Agenda

- Part I: Journal Overview
  - Updates
  - Current Data
  - Current Process
  - Upcoming Changes
- Part 2: Proper Survey Data Analysis and Presentation
- Part 3: Proper Qualitative Data Analysis and Presentation

Journal Overview: Updates

- Indexing
  - Education Resources Information Center (ERIC)
  - EBSCO: Sport Discuss
  - EBSCO: Cumulative Index of Nursing and Allied Health Literature (CINAHL) Beginning 2013
Journal Overview: Current Data

- The journal continues to grow
  - More manuscripts submitted
  - More manuscripts accepted
  - More manuscripts published
  - Greater Substance
Journal Overview: Current Data

- Published pages per year

![Published Pages Graph]

*Projected estimate

Journal Overview: Current Process

- Submission
- Initial QC—mechanical review
- Peer Review (at least 2 peers)
- Publication Decision
  - Days from receipt to first decision:
    - 2010: 74.42
    - 2011: 111.16
    - 2012: 82.82
  - Our goal: <60 days
- One accepted:
  - Copy edit review
  - Author Queries
  - Layout

Journal Overview: Upcoming Changes

- ATEJ now housed in NATA publication office
- Leslie Neistadt is our managing editor
- Allen Press Relationship
  - Copy edit
  - Layout
  - Publishing ahead of print (forthcoming)
  - Website
- Benefits
The peer review process is critical to the continued growth in quality of the ATEJ. We need to continually improve the quality of feedback to authors. One area we can improve on is providing feedback on proper data analysis and presentation of results.

2013 ATEC Pre-Conference Session:
The Athletic Training Education Journal Manuscript Reviewers' Workshop:
Proper Data Analysis & Reporting of Results

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Objectives
- Review critical information that should be present in analysis/results
- Discuss statistics that provide information on significance and meaningfulness of the outcomes
- Discuss critical information that should be provided relative to study design
What is critical to an effective presentation of results?

- It starts in the methods section!
- Description of study design
  - What are the variables?
  - How were they measured?
  - Type of question?
- Analysis of data
  - How has data been reduced, converted or transformed?
  - Type of statistical analysis performed
  - Assumptions met/not met
  - A priori probability levels

What are the important statistical measures for significance & meaningfulness?

- Probability level (p value)
- Effect Size
  - Standardized mean difference
  - 0.2 is small, 0.5 is moderate, 0.8 is large
- Confidence intervals
  - Degree of precision of the sample compared to the population, typically use 95% CI
  - Mean age of 21.5, SE=.7, n=15 produces a 95% CI of 20.1–22.8 years

What are the important statistical measures for significance & meaningfulness? continued

- Power
  - Probability of making a correct hypothesis decision/significance
    - A function of effect size, p value and sample size
    - A study using a n=10, ES=0.5 and p=.05 produces a power of 0.20
- Odds Ratio/Relative Risk
  - Odds/Risk of a specific event occurring in a treatment group compared to a control group
  - Value =1, likely to occur equally
  - Value < 1, less likely to occur
  - Value > 1, more likely to occur
- Coefficient of Determination ($R^2$)
  - Determines the % variability of one variable explained by another if they are correlated
  - A correlation between 2 variables has a r=.70 and an $R^2=.49$
  - Only half of the variability in one variable is explained by the other
What should be in the results?

- Sample description
  - Descriptors of representativeness
    - Means, SD, confidence intervals
  - What descriptors are important?
- Sample size concerns?
  - Statistical power measure

What should be in the results?

- Categorical data
  - Frequencies, percentage proportions
  - If group comparisons are performed
    - Actual calculated value of statistical test (e.g., Chi-square), exact p value
    - Odds ratio and CI
      - E.g., male CIs were 2.5 times (OR = 2.5, 95% CI = 1.9–3.1) more likely to adopt the behavior compared to female CIs

What should be in the results? continued

- Correlational research
  - Means, SD, CI for each variable
  - Scatterplot or mention of outliers or curvilinear relationships being identified
  - Coefficient value (r), exact p value, R² value
  - If regression is performed:
    - All of the above and standard error of the estimate (SEE)
What should be in the results section? continued

- Group comparisons/cause & effect
  - Means, SD, CI for each variable
  - Actual calculated value of statistical test (e.g. ANOVA), degrees of freedom, exact p value
  - Post hoc results (if applicable)
  - Effect size

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The (Mis)Use of Likert Scales

- How are Likert scales misused?

  - Example 1: Response of 100 subjects
  - Strongly Agree: 17%
  - Agree: 44%
  - Disagree: 15%
  - Strongly Disagree: 24%

  - Example 2: Response of 100 subjects
  - Strongly Agree: 4
  - Agree: 3
  - Disagree: 2
  - Strongly Disagree: 1

  - Mean response was 2.5 ± 1.0

- How should Likert scales be analyzed?
  - If a word-based construct that has no units, it should be analyzed as ordinal scale data
  - If numerically based with the possibility of fractional values and units of measure, it can be analyzed as interval/ratio scale data
  - A series of Likert scale items measuring the same construct can be combined to create an interval/ration scale "index" score

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How do I incorporate the results into the conclusions?

- Does the data reported show significance and meaningfulness?
- Does the data CONVINCE you the authors conclusions are correct?
- Do the authors use/report the data to support the conclusions?
- Are the appropriate conclusions made based upon the data?
- Do authors relate statistical significance/meaningfulness to clinical meaningfulness?
- Are limitations discussed?
Objectives
◦ Provide information pertaining to important aspects a reviewer should examine when reviewing the steps of analysis for a qualitative research study
◦ Offer guidelines for presenting qualitative research findings

Analysis is about…
◦ Making the data usable (consolidating/reducing)
◦ AND
◦ Making sense out of the data...
◦ Making meaning…
Qualitative Data Analysis

- Analysis involves:
  1. identifying units of data and assigning a label that captures its meaning [coded concepts/open coding]
  2. Compare/Contrast each unit of data and identify recurring regularities. Organize units of data into “like categories.” [categories/themes]
  - Referred to as analytic coding

- The emergent themes/categories should relate to the studies purpose.
- Ask yourself:
  - Relatedness to research questions?
  - Is there a disconnect?

- Category titles should be sensitizing
  - You should read the title of a category and understand its nature
    - “Negative Organizational Influences” rather than “Organizational Influences”
    - “Time management” rather than “Time”
  - Ask yourself:
    - Is there a better title for the category or theme to capture its meaning?
Categories should be conceptually congruent

- Categories should be at the same level of abstraction
- Example: The purpose of this study was to explore athletes’ perceptions of social support

Merriam SB. Qualitative Research: A Guide to Design and Implementation; 2009

Head Athletic Trainer
Assistant Athletic Trainer
Sports Medicine Personnel Support

Mom & Dad
Siblings
Coaches
Teammates
Team “Family”

Categories should be mutually exclusive

- A unit of data should fit into only one theme
- As you read quotes ask yourself:
  - Does this resonate with the title of theme? If not, is there a different category that this may fit within?

Merriam SB. Qualitative Research: A Guide to Design and Implementation; 2009
Trustworthiness must be addressed
- Member checks
- Peer debriefing
- Triangulation
  - Data source triangulation
  - Multiple analyst
- Audit trail
- Robust description
- Research reflexivity

Presenting results from a qualitative study
- Does the author use consistent terms?
  - Themes
  - Categories
  - Properties
  - Dimensions
  - Subthemes
  - Subcategories
  - Higher order themes … lower order themes
  - First order, second order, third order themes
- Consistency is key
- When should higher and lower order be used?
- When should first, second, or third order themes be used?

Themes: “higher order” and “lower order”
- Themes are recurrent and unifying ideas from the participants regarding the subject of inquiry
- Higher vs lower order
  - Use this descriptive language when generally describing a theme (highest order) and any “sub-themes” that comprise it (lower order)
  - Lower order themes tend to be first order—they are the first created during the open coding process
First order, second order, and third order themes...

- First order themes are those initially created when placing coded concepts (labels that capture the meaning of textual data) into like groups

  Example

  Second Order Themes are those created when several first order themes are grouped together

  Third order themes are those created when several second order themes are grouped together

![Diagram of first, second, and third order themes](image_url)

**Domains and Dimensions**

- Based on Spradley’s (1979) work
- Use the term domain to organize the data in a logical way to convey its meaning to a reader
Consistency is key

As a reviewer:
- Argue for the use of consistent terms
- Raise questions if you don’t fully understand the organization of the data
- Suggest alternative ways of organizing the data when appropriate

“As I read the results it appears that the higher order theme emerged from the two lower order themes. However, the two lower order themes seem very dissimilar and it is not clear why they were organized together into a higher order theme. Please clarify, or consider keeping these separate.”

“in reading this section it is very confusing because the terms theme, category, and dimension are used throughout. Are these one in the same? If so, consider using a consistent term to avoid confusion by a reader.”

Use a visual organizer for the findings

Not necessary for themes with no lower order (categories without subcategories)

Helpful for multiple levels of presentation (eg, when first, second, and third order themes are presented)
Conclusion

- Clear steps of analysis
- Trustworthiness addressed
- Consistency of terms
- Clear, meaningful, and practical presentation of findings

Thank you!