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## INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI:10.21474/IJAR01/13490  
DOI URL: <http://dx.doi.org/10.21474/IJAR01/13490>



### REVIEW ARTICLE

#### A BOOK REVIEW: USING STATISTICS IN SMALL-SCALE LANGUAGE EDUCATION RESEARCH: FOCUS ON NON-PARAMETRIC DATA BY TURNER

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#### Manuscript Info

##### Manuscript History

Received: 30 July 2021

Final Accepted: 31 August 2021

Published: September 2021

#### Abstract

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#### Book Review:-

**Using Statistics in Small-Scale Language Education Research: Focus on Non-Parametric Data** by Jean L. Turner, New York: Routledge, 2014, 360 pages, £42.29, ISBN: 978-0-203-52692-7.

Considering the surging demand to conduct classroom-based research, a coursebook in statistics is a valuable tool a researcher may possess. Adequate knowledge and understanding of different types of statistics will enable researchers to seamlessly apply the appropriate statistical tools for their studies. However, some language education researchers tend to overlook the value of doing quantitative studies. Some may even employ a statistical treatment that is inappropriate with the size of chosen respondents. The book entitled “*Using Statistics in Small-Scale Language Education Research: Focus on Non-Parametric Data*” is written and published by Jean L. Turner in 2014 to address such concerns. Turner is a professor, who has undergone a TESOL/TFL Program, at Monterey Institute of International Studies, USA. And with her exceptional knowledge of the field, the book adequately covers descriptive, parametric, and non-parametric statistics, but with a huge portion of focus on non-parametric. This book provides language education researchers with the skills and competence needed in conducting small-scale research. Critiquing this book may help future researchers gauge if the work by Turner renders accurate information and an efficient training manual. And while the book shows sundry strong points, there are still a few weaknesses present in terms of bygone sources and its lack of scope.

Tackling the strengths, the book provides an in-depth discussion of each chapter with unbiased and efficient contexts. To explain this further, Section 1 allows readers to develop a firm foundation of statistical research. Chapter 1 defines research using different classroom scenarios as examples. Also, in this chapter, Turner highlights the use and significance of statistical research to analyze quantitative information. In addition, different types of research are explained in detail. Three types of statistical formulas (descriptive, parametric, and non-parametric) are also explicated in this chapter. The chapter is concluded by presenting the characteristics of statistical research with notes added to it for the readers to fully construe some of the concepts relating to statistics. Chapter 2 defines and describes variables, presenting the definition of variables from the perspective of Shavelson (1996) and Hatch and Lazaraton (1991). They define variables as an attribute of an object or person, which may vary at a given time. Turner adds final comments on scale types. Also, it is in this chapter that R, a free online statistical program, is introduced. The author also discusses the three measures of central tendency and the two measures of dispersion. The step-by-step process in calculating for each measure is elaborated and demystified. Next, chapter 3 deals with designing sound research. It analyzes variables and their specific roles in research. This chapter explicates the

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threats to the study. Issues relating to the participants, data collection tools, research environment, and other tool-related concerns are given and explained profoundly. Moreover, this chapter expounds on research designs and their important distinguishing features. Practice problems are also included in this chapter to help readers understand the topics covered. Forming research questions and parts of research reports are the focus of discussion in chapter 4. Specifically, Turner enumerates and elucidates the parts of a research proposal: abstract, introduction, method, analysis, results, discussion, references, and appendices. Turner presents the concepts of this chapter following the guidelines of the Publication Manual of the American Psychological Association (APA) in 2001. Last, chapter 5 expatiates the purposes of statistical logic. Besides, Turner provided the ten steps in statistical logic. A few examples are illustrated to appreciate further how each step of statistical computation is being executed. Notes are also attached to the last page of chapter 5 to shed light on some technical terms used.

Next, section 2 of the book comprises chapters six and seven. This section centers on examining differences between two sets of data. Chapter 6 features the parametric t-test statistics. Three different t-test formulas are presented in this chapter, namely the independent samples t-test formula, paired-samples t-test formula, and case 1 t-test. The author emphasizes that these t-test formulas are to be used if certain criteria such as randomly selected respondents in a study are from a normally distributed population, the independent variable is nominal, and other additional considerations are met. The ten logical steps are again included in the chapter to guide the readers in scrutinizing the given examples. Alternatively, this chapter contains instructions on running t-tests using R. Non-parametric counterparts of t-tests are discussed in chapter 7, specifically the Wilcoxon rank-sum and Wilcoxon signed-rank statistics. The chapter explicitly states the reasons for employing non-parametric tests, with one reason being which a language education researcher would easily understand is the dearth of the number of participants in a study. Similar to the previous chapters of the book, this chapter shows an example study for Wilcoxon rank-sum and Wilcoxon signed-rank. Likewise, tables with corresponding instructions on how to compute Wilcoxon are included in the chapter.

Section 3 constitutes chapters eight and nine. This section analyzes differences among more than two sets of data. Chapter 8 broaches parametric analysis of variance or ANOVA. Turner familiarizes the readers with the ANOVA family, namely 1-Way Between-Groups, MANOVA, and ANCOVA. The author does not provide an in-depth discussion of ANOVA formulas in this chapter because the focus of the book is on research conducted in the classrooms. Thus, the example study in this chapter concentrates on 1-Way Between-Groups ANOVA. Both instructions for manually computing the ANOVA and encoding the data to R are lucidly shown in this chapter. Chapter 9 presents the non-parametric equivalent of ANOVA. Turner describes Kruskal-Wallis and Friedman's Test statistics. She further explains how the two non-parametric tests are being computed by either using a calculator or by using the free software R. Examples and practice problems with easy-to-follow steps are also included in the chapter. Notes from the author are added to the last page of the chapter to explicate some statistical terminologies mentioned in the chapter and give additional references.

The fourth and last section encompasses the last three chapters of the book. These are chapters ten, eleven, and twelve. This section underscores the analysis of patterns within a variable and between two variables. Chapter 10 starts analyzing the Pearson's Product Moment Correlation Coefficient statistic or Pearson's  $r$ . It also shows the features of correlation coefficients. Examples with corresponding illustrations and graphs of the variables are also presented. Similarly, a sample study is included with computation following the ten statistical logics. In addition, there are tables with graspable instructions for using R. Chapter 11 discusses the non-parametric equivalents of Pearson's  $r$ . It first expounds on using Spearman's rho or Kendall's tau based on the ten steps of statistical logic. Additionally, this chapter demonstrates the commands which are of paramount help if Spearman's rho will be computed using R. There are also practice problems in the chapter. The author makes the answer key available for these practice problems by providing a link that can be accessed using the internet. In addition, available notes give elucidation on the concepts presented in this chapter. Non-parametric Chi-squared statistics becomes the highlight of the last chapter of the book. In chapter 12, Turner demystifies the 1-way chi-squared and 2-way chi-squared statistics. Also, this chapter underscores the significance of using chi-squared statistics in small-scale language education. An example study with accompanying figures is given to enable readers to understand how chi-squared is applied. Additionally, chapter 12 gives important considerations when using the chi-squared statistics. It even adds types of chi-squared analysis. The 10-step statistical logic makes the discussion of chi-squared more comprehensible. On how to run R commands for chi-squared is also shown. There are also additional notes attached to the last page of this chapter.

With these being said, the book shows its organized categorization. All sections, chapters, and subchapters are well-arranged, together with proper labeling of figures; hence, convenience exists when skimming through the terms, arguments, and ideas. Moreover, since plagiarism is an issue that is always being addressed in the academe, which mainly ruins the integrity of the author (Santini, 2018), proper citations must always be part of research writing. In this book, Turner assures the audience that every claim is backed up with a reliable source, and that there is no bias in the text. There are also notes to guide the readers towards the main objective of the book. The author also makes the texts readable, convenient, and reliable, while still being technical, enabling its readers to understand highfalutin terminologies.

Despite convincing strengths found in the article, it still has its weaknesses as well. The flaws include obsolete sources and the book's limited scope. For the first point, Turner's book has references that can be dated even from 1991. Wolf (2019) suggests that the past 2 to 3 years is the best point of reference in terms of the sources being used by researchers since these kinds of references encapsulate more of the recent conditions and statistical reports. Authors must be vigilant with the dates of the publication since they may not be as reliable and have the possibility that the publications are already debunked or improved by other researchers. Another weakness of the book is its lack of scope, as this only gravitates on small-scale studies aligned with language education. Although Turner discloses the book's limitation, this can still help future researchers to widen the breadth and fill in the gaps of the research.

As a recommendation, future researchers can cover a wider ambit with relevant sources. The scope can target other audiences from different profiles and backgrounds. Future researchers can also look for developed studies that keep abreast of the trends and events of today. Still, in conclusion, Turner's "*Using Statistics in Small-Scale Language Education Research: Focus on Non-Parametric Data*" is an indispensable book for every language education researcher and professional. This book eliminates the fear of a language researcher of numbers in research and presents statistics in a more fathomable way. It is a valuable book that is and should be recommended to all language education researchers. It inspires language education students and professionals to transcend in doing small-scale research by utilizing statistics to complement qualitative research.

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