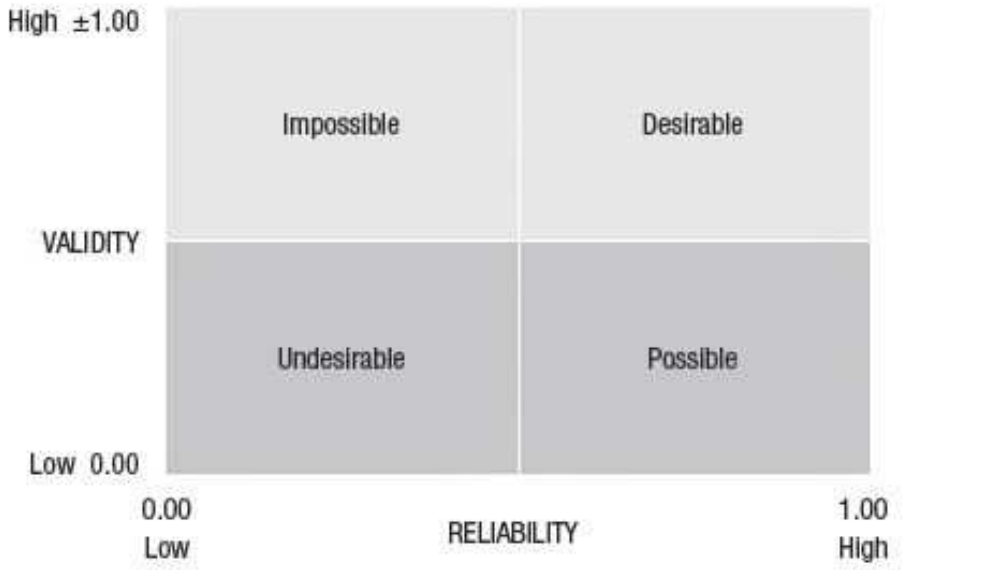
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Measurement Objectivity

- A type of reliability (inter-rater reliability)
  - When two observers/raters perceive the same thing and record the same value for the observation
- *rxx'*
  - The reliability (*r*) for a measurement taken on two occasions (*x* and *x'*).

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Relationship Between Validity and Reliability



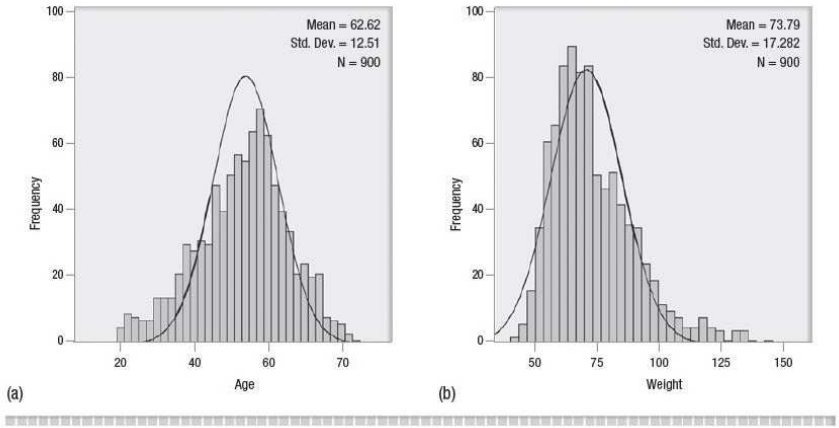
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Types of Statistics

- Descriptive
- Correlational
- Inferential

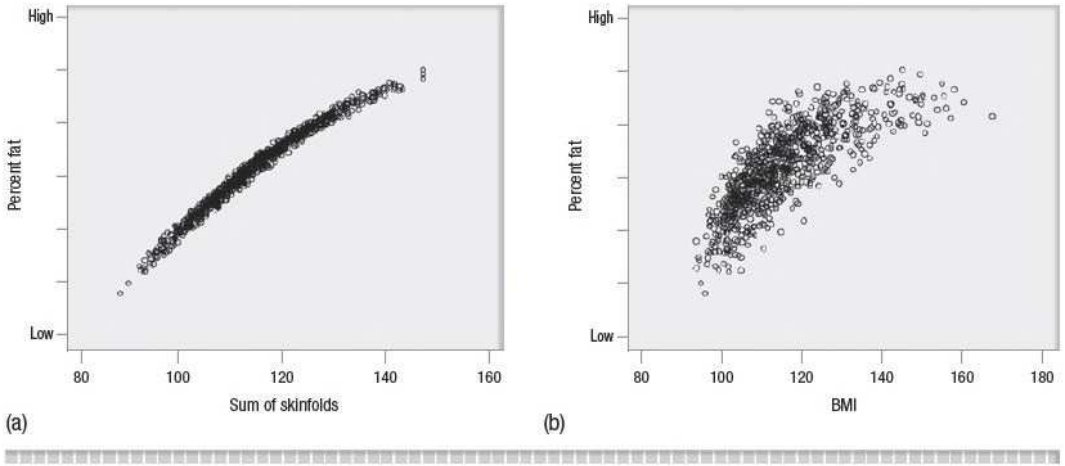
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Types of Statistics—Examples



Descriptive statistics for age (a) and weight (b)

Correlational statistics showing relationship between DXA determined percentage of body fat and skinfold thickness (a) or BMI (b).



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Errors

- No measurement process is perfectly reliable.
- Standard error of measurement (SEM)
- Standard error of estimate (SEE) or standard error of prediction (SEP)
- “Margin of error” in inferential statistics = standard error of estimate

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Video 2.4



- Categories of Statistics

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Video 2.5



- Starting SPSS

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