Text: Stocks

1. Assuming that the premises are true, write the appropriate deductive conclusion for the following argument.
   
   \[ P_1: \text{If I am a parent who protects his/her children, I will refuse to work with pedophiles.} \]
   \[ P_2: \text{I refuse to work with pedophiles.} \]
   
   Therefore
   C: _____________________________________________
   
   Select the appropriate conclusion from the following list:
   - “I am a parent who protects his/her children.”
   - “I am not a parent who protects his/her children.”
   - “I refuse to work with pedophiles.”
   - “I agree to work with pedophiles.”
   - There is no valid deductive conclusion from these premises.

2. Identify the level of measurement:
   Global Rating of Client Status as
       1 = Deteriorated, 2 = Slightly Deteriorated, 3 = No Change, 4 = Slightly Improved, 5 = Improved

3. Identify the level of measurement:
   Social Security Number.

4. Identify the level of measurement:
   Client age categories.

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>16 – 18</td>
<td>2</td>
</tr>
<tr>
<td>12 – 15</td>
<td>8</td>
</tr>
<tr>
<td>8 – 11</td>
<td>6</td>
</tr>
<tr>
<td>4 – 7</td>
<td>4</td>
</tr>
<tr>
<td>0 – 3</td>
<td>0</td>
</tr>
</tbody>
</table>

5. Identify the level of measurement:
   Total score on the Index of Family Relationship (the sum of the transformed item scores equals the total Index of Family Relationship score)
6. Identify the level of measurement:
Diagnostic category code:
298.8 – Brief Psychotic Disorder, 298.9 – Psychotic Disorder NOS, 299.00 – Autistic Disorder, 299.10 –
Childhood Disintegrative Disorder, 299.80 – Asperger’s Disorder.

7. We wish to evaluate support for requiring parental notification before providing abortion services to a minor in
a neighborhood served by a community clinic.
We have a sampling frame containing the names of the $N = 5,280$ parents who live in the neighborhood.
We wish to draw a sample of $n = 165$ individuals.
We determine that to do this, we need to sample every 32nd individual ($k = N/n = 5,280/165 = 32$) listed in the
sampling frame after making a random start within the first 32 individuals in the sampling frame.
After selecting the sample, we asked each of the $n = 165$ individuals in the sample to fill out a twelve item
questionnaire covering situations where a minor might seek abortion. For each of the situations, the
questionnaire asked the individual to indicate whether or not the parents should be notified before abortion
services were provided.
What type of sample have we selected?
- cluster sample
- convenience sample
- purposive sample
- quota sample
- simple random sample
- snowball sample
- stratified sample
- systematic sample

8. Find the requested proportions for the following $z$ scores using Table A5.01: Proportions of the Standard
Normal Distribution in Appendix V.
Please show all work on a separate sheet and list your answers on your answer sheet.
Do not round your answers.

8.01. The proportion of scores between $z = 0.54$ and the mean. $p = \ldots$
8.02. The proportion of scores greater than $z = 0.54$. $p = \ldots$
8.03. The proportion of scores less than $z = 0.54$. $p = \ldots$
8.04. The proportion of scores between $z = -0.54$ and $z = +0.54$. $p = \ldots$
8.05. The proportion of scores that are less than $z = -0.54$ or greater than $z = +0.54$. $p = \ldots$

9. For $r_{12} = +0.6$ and $r_{13} = -0.8$, which of these two correlation coefficients represents the stronger relationship?
Calculate the coefficient of determination ($PVE$) for each of these correlation coefficients and use the values
for $PVE$ to explain and justify your answer about which of the correlation coefficients represented the stronger
relationship.
Round your answers to two decimal places.

9.01. $PVE_{12} = r_{12}^2 = \ldots$
9.02. $PVE_{13} = r_{13}^2 = \ldots$
9.03. The correlation coefficient representing the stronger relationship is $r = \ldots$ because
10. When we ask the question, “Are we measuring what we say we are measuring?” we are dealing with which one of the following issues?
- Asymmetry
- Exhaustiveness
- Objectivity
- Reliability
- Spuriousness
- Validity

11. Use one of the following answer options and retype this sentence with the blanks filled in.
“A reliability coefficient is a measure of strength of association between _______ scores and _______ scores.”
- Nominal/ordinal, interval/ratio
- Non-spurious, spurious
- Objective, subjective
- Observed, true
- Symmetric, asymmetric

12. We administer one instrument to each subject in a single group of subjects on two occasions (1st administration and 2nd administration).
We calculated the reliability coefficient as the correlation coefficient between the ordered pairs of 1st administration and 2nd administration scores.
Retype this sentence with the blank filled in.
“This is a ___________________ reliability coefficient.”
- Coefficient alpha
- Parallel administrations
- Parallel forms
- Split half
- Split plot
- Test-retest

13. The standard error of the mean (σ) refers to the standard deviation of the sampling distribution of means from samples of a particular size (n). We may estimate the standard error of the mean from sample data using
\[ s_\bar{Y} = \frac{s_Y}{\sqrt{n}} \]
We have drawn a random sample of n = 15 individuals participating in senior center programs in this metropolitan area. We measured level of self-care competence using for each individual in the sample with a self-care competency questionnaire. Possible scores ranged from 0 to 100 where higher scores indicated greater competency at tasks necessary for independent living.
The statistics for the sample included a mean of \( \bar{Y} = 10 \) and a standard deviation of \( s_Y = 5 \).
What is the standard error of the mean?
Round your final answer to two decimal places and show your work on your worksheet.
\[ s_\bar{Y} = \] ________________

14. We know that the national average for the Social Work Skills test is \( \mu_Y = 83 \). However, we do not know the population standard deviation.
We have initiated a new program that we believe will increase the level of skill shown by our undergraduates.
One year after implementation, we randomly sampled n = 36 BSW students who entered the program after the change was implemented and administered the Social Work Skills test to them. The average score for this group was \( \bar{Y} = 86 \) with a standard error of the mean of \( s_\bar{Y} = 2.1 \).
Construct a 95% confidence interval around the \textit{sample} mean based upon our sample size and sample standard deviation. Remember to use a \textit{t} at the appropriate \textit{α} level and degrees of freedom (\textit{df}).

\[ C_{95} = \bar{Y} \pm \left( t_{0.05, \text{df}} \right) \left( s_{Y} \right) \]

14.01. \text{df} \quad = \quad ________.
14.02. \text{t}_{0.05, \text{df}} \quad = \quad ________.
14.03. \textbf{Upper limit:} \quad \hat{\mu}_{\text{upper}} \quad = \quad ________.
14.04. \textbf{Lower limit:} \quad \hat{\mu}_{\text{lower}} \quad = \quad ________.

Please round your \textbf{final} answer to two decimal places and show your work on your work sheet.

14.05. Based upon the evidence provided by the 95% confidence interval for our sample mean and standard deviation, can we justify an inductive inference that the students who entered our program when the program change was implemented tended to score higher than the national average (\(\mu_{Y} = 83\)) on the SWS test?

Support your answer by discussing how the value for the national average for the Social Work Skills test relates to the values contained within the 95% confidence interval that you just calculated.

15. Define each term in the following list.
15.01. \textit{Null Hypothesis} (\(H_0\))
15.02. \textit{Alternate Hypothesis} (\(H_A\))
15.03. \textit{Type I Error}
15.04. \textit{Type II Error}
15.05. \textit{alpha level} (\(\alpha\))
15.06. \textit{beta level} (\(\beta\))

16. You evaluated the relative effectiveness of two training packages (videotape or workbook) designed to help students deal with math anxiety. Each of the two training packages consisted of five weekly modules that subjects were to complete at home.

You randomly selected the subjects in our study from students who presented at a university clinic for participation in a treatment study on how to cope with math anxiety.

You randomly assigned each subject to receive one of two training packages: a videotape treatment package or a workbook treatment package. The content presented in the videotapes and the workbooks was identical.

At the beginning of the program, each subject met with a social worker for thirty minutes. At this meeting, the social worker oriented the subject to the program, gave the subject either a videotape or workbook covering the material in the first module and instructions for the use of the module.

At the second through fifth weekly sessions, each subject met with his or her social worker for ten minutes to review progress, receive the next training module, and instructions for the use of the module.

At the sixth session, each subject met with his or her social worker for thirty minutes to review progress, and discuss how to maintain gains.

After completing the program, each subject filled out the Mathematics Anxiety Rating Scale – Revised (MARS–R). The MARS–R is a 24-item instrument. Respondents rate each item using a five point scale from 1 = low anxiety to 5 = high anxiety. The MARS–R score is the sum of item ratings with higher scores indicating more intense anxiety (Plake & Parker, 1982).

We compared the subjects’ MARS-R scores between the two training packages.
16.01. The independent variable in this study refers to which of the following.
- (1) anxiety about mathematics, (2) other anxiety
- (1) before intervention, (2) after intervention
- math anxiety
- MARS–R score
- pre-participation vs. post-participation status
- presenting problem
- (1) social worker, (2) student
- training package
- (1) videotape, (2) workbook

16.02. Levels of the independent variable in this study refer to which of the following.
- (1) anxiety about mathematics, (2) other anxiety
- (1) before intervention, (2) after intervention
- math anxiety
- MARS–R score
- pre-participation vs. post-participation status
- presenting problem
- (1) social worker, (2) student
- training package
- (1) videotape, (2) workbook

16.03. The dependent variable in this study refers to which of the following.
- (1) anxiety about mathematics, (2) other anxiety
- (1) before intervention, (2) after intervention
- math anxiety
- MARS–R score
- pre-participation vs. post-participation status
- presenting problem
- (1) social worker, (2) student
- training package
- (1) videotape, (2) workbook

16.04. The dependent measure in this study refers to which of the following.
- (1) anxiety about mathematics, (2) other anxiety
- (1) before intervention, (2) after intervention
- math anxiety
- MARS–R score
- pre-participation vs. post-participation status
- presenting problem
- (1) social worker, (2) student
- training package
- (1) videotape, (2) workbook

16.05. Identify the level of measurement (Nominal, Ordinal, Interval, or Ratio) for the dependent measure in this study.
16. What type of research design did this study use?

- **single sample comparison**
  [Uses a single sample. Evaluates difference between sample dependent measure values and known or theoretical population dependent measure values.]

- **j = 2 dependent samples comparison: pre-post**
  [Uses a single sample. Evaluates change between pre-test and post-test dependent measure values for sampling units.]

- **j = 2 dependent samples comparison: matched pairs**
  [Uses two samples of matched sampling units (pairs). Evaluates difference between dependent measure values for matched pairs of sampling units.]

- **j = 2 independent samples comparison**
  [Uses samples formed by assigning sampling units to two different levels of the independent variable or uses samples selected from two different populations. Evaluates difference between dependent measure values for the two samples.]

- **two variable correlation**
  [Uses a single sample. Evaluates correlation between ordered pairs of dependent measure values (X,Y).]

- **j > 2 independent samples comparison**
  [Uses samples formed by assigning sampling units to each of the j>2 levels of the independent variable or uses samples selected from each of the j>2 populations. Evaluates differences among dependent measure values for all samples.]

17. We wished to evaluate the effectiveness of a computer-administered training program designed to teach basic interviewing skills. We randomly selected a sample of \( n = 10 \) social work students as subjects for this evaluation.

Each student participated in the training program for 30 minutes each weekday for ten days.

Before beginning the program, we videotaped each student while the student conducted a structured interview of an actor who played the part of a client with a particular concern.

After completing the program, we videotaped the ten students again while each student interviewed a second actor playing the part of a client from a slightly different background and having a slightly different concern.

We used two client background/problem scenarios (scenario A and scenario B) for the interviews. Half the students saw the actor who played scenario A for the pre-test interview and the actor playing scenario B for the post-test interview. The remainder saw the actor who played scenario B for the pre-test interview and the actor playing scenario A for the post-test interview.

A rater evaluated each videotape using the Rabin Interview Skills Protocol (RISP). The RISP is a well-validated and reliable (albeit fictitious) instrument for the evaluation of interview skills.

The RISP consists of ten items that describe ten components of skillful interviewing. A rater observes an interview and then rates the interviewer’s performance in each of the ten components of skillful interviewing. The rater uses a five point scale from 1 = inadequate use of the skill component to 5 = superior use of the skill component.

The total RISP score is the sum of the ten item scores. Possible RISP scores range from 10 to 50 where higher scores on the RISP indicate more skillful interviewing.

We gave the videotapes of individual interviews to the rater in random order. The rater did not know which interviews were pre-test interviews and which were post-test interviews.

As a check on rater reliability, we randomly selected six of the videotapes and had a second rater evaluate them with the RISP. The second rater did not know what scores the first rater had given. As was the case with the first rater, the second rater did not know which interviews were pre-test interviews and which were post-test interviews.
When we compared the scores, the results indicated strong agreement between the raters (high inter-rater reliability). On four of the videotaped interviews, the second rater gave RISP scores that were the same as the first rater’s. For one of the remaining interviews, the second rater gave a RISP score one point higher than the first rater’s score. For the other interview, the second rater gave a RISP score that was two points less than the first rater’s score.

17.01. The independent variable in this study refers to which of the following.
   - actors
   - (1) before training, (2) after training
   - (1) client scenario A, (2) client scenario B
   - (1) first actor, (2) second actor
   - (1) first rater, (2) second rater
   - interviewing skill
   - Rabin Interview Skills Protocol score
   - raters
   - scenario status
   - social work students
   - training status

17.02. Levels of the independent variable in this study refer to which of the following.
   - actors
   - (1) before training, (2) after training
   - (1) client scenario A, (2) client scenario B
   - (1) first actor, (2) second actor
   - (1) first rater, (2) second rater
   - interviewing skill
   - Rabin Interview Skills Protocol score
   - raters
   - scenario status
   - social work students
   - training status

17.03. The dependent variable in this study refers to which of the following.
   - actors
   - (1) before training, (2) after training
   - (1) client scenario A, (2) client scenario B
   - (1) first actor, (2) second actor
   - (1) first rater, (2) second rater
   - interviewing skill
   - Rabin Interview Skills Protocol score
   - raters
   - scenario status
   - social work students
   - training status
17.04. The dependent measure in this study refers to which of the following.
- actors
- (1) before training, (2) after training
- (1) client scenario A, (2) client scenario B
- (1) first actor, (2) second actor
- (1) first rater, (2) second rater
- interviewing skill
- Rabin Interview Skills Protocol score
- raters
- scenario status
- social work students
- training status

17.05. Identify the level of measurement (Nominal, Ordinal, Interval, or Ratio) for the dependent measure in this study.

17.06. What type of research design did this study use?
- single sample comparison
  [Uses a single sample. Evaluates difference between sample dependent measure values and known or theoretical population dependent measure values.]
- \( j = 2 \) dependent samples comparison: pre-post
  [Uses a single sample. Evaluates change between pre-test and post-test dependent measure values for sampling units.]
- \( j = 2 \) dependent samples comparison: matched pairs
  [Uses two samples of matched sampling units (pairs). Evaluates difference between dependent measure values for matched pairs of sampling units.]
- \( j = 2 \) independent samples comparison:
  [Uses samples formed by assigning sampling units to two different levels of the independent variable or uses samples selected from two different populations. Evaluates difference between dependent measure values for the two samples.]
- two variable correlation:
  [Uses a single sample. Evaluates correlation between ordered pairs of dependent measure values (X,Y).]
- \( j > 2 \) independent samples comparison:
  [Uses samples formed by assigning sampling units to each of the \( j > 2 \) levels of the independent variable or uses samples selected from each of the \( j > 2 \) populations. Evaluates differences among dependent measure values for all samples.]