
Nursing Theses and Dissertations

School of Nursing

Summer 7-14-2021

Use of Standardized Test Results by Faculty and Students for Advanced Practice Nurse Certification Success

Dinorah Martinez-Anderson
University of Texas at Tyler

Follow this and additional works at: https://scholarworks.uttyler.edu/nursing_grad



Part of the Curriculum and Instruction Commons, Educational Administration and Supervision Commons, Educational Assessment, Evaluation, and Research Commons, Educational Methods Commons, Educational Psychology Commons, Higher Education and Teaching Commons, Nursing Commons, Online and Distance Education Commons, and the Scholarship of Teaching and Learning Commons

Recommended Citation

Martinez-Anderson, Dinorah, "Use of Standardized Test Results by Faculty and Students for Advanced Practice Nurse Certification Success" (2021). *Nursing Theses and Dissertations*. Paper 128.
<http://hdl.handle.net/10950/3766>

This Dissertation is brought to you for free and open access by the School of Nursing at Scholar Works at UT Tyler. It has been accepted for inclusion in Nursing Theses and Dissertations by an authorized administrator of Scholar Works at UT Tyler. For more information, please contact tgullings@uttyler.edu.

USE OF STANDARDIZED TEST RESULTS BY FACULTY AND STUDENTS FOR
ADVANCED PRACTICE NURSE CERTIFICATION SUCCESS

by

DINORAH MARTINEZ-ANDERSON

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy in Nursing
School of Nursing

Barbara McAlister, Ph.D., Committee Chair

College of Nursing and Health Sciences

The University of Texas at Tyler
August 2021

The University of Texas at Tyler
Tyler, Texas

This is to certify that the Doctoral Dissertation of

DINORAH MARTINEZ-ANDERSON

has been approved for the dissertation requirement on
July 14, 2021
for the Ph.D. degree

Approvals:

DocuSigned by:

Barbara McAlister

E3F4569FD51647C...

Dissertation Chair: Barbara McAlister

DocuSigned by:

Amy Roberts

E35EDEEEBEE048...

Member: Amy Roberts

DocuSigned by:

Pamela Willson

DBC679E1F8B410...

Member: Pamela Willson

DocuSigned by:

Dr. Jennifer Chilton

5B66005C28BE43A...

Chair, Department of School of Nursing

DocuSigned by:

Barbara Haas

985A922F3BF54C7...

Dean, College of Nursing & Health Sciences

© Copyright by Dinorah Martinez-Anderson 2021
All rights reserved.

DEDICATION

I dedicate this dissertation and my doctoral degree to my God, my Lord and Savior Jesus Christ and the Holy Spirit for anchoring my faith throughout this process and knowing that I am a child of God, which is my true identity, with or without a doctorate degree.

ACKNOWLEDGEMENT

It is with great humility and gratitude that I acknowledge all who participated in my journey towards my personal goal of a doctorate degree. I would like to thank my dissertation chair, Dr. Barbara McAlister, for your strong guidance, constant encouragement, and timely support to bring me to the finish line. Also, to Dr. Barbara Haas for picking up the pieces of an unexpected bump in the road and believing in me. Dr. Amy Roberts, thank you for your example of professionalism, gentle spirit, and friendship. Special thanks to Dr. Pam Willson, for your friendship, presence, and nurturing my every step through this journey.

Words cannot capture the love and support I received from my family. To my husband, Tommy Anderson and my sons, Josiah and Jacob. Thank you for your patience, pep talks, and presence. You are my heart and reason I strive to be the best I can be. I love you more. To my parents, Fidencio and Conchita Martinez, for their unconditional love and support. *Papi, mira, ya lo logre! Ojala que te sientas orgulloso. Muchas gracias, te amo!* To my first and life-long teacher, and prayer warrior, Mom, thank you for the hours of strategic prayers *al Señor*. Abe, for the encouragement and support to “finish this”. Letty, for your support and pushing me to do the hardest thing and *start again* and better understand ZPD, “the zone is not a place, but a specific time period in the learning process,” that was my turning point.

God blessed me with an incredible friend to experience this doctoral journey with, a friend to walk beside me and cheer me on, sharing our ups and downs and family drama, to Dr. Elizabeth Delavan, I am so grateful I found you and pray our friendship lasts forever.

Table of Contents

List of Tables	v
List of Figures	vi
Abstract	vii
Chapter One	1
Overview of Program Research	1
Introduction to the Articles	3
Chapter Two	5
HESI APRN Standardized Testing Results Guided by Third Voice	5
Abstract	5
Methods	7
Findings	14
Third Voice	15
Third Voice Applied	16
Discussion	17
References	19
Chapter Three	232
Using the Third Voice Conceptual Perspective in Advanced Practice Nursing Education: A Concept Analysis	232
Abstract	232
Background	243
Concept Identification	264
Theoretical Framework	276
Interdisciplinary Applications	29
Exemplar for nursing education	29
Exemplar for clinical patient care	310
Exemplar for aviation industry	321
Defining Attributes	332
Model Case	343
Contrary Case	354
Antecedents and Consequences	365

Empirical Referents Defined	376
Discussion.....	387
Implications and recommendations for nurse educators.....	387
Conclusion	398
References.....	39
Chapter Four	443
Using Standardized Test Results to Inform Nursing Certification Preparation: Challenges and Lessons.....	443
Abstract.....	443
Problem and Significance	476
Review of the Literature	497
Concepts.....	49
Standardized testing	510
General education.....	510
Nursing education	521
Graduate nursing education and standardized testing	532
Teaching and Standardized Testing	532
Learning and Standardized Testing.....	543
Gaps in the Literature	554
Conceptual Framework.....	554
Model of the Conceptual Framework	576
Research Questions.....	587
Design	598
Methods	59
Sample.....	59
Protection of Human Subjects	610
Instruments.....	631
Demographic Data Form.....	631
The Approaches to Teaching Inventory (ATI).....	632
The Learning and Study Skills Inventory (LASSI, 3RD edition)	643
Perceived Stress Scale (PSS).....	654

APEA Pre-and University Predictor Tests	654
APN National Certification Exam.....	665
Qualitative Study Questionnaire	676
Data Collection	676
Data Analysis	698
Results.....	69
Demographics	69
Qualitative Component	69
Concurring Findings.....	710
Divergent Findings	710
Student-specific Findings	721
Faculty-specific Findings	721
Discussion.....	73
Strengths and Limitations	732
Strengths	732
Limitations	74
Sample.....	743
Data collection.....	743
Respondent Fatigue	743
Lack of Access	743
Longitudinal effects.....	754
Summary.....	754
References.....	765
Chapter Five.....	843
Summary and Conclusion.....	843
Nursing Implications.....	864
Next Steps.....	865
References.....	88
Appendix A: IRB Approval University of Texas at Tyler.....	90
Appendix B: IRB-Modification Approval University of Texas at Tyler	92
Appendix C: IRB Approval South University.....	94

Appendix D: Demographic Data Form (Student).....	96
Appendix E: Demographic Data Form (Faculty)	98
Appendix F: Approaches to Teaching Inventory (ATI)	100
Appendix G: The Learning and Study Skills Inventory (LASSI)	103
Appendix H: Perceived Stress Scale (PSS)	105
Appendix I: Qualitative Study Questionnaire (Student).....	106
Appendix J: Qualitative Study Questionnaire (Faculty).....	107
Biographical Sketch.....	108

List of Tables

Table 2.1. Selections from the Review of the Literature on Standardized Testing and Use of Conceptual Frameworks	7
Table 4.1. Conceptual and Operational Definitions of Variables of the Original Study ...	58

List of Figures

Figure 4.1. Adapted Model of the Reconceptualization of Vygotsky's Theory of the Zone of Proximal Development (RVZPD)	57
---	----

Abstract

USE OF STANDARDIZED TESTS BY FACULTY AND STUDENTS FOR ADVANCED PRACTICE NURSE CERTIFICATION SUCCESS

Dinorah Martinez-Anderson

Dissertation Chair: Barbara McAlister, Ph.D.

The University of Texas at Tyler
July 2021

The utilization of standardized testing as a recognized educational strategy to measure pre-professional readiness in Advanced Practice Nursing (APN) graduate programs has increased. Research supports such use for predicting licensure success for undergraduate education, however when related to the use in graduate nursing education, it is limited. Teaching and learning practices of APN faculty and students have not been comprehensively explored. This study examined the use of standardized testing results by faculty and students in APN graduate education that contributes to student national certification success. The Reconceptualization of Vygotsky's Theory of Zone of Proximal Development (RVZPD) underpins the study. An original descriptive correlational research design was implemented with a sample from a multi-state APN graduate program. Low participant response yielded insufficient data. An amendment to the original study was approved and a qualitative study was implemented to better understand the participants' perspectives on their use of standardized test results.

Responses from participants were categorized into four themes: Concurring, Divergent, Student, and Faculty-specific. Standardized testing is a tool to measure new knowledge and skills

was a concurring theme. Students agreed test results reflect their knowledge, while faculty disagreed they reflect their teaching. Advanced Practice Education Associates (APEA) predictor test results informed students of areas of weakness to focus on for test success, while informing faculty of areas needing in-depth teaching. This qualitative data from graduate nursing students and faculty indicate that standardized testing has potential to serve as a meaningful educational component for both teaching and learning practices that lead to APN national certification success.

Keywords: standardized testing, advanced practice nursing education, advanced practice nurse, third voice, zone of proximal development

Chapter One

Overview of Program Research

Healthcare costs have increased by 14% in the last five years from \$10,000 to \$12,000 per capita and a recent report by Patrick Boyle for the Association of American Medical Colleges (AAMC) projected a physician/provider shortage of between 54,100 to 139,000 by 2033 (Boyle, 2020; Elflein, 2020). With the increase of health care costs and health provider shortages, nursing educational programs have had to answer the call and address the need to produce safe, competent advanced practice nurses to fill the gap. For 2019, the American Academy of Nurse Practitioners Certification Board (AANPCB) reported that 84% of all nurse practitioner certifications were in primary care, an increase of 17% in one year (AANP, 2021). The Association of American Medical Colleges (AAMC) reported that in response to the COVID-19 pandemic, expansion of the nurse practitioner role and relaxed state licensure requirements were instituted to meet the nationwide demand for healthcare providers (Boyle, 2020).

Standardized testing is widely used among multiple disciplines for a variety of reasons. After students complete an accredited graduate level nursing program, passing the national certification exam is required by 94% of states in the U.S. to practice as an advanced practice nurse (APN). Graduate level nursing education primarily uses standardized tests to provide evidence of pedagogical rigor for faculty teaching, measure advanced clinical skills, demonstrate professional practice competencies, and indicate readiness for the national certification exam (Willson & Goodman, 2015; Zweighaft, 2013).

The literature provides evidence of successful use of standardized testing in the prediction of licensure exam (i.e., the National Council Licensure Examination for Registered

Nurses (NCLEX-RN) success among undergraduate education. However, there is limited literature on the use of standardized testing and its role in the educational process leading to national certification exam success in graduate level education. This research presents an opportunity to explore the influence that standardized testing offers advanced practice nursing education. With the need to produce competent nurse practitioners and fill the healthcare gap, it is imperative to fully understand the contribution standardized testing plays in the educational process that informs the educator and student. Plans for a descriptive, correlational quantitative study along with results from related qualitative inquiry are presented in this portfolio. This work assists in filling the literature gap by providing information related to the use of standardized testing, the conceptual framework that underpins its use, and how test results inform stakeholders for certification success.

This dissertation portfolio presents research that began with the review of the literature related to the use of standardized testing in graduate level, Advanced Practice Registered Nurse (APRN) education as the central focus. The dissertation portfolio contains one published article and two manuscripts that highlight standardized testing in APN education. The published article provides the state of the science based on a review of the literature, highlighting the gap in the literature related to the use of standardized tests in graduate nursing education and lack of theoretical and policy standardization in nursing education (Table 2.1). The first manuscript is a concept analysis of the concept of Third Voice. Standardized testing is conceptualized as Third Voice in the Reconceptualization of Vygotsky's Theory of the Zone of Proximal Development (RVZPD), the framework that underpins the use of standardized testing in APN education. The second manuscript details plans for a descriptive exploratory design study of the use of standardized testing in APN education in a cohort of faculty and students.

Introduction to the Articles

Chapter Two offers the *HESI APRN Standardized Testing Results Guided by Third Voice* (Martinez-Anderson, 2021) published in the peer-reviewed, *Internet Journal of Advanced Nursing Practice* as the foundational literary contribution to this portfolio. This article discusses the use of standardized testing as an established, credible, and reliable educational assessment tool in nursing education. It highlights the plethora of scholarly literature on the use of standardized tests in undergraduate nursing education juxtaposed against a paucity of articles on its use in APRN education. The comprehensive search also revealed no existing literature that establishes a theoretical underpinning that fits the role standardized testing plays in the educational process. Using theoretical validity, standardized testing's influence on nursing knowledge is identified and established (Munhall, 2012). Drawing from the original theory by Vygotsky (1978), the RVZPD expands the original concepts beyond the visible and audible to introduce a new concept, Third Voice, which contributes to goal attainment (Eun, Knotek, Heining-Boynton, 2008). Standardized testing is used as an example of the concept of Third Voice and its contribution within the Zone of Proximal Development (ZPD); it is introduced as a strong theoretical fit as applied in graduate nursing education.

The RVZPD, as a conceptual framework for standardized testing use posits concepts as three voices: the educator, the student, and the standardized test. It reveals standardized testing as the invisible, authoritative contributor in the educational process. Chapter Three offers a concept analysis deconstructing and applying RVZPD to advanced nursing education with a strong emphasis on the concept of Third Voice. The analysis highlights the novel concept of Third Voice, operationalized as standardized testing for graduate nursing testing success and interdisciplinary application. This manuscript was submitted for publication in a peer-reviewed

journal, *Advances in Nursing Science*, and is presently in revision in accordance with the journal reviewers' requests.

Chapter Four discusses the challenges and lessons learned from the study titled, "Use of Standardized Test Results by Faculty and Students for Advanced Practice Nurse Certification Success." This IRB-approved original study was implemented but did not produce sufficient data due to low participation (Appendix A-C). Low participation led to the need to amend the study to incorporate qualitative inquiry to answer two research questions: 1) How does Third Voice (standardized test results) influence graduate nursing faculty's (First Voice) teaching strategies and graduate nursing students' (Second Voice) study skill strategies? and 2) Does the application of the concept of Third Voice in advanced nursing practice predict first-attempt, national certification success? The intended Methods and Analysis sections are shared along with the results of the qualitative inquiry. See Appendices D-J for instruments used. The information gleaned represents foundational information on the interaction between the educator, student, and standardized testing results to inform teaching and learning strategies that lead to certification success. An adapted model representing the application of RVZPD to standardized testing is presented (Figure 4.1).

Chapter Five provides the summary and conclusion. Standardized testing results as the phenomenon that contributes to the learning process in advanced nursing education that leads to national certification success has not been wholly explored. This portfolio lays the groundwork for further exploration into a deeper understanding of the role standardized testing plays as the silent contributor in the learning process in advanced practice nursing education.

Chapter Two

HESI APRN Standardized Testing Results Guided by Third Voice

Abstract

Standardized testing is an established credible and reliable educational assessment tool that measures Advanced Practice Registered Nurse (APRN) pre-professional certification exam preparedness. While the literature is plentiful related to standardized testing use in undergraduate education, there is limited evidence within graduate level (APRN) nursing education. Furthermore, no existing literature that explores a strong theoretical underpinning that fits the role standardized test results play in the educational process was identified. Guided by the concepts of the three voices in the Reconceptualization of Vygotsky's Theory of the Zone of Proximal Development (ZPD) leading to a specified goal outcome (attainment). The first two voices represent the educator and student respectively, while standardized test results are conceptualized as the Third Voice. When the HESI™ APRN Exam is viewed through the conceptual framework of Third Voice, this strategy provides educators a clear plan to utilize testing results to direct remediation for APRN certification success.

Keywords: HESI APRN Exam, standardized testing, advanced practice nurse, standardized testing results, Third Voice

Standardized testing has become an accepted credible and reliable educational tool (Nibert & Morrison, 2013), used as a familiar strategy by nursing educators in assessing core competencies and clinical knowledge in preparation for licensure and certification. (Young, Rose, & Willson, 2013) Some, like Sullivan (2014), believe standardized testing “holds students accountable for their performance and nursing schools accountable for meeting accreditation standards” (p.47). Furthermore, standardized tests provide evidence of pedagogical rigor for faculty and gauge knowledge of advanced clinical skills, professional practice competencies for students, and readiness for national certification exam (Willson & Goodman, 2015; Zweighaft, 2013). The HESI™ APRN Exam is an evidence-based testing product designed to match the national certification testing blueprint that measures advanced practice nursing core competencies and clinical knowledge in preparation for national nurse practitioner certification (Nibert & Morrison, 2013). Multiple methods of implementation are used for standardized testing, however, Mee & Hallenbeck discovered there are no established standards or guidelines related to standardized testing policies, including use of testing results, in nursing education (2014) A conceptual framework underpinning standardized testing can assist nurse educators in implementing evidence-based education (Sales, Smith, Curran, & Kovechar, 2013)

There are several secured, computerized testing products available specifically for graduate nursing (APRN) faculty to use, such as Elsevier’s HESI Exit Exam, Advanced Practice Education Associates (APEA) Predictor Exams, Fitzgerald Health Education Associates (FHEA), Barkley & Associates, Inc. and the National League of Nursing (NLN) End of Program Exam (EPE), and Rosh Review NP Comprehensive Exam. To understand the influence standardized testing has on nursing knowledge, conceptual frameworks must be identified and established. A review of the literature was completed to identify the conceptual models currently

used to underpin how standardized testing is used in graduate nursing (APRN) educational programs.

Methods

A systematic review was undertaken to identify conceptual models in studies that utilized standardized testing in nursing preparation for licensure and certification. Four evidence sources were searched, including CINAHL complete, Medline complete, Cochrane, and ERIC. Search terms used were *computerized educational testing, educational testing, educational assessment, educational policy, exit exam OR exit test*. Terms were searched with the Boolean connector “and” producing no results. Using the Boolean connector “or” produced 3,597 articles. The inclusion criteria applied included publication dates from 2010 to 2018 in the English language which yielded 21 articles. Duplicates were removed after reading titles and abstracts. Twelve articles were identified after applying the inclusionary criteria of implementation of standardized testing, and report of outcomes. A separate search within the Virginia Henderson Global Nursing Online eRepository produced a Sigma Theta Tau presentation by Willson, and the presentation was included as gray literature (Willson, 2011). Thirteen reports are displayed below in Table 1.

Table 2.1. *Selections from the Review of the Literature on Standardized Testing and Use*

Conceptual Frameworks

Citation: author(s), date of publication & title/ Level of evidence	Conceptual Framework	Nursing Program Type	Findings	Discussion
Willson P, Goodman J, 2015, Standardized Testing to predict APRN credentialing success: What is the science?	No theory	APRN N=35 Graduate nursing program deans and directors Response rate= 26%	Scores from 700-900 was 100% pass rate. Benchmark criteria is based on evidence presented that <699- scores were 56% pass rate, while >700	Most schools administer the HESI APRN at the end of the program of study. Graduate faculty have limited track record of using predictive standardized

Table 1. (continued)

Level V			Had 100 % pass rate. SD=113.39 Predictive validity Score mean 796. Accuracy of scoring.	exams, even if using them in undergraduate education. This is a building block for educational science of APRN predictive testing and should be strengthened with further study.
Barton L, Willson P, Langford R, Schreiner B, 2014, Standardized predictive testing: Practices, policies, and outcomes	Vygotsky’s Theory of Zone of Proximal Development [Goal Attainment]	RN N=471 Stratified random sample of Diploma, ADN, and BSN nursing program deans and directors in the US.	HESI Exit exam score of 900 or above has a 98.26% pass rate. Table 4 summarizes findings related to a variety of HESI Implementation Policies. Four policy components that point to improved student outcomes; -achievement of a mandatory benchmark score -required participation in prep plan - required re-testing -require remediation after failing to meet benchmark Standardized testing policies need to be crafted to include certain components that are related to standardized exam success. Further study longitudinally for	The results of this study demonstrate that developing and implementing policy to support standardized testing in school of nursing is an integral part of student success. Third voice is representative in zone of proximal development. Limitations to generalizability of conclusions due to randomized sample is from single test product database. Also due to retrospective, non-experimental nature of study, no effort to discern or verify school policies implementation.
Level IV				

Table 1. (continued)

			testing policy, implementation is necessary.	
Stonecypher K, et al, 2015, Faculty experiences developing and implementing policies for Exit Exam testing Level IV	No theory	RN N=15 programs 9=BSN programs 6= ADN programs (11=Public and 4=Private)	Negative triggers that will generate the need for testing policy change. Then once it occurs, policy modification gives it value, then reaction to change of testing policy is measured.	Although resistance was experienced with change, ultimate goal of higher passage rates were well accepted. As the worth of the policy is demonstrated, acceptance or improvement are made. Continuation to monitor student success and attend to improving curricula, teaching strategies, and evaluation processes is needed by faculty.
Lauer M, Yoho M, 2013, HESI Exams: Consequences and remediation Level IV	Classical Test Theory by Crocker and Algina Critical Thinking Theory by Paul & Binker	RN N=66 programs N=3758 students 16% designated a benchmark score as 900, 72% designated 850 5% designated 850-900	The schools that established a mandatory consequence and remediation policy showed significantly higher HESI Exit scores than those who did not.	Based on the findings, it is best to attach consequences to standardized testing and to require remediation for those students who do not achieve the faculty-designated benchmark score. If no consequences or remediation is applied, then students will devalue or interpret as unimportant.
Nibert A, Morrison S, 2013, HESI Testing- A history of evidence-based research. Level V	Classical Testing Theory	RN N=9 validity studies in last 13 years N=49115 students	These studies investigated the accuracy of the E2 in predicting success in the NCLEX-RN.	The research findings are to serve as supplement that have undergone rigorous peer review and inspires further expansion.

Table 1. (continued)

			Additional variables related to standardized testing that were also investigated included the effects of monitoring, the predictive accuracy of repeated testing with parallel versions of E2, and the impact of HESI Specialty exams throughout curriculum.	of science that supports the dissemination of knowledge related to standardized testing.
Young A, Willson P, 2010, Predicting NCLEX-PN success with the HESI Exit Exam. Level IV	No theory	LPN/LVN N=72 programs N=4383students	All three versions of the E2 were found to have predictive validity above 90%. The most common faculty designated benchmark score was 850. Most schools required students to retest until benchmark was reached.	This study emphasizes the predictive accuracy of the E2-PN HESI for Practical Nurses. Findings are consistent with four previous studies that evaluated the accuracy of the E2-PN HESI at predicting NCLEX-PN success.
Langford R, Young A, 2013, Predicting NCLEX-RN success with the HESI Exit Exam: Eighth Validity Study. Level IV	Critical thinking theory by Paul & Binker and Classical test theory described by Crocker and Algina	RN N=66 programs N=3758 students	The HESI E2 Exit Exam continues to be highly accurate 94.93-98.32% in predicting NCLEX-RN success with first time testing and 2 re-tests. The majority of participating nursing programs reported establishing policies	Predictive accuracy of first time NCLEX-RN takers based on E2. Scores between 850-899 on a repeat testing had significantly greater risk of failing NCLEX-RN with each successive retesting so continued remediation is essential for

Table 1. (continued)

			related to HESI E2 performance and most set 850 as their benchmark score.	students who score 850-899; but of concern for those who require repeat retesting to achieve 850.
Young A, Rose G, Willson P, 2013, Online case studies: HESI Exit Exam scores and NCLEX-RN outcomes. Level IV	No theory	RN N=72 programs N=4383 students	Mean E2 scores and NCLEX-RN pass rates of students who used case studies and those who did not were compared. Both the E2 scores and NCLEX-RN pass rate were significantly higher for those who used case studies compared to those who did not.	Based on the study, directors and deans are utilizing case studies for remediation and exam preparation. However, this study highlights the significant relation of utilizing Elsevier's case studies in preparing for the E2 exam and ultimately for the licensing exam.
Zweighthaft E., 2013, Impact of HESI Specialty Exams: The Ninth HESI Exit Exam Validity Study. Level IV	Classical Test Theory by Crocker and Algina Critical Thinking Theory by Paul & Binker	RN N=63 programs N=3790 students Timeline: took E2 between 2008-2009	Findings continued to indicate the predictive accuracy of the HESI E2 Exams leading to NCLEX-RN success at 96.61%. Of the eight HESI Specialty exams investigated, scores on the Critical Care, Pediatrics, and Med-Surgical Specialty exams were most predictive of NCLEX-RN success.	Based on its pattern of predictability, the HESI E2 can confidently be used by faculty as part of curriculum or student remediation, thus decreasing risk of failing the licensure exam and increasing NCLEX-RN pass rates. E2 and Specialty Exams can also be tracked over time as an outside measure of curriculum evaluation and faculty effectiveness for accreditation reports.

Table 1. (continued)

<p>Willson P, 2011, Electronic Standardized Testing for Advanced Practice Registered Nursing (APRN) programs. <i>Sigma Theta Tau, International Presentation</i></p>	<p>No theory</p>	<p>APRN N=9 programs N=141 APRN students For 2008-2009 academic year</p>	<p>Electronic standardized APRN predictive exams provide valuable student competency data that allow faculty to address student knowledge gaps with remediation and clinical experience focus. Also, provide outcome measures for curricular programing, testing policy development and reporting for accreditation.</p>	<p>This national multi-site US sample of graduate nursing programs found that electronic standardized end of program assessments are highly accurate at predicting APRN certification success. Findings are consistent with preliminary benchmark setting studies for APRN HESI minimum scores of 750 or higher. Faculty's implementation strategies, testing policies, and curricular evaluation benefitted from results.</p>
<p>Level II</p>				
<p>Santo L, Frander E, Hawkins A, 2013, The use of standardized exit examinations in baccalaureate nursing education.</p>	<p>No theory</p>	<p>RN N=1 program N= # of students, not provided</p>	<p>Study looks at interventions to implement to address ethical, cultural, socioeconomic, and technological aspects to their standardized testing policy revision.</p>	<p>Overview of controversy surrounding the use of standardized testing. Discusses the potential for ethical, legal, cultural, socioeconomic and technological consequences. A look at their program's exit exam policy, pass rates, and recommendations are presented.</p>
<p>Level II</p>				
<p>Carr S, 2011, NCLEX-RN pass rates peril: one</p>	<p>No theory</p>	<p>RN N=1program</p>	<p>Private nursing program discussed and identified</p>	<p>Strategies to address the low NCLEX-RN pass</p>

Table 1. (continued)

<p>school's journey through curriculum revision, standardized testing and attitudinal change.</p>	<p>N= 41 students</p>	<p>multifaceted problems cause poor NCLEX-RN pass rates. Gaps in curricular content, student attitudes, delays in taking exam, inadequate student preparation.</p>	<p>rates were necessary of this program included: addressing the areas of weakness in the curriculum, revising courses, engaging students, changing standardized exit exams, employing a mid-curricular and implementing remedial courses for poor performers.</p>	
<p>Level II</p>				
<p>Willson P, Martinez-Anderson D, Throckmorton T, 2018, Use of standardized testing in Advanced Practice Registered Nurse (APRN) education.</p>	<p>Reconceptualized Theory of Vygotsky's Zone of Proximal Development (goal attainment)</p>	<p>APRN N=114 programs N=497 students</p>	<p>Aim to establish predictive validity of one set of standardized exams for APRN certification success in a national U.S. sample and to determine implementation strategies used by faculty.</p>	<p>A national multi-state sample of graduate nursing programs indicate that computerized standardized end of program tests are highly accurate at predicting APRN certification success and give support for faculty to set testing policies and benchmarking scores. Test summary reports, using the conceptual framework of third voice, inform both the faculty and student for programmatic evaluation.</p>
<p>Level III</p>				

Note. RN = registered nurse; LPN/LVN=licensed practical nurse/licensed vocational nurse; APRN =advanced practice registered nurse; NCLEX-RN=national council licensure examination; E2 PN HESI= HESI Exit Exam for practical nurses; HESI=Health Education Systems, Inc.; APRN HESI=standardized test for advanced practice registered nurse; HESI E2= HESI Exit Exam. Level of evidence: I= Systematic reviews of randomized-controlled trials or non-randomized trials; II=Single randomized- control trial or single non-randomized; III=Systematic review of correlational or observational study; IV= Single correlational or observational study; V=Systematic review of descriptive, qualitative or physiologic studies (adapted from: Polit and Beck, 9th edition, 2012).

Findings

Eighty percent (n=10) of the articles focused on undergraduate nursing standardized testing using HESI NCLEX-RN, while two articles and one presentation highlighted APRN graduate standardized testing using the HESI APRN Exam. Fifty percent (n=6) of the articles do not refer to using a conceptual framework, (Carr, 2011; Santos, Frander & Hawkins, 2013; Stonecypher, Young, Langford, Symes, & Willson, 2015; Willson & Goodman, 2015; Young & Rose, 2013; Young & Willson, 2010) while the other half, described using a specific conceptual framework when relating to standardized testing results and practices. (Barton, Willson, Langford & Schreiner, 2014; Langford & Young, 2013; Lauer & Yoho, 2013; Nibert & Morrison, 2013; Willson, Martinez-Anderson, & Throckmorton, 2018; Zweighaft, 2013). The three commonly mentioned conceptual frameworks related to standardized testing and used in nursing education were identified as: 1) the Classical Test Theory by Crocker and Algina (1986), 2) the Critical Thinking Theory by Paul and Binker (1990), and 3) the Reconceptualization of Vygotsky's Theory of the Zone of Proximal Development by Eun, Knotek, and Heining-Boynton (2008). Nibert and Morrison (2013) used the Classical Test Theory only. The other studies used a combined Classical Test Theory with the Critical Thinking Theory as a framework. (Langford & Young, 2013; Lauer & Yoho, 2013; Zweighaft, 2013) While these theories give foundation to test item construction, development, and validity, only two articles were found that address the implementation of standardized testing results for faculty and students. This first article by Barton, Willson, Langford and Schreiner (2015) utilized Eun, Knotek and Heining-Boynton's Reconceptualization of Vygotsky's Theory of the Zone of Proximal Development (RVZPD) that lead to goal attainment (Eun, Knotek, & Heining-Boynton, 2008) as a conceptual framework, in a sample of Diploma, ADN, and BSN nursing programs in relation to a policy for standardized

testing. The second article, by Willson, Martinez-Anderson, and Throckmorton (2018) also referenced the work of Eun et al. (2008) in their longitudinal study exploring HESI APRN predictive validity for national certification success among 114 graduate nursing (APRN) programs to underpin the conceptual framework of standardized testing research for their study. The 10 studies included two Level V systematic reviews and six Level IV studies which demonstrate a strong quality of research design for evidence-based nursing education leading to practice (Polit & Beck, 2017).

Third Voice

The defining attributes of the Reconceptualized Theory the Zone of Proximal Development (RVZPD) by Eun, Knotek, and Heining-Boynton (2008), include *dialogue*, *development*, and *evaluation* that can occur at any level in a variety of disciplines and circumstances. In this theory, three participants exist as “voices.” First Voice represents the more experienced participant, such as the educator, second voice represents the inexperienced participant, such as the student, and third voice is the silent or inaudible participant, representing the objective influencer, conceptualized here as standardized testing results. In the educational environment, the interaction or *dialogue* between the first (educator) and second voices (students) is considered active *development*, that is, where teaching and learning occur. The specified measurable space between attaining understanding and knowledge, defines the student’s transition from novice to mastery or goal attainment is called the Zone of Proximal Development (ZPD) (Eun et al., 2008). At the time of *evaluation*, a standardized test is presented to the student by the educator; this is when Third Voice is awakened and manifests as the inaudible educational phenomenon that reveals the objective and authoritative results of the development (i.e., teaching and learning) that occurred or did not occur. It is this phenomenon of

Third Voice that expresses its duality in education and speaks to both the educator and the student through its unbiased mechanism of results. When applied to teaching, Third Voice offers educators and students a formative evaluation of their investment in the teaching and learning collaboration. Third voice provides a concise and strategic map for educators for guided remediation as they assist students towards their goal of attaining successful APRN certification. Simultaneously, informing the student of specific content strengths and weaknesses they need to address while in the zone of proximal development.

Third Voice Applied

The phenomenon of Third Voice has been experienced for many years, however, it was not clearly identified. It is now recognized through the seminal work of Eun, Knotek, and Heining-Boynton's Reconceptualized Theory of Vygotsky's Zone of Proximal Development (RVZPD) (2008), which has identified its role as an active, but invisible, inaudible participant in the educational process. The defining attributes of *dialogue*, *development*, and *evaluation* can occur at any level and in a variety of circumstances along the educational process continuum.

Dialogue between First and Second Voice reaps rewards as teaching-learning occurs in the ZPD. However, dialogue must be tested to verify if development occurred. With standardized testing, objective results (i.e. Third Voice) are evidence that development did or did not occur. The behaviors that follow by the educator and student are based on Third Voice. For the educator, Third Voice is the formative evaluation of the status of understanding and development of the student outcomes. Third Voice gives the educator a model that can be a step by step map to successful use of such tools as one-on-one tutoring/remediation, systematic self-study strategies, review books, targeted clinical experiences, and simulation to assist students to succeed (Carr, 2011; Stonecypher, Young, Langford, Symes, & Willson, 2015; Willson, 2011).

This moves the educator through their own zone of development to enhance their own knowledge and provide a focused approach for student development and goal attainment of passing the APRN certification exam.

For students, Third Voice revealed in the HESI APRN Exam Student Report is an individualized report that identifies APRN national standards of the profession and their rank compared to national norms (Nibert & Morrison, 2013). This report categorizes and highlights areas of need for strategic self-remediation that translates to an overview of student readiness prior to APRN certification. This moves the student through the ZPD to achieve developmental goal attainment of APRN certification success.

Additionally, Third Voice can be used as a continuous objective, authoritative appraisal of the effectiveness of the nursing program's curriculum (Noel, Jackson, Cook, & Yoho, 2017). This moves program administrators through the ZPD where program improvement can be addressed without bias if an objective weakness is found. Third Voice provides a guide or roadmap for educators, students, and nursing programs to achieve a final developmental goal of APRN certification success.

Discussion

The primary role of APRN education is to ensure that students meet National Organization of Nurse Practitioner Faculties (NONPF) and American Association of Colleges of Nursing (AACN) Master's Essentials criteria to become safe and competent primary care providers (Master's Essentials, 2011; National Organization for Nurse Practitioner Faculties, 2015). Third Voice contributes objective evidence that acquisition of knowledge, skills, competency, teaching, curriculum, and evaluation of graduate education has been successfully achieved. Using evidence-based RVZPD'S theoretical concept like Third Voice empower both

the educators in teaching and the students in learning for enhanced development that produces success. The challenge put forth in this article is to recognize, Third Voice as an ever-present partner in the educational process. It serves as an essential source of independent evidence to enhance the use of standardized APRN test results in APRN education and fosters student certification success.

Third Voice's impact on nursing standardized testing outcomes warrants further exploration. With Third Voice from the guiding framework of the RVZPD, evidence-based outcomes for testing products, directed remediation strategies, and timing for predictive testing should be measured not only for the field of nursing but for the various healthcare disciplines requiring licensing and certification testing (Willson & Goodman, 2015).

References

- Barton, R., Langsford, R., & Schreiner, B. (2014). Standardized predictive testing: Practices, policies, and outcomes. *Administrative Issues Journal: Connecting Education, Practice, and Research*, 4(2), 68-78. doi:10.5929/2014.4.2.2
- Carr, S. M. (2011). NCLEX-RN pass rate peril: One school's journey through curriculum revision, standardized testing, and attitudinal change. *Nursing Education Perspectives*, 32(6), 384-388. doi:10.5480/1536-5026-32.6.384
- Crocker, L., & Algina, J. (1986). *Introductions to classical and modern test theory*. Belmont, CA: Wadsworth/Thomson Learning.
- Eun, B., Knotek, S. E., & Heining-Boynton, A. L. (2008). Reconceptualizing the zone of proximal development: The importance of third voice. *Educational Psychology*, 20(20), 133-147. doi:10.1007/s10648-007-9064-1
- Langford, R., & Young, A. (2013). Predicting NCLEX-RN success with the HESI exit exam: Eighth validity study. *Journal of Professional Nursing*, 29(2S), S5-S9. doi:10.1016/j.profnurs.2012.06.007
- Lauer, M., & Yoho, M. J. (2013). HESI exams: Consequences and remediation. *Journal of Professional Nursing*, 29(2S), S22-S27. doi:10.1016/j.profnurs.2013.01.001
- Master's Essentials. (2015). Retrieved from <http://www.aacn.nche.edu/education-resources/essential-series>
- Mee, C. L., & Hallenbeck, V. J. (2014). Selecting standardized tests in nursing education. *Journal of Professional Nursing*, 1-5. doi:10.1016/j.profnurs.2012.06.006

- National Organization of Nurse Practitioner Faculties[NONPF]. (2015). *National Organization of Nurse Practitioner Faculties*. Retrieved from <http://www.nonpf.org/?page=1>
- Nibert, A., & Morrison, S. (2013). HESI testing- A history of evidence-based research. *Journal of Professional Nursing*, 29, S2-S4. doi:10.1016/j.profnurs.2012.06.004
- Noel, V., & Cook, J. (2009). *Efficacy of a progression policy: Implementing an exit exam benchmark score as a predictor for success on NCLEX-RN* [Doctoral dissertation]. Capella University. Retrieved from <https://www.proquest.com/docview/305165878/4E4FAADE0EA1475CPQ/1>
- Paul, R. W., & Binker, A. J. (1990). *Critical thinking: What every person needs to survive in a rapidly changing world*. Retrieved from <https://eric.ed.gov/?id=ED338557>
- Polit, D. F., & Beck, C. T. (2017). *Nursing research: Generating and assessing evidence for nursing practice* (10th ed.). Philadelphia, PA: Wolters Kluwer Health.
- Sales, A., Smith, J., Curran, G., & Kochevar, L. (2013). Models, strategies, and tools: Theory and implementing evidence-based findings into health care practice. *Journal of General Internal Medicine*, 21, S43-S49. doi:10.1111/j.1525-1497.2006.00362.x
- Santos, L., Frander, E., & Hawkins, A. (2013). The use of standardized exit examinations in baccalaureate nursing education. *Nurse Educator*, 38(2), 81-84. doi:10.1097/NNE.0b013e3182829c66
- Stonecypher, K., Young, A., Langford, R., Symes, L., & Willson, P. (2015). Faculty experiences developing and implementing policies for exit exam testing. *Nurse Educator*, 40(4), 189-193. doi:10.1097/NNE.0000000000000152

- Sullivan, D. (2014). A concept analysis of "High stakes testing". *Nurse Educator*, 72-76.
doi:10.1097/NNE.0000000000000021
- Willson, P. (2011). Electronic standardized testing for advanced practice registered nursing (APRN) programs. In *Sigma Theta Tau 2011 Conference- STI*. Presented at the 22nd International Nursing Research Congress in Cancun, Mex. Retrieved from http://www.stti.iupui.edu/pp07/congress11/willson_pamela.pdf
- Willson, P., & Goodman, J. (2015). Standardized testing to predict APRN credentialing success: What is the science? *Journal of Advanced Nursing Practice*, 14(1), 1-6.
doi:10.5580/IJANP.32179
- Willson, P., Martinez-Anderson, D., & Throckmorton, T. (2018). Use of standardized testing in advanced practice registered nurse (APRN) education. *The Internet Journal of Advanced Nursing Practice*, 17. doi:10.5580/IJANP.53542
- Young, A., & Willson, P. (2010). Predicting NCLEX-PN success with the HESI exit exam. *Journal of Practical Nursing*, 60(4), 10-12. Retrieved from [https://search-ebscohost-com.su.idm.oclc.org/login.aspx?direct=true&db=rzh&AN=104880281&site=eds-live](https://search.ebscohost.com.su.idm.oclc.org/login.aspx?direct=true&db=rzh&AN=104880281&site=eds-live)
- Young, A., Rose, G., & Willson, P. (2013). Online case studies: HESI exit exam scores and NCLEX-RN outcomes. *Journal of Professional Nursing*, 29, S17-S21.
doi:10.1016/j.profnurs.2012.06.010
- Zweighaft, E. (2013). Impact of HESI specialty exams: The ninth HESI exit exam validity study. *Journal of Professional Nursing*, 29, S10-S16. doi:10.1016/j.profnurs.2012.06.011

Chapter Three

Using the Third Voice Conceptual Perspective in Advanced Practice Nursing Education:

A Concept Analysis

Abstract

With the increase of health care costs and health provider shortages, educational programs have had to answer the call to produce safe, competent advanced practice nurses (APN) to fill the gap. Standardized testing is used to gauge mastery of competencies and professional clinical readiness. There is evidence of the value of using standardized testing in predicting pre-certification success. However, standardized testing results as the phenomenon that contributes to the learning process in advanced nursing education leading to national certification success has not been completely understood. The purpose of this concept analysis is to explore the concept of Third Voice. The Walker and Avant (2011) method of concept analysis was used. Through searching the literature related to the use of standardized testing, 10 articles focused on undergraduate nursing education use, while two articles and one presentation highlighted graduate or advanced practice nursing education use. The significance to nursing, concept identification, historical perspective, interdisciplinary application, defining attributes, and other characteristics of Third Voice with exemplars are highlighted. Finally, a model that features the application of this conceptual phenomenon in the advanced nursing learning process is included.

Keywords: nursing education, standardized testing, advance practice nurses, third voice, concept analysis

The principal role of preparing professionals in nursing or any other profession is to develop qualified, safe, skilled, and competent professionals. Board certification is the gold standard and mark of highest achievable professionalism in a given profession. It demonstrates to the general public that rigorous educational training, hands-on experiential requirements specific to the area of specialty have been achieved. A pre-licensure or certification test or standardized test is designed with national standards as a blueprint to assess core competencies and skills established by the respective national certifying organizations that establish professional standards for a given profession. As the teaching and learning activities of a nursing curriculum program are completed, students prepare to transform from student to entry level professional. The results of pre-licensure or pre-certification standardized tests express the concept of Third Voice, which is fully explored in this paper.

Background

The primary role of graduate advanced practice nursing faculty is to ensure students meet National Organization of Nurse Practitioner Faculty (NONPF) and Master's Essentials criteria to become safe and competent primary care providers. For years, nursing education has used standardized testing to measure competency and skills. The literature shows evidence of use within the undergraduate nursing education, and yet literature is scant in regards to any foundational standards, guidelines, theories, or concepts underpinning standardized testing in graduate advanced practice nursing education (Barton, Willson, Langford, & Schreiner, 2014; Langford & Young, 2013; Lauer & Yoho, 2013; Nibert & Morrison, 2013; Stonecypher, Young, Langford, Symes, & Willson, 2015; Willson, 2011; Willson & Goodman, 2015; Young, Rose, & Willson, 2013; Zweighaft, 2013). A deeper search yielded three articles that address the implementation of standardized testing results for faculty and students using the work of Eun,

Knotek, and Heining-Boynton as framework (Eun, Knotek, & Heining-Boynton, 2008). This first article by Barton et al. (2014) utilized Eun and colleagues' Reconceptualization of Vygotsky's Theory of the Zone of Proximal Development (RVZPD) that lead to goal attainment as a conceptual framework, in a sample of Diploma, ADN, and BSN nursing programs in relation to a policy for standardized testing (Eun et al., 2008). The second article, by Willson, Martinez-Anderson, and Throckmorton (2018) also referenced the work of Eun et al. in their longitudinal study exploring HESI APRN predictive validity for national certification success among 114 graduate nursing (APRN) programs to underpin the conceptual framework of standardized testing research for their study. The third article, by Martinez-Anderson (2021), provides a clearer understanding of the application of this theory using standardized testing as the Third Voice phenomenon in the educational process. Fully understanding how the concept of Third Voice contributes as the objective evidence for acquisition of knowledge, skills, competency, and teaching, significantly impacts standardization of nursing testing science in advanced practice producing student success and establishing nursing program effectiveness (Willson & Goodman, 2015).

Model of Conceptual Framework

The original framework by Vygotsky, posited two tenets as voices: First and Second Voice- representing the educator and student, respectively. The RVZPD introduces a Third voice within the ZPD that is invisible and inaudible but is an active participant in the educational process. In this study, standardized testing fills to role of Third Voice. See Figure 1 for an adapted model as applied in this study.

Concept Identification

The Merriam-Webster Online Dictionary defines the English word “*third*” as a noun (Merriam-Webster Online Dictionary, 2018). The origin of “*third*” is Middle English *thridde* or *thirde*, from Old English *thridda*, *thirdda*, akin to Latin *tertius*, and Greek *treitos*, *treis*. The first known use was before the 12th century. As a noun “*third*” simply means “*one of three equal parts of something*” (Merriam-Webster Online Dictionary, 2018). In the numeric application, “*third*” means “*one that is next after second in rank, position, authority, or precedence*”, in music, “*third*” defines “*the musical interval embracing three diatonic degrees*” and “*the harmonic combination of two tones a third apart*” (Merriam-Webster Online Dictionary, 2018).

The Merriam-Webster Online Dictionary defines the English word “*voice*” as a noun and verb (Merriam-Webster Online Dictionary, 2018). The origin of “*voice*” is Middle English, from Old French *vois*, from Latin *voc-*, *vox*, akin to Old High German *giwahanen* to mention, Greek *epos* word, speech, Sanskrit *vāk* voice. The first known use was in the 14th century. As noun, “*voice*” simply means “*the sounds that you make with your mouth and throat when you are speaking, singing, etc.*”, “*the ability to speak*”, and “*the ability to sing*”. As a verb, “*voice*” means “*to express (something) in words: utter*” (Merriam-Webster Online Dictionary, 2018). A deeper understanding of “*voice*” is captured through Merriam-Webster in the synonym section (Merriam-Webster Online Dictionary, 2018). Words such as “*express*”, “*vent*”, “*utter*”, “*broach*”, and “*air*” mean to “*make known what one thinks or feels*”. An explanation on how each of these words holds an affinity to third voice is presented. *Express* “*suggests an impulse to reveal in words, gestures, actions, or what one creates or produces*”, this correlates to third voice as it reveals what one creates as first voice to second voice, and what is produced by the second voice of what has been learned. *Vent* “*stresses a strong inner compulsion to express especially with*

words”, third voice functions with the same approach of stressing an objective force, but not with words. *Utter* “implies the use of the voice not necessarily in articulate speech”, this directly symbolizes third voice in the use of standardized testing results, speaking without articulate speech. *Broach* “adds the implication of disclosing for the first time something long thought over or reserved for a suitable occasion”, this mirrors the influence third voice possesses as results from standardized testing represent a journey through the zone of proximal development (something long thought over) and objective assessment of acquisition of knowledge and skills (reserved for a suitable occasion). *Air* “implies an exposing or parading of one’s views often in order to gain relief or sympathy or attention”, this directly links to third voice as results from testing are exposed, they capture the attention of both first voice and second voice in relation to what was enhanced and what was constrained (Merriam-Webster Online Dictionary, 2018).

Theoretical Framework

The theoretical framework for this concept analysis is the Reconceptualization of Vygotsky’s Zone of Proximal Development (RVZPD) by Eun and colleagues, drawing from Vygotsky’s original work on child development/education (Eun et al., 2008; Vygotsky, 1978). reconceptualized Vygotsky’s Theory of the Zone of Proximal Development (ZPD). The construct of the ZPD is a key construct in Vygotsky’s educational, psychosocial-culture theory of cognitive and learning development, which is primarily used in child development, psychology and educational disciplines (Vygotsky, 1978). The ZPD is defined as “the distance between the actual development level as determined by independent problem solving and the level of potential development as determined through problem solving under guidance or in collaboration with more capable peers” (Eun et al., 2008). McLeod considers this theory as mirroring scaffolding (McLeod, 2012). Scaffolding are activities of guidance, and in collaboration with

other colleagues, provided by the more experienced peer/educator to support the less experienced student through the time period (zone of development), but activities taper off as they become unnecessary and the less experienced student is able to progress independently (McLeod, 2012). The original ZPD conceptualization by Vygotsky includes three elements: 1) the goal (e.g., cognitive or psycho-social cultural development/maturity), 2) the individual undergoing the transition/development (e.g., child, student), and 3) the more competent guide or mediator (e.g., adult, educator) (Vygotsky, 1978). One can surmise that development begins jointly between the learner and educator and then evolves into the learner's independent learning, so practically-speaking, for any domain or skill that is identified, a ZPD exists. Chaiklin (2003) states Vygotsky's ZPD is used for identifying two purposes related to development: Identifying 1) psychological and social maturing functions as in the "transition of one age period to the next age period" (p.7) and 2) the "current state in relation to developing maturing functions for a specific transition" (p.7). The ZPD captures the idea that for every transition there are certain psychological and social functions one must form or mature into, in order to reach a new capability, new intellectual understanding, and new reasoning. Vygotsky suggested these manifestations as "conscious awareness/volition" (Chaiklin, 2003, p.7). Thompson (2013) provides a schematic model of Vygotsky's original ZPD using "*actual, potential, and realized*" levels to reflect the learner's progression through development (p. 255).

The theory originally proposes two main tenets or *voices*, the first voice represents the more experienced participant and the second voice, represents the less experienced participant. During their consideration of Vygotsky's theory (1978), Eun and his colleagues, introduced an additional voice, Third Voice (2008). In Vygotsky's original theory, the zone of proximal development (ZPD) is where interaction between the first and second voice occurs. Eun and

colleagues, note *dialogue* as the basic principle of interpreting any utterances between two objects, usually meaning two persons (2008). “Utter” or “utterance” is a synonym to *voice* as described by Merriam-Webster Online noting, that it “implies the use of the voice not necessarily in articulate speech” (2018).

The Reconceptualized ZPD by Eun et al. (2008) credits Mikhail Bakhtin, who first proposed the concept of dialogicality, using semiotics to interpret utterances in any type of discourse, where meaning is found in the words written or spoken by a speaker, and interpreted by the listener, giving way to a voice (Bakhtin, 1981, as cited in Eun et al., 2008). When used within the context of standardized testing results, Third Voice “utters” as the “hidden voice” that speaks without articulate speech. The introduction of Third Voice represents the objective influence the first voice has on the second voice as it moves through the ZPD towards goal attainment. A silent participant in the developmental transition emerges. This *development*, or adaptation, as Vygotsky originally and explicitly intended, “meant to become a culturally competent independent being” (Bakhtin, 1981, p.140). This basic approach within the ZPD, symbolizes the internalizing process of things learned and assimilated to the point of independent functioning at “his or her own time and place” (Bakhtin, 1981, p.140). Third voice makes evident those elements that influence, mediate, and assess development within the ZPD, mediate the perceptions and interpretations of the dialogue between the first and second voices, and assess if developmental goals are progressing or constrained (Eun et al., 2008).

Additionally, Third Voice possesses influence to authenticate the relevance, fulfillment of objectives, effectiveness, impact, and sustainability of what the First Voice has presented to second voice through *evaluation*. Consequently, the hidden but implicit collaborative mediation between the third and first voices becomes the overarching and foundational influence that

provides a roadmap for the second voice to reach the developmental goal of the ZPD journey (Eun et al., 2008).

Interdisciplinary Applications

Synthesis and integration of concepts and insights from multiple disciplines to fashion a more complete inclusive framework of analysis creates an interdisciplinary perspective (Goldsmith, Hamilton, Hornsby, & Wells, 2018). The concept analysis of Third Voice is presented in exemplars from three distinct disciplines; nursing education, clinical patient care, and the aviation industry. This examination will provide a more significant understanding of this concept.

Exemplar for nursing education

In nursing education, standardized testing results have been identified as an example of Third Voice when the reconceptualized ZPD is applied (Martinez-Anderson, 2021; Willson, Martinez-Anderson, & Throckmorton, 2018). First voice working within the ZPD, represents faculty teaching practices to assist students in moving from a level of independent performance (actual level) towards collaborative mediation (potential level) (Thompson, 2013). Second voice represents students' independent performance within the ZPD as learning and study skills, which is guided by first voice in a collaborative mediation and develops into a level of potential performance. The interaction or *dialogue* between them is considered active *development*, where teaching and learning occur. ZPD represents the reciprocal shared space between first voice (faculty) and second voice (nursing students), where negotiation of meaning takes place and developmental progression occurs from potential to a realized level in advanced practice education. At the time a test (standardized) is presented to the student by the educator, Third

Voice is awakened and manifests as the objective participant producing the results of the test or *evaluation*. Third Voice speaks to both the student and educator through results.

Third voice represents the authoritative and inaudible mechanism of standardized testing results in the learning process between faculty and students and their influence on advanced practice nursing students' national certification success ((Martinez-Anderson, 2021; Willson, Martinez-Anderson, & Throckmorton, 2018). Third voice as an educational partner informing the interaction between faculty, students, and standardized test results is an innovative perspective in the advanced nursing practice educational realm. See Figure 1 for an adapted model was designed showing the Third Voice and the ZPD when applied to Pre- and Post-standardized test results in APRN education.

Exemplar for clinical patient care

Another example of application of Third Voice is in the realm of inpatient clinical Music Therapy (MT). Considered an integrative medical intervention, music therapy has resulted in positive effects on a patient's quality of life (Mandel, Hanser, Secic, & Davis, 2007). In 2014, Mandel, Davis, and Secic, investigated the effects of music therapy (MT) on inpatient and post hospitalization pain on quality of life (Mandel et al., 2014). The MT intervention used board certified music therapists to provide 15 to 30-minute sessions in the patient's room and also a take-home music CD for post hospitalization. Here is the introduction of *dialogue* between the first voice, the music therapists as the more experienced participant in this field, and the patients representing second voice as the less experienced participants. "Music-assisted relaxation and imagery (MARI) is a systematic application of cued relaxation techniques, verbally guided imagery with prerecorded sedative music to facilitate the relaxation response" (Mandel et al., 2014, p.29). The use of the MARI is the *development* or change that occurs when dialogue of

intervention is applied. After hospital IRB approval, 2 cohorts of medical/surgical patients consented to participate, with one control cohort. Patients voluntarily participated in a two-year long study, completing surveys as inpatients and outpatients. For measurement of effects, Mandel and colleagues, used the SF-12v2, the shortened version of the SF-36 health-related quality of life survey (Mandel et al., 2007). The shortened version supported examines “health-related physical, and mental quality of life including physical functioning, physical role, bodily pain, general health, vitality, social functioning, emotional role, mental health, overall physical component summary, and overall mental component summary” (Mandel et al., 2007, p. 30). In this case, when considering Third Voice, the results from the SF-12v2 produce the objective assessment or *evaluation* of the impact of MT on pain linked to health-related quality of life. Results from the cohort with MT intervention inpatient and outpatient revealed statistically significantly less pain and increased health-related quality of life, compared to patients who did not participate in MT. The behaviors and outcomes of these patients represent Third voice. When MT was applied, outcome of less pain and increased quality of life represents the development that occurred in them, while those who did not apply MT, their outcomes did not reveal less pain nor an increase in quality of life (Mandel et al., 2014).

Exemplar for aviation industry

Third Voice can also be seen in the aviation industry. The history of aviation has shown that flight has not always been safe (Kerber, 2014). In fact, after the Korean War in 1952, the Air Force and Naval Air surveyed the need to assess the accident rate because at the rate of loss (pilot and plane) the forces would run out of airplanes. “After considerable thought and analysis of what caused adverse events, they completely changed the pilot culture” (Kerber, 2014, p. 333). Gone were the days of “flamboyant, devil-may-care pilots” (p.333) to a new breed of

commander trained pilots. They trained to maintain their “aggressiveness” and “hone in on their eye-hand skills” however added foundational “standardized practices and techniques and the need to preplan every flight; plus, they created a safety foundation to analyze and correct the causes of future accidents” (Kerber, 2014, p, 333). Major improvements have led to a culture of safety. Of those improvements in 1934, the “oldest safety enhancement,” a checklist, was born and became part of the culture of safety in aviation (Kerber, 2014, p.333; Hussain, Adams, Cleland, Jones, Walsh, & Kiaii, 2016). A checklist or protocol serves as a silent participant in the realm of safety. Pilots, using checklists, are to review their mission, then perform a pre-brief walk around check, then, PEEEP (Pilot, Environment, Equipment, External Pressures), then flight procedure, then debrief (Kerber, 2014, p.334; Hussain et al., 2016). By using the checklist, the pilot is able to communicate or interact with the maintenance team or machinery (airplane) so the mission can be safely accomplished without threats of errors or catastrophe. When considering Third Voice, the pilot serves as the First Voice as the most experienced participant and lead in the *dialogue*. The co-pilot, team, or equipment (airplane) serve as Second Voice as they are collaborating with the First Voice and responding if something is amiss based on the protocol. The checklists are the Third Voice that are the standardized protocols establishing safety readiness for a successful flight (Kerber, 2014).

Defining Attributes

Defining attributes (DAs) for the concept of Third Voice include dialogue, development, and evaluation:

- *Dialogue* between two main participants. Within the concept of Third Voice, participants represent First Voice and Second Voice. Participants can be described as verbal, non-

verbal, written, auditory, experiential, solo, group, or organizational (Eun et al., 2008; Vygotsky, 1978).

- *Development* may be synonymous with adaptation. In Third Voice, the interaction between participants produces discourse, utterances, thoughts, expressions, experimentation, application, and interventions that lead to transformation, change, or growth (Eun et al., 2008; Vygotsky, 1978).
- *Evaluation* is considered the objective component; it is the essence of Third Voice. The final objective assessment, results, outcomes, silent contributor, and evidence (Eun et al., 2008; Vygotsky, 1978).

Model Case

An example of a model case of the concept of Third voice is a patient seeking medical attention in the primary care setting. An obese 26-year-old Hispanic male patient experiencing increased thirst (polydipsia) and increased urination (polyuria) presents to the clinic. The Advanced Practice Nurse Practitioner (NP) performs a comprehensive history and a systematic physical assessment. The patient has strong family history of DM. Based on findings, the following laboratory tests are ordered: random blood glucose, urinalysis, CBC, TSH, CMP, and HgbA1C. The random blood glucose is 220 mg/dl, and the presence of protein and ketones are evident in the urinalysis. The NP returns to the patient and explains (*dialogue*) the data or results produced by the diagnostic tests. Patient education related to Diabetes Mellitus Type II is then introduced. A treatment plan guided by the 2019 Update to the 2018 Management of Hyperglycemia in Type 2 Diabetes (Buse et al., 2019) and the 2019 American College of Cardiology and the American Heart Association (ACC/AHA) Guideline on Primary Prevention of Cardiovascular Disease Report (Arnett et al., 2019) included: disease process education,

nutritional education, medication administration, side effects, blood glucose management, exercise regimen, and support system resources. A follow up is scheduled in 2 weeks for a status check.

In this case, the lab results can be conceptualized as Third Voice with the application to the clinical setting highlighted. First Voice is represented by the NP. The practitioner is the more experienced participant in this scenario. Second voice is the patient as he represents the less experienced participant, with the knowledge gap or the problem. The treatment or educational plan for this patient represents the *development*, change, or transformation space when evidence-based practice care is applied. The patient *evaluation* or outcome is the Third Voice. The phenomenon of Third Voice will be silently manifesting within 2 weeks when patient applies what was prescribed and advised, reflecting his movement through the ZPD. On his follow up visit, the patient's blood glucose is normalized, urinalysis is normal, weight has decreased, and polydipsia and polyuria have ceased, reflecting the effectiveness of Third voice-centered treatment plan.

Contrary Case

A contrary case of Third Voice would be a vehicle dashboard light. Manufacturers in early 80's developed a standardized means to diagnose and control engine problems electronically through the On-Board Diagnostic (OBD) system to satisfy EPA emission standards (Montoya, 2019). Today, most cars are equipped with a sophisticated computerized OBD-II system capacity that requires the mechanics to scan and diagnose a vehicle's health status. When an individual gets in his car, puts the key in the ignition and starts it, the internal OBD-II system automatically performs a computerized systems checklist (OBD-II Background, 2013). This mechanism identifies status of standard levels of fuel, oil, brakes, tires, battery, and

other critical levels to inform the driver of the status of the car. No dashboard lights mean all systems are at their optimal level and the car is in great health. When something is off, a “check engine” dashboard light can appear in two ways: 1) a steady light can mean the situation is not an emergency, meaning something like the gas cap needs adjustments or something else easily remedied or 2) a blinking light signals a more serious internal system issue that needs an experienced mechanic to assess the problem that can cause the car to fail if left unchecked (Consumer Reports, 2018).

In this generalized automotive mechanical application of Third Voice, First Voice is represented by the individual who will drive the car; he is the experienced participant. Second Voice is represented by the car- the motorized, comfortable, interior/exterior metal frame. Dialogue or interaction between them is represented by the how the car responds to its care and maintenance. Evaluation is when the individual turns the ignition on and observes the dashboard for information. Third voice manifests when the computerized OBD-II system checklist is activated and an internal checklist detects a problem causing the “check engine” dashboard light to turn on. This process informs the driver and car something is amiss. This silent authoritative indicator, declares attention is required. The contrary case of Third voice occurs when the “check engine” light turns on and it is ignored, leading to breakdown of the car due to lack of maintenance or worse, unsafe conditions that can cause a motor vehicle accident.

Antecedents and Consequences

Antecedents as defined by Walker and Avant are “events or incidents that must occur or be in place prior to the occurrence of the concept” (Walker & Avant, 2011, p.167). Baran in his dissertation, related several antecedents related to nursing education that affect the educator, student, and nursing curriculum (Baran, 2012). Antecedents like a new and fresh “understanding

of course content, designing and structuring the course, knowing students, enhancing teacher-student relationships, guiding student learning, increasing teacher presence”, utilizing course evaluation results, and if teaching online, creating an “online teacher person” can exist for Third Voice to manifest (Baran, 2012, p. 1). Other antecedents related to the scenarios presented, include the “threat and error” model in aviation, where the existence of a threat must be present in order for Third Voice to occur and thus mitigate an (Hussain et al., 2016). In the music therapy and clinical scenario, a health-related problem is present, there is a knowledge gap, intervention chasm or a need, where required interaction, partnership or collaboration produce Third Voice.

Avant and Walker define consequences as “events or incidents that occur as a result of the occurrence of the concept” (Walker & Avant, 2011, p. 167). In education, *dialogue* between the educator and the student will increase communication and create a safe environment for *development* and movement toward goal attainment. Third Voice via *evaluations* and incorporating results will guide change for course revisions and for strategic study plans of remediation for certification success. Baran also notes that consequences produce creative teaching, by transforming the educator and empowering the students through the silent presence of Third Voice (2012). In the clinical setting, consequences have negative or positive patient outcomes; in aviation, consequences may be safety or catastrophe.

Empirical Referents Defined

Empirical referents consider the measurement of a concept. From the examples presented, a variety of empirical referents will be described. The concept of Third Voice may be perceived as ambiguous; however, it can be measured. In the educational realm, Third Voice is measured through standardized testing results, as it informs both student and educator. When

specifically used in APRN education as Pre- and Post- test method, the mean difference is a metric outcome of Third Voice for the implementation of remediation. In the outpatient clinical setting, laboratory results function as the Third Voice and guide the strategic patient treatment and management of a diabetic patient based on the application of evidence-based practice guidelines and measures patient behaviors and outcomes. For an inpatient clinical setting, Third Voice emerges as survey responses that measure the effects of music therapy on patient's pain and quality of life. In the aviation industry, checklists serve as the silent airman representing the safety, stability, and readiness of flight. Third Voice is the silent "check engine" icon on the dashboard of the car, signaling the need for car maintenance attention or when icon is off that all is well.

Discussion

Implications and recommendations for nurse educators

Nursing education serves to impart meaningful nursing knowledge and clinical skill competencies on students for safe, competent, and professional practice. The conceptual perspective of Third Voice, captures the phenomenon of standardized test results as an active contributor in the learning process. Standardized testing continues to be a method used to measure student progression and offers a predictive usefulness to educators, while simultaneously informing the educator and the student of their distinct strengths and weaknesses. The appropriate use of standardized test results conceptualized as Third Voice, lays a foundation for recommending best practices for using standardized testing. Nurse educators are the lead navigators through zone of proximal development. Informed by Third Voice, they can incorporate interdisciplinary teaching strategies to better equip students for licensure or certification success (Goldsmith, Hamilton, Hornsby, & Wells, 2018)

Conclusion

The significance of Third Voice to nursing education is the identification of the silent, objective, and authoritative contributor in the teaching and learning process. Third Voice is a concept that has been around for many years. However, it now has a name or a “voice.” Defining attributes identified like dialogue, development, and evaluation can occur at any level in a variety of disciplines and circumstances. The expression of Third Voice is best revealed when all these attributes are present. However, the clearest example of Third Voice is the application of results making the difference or causing a re-direction for a better outcome.

With the details of this concept analysis, further research is necessary into standardizing the conceptual framework of Third Voice for standardized testing science across disciplines. Implications of this concept analysis for nursing education may focus on how the standardized testing results, or Third Voice, are utilized by nursing programs in terms of development of testing guidelines, policies and procedures, testing practices, implementation, remediation, course evaluation, and overall program evaluation. Third Voice, when used appropriately provides and promotes credible, evidence-based testing science and significantly contributes to the scholarship of educational nursing practice as well as other professions (Nibert & Morrison, 2013).

References

- Arnett, D. K., Blumenthal, M. A., Albert, R. S., Buroker, A. B., Goldberger, Z. D., Hahn, E. J., & Ziaieian, B. (2019). ACC/AHA Guideline on the primary prevention of cardiovascular disease: A report of the American College of Cardiology/American Heart Association task force on clinical practice guidelines. *Circulation*, 140(11), 17 Mar. 2019, pp. 596–646. doi:10.1161/cir.0000000000000678.
- Bakhtin, M. M. (1981). *The dialogical imagination*. (C. Emerson & M. Holquist, Trans.). In M. Holquist (Ed.). Austin & London: University of Texas Press.
- Baran, E. (2012). The transformation of online teaching practice: Tracing successful online teaching in higher education. Retrieved from *Dissertation Abstracts International*. 452-456.
- Barton, L., Willson, P., Langford, R., & Schreiner, B. (2014). Standardized predictive testing: Practices, policies, and outcomes. *Administrative Issues Journal: Connecting Education, Practice, & Research*, 4(2), 68-76. doi:10.5929/2014.4.2.2
- Buse, J. B., Wexler, D. J., Apostolos, T., Rossing, P., Mingrone, G., Mathieu, C., D'Alessio, D. A., & Davies, M. J. (2020, February). 2019 Update to: Management of hyperglycemia in Type 2 Diabetes, 2018. A consensus report by the American Diabetes Association (ADA) and the European Association for the Study of Diabetes (EASD). *Diabetes Care*, 43(2), 487-493. doi:10.2337/dci19-0066.
- Consumer Reports. (2018, December 19). What Does the Check Engine Light Really Mean? *Consumer Reports*. Retrieved from www.consumerreports.org/car-repair-maintenance/what-does-check-engine-lightmean/.

- Eun, B., Knotek, S. E., & Heining-Boynton, A. L. (2008). Reconceptualizing the zone of proximal development: The importance of the third voice. *Educational Psychology Review*, 20, 133-147. doi:10.1007/s10648-007-9064-1
- Goldsmith, A., Hamilton, D., Hornsby, K., & Wells, D. (n.d.). Interdisciplinary approaches to teaching. The Science Education Resource Center [SERC]. Pedagogy in Action. Retrieved from <https://serc.carleton.edu/sp/library/interdisciplinary/index.html>
- Hussain, S., Adams, C., Cleland, A., Jones, P. M., Walsh, G., & Kiaii, B. (2016). Lessons from aviation- the role of checklists in minimally invasive cardiac surgery. *Perfusion*, 31(1), 68-71. doi:10.1177/0267659115584785
- Kerber, C. W. (2014). Changing our culture: Adopting the military aviation safety system. *Journal of NeuroInterventional Surgery*, 6 (5), 332-341. doi:10.1136/neurintsurg-2013-011070
- Langford, R., & Young, A. (2013). Predicting NCLEX-RN success with the HESI exit exam: Eighth validity study. *Journal of Professional Nursing*, 29(2S), S5-S9. Retrieved from doi:10.1016/j.profnurs.2012.06.007
- Lauer, M., & Yoho, M. J. (2013). HESI exams: Consequences and remediation. *Journal of Professional Nursing*, 29(2S), S22-S27. doi:10.1016/j.profnurs.2013.01.001
- Mandel, S. E., Davis, B. A., & Secic, M. (2014). Effects of music therapy on patient satisfaction and health-related quality of life of hospital inpatients. *Hospital Topics*, 92(2),28-35. doi: 10.1080/00185868.2014.906830
- Mandel, S. E., Hanser, M., Secic, M., & Davis, B. A. (2007). Effects of music therapy on health-related outcomes in cardiac rehabilitation: A randomized control trial. *Journal of Music Therapy*, 44(3),176-197. doi:10.1093/jmt/44.3.176

- Montoya, R. (2019, July 17). What does your check engine light mean? Retrieved from <https://www.edmunds.com/car-maintenance/what-your-check-engine-light-is-telling-you.html>
- Nibert, A., & Morrison, S. (2013). HESI testing - A history of evidence-based research. *Journal of Professional Nursing, 29*(2S), S2-S4. .doi:10.1016/j.profnurs.2012.06.004
- OBD-II. (2013). OBD-II background. Retrieved from <http://www.obdii.com/obdii.html>
- Stonecypher, K., Young, A., Langford, R., Symes, L., & Willson, P. (2015). Faculty experiences developing and implementing policies for exit exam testing. *Nurse Educator, 40*(4), 189-193. doi:10.1097/NNE.0000000000000152
- Third. (n.d.). In *Merriam-Webster.com dictionary*. Retrieved from <https://www.merriam-webster.com/dictionary/third>
- Voice. (n.d.). In *Merriam-Webster.com dictionary*. Retrieved from <https://www.merriam-webster.com/dictionary/voice>
- Walker, L. O., & Avant, K. C. (2011). *Strategies for theory construction in nursing*. Prentice Hall, New York.
- Willson, P. (2011). Electronic standardized testing for advanced practice registered nursing (APRN) programs. In *Sigma Theta Tau 2011 Conference- STI*. Presented at the 22nd International Nursing Research Congress in Cancun, Mex. Retrieved from http://www.stti.iupui.edu/pp07/congress11/willson_pamela.pdf
- Willson, P., & Goodman, J. (2015). Standardized testing to predict APRN credentialing success: What is the science? *The Internet Journal of Advanced Nursing Practice, 14*(1), 1-6. doi:10.5580/IJANP.32179

Willson P., Martinez-Anderson, D., & Throckmorton, T. (2018). Use of standardized testing in advanced practice registered nurse (APRN) education. *The Internet Journal of Advanced Nursing Practice*, 17, (1). doi:10.5580/IJANP.53542

Young, A., Rose, G., & Willson, P. (2013). Online case studies: HESI exit exam scores and NCLEX-RN outcomes. *Journal of Professional Nursing*, 29(2S), S17-S21. Retrieved from <http://dx.doi.org/10.1016/j.profnurs.2012.06.010>

Zweighaft, E. (2013). Impact of HESI specialty exams: The ninth HESI exit exam validity study. *Journal of Professional Nursing*, 29(2S), S10-S16. Retrieved from <http://dx.doi.org/10.1016/j.profnurs.2012.06.011>

Chapter Four

Using Standardized Test Results to Inform Nursing Certification Preparation:

Challenges and Lessons

Abstract

Purpose: The goal of Advanced Practice nursing education is to produce graduates who can provide safe, quality care within the complex health care system.

Successfully passing the standardized national certification exam is required to practice as an Advanced Practice Nurse (APN) in the United States. Standardized tests measure the readiness for professional advanced nursing practice. The purpose of this study was to explore the role standardized test results play in informing faculty's teaching practices and students' study skill practices.

Conceptual Framework: The Reconceptualization of Vygotsky's Zone of Proximal Development underpins this study.

Design: A descriptive, exploratory design method was initiated. A descriptive qualitative component was included to better understand the participants' perspectives on standardized testing.

Method: Participant role-specific tools were deployed to a convenience sample of nurse practitioner students and faculty. A small cohort of participants, comprised of two students and two faculty from the original sample, was later provided a Qualtrics link to an online, open-ended question survey.

Data Analysis: Content analysis was conducted.

Results: The responses of a small cohort comprised of both students and faculty participants highlighted the following themes: 1) standardized testing is a way to

measure new knowledge and skills, and 2) standardized testing causes stress. Students expressed that standardized test results accurately reflect their knowledge, while faculty suggested standardized test results did not reflect their teaching.

Conclusion: Qualitative data from graduate nursing students and faculty indicated that standardized testing has potential to serve as a meaningful component for both teaching and learning practices.

Key words: standardized testing, standardized test results, third voice, graduate nursing education, advanced practice nurse

Increased health care costs and primary care provider shortages have compelled graduate nursing programs to produce qualified, safe, skilled, and competent professionals to fill the healthcare gap (Elflein, 2020). Standardized testing is a tool used by nursing faculty to measure the readiness for advanced practice nursing students for certification as advanced practice nurse practitioners (Nibert & Morrison, 2013; Stonecypher, Young, Langford, Symes, & Willson, 2015; Sullivan, 2014; Zweighaft, 2013). The literature describes two conceptual frameworks used to underpin the use of standardized testing in undergraduate nursing education as the Classical Test Theory by Crocker and Algina (1986) and the Critical Thinking Theory by Paul and Binker (1990). These address the construction and development of testing used in undergraduate nursing education.

Only one framework was found in the literature to underpin the use of standardized testing in graduate nursing education: the Reconceptualization of Vygotsky's Zone of Proximal Development (RVZPD) by Eun, Knotek, and Heining-Boynton (2008) (Eun et al., 2008 as cited in Willson, Martinez-Anderson, & Throckmorton, 2018). The RVZPD discusses students and faculty as major stakeholders in the educational/testing process and also ascribes significance to the test itself (Martinez-Anderson, 2020). More specifically, the RVZPD as a conceptual framework for the use of standardized testing posits concepts as three voices: those of the educator, the student, and the standardized test. It presents standardized testing as the invisible, authoritative contributor in the educational process.

Despite careful planning, the initial study, which was designed to explore preparation for the Advanced Practice Registered Nurse (APRN) certification exam through the lens of the RVZPD, did not produce an adequate sample for statistical analysis. The original descriptive correlational study intended to investigate two research questions:

1) How do the First Voice (faculty teaching practices), Second Voice (student learning and study skills), and Third Voice (the APEA Predictor test results) in conjunction with the covariate (student stress) predict APN student first-attempt national certification exam success?

2) How does the Third Voice interact with the First and Second Voices to predict APN first-attempt national certification success?

An amended descriptive exploratory design of the original study was IRB-approved and implemented with a qualitative component that used two new study questions:

- 1) How does Third Voice (standardized test results) influence graduate nursing faculty's teaching strategies (First Voice) and graduate nursing students' study skills strategies (Second Voice)? and
- 2) Does the application of Third Voice concept perspective predict advanced nursing practice first-attempt, national certification success?

Problem and Significance

According to Sackett (1996), evidence-based advanced clinical nursing expertise reflects the combination of a practitioner's cumulative nursing experience, superior clinical skills, and certification. Certification success reflects credibility of a nursing program's overall effectiveness and indicates that the curriculum supports accreditation standards. There has been increased use of standardized testing as a recognized educational strategy to measure pre-professional preparedness. Standardized testing has been established as a successful strategy to predict NCLEX licensure success in undergraduate nursing education (Nibert & Morrison, 2013; Stonecypher et al., 2015; Sullivan, 2014; Zweighaft, 2013). Yet there is limited evidence of how standardized testing is used as a participant in the teaching-learning process and how test results inform the faculty's teaching and the student's learning strategies in Advanced Practice Nursing-

Family Nurse Practitioner (APN-FNP) education (Martinez-Anderson, 2021; Willson et al., 2018). Multiple methods of implementation are used for standardized testing, however Mee and Hallenbeck discovered there are no established standards or guidelines related to standardized testing policies, including the use of testing results in nursing education (2014). Furthermore, there is no recognized conceptual framework underpinning the role standardized testing plays in the educational process guiding nurse educators in implementing evidence-based education (Sales, Smith, Curran, & Kochevar, 2013)

Standardized testing products from the Advanced Practice Education Associates (APEA), like quizzes, question banks (MyQBank), online review course video modules, and predictor exams, provide individualized student report of results as evidence of pedagogical foundation for faculty to gauge preparedness of clinical skills, professional practice competencies for students, and readiness for the certification exam (Willson & Goodman, 2015; Zweighaft, 2013). Sullivan (2014) believes standardized testing “holds students accountable for their performance and nursing schools accountable to meet accreditation standards” (p.47). Accordingly, APEA reports a benchmark set at 70% or above for the Pre and University Predictor tests leads to certification exam success rates of 99-100% (APEA, 2017). However, to date there is no empirical evidence other than the proprietary data from the APEA company. Existing literature is limited that describes what role the standardized test (i.e., APEA) plays in the interaction between faculty teaching and student learning practices. For this reason, an in-depth exploration of the associations between standardized testing and teaching/learning among graduate nursing educators/students and certification success is warranted to further nursing knowledge in testing science.

Review of the Literature

A comprehensive review was undertaken to identify conceptual models in studies that utilized standardized testing in nursing preparation for licensure and certification. Four evidence sources were searched, including CINAHL complete, Medline complete, Cochrane, and ERIC. Search terms used were *standardized testing, standardized assessment, computerized educational testing, educational testing, educational assessment, educational policy, exit exam, OR exit test*. Terms were searched with the Boolean connector “and” producing no results. Using the Boolean connector “or” produced 3,597 articles. The inclusion criteria applied included publication dates from 2010 to 2021, English language which yielded 22 articles. Duplicates were removed after reading titles and abstracts. Twelve articles were identified after applying the inclusionary criteria of implementation of standardized testing, and report of outcomes. A separate search within the Virginia Henderson Global Nursing Online eRepository produced a Sigma Theta Tau presentation by Willson; the presentation was included as grey literature resulting in a total of 13 sources (Willson, 2011). The literature evidence includes two Level V systematic reviews and seven Level IV studies which demonstrates a strong quality of research design for evidence-based nursing education (Polit & Beck, 2017).

More than eighty percent (n=10) of the articles focus on undergraduate nursing standardized testing using HESI NCLEX-RN, while three articles and one presentation highlighted APRN graduate standardized testing using the HESI APRN Exam. Fifty percent (n=6) of the articles did not report using a conceptual framework, (Carr, 2011; Santo et al., 2013; Stonecypher et al., 2015; Willson & Goodman, 2015; Young et al., 2013; Young & Willson, 2010) while the other half, described using a specific conceptual framework when relating to standardized testing results and practices (Barton et al., 2014; Langford & Young, 2013; Lauer &

Yoho, 2013; Nibert & Morrison, 2013; Willson et al., 2018; Zweighaft, 2013). The three commonly mentioned conceptual frameworks related to standardized testing use in nursing education were identified as: 1) the Classical Test Theory by Crocker and Algina, (1986), 2) the Critical Thinking Theory by Paul and Binker (1990), and 3) the Reconceptualization of Vygotsky's Theory of the Zone of Proximal Development (Barton et al., 2014; Willson et al., 2018). Nibert and Morrison (2013) used the Classical Test Theory only. The other studies combined Classical Test Theory with the Critical Thinking Theory as a framework (Langford & Young, 2013; Lauer & Yoho, 2013; Zweighaft, 2013). While these theories give foundation to test item construction to meet learning objectives and development of test questions for validity, only three articles were found in the literature that address the implementation of standardized testing results in the context of faculty and students. Barton et al. (2014) utilized the RVZPD as a conceptual framework that lead to goal attainment in a sample of Diploma, ADN, and BSN nursing programs in relation to a policy for standardized testing. The RVZPD was also used to support a longitudinal study exploring HESI APRN predictive validity for national certification success among 114 graduate nursing (APRN) programs (Willson et al., 2018). Martinez-Anderson (2021) suggested the RVZPD's concept of Third Voice as a strong fit to underpin the role of standardized testing in the educational triadic phenomenon of the educator/faculty, student, and the test results that provide a roadmap for future testing success.

Concepts

While an initial comprehensive review of the literature was performed for the use of standardized testing in advanced practice nursing education, once the decision was made to use the RVZPD as a framework for the study, an even more in-depth literature search was undertaken. Concepts identified included: 1) standardized testing in general and in nursing

education, 2) graduate nursing education and standardized testing, 3) teaching and standardized testing, and 4) learning and standardized testing.

Standardized testing

General education. A standardized test is a test that employs uniformed and standard questions from a consistent bank of questions to be administered in a uniformed way using standard and consistent procedures for scoring in a way to ensure results are comparable to the relative performance of individual students or groups of students (Standardized Test, 2015). Historically, the earliest standardized testing recorded was in the 7th century Imperial China, when prospective government workers were tested on Confucian philosophy and poetry (Fletcher, 2009). In the United States, standardized testing has been primarily utilized in education with the earliest recorded administration in the mid-19th century (Alcocer, 2017). Standardized tests began as oral examinations, evolved for use as written tests, then eventually to computerized tests. Standardized tests may measure mental ability, preparedness for college, and professional readiness in law, medicine, or nursing. Commonly used formats in standardized tests include multiple-choice questions, true-false questions, short-answer questions and essay questions (Standardized Test, 2015).

Some educators believe that technological enhancements for standardized testing provide a fair, consistent, and efficient approach to large-scale testing thus reducing bias and subjectivity (Standardized Test, 2015). Additionally, the U.S. Office of Technology Assessment (1992) reported this educational approach is believed to have a three-pronged purpose: 1) to evaluate, measure, gauge student learning and progress, 2) hold students and schools accountable for curriculum and pedagogy based on results, and 3) apportion educational prospects of fairness and efficiency to students (Office of Technology Assessment, 1992). The use of standardized tests

for educational outcome assessment has increased due to the 2002 No Child Left Behind (NCLB) Act signed by President George W. Bush into law. This law focuses on the performance of groups of students, rather than individual students, placing a higher responsibility on teachers, schools, and districts utilizing high-stakes testing to measure the quality of education being provided by the schools (William, 2010).

Finally, healthcare professionals are required to complete an educational program and then successfully pass licensure or certification exams in order to practice professionally. The evaluation of programmatic success differs when compared to a traditional liberal arts or sciences education programs (Holstein, Zangrilli, & Taboas, 2006). Based on this premise, successful healthcare educational outcomes do not solely depend on graduation, but on the evidence of passing licensure and certification exams (Holstein et al., 2006).

Nursing education. Over 25 years of literature evidence on standardized testing in baccalaureate (undergraduate) nursing education exists, with most of the evidence specifically focused on proprietary standardized testing products. The most commonly used products in undergraduate programs include Assessment Technology Inc. (ATI), Health Education Systems, Inc. (HESI), National League of Nursing Testing Services (NLN), and Kaplan, Inc. (Kaplan) (Coons, 2014). In nursing education, outcomes are measured by a variety of methods, but primarily by using standardized testing to determine preparation into professional nursing practice. The National Council of State Boards of Nursing (NCSBN) is charged with the maintenance of minimum practice standards for nurses transitioning into professional practice. Thus, nursing programs must comply with these standards especially when adjustments are deemed necessary by the NCSB due to sociopolitical, economic, and demographic changes affecting the nursing workforce (Sosa & Sethares, 2015). With these changes come increased

competency demands for nursing practice, causing fluctuation in pass rates, reflecting each program's pursuit of newly desired educational outcomes. In order to reflect that curricula have been amended to meet changing demands, standardized testing is one common method used to measure competence as it relates to overall educational outcomes (Coons, 2014; Sosa & Sethares, 2015).

Graduate nursing education and standardized testing. Two of the most commonly used proprietary, commercially prepared, test products used in graduate nursing education are Elsevier's Health Education Systems, Incorporated (HESI) also known as the HESI™ and Advanced Practice Educational Associates (APEA). These are evidence-based testing products developed to measure nursing core competencies and clinical knowledge in preparation for APN national certification (Nibert & Morrison, 2013). These computer-based test products administered by nursing faculty are designed to resemble the actual test given based on test blueprints developed by the National Organization of Nurse Practitioner Faculties (NONPF), the American Association of Colleges of Nursing (AACN), the American Association of Nurse Practitioners Certification Board (AANPCB), and the American Nurses Credentialing Center (ANCC).

Teaching and Standardized Testing. Standardized tests for advanced practice are primarily multiple-choice questions that focus on clinical skills, diagnoses, treatment management, pharmacotherapy, health promotion, public health and policy, and patient education (AANPCB (2019); ANCC (2017)). Standardized tests in nursing education have a variety of applications across undergraduate and graduate programs. Undergraduate nursing leaders and educators must address several elements related to standardized testing: 1) developing curricula testing policies, 2) timing of tests i.e., formative vs. summative, 3)

benchmarking scores and academic weight of test results for course grades, 4) determining consequences and remediation for low scores, and 5) predicting student licensure success while identifying weaknesses (Barton et al., 2011; dos Santos et al., 2015; Stonecypher et al., 2015). In graduate nursing education, faculty use standardized tests to: 1) serve as a curriculum indicator of course and teaching strategy effectiveness or need to for readjustment, 2) provide a roadmap for faculty to assist students in targeting areas of strength and weakness to enhance their advanced nursing skills acumen towards APN certification success, 3) gauge mastery of advanced practice competencies and clinical readiness, and 4) assess potential and predict success on national certification exams, (Martinez-Anderson, 2021; Willson & Throckmorton, 2017; Willson et al., 2018).

Learning and Standardized Testing. Thompson (2013) suggests student learning is an active, collaborative process as students negotiate meaning in ways established from their previous social, cultural, and environmental knowledge and new experiences and knowledge. A student's motivation, self-agency, and ability to adjust habits, influences, attitudes, and study strategies will determine academic success or failure (Dill et al., 2014). Homard (2013) states that the use of standardized test review packages increased student academic outcomes and Willson et al. (2018) report evidence of the use of standardized testing results to gauge readiness (predictor exam) and to target the specific areas students need to master to be successful in APN national certification exam. For students, standardized test results present an overview of their foundational academic mastery and clinical strengths and weaknesses allowing students to individualize study strategies focusing on deliberate area-specific remediation (Martinez-Anderson, 2021). Additionally, standardized testing results generate a measure of the overall

nursing program effectiveness, a major consideration for potential students investigating nursing programs options.

Gaps in the Literature

The use of standardized testing in APN/Graduate nursing education has not been widely explored in the scholarly literature. Only limited evidence is available about how standardized test results inform faculty teaching and student learning for advanced practice nursing national certification success. Similarly, evidence of a conceptual/theoretical framework that is a strong fit for the triadic relationship of educator, student, and test as it relates to cognitive learning and use of standardized testing in the educational process is scarce. Until Martinez-Anderson (2021) introduced a discussion of APEA products used in APN education, HESI was the only standardized testing product related to graduate education mentioned in the literature.

Conceptual Framework

The conceptual framework for this study was the RVZPD by Eun et al. (2008). The Zone of Proximal Development (ZPD) is a key construct in Vygotsky's educational, psychosocial-cultural theory of cognitive and learning development, which is primarily used in child development, psychology, and educational disciplines (Bahktin, 1986; Vygotsky, 1978). The ZPD is defined as "the distance between the actual development level as determined by independent problem solving and the level of potential development as determined through problem solving under guidance or in collaboration with more capable peers" (Eun et al., 2008, p.134). The original ZPD conceptualized by Vygotsky includes three elements: 1) the goal (e.g., cognitive or psycho-social cultural development/maturity), 2) the individual undergoing the transition/development (e.g., child, student), and 3) the more competent guide or mediator (e.g., adult, educator) (Eun et al., 2008). According to the framework, development begins jointly

between the learner and educator and then evolves into the learner's independent learning, so practically, for any domain or skill that is identified, a ZPD exists. Chaiklin (2003) states Vygotsky's ZPD is used for two purposes related to development: 1) identifying psychological and social maturing functions as in the "transition of one age period to the next age period;" (p.7) and 2) the "current state in relation to developing maturing functions for a specific transition" (p.7). The ZPD captures the idea that for every transition there are certain psychological and social functions one must form or mature into, to reach a new capability, new intellectual understanding, and new reasoning. Vygotsky describes these manifestations as "conscious awareness/volition" (Chaiklin, 2003, p.7).

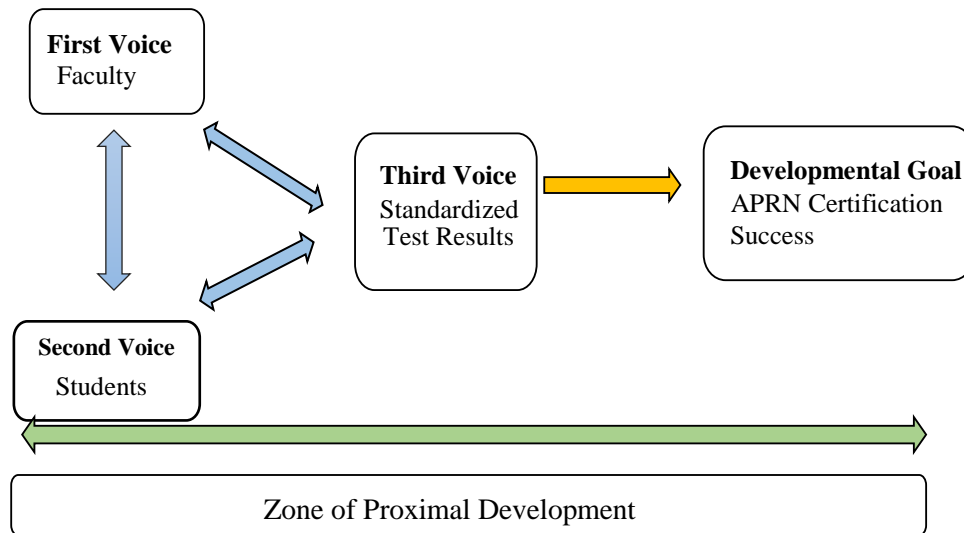
Drawing from Vygotsky's (1978) original work on child development/education where the First Voice is the more experienced and capable participant and the Second Voice is the less competent participant, Eun et al.'s RVZPD (2008) proposed the concept of a Third Voice or the invisible, inaudible, but influential participant in the dialogicality between the first and second voices within the ZPD. In their RVZPD, Eun et al. (2008) credit Mikhail Bakhtin (1981), for first proposing the concept of dialogicality, Dialogicality uses semiotics to interpret utterances in any type of discourse, where meaning is found in the words written or spoken by a speaker, and interpreted by the listener, giving way to a voice. This Third Voice makes evident those elements that influence development within the ZPD, mediates the perceptions and interpretations of the dialogue between the first and second voices, and assesses if developmental goals are progressing or constrained (Eun et al., 2008). Consequently, the hidden but implicit collaborative mediation between the Third and First Voices, becomes the overarching and foundational influence that provides a roadmap for the Second Voice to reach the developmental goal of the ZPD journey (Eun et al., 2008).

The RVZPD with the identification of the Third Voice served as a good fit to underpin this study. This study was planned to highlight the phenomenon of standardized testing's role from the perspective of First Voice, Second Voice, the zone of proximal development, and Third Voice in the educational process. First Voice working within the ZPD, represents faculty teaching practices to assist students' movement from a level of independent performance (actual level) towards collaborative mediation (potential level) (Thomas, 2013). Second Voice is represented by students' independent performance of learning and study skills within the ZPD which are guided by First Voice in a collaborative mediation and develop into a level of potential performance. ZPD represents the reciprocal shared space between First Voice (faculty) and Second Voice (nursing students), where negotiation of meaning takes place and developmental progression occurs from potential to a realized level in advanced practice education. Third Voice is represented by the authoritative and inaudible mechanism of standardized testing in the teaching-learning process between faculty and students and its influence on student national certification success. This study aimed to explore how Third Voice informs faculty teaching strategies and student learning and study skills strategies before and after the administration of a standardized test.

Model of the Conceptual Framework

Figure 4.1. Model of the Reconceptualization of Vygotsky's Theory of the Zone of Proximal Development (RVZPD). This model presents RVZPD applied to standardized testing in graduate nursing education. First Voice as the experienced participant is represented by faculty, Second Voice as the less experienced is represented by students, and Third Voice is the silent participant represented by the standardized test results. The developmental goal is represented by first attempt, certification exam success. ZPD is the time when development takes place.

Figure 4.1. (continued)



Note: Adapted from Eun, B., Knotek, S.E., Heining-Boynton, A.L. (2008). Reconceptualizing the zone of proximal development: The importance of the third voice. *Educational Psychology Review*. 20; 133-147. doi:10.1007/s10648-007-9064-1.

Research Questions

The original descriptive correlational study intended to investigate two research questions:

1) How do the First Voice (faculty teaching practices), Second Voice (student learning and study skills), and Third Voice (the APEA Predictor test results) in conjunction with the covariate (student stress) predict APN student first-attempt national certification exam success?

2) How does the Third Voice interact with the First and Second Voices to predict APN first-attempt national certification success?

The conceptual and operational variable definitions of the independent and dependent variables for the original study, including a covariate of student stress are categorized and included in Table 4.1.

Table 4.1. *Conceptual and Operational Definitions of Variables for the Original Study*

Variables	Conceptual Definition	Operational Definition
Educational outcome (DV)	Readiness for the APN role	First-attempt certification pass scores from AANPCB and ANCC
Faculty Teaching Practices (IV 1)	First Voice- Experienced, capable participant in learning process	The Approaches to Teaching Inventory (ATI) (Trigwell & Prosser, 2004).
Student Learning Practices (IV 2)	Second Voice- Less experienced participant in the learning process	The Learning and Study Skills Inventory (LASSI), a 60-item instrument (Weinstein, Palmer, Acee, 2016).
Standardized Testing Results (IV 3)	Third Voice- Invisible, inaudible participant in learning process	APEA Pre and University Predictor tests, a 150-item multiple choice standardized test with a percentage score (APEA, 2017).
Student Identified Stress (Covariate)	Confounding interference of psychological stress/distress in learning process	The Perceived Stress Scale (PSS), a 10-item instrument with a 4-point Likert-type score (Cohen, Karmarck, & Mermeistein, 1983).

Note: DV represents dependent variable; IV represents independent variable.

An amended descriptive exploratory design of the original study was IRB-approved and implemented with a qualitative component that produced two new qualitative research questions: 1) How does Third Voice (standardized test results) influence graduate nursing faculty's (First Voice) teaching strategies and graduate nursing students' (Second Voice) study skill strategies? and 2) Does the application of Third Voice theory perspective predict advanced nursing practice first-attempt, national certification success?

Design

A descriptive, exploratory design guided the original study. The dual cohorts of students and faculty were each to complete role-specific instruments related to standardized testing.

Ultimately the study was amended to include a qualitative component to explore the perspectives on standardized testing of students and faculty.

Methods

This study aimed to explore how standardized test results inform an APN program's faculty teaching practices and the program's students' learning and study skills, which ultimately predict APN national certification exam success.

Sample

A priori power analysis was performed to calculate the estimated sample size of students needed for the original study. Using a significance level of .05 and a power of .80 (Cohen, 1992), the required estimated sample size was 93 for a medium effect size of odds ratio. The population for this study was comprised of faculty and students of a national, multi-campus APN program of a university system across the United States.

Following institutional review board approval, a convenience sample was recruited from students enrolled in and faculty who teach the program's final senior level course, NURS 6440 Primary Care Practicum, where the Pre- and University APEA Predictor tests are administered as part of the course. Faculty and students were recruited from face-to-face and online campuses using bulk email with a video, sent via email, explaining the study, the process, and the incentive to participate. There was an estimate of 12-20 faculty teaching this course and an estimate of 200-250 students taking this course during the original study. Inclusion criteria for the student participants included current enrollment in the NURS 6440 Primary Care Practicum and 2) will take the two APEA Predictor tests as part of their coursework in the APN program. Inclusion criteria for the faculty participants included: 1) teaching in the university APN program, 2) being

faculty of record for the Primary Care Practicum, and 3) administering the APEA Predictor tests, and collecting, compiling, and reporting individualized student test results.

Due to low participant response data, the threshold for significance was not reached and the study design was modified. The two students and two faculty who completed each instrument in the original study served as the sample for the added qualitative portion of the study.

Protection of Human Subjects

Two separate Institutional review board (IRB) approvals, one from the University of Texas at Tyler (UT Tyler) and the other from the multi-state university, were required as the two educational institutions were designated research sites. After receiving approval from the Dean of the College of Nursing and Public Health to use student and faculty emails for research purposes only, the faculty and students from the multi-state university research site's APN program were recruited via a recruiting email with a short explanatory video sent to all APN faculty and students meeting research criteria. Informed consent was included in email. A 2-week window was provided for participants to respond. Pre- and University-Predictor scores and national certification pass/fail data were -to be obtained by faculty and Program Directors for research purposes only.

In the initial study, the participants did not risk beyond the time required to complete the surveys and compile the data as required for the study; no immediate benefit was experienced by participants. The participation of faculty and students was entirely voluntary. Any participant had the choice to stop at any time during the collection of data if they so choose. An approved method for de-identification of all data collected for study was used. Student data of individual Pre- and University-APEA Predictor test results as well as their Certification outcomes and responses to the Learning and Study Skills Inventory (LASSI) and the Perceived Stress Scale

(PSS) were to be collected as well as faculty responses to the Approaches to Teaching Inventory (ATI) were collected.

A challenge emerged when one multi-state university IRB committee member claimed this study contained elements that would potentially jeopardize or violate students' rights related to the Family Educational Rights and Privacy Act (FERPA). The researcher provided a detailed description of the de-identification process, assuring confidentiality of process; however, their final IRB decision was for researcher to request test scores and national certification pass/fail data directly from individual students and individual faculty study participants. This created a barrier for data collection as students were reluctant to share test scores, presumably because of low or failing scores. Additionally, the researcher corresponded with CEO (Chief Executive Officer) of APEA requesting collaboration and assistance in data collection, but was turned down due concerns regarding intellectual and proprietary product rights. Faced with this challenge, personalized email requests became the data collection method. Emails were developed and sent to students and faculty requesting specific information. The data collection section below expands the details of the process undertaken for participant data collection.

After the implementation of the original study, yet another challenge emerged related to low participation responses. This caused the researcher to change the study design to a descriptive qualitative approach, thus requesting an amendment to the original approved proposal. With adoption of this new design, a cohort of two students and two faculty who had completed all instruments associated with original study were recruited and consented to participate in the qualitative study.

Instruments

Demographic Data Form. An investigator-developed demographic form was used to obtain individual characteristics that include age, race, level of education, and gender, etc. This data was also used for de-identification purposes. The form was delivered online and was included in the recruitment email. Once participants gave consent, they were directed to the Demographic Data Form. Once students completed the Demographic Data Form, the PSS questionnaire followed and then were provided a link to complete the LASSI. Once faculty completed the Demographic Data Form, they were asked the ATI questions. In the original study, the PI wanted to determine the efficacy of the use of APEA's proprietary products as resources by the multi-state university for the study-related course, as there is limited literature related to the efficacy of APEA products' use for certification success. Two open-ended qualitative questions related to the use of APEA products (e.g. quizzes, MyQBank, online review course modules, etc.) for the preparation for the certification exam were included within the Demographic Data Form via Qualtrics. See Appendices D and E.

The Approaches to Teaching Inventory (ATI). The ATI is a 16-item inventory with a 5-point Likert-type scale ranging from *only rarely true* to *almost always true* (Trigwell & Prosser, 2004). The ATI is designed to measure aspects of teaching approaches that help improve student learning through two subscales, Conceptual Change/Student-Focus (CCSF) and Information Transmission/Teacher-Focus (ITTF). This instrument was given to faculty who administer the APEA Pre and University Predictor tests in NSG 6440 Primary Care Practicum to collect data on their teaching approaches/strategies. The ATI is psychometrically sound with reported Cronbach's alpha values of 0.86 for the CCSF and 0.83 for the ITTF (Goh, Wong, & Hazmah, 2014). Scale score norms are not available due to the nature of the relational

perspective origin of the instrument, however, it may be feasible to establish norm ranges once a strong sample of context specific inventories are collected (Trigwell & Prosser, 2004). See Appendix F.

The Learning and Study Skills Inventory (LASSI, 3RD edition). The LASSI is a 60-item 10-subscale inventory that measures students' (age 13 and above) understanding and use of learning and study strategies including the self-related factors like self-regulation, self-management, self-esteem, and self-efficacy that lead to strategic learning (Weinstein, Palmer & Acee, 1982; 2016). The 10 subscales include: 1) Anxiety, 2) Attitude, 3) Concentration, 4) Information processing, 5) Motivation, 6) Selecting main ideas, 7) Self-testing, 8) Test strategies, 9) Time management, and 10) Using academic resources (Weinstein et al., 2016). Each subscale consists of six items and is rated on a 5-point Likert scale with 1= *Not at all typical of me*, 2=*Not very typical of me*, 3=*Somewhat typical of me*, 4=*Fairly typical of me*, and 5=*Very much typical of me*. According to the LASSI (3rd) manual (Weinstein et al., 2016), the LASSI yields 10 individual subscale scores by adding up student responses to the six items on each subscale. The scale scores can then be compared numerically or graphically to the norms or cut-off scores developed by an educational institution or program with 75th percentile being a common cut-off norm used on many campuses. Scores between the 75th-100th percentile indicate no need for improvement of strategies, If the score is between the 75th and the 50th percentiles on any of the ten scales, students should consider improving their strategies in those areas. For scores below the 50th percentile on any of the ten subscales, students would need to improve their learning and study skills for success (Zhou et al., 2016). Subscales that have shown correlated academic performance predictors include concentration, motivation, self-testing, and test strategies (Weinstein et al., 2016). See Appendix G.

The LASSI can be both diagnostic and prescriptive providing faculty and students specific individualized feedback in the 10 scale areas (Weinstein et al., 2016). Internal consistency (alpha) for all 10 scales ranged from 0.76 to 0.87 (Weinstein et al., 2016): information processing (.84), selecting main ideas (.89), testing strategies (.80), anxiety (.87), attitude (.77), motivation (.84), concentration (.86), time management (.85), use of resources (study aids) (.73), self-testing (.84) (Weinstein & Palmer, 2002). Zhou et al. (2016) investigated the reliability and validity of the extent the LASSI influenced academic performance outcomes among medical school students. Their findings showed a variance range from 10% to 49% or a small to substantial effect, providing concurrent validity evidence that the LASSI results positively promoted the academic performance outcomes for the medical students.

Perceived Stress Scale (PSS). The Perceived Stress Scale (PSS) was used to measure the student participants' perception of stress regarding the standardized tests in an APN program. The PSS is a 10-items Likert-style scale (0=*Not at all*, 4=*Extremely*) with three subscales: intrusion, avoidance, and hyperarousal (Weiss & Marmar, 1997). A total score greater than 33 indicates significant and probable diagnosis of Post-Traumatic Stress Disorder (PTSD), while a score of 24 indicates clinical concern of stress affecting psychological and physiological systems (Weiss & Marmar, 1997). Previous studies reported acceptable Cronbach's alphas at .79 to .91 for the total scale and subscales (Beck et al., 2008). See Appendix H.

APEA Pre-and University Predictor Tests. The APEA Predictor tests are 150-multiple choice question exams that cover 16 different knowledge areas related to advanced practice and are categorized using five testing domains: assessment, diagnosis, planning/interventions, evaluation and pharmacotherapy (APEA, 2017). These tests are electronically purchased and delivered via password-protected link. The questions are randomly generated. Once completed,

the test results are categorized into knowledge areas and testing domains where knowledge weaknesses are identified. The results are then given in a graphical report with the national maximum and minimum means range with a national mean compared to the student score, percentage of knowledge area questions that are used for the exam, percent of correct questions by the testing domains, and test composition related to the number of items for each knowledge area (APEA, 2017). Additionally, a rationale is provided for any incorrect item responses to facilitate immediate remediation. Test results were to be collected by the program director of the multi-state university school along with certification exam results, but due to the university's IRB constraints, it was necessary to gain participants results via self report.

APN National Certification Exam. There are two national certification exams available for Family Primary Care Nurse Practitioner advanced practice nursing students. They are published by the professional testing organizations, the American Academy of Nurse Practitioners Certification Board (AANPCB) and the American Nurses Credentialing Center (ANCC). These organizations produce similar yet different certification exams. The AANPCB exam consists of 150 multiple-choice questions, of which 15 are pretest questions the organization pilots for future use and are not scored, thus a candidate's score is based on a total of 135 questions (AANPCB, 2016). The ANCC certification exam contains 200 multiple-choice questions, similarly to AANPCB, they have 25 pretest questions that are not scored and thus the final score is based on 175 questions (ANCC, 2016). Both are competency-based exams incorporate the Nurse Organization for Nurse Practitioner Faculties (NONPF) Nurse Practitioner Core Competencies as well as the Master's Essentials from the American Association of Colleges of Nursing (AACN) and are used to inform and develop foundational knowledge criteria for advanced nursing practice. Students individually choose which certification exam to

take, since there is not consensus across the U.S. regarding which certification exam is the gold standard. The possible outcomes for the certification exam were dichotomous, i.e., pass or fail. In the original study, the students' first attempt certification exam outcomes, six weeks after completion of the program were requested and were to be entered in the APEA & Certification Outcomes Report, but due to study constraints this data was unable to be collected as planned.

Qualitative Study Questionnaire. Following a second IRB approval, the quantitative study design was amended to incorporate an online self-administered questionnaire (SAQ). The additional questions were provided to the two students and two faculty who had completed all instruments associated with the original study. The intent was to achieve a deeper understanding of the participants' perspectives. The student questions focused on their personal experiences with taking standardized tests and expanded on the role standardized test results played in their learning and study strategies. The faculty questions focused on their personal experiences with administering standardized testing and the role test results played in their teaching strategies. See Appendix I and J.

Data Collection

In the original study, after IRB approvals were obtained from both universities, faculty and students from the designated study course were recruited using an email embedded video that included a consent form describing in detail the commitment of participating prior to the start of their final semester. In response to the constraints imposed by the multi-state university's IRB, the data collection from study participants had to be modified to adhere to their IRB standards. Without the active participation of the faculty and Program Directors to provide APEA scores and certification results, the PI was obligated to modify the data collection process. This modification altered the data collection points for students from three to five but did not

affect the data collection points for faculty and Program Directors. For students, five data collection points were planned during the 11-week session:

1) Week 1: Before the administration of the APEA Pre-Predictor test, the initial consent linked to the participant-specific demographic data form and instruments were deployed via email (i.e. ATI, LASSI & PSS);

2) Week 2: After administration of the APEA Pre-Predictor test, an email requesting the students' APEA scores was sent to students who consented to participate;

3) Week 10: Before administration of the APEA University Predictor test, the participant specific instruments were sent to participants via email with weblinks (i.e. ATI, LASSI & PSS);

4) Week 11: After administration the APEA University Predictor test, an email requesting the students' APEA scores was sent to students who consented to participate; and

5) Post-course completion: 6 weeks after graduation, an email was sent to consented students requesting their results from the national certification exam.

According to the plans of the original study, the Program Director was to supply the results for all consented students for the Pre-Predictor, University Predictor, and national certification test results. Outcomes were to be documented on the APEA & Certification Outcomes Report. See Appendix C.

For faculty, two different data collection points were planned:

1) Week 1: Before administering the APEA Pre-Predictor test, the initial consent linked to the participant-specific demographic data form and instruments were deployed via email;

2) Week 10: Before the APEA University Predictor test, the participant specific instruments were sent to faculty in email with weblinks.

The LASSI data were collected with purchased administrative access and Qualtrics was the online survey software used to deliver consent, demographic data, and other instruments like the ATI and PSS. In the original study, the PI wanted to determine the efficacy of APEA's proprietary products used as resources by the multi-state university for their final program course as there is only limited literature available related to the certification success. Two open-ended qualitative questions related to the use of APEA products (e.g. quizzes, MyQBank, online review course modules, etc.) for the preparation of the certification exam were included within the Demographic Data Form via Qualtrics. The questions for students included:

1) What role do you think the APEA Predictor tests and related products (e.g. 3P exam, Clinical Guidelines textbook, MyQBank, and the online review course modules) play in your learning and study for your certification exam success?

2) How do you perceive your Predictor test score? Does that influence your learning or performance for the certification exam later? If so, how?

Questions for faculty included:

1) What role do you think APEA Predictor tests and related products (e.g. 3P exam, Clinical Guidelines textbook, MyQBank, and the online review course modules) play in your teaching practices for student certification exam success?

2) How do you perceive the APEA University Predictor test results? Do they have an influences on your teaching? If so, how?

Data Analysis

Based on the target number of 93 participants determined from the power analysis, a total of 110 students were invited to participate (25 on-ground and 85 online students), 22 students consented to participate, but after data cleaning, only 12 participants partially completed the

instruments. Of the 12, only two students had thoroughly completed all the questionnaires as directed. A total of 12 faculty were invited to participate (four on-ground and 12 online); six consented to participate, but after data cleaning, only two faculty members had completed all the questionnaires as directed. Poor response rate precluded meaningful statistical analysis of the student and faculty specific instruments. Data obtained from the original and subsequent open-ended qualitative questions were analyzed for content and possible themes.

Results

Demographics

The demographic attributes of the two faculty and two students who completed all the study instruments and the additional qualitative questions are as follows. All participants were female. Student participant A was 29 years old and student participant B was 60 years old, both identified as White, non-Hispanic. Student participant A has been a registered nurse for six years and participant B has been a registered nurse for 34 years. Both were online graduate nursing students pursuing a Master of Science in Nursing with a specialization goal of becoming a Family Nurse Practitioner.

Faculty participant A was 66 years old and faculty participant B was 45 years old. Faculty A is White, non-Hispanic and faculty B is Hispanic. Both hold doctoral degrees. Faculty participant A has been a registered nurse for 40 years and has worked as faculty for 15 years. Faculty participant B has been a registered nurse for 22 years and has worked as faculty for 9 years. Faculty participant A teaches face-to-face (on-ground) and faculty B teaches online.

Qualitative Component

The qualitative data generated from the original study's open-ended questions were considered collectively with the additional qualitative data and summarized into four categories,

then themes were extrapolated. Categories include 1) concurring data, 2) divergent data, 3) student-specific data, and 4) faculty-specific data. Only qualitative data from the four participants who completed all instruments from the original study and the adjunctive qualitative questions were analyzed.

Concurring Findings. The qualitative data highlighted two themes, where the students and faculty concurred: 1) taking and administering standardized testing is a way to measure new knowledge and skills, and 2) standardized testing causes stress.

Student Participant 1: *“Throughout my nursing education, standardized tests have been a way to gauge where I am and how much information I have been retaining. I have had a love hate with standardized testing.”*

Faculty Participant 2: *“Standardized tests help with finding out where a student is in regard to the new skills and knowledge.”*

Student Participant 1: *“Taking standardized tests can be very nerve wracking for me. I put a lot of pressure on myself to do very well and that can sometimes cause me to overthink questions.”*

Faculty Participant 1: *“I feel anxious for the students.”*

Divergent Findings. Divergent views were also expressed by students and faculty: 1) students think standardized test results accurately reflect their knowledge, while 2) faculty suggested standardized test results did not reflect their teaching.

Student Participant 1: *“Yes, I think the test results accurately reflected my knowledge. I think my study time was reflected in my scores. I believe that the questions were based upon the material that I was responsible for learning.”*

Faculty Participant 2: *“I do not believe those results reflect my teaching as the review of the content is done by the student. Some students do not watch the videos, they just play it in the background just to get the assignment done. The scores reflect how hard the student worked.”*

Student-specific findings. Student participant data reflected the following themes: (1) standardized tests are tools to help in preparation for test success by focusing on areas of weakness, and (2) study for standardized testing is difficult and time consuming during the last quarter/semester of an APN program.

Student Participant 1: *“After receiving my Pre-Predictor test results, I tried focusing on my weak areas and took QBank (APEA question bank) questions from my weak areas and studied rationales from the questions.”*

Student Participant 2: *“I feel they are a tool to help prepare us for Boards, but with a busy class schedule and work, they are very time consuming and I do not have the needed amount of time to apply for the tools to be effective.”*

Faculty-specific findings. For faculty participants, data reflected the following themes: 1) standardized testing APEA (Advanced Practice Education Associates) products assist with an outlined approach of review like a roadmap, and 2) test results identify areas needing more in-depth guided teaching.

Faculty Participant 1: *“I cover the areas that the APEA states are important, but I also cover the areas that I feel are important based on what I have seen in practice over the years. I use case studies and open discussion and try hard to bridge the theory with what they are encountering in their clinical (practicum).”*

Faculty Participant 2: *“I personally use the scores to guide my teaching. I reach out to students who score lower than 70% in their Pre-Predictor exam and try to do several one-on-one communications with them.”*

Discussion

This qualitative study was launched in response to the challenge of low participant response that occurred during the original quantitative, descriptive exploratory study. The discussion presents in detail, the strengths and limitations of this study and the foundations for further research. Lessons learned during the dissertation process are interwoven throughout.

Strengths and Limitations

Strengths

Standardized testing continues to be a method used across nursing education and other disciplines to measure student progression within the zone of proximal development. In this study, the Reconceptualized theory of Vygotsky’s zone of proximal development (RVZPD) by Eun, et al. (2008) introduced a Third Voice, which strongly conceptualizes standardized testing as the inaudible participant in the educational process. Literature has shown predictive value with the use of standardized testing related to licensure and certification success. However, this theoretical fit offers a credible conceptualization of the phenomenon standardized testing plays as the mechanism used in the deliberation of the learning process between educator as First Voice and student as Second Voice, providing strength to this study. This RVZPD can also be applied across disciplines.

Another strength is the investigation of standardized testing use with specific application to advanced practice nursing education. While there is evidence of the use of standardized testing value in predicting certification success in a variety of disciplines, a look into the ways

standardized testing results contribute to the teaching and learning processes is unique. The perspectives of graduate nursing faculty and advanced practice nursing students were explored; the findings, while limited, convey a need for future research in this area.

Limitations

Sample. Sample size based on power analysis was not met. This precluded the ability to conduct statistical analysis. The sample of a non-random, convenient, homogenous group of APN nursing students and MSN-FNP nursing faculty from one university system created another limitation. The repeated measures design contributed to the high potential of attrition due to possible research fatigue of the participants.

Data collection. Stringent rules by the IRB of the multi-state university greatly hindered data collection efforts for securing students' test results. Even with the PI's ability to guarantee anonymity to the participants, students' lack of participation indicated reluctance to reveal their individual test outcomes.

Respondent Fatigue. Respondent or participant fatigue is a phenomenon that manifests when survey participants become tired of the task of answering questions causing the deterioration of the quality of data they are contributing (Lavrakas, 2008). This was a limitation of the original study which contained 70+questions for students and 36+questions for faculty; then they were asked to answer more qualitative questions. The time to complete the entire study created respondent/participant fatigue and contributed to low participant response. A more effective research design considering the length of questionnaires should be pursued in the future to minimize fatigue.

Lack of Access. The initial study depended on getting student scores of Pre- and University-Predictor tests from Program Directors and de-identifying them. Due to multi-state

university IRB's denial of this method of access, an adjusted method of reaching students/faculty individually using email was used and produced insufficient participant responses. The reframing of study to a qualitative design provided minimal participant data. This study lays a foundation as a template for use by university faculty within their programs, to measure the use of standardized test results for student success as well as nursing program effectiveness.

Longitudinal effects. The repeated measures design created insurmountable challenges for the original study. Data collection at different times created constraints for participants increasing attrition. Self-reported data during the longitudinal study also may have produced selective memory impacting integrity of data. This limitation was the principal contributor to the insufficiency of data collected and need to reframe the original study.

Summary

Insufficient participation of the original study introduced the need for reframing this study to a qualitative descriptive study. The findings, while limited, show the use of standardized testing results in the educational process and interaction between students and faculty. The theoretical perspective of Third Voice appropriately underpins and conceptualizes standardized testing as the phenomenon of the invisible, silent contributor in the learning/teaching process of advanced nursing education and provides significant strength to this study. Although unanticipated data collection challenges were met, the original study was thoughtfully designed thus offering a roadmap for a more comprehensive, future exploration of standardized testing's role in advanced practice nursing education.

References

- Advanced Practice Educational Associates [APEA]. (n.d.). *Advanced Practice Educational Associates*. Retrieved from <http://www.apea.com/home>
- Alcocer, P. (2017). Chapter 4. In *History of standardized testing in the United States* (pp. 103-131). Retrieved from <https://www.nea.org/resource-library/essa-and-testing>
- American Academy of Nurse Practitioners Certification Board [AANPCB]. (n.d.). *American Academy of Nurse Practitioners Certification Board*. Retrieved from <http://AANPcert.org/certs/index>
- American Nurses Credentialing Center [ANCC]. (n.d.). *American Nurses Credentialing Center. APN Consensus Model*. Retrieved from <http://www.nursecredentialing.org/Certification/APNCorner>
- Andreou, E., Alexopoulos, E. C., Lionis, C., Varvogli, L., Gnardellis, C., Chrousos, G. P., & Darviri, C. (2011). Perceived Stress Scale: Reliability and validity study in Greece. *International Journal of Environmental Research and Public Health*, 8(8), 3287–3298. doi:10.3390/ijerph8083287
- Baik, S. H., Fox, R. S., Mills, S. D., Roesch, S. C., Sadler, G. R., Klonoff, E. A., & Malcarne, V. L. (2019). Reliability and validity of the perceived stress scale-10 in Hispanic Americans with English or Spanish language preference. *Journal of Health Psychology*, 24(5), 628–639. doi:10.1177/1359105316684938
- Bakhtin, M. M. (1981). *The dialogical imagination*. (C. Emerson & M. Holquist, Trans.). In M. Holquist (Ed.). Austin and London: University of Texas Press.
- Barton, L., Willson, P., Langford, R., & Schreiner, B. (2014). Standardized predictive testing: Practices, policies, and outcomes. *Administrative Issues Journal: Connecting Education*,

Practice, and Research, 4(2), 68-76. doi:10.5929/2014.4.2.2

Binder, B., Jones, P. Emerson, M.H., & Fuentes, E.E. (2009). Using computerized exams to predict nurse practitioner certification exam success exam analysis and faculty appraisal 2005-2007 [Conference session]. 2009 Sigma Theta Tau International Conference 40th Biennial Convention, Indianapolis, IN, United States. Retrieved from <http://www.nursinglibrary.org/vhl/handle/10755/156022>

Carr, S.M. (2011). NCLEX-RN pass rate peril: One school's journey through curriculum revision, standardized testing, and attitudinal change. *Nursing Education Perspectives*, 32(6):384-388. doi:10.5480/1536-5026-32.6.384

Chaiklin, S. (2003). The zone of proximal development in Vygotsky's analysis of learning and instruction. In A. Kozulin, B. Cohen, J. (1992). A power primer. *Quantitative Methods in Psychology*, 112(1), 155-159.

Cohen, J. (1992). A power primer. *Quantitative Methods in Psychology*, 112(1), 155-159.

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, 24, 386-396.

Coons, I. (2014). *Use of Standardized Tests Within Nursing Education Programs [Doctoral dissertation]*. UNLV Theses, Dissertations, Professional Papers, and Capstones. doi:10.34917/5836090

Crocker L., & Algina J. (1986). *Introductions to classical and modern test theory*. Belmont, CA: Wadsworth/Thomson Learning.

Dill, D. (2014). Ensuring Academic Standards in US Higher Education. *Change: The Magazine of Higher Learning*, 46(3), 53-59, doi:10.1080/00091383.2014.910043

- dos Santos, A., Oliveira, K. K., Rosario, S. S., Lira, A. B., Tourinho, F. V., & dos Santos, V. E. (2014, Jul/Sept). Strategies for teaching learning process in nursing graduate and post graduate nursing: An integrative review of literature. *Journal of Research Fundamental Care Online*, 6(3), 1212-1220. doi:10.9789/2175-5361.2014v6n3p1202
- Elflein, J. (2020, June). Healthcare expenditure per capita in the U.S. 1960-2020. *Statista*. Retrieved from <https://www.statista.com/statistics/184955/us-national-health-expenditures-per-capita-since-1960/>
- Eun, B., Knotek, S. E., & Heining-Boynton, A. L. (2008). Reconceptualizing the zone of proximal development: The importance of the third voice. *Educational Psychology Review*, 20, 133-147. doi:10.1007/s10648-007-9064-1
- Field, A. (2013). *Discovering statistics using IBM SPSS statistics* (4th ed.). SAGE Publications.
- Fletcher, D. (2009). Brief history: Standardized testing. *TIME*. Retrieved from <http://content.time.com/time/nation/article/0,8599,1947019,00.html>
- Gibbons, C. (2010). Stress, coping and burn-out in nursing students. *International Journal of Nursing Studies*, 47, 1299-1309.
- Health Educational Systems Incorporate [HESI]. (n.d.) *Health Educational Systems Incorporated*. Retrieved from <https://evolve.elsevier.com/education/APN-review-and-testing/>
- Holstein, B. L., Zangrilli, B. F., & Taboas, P. (2006). Standardized testing tools to support quality educational outcomes. *Quality Management in Health Care*, 15(4), 300–308. doi:10.1097/00019514-200610000-00014

- Homard, C.M. (2013). Impact of a standardized test package on exit examination scores and NCLEX-RN outcomes. *Journal of Nursing Education*, 52(3):175-8. doi: 10.3928/01484834-20130219-01.
- Kozulin, A., Gindis, B., Ageyev, V., & Miller, S. (2003). *Vygotsky's educational theory and practice in cultural context*. Cambridge, Cambridge University Press.
- Lauer, M., & Yoho, M.J. (2013). HESI exams: Consequences and remediation. *Journal of Professional Nursing*, 29; 2S, S22-S27. doi:10.1016/j.profnurs.2013.01.001
- Lavrakas, P. J. (2008). Respondent fatigue. *Encyclopedia of survey research methods* (Vols. 1-0). Thousand Oaks, CA: SAGE Publications, Inc. doi:10.4135/9781412963947
- Langford, R., & Young, A. (2013). Predicting NCLEX-RN success with the HESI exit exam: Eighth validity study. *Journal of Professional Nursing*, 29, 2S, S5-S9. doi:10.1016/j.profnurs.2012.06.007
- Lewis, S.L., & Shaw, C.A. (2007). Stress and stress management. In S. Lewis, M. Heitkemper, S. Dirksen, P. O'Brien, & L. Bucher (Eds.), *Medical surgical: Assessment and management of clinical problems* (7th edition). St. Louis, MO, Mosby.
- Martinez-Anderson, D. (2021). HESI APRN standardized testing results guided by third voice. *The Internet Journal of Advanced Nursing Practice*, Vol. 18(1). doi:10.5580/IJANP.54937
- Master's Essentials. (2015). Retrieved from <http://www.aacn.nche.edu/education-resources/essential-series>
- Mee, C.L., & Hallenbeck, V.J. (2014). Selecting standardized tests in nursing education. *Journal of Professional Nursing*, Vol. 21(6). doi:10.1016/j.profnurs.2012.06.006

- National Organization of Nurse Practitioner Faculties [NONPF]. (2011). *National Organization of Nurse Practitioner Faculties*. Retrieved from <http://www.nonpf.org/?page=1>
- Nibert, A., & Morrison, S. (2013). HESI testing - A history of evidence-based research. *Journal of Professional Nursing*, 29(2S), S2-S4. doi.org/10.1016/j.profnurs.2012.06.004
- Office of Technology Assessment. (1992). *Testing in American schools: Asking the right questions*. U.S. Congress, OTA-SET-519. Washington, DC: U.S. Government Printing Office.
- Paul, R. W., & Binker, A. J. (1990). *Critical thinking: What every person needs to survive in a rapidly changing world*. Center for Critical Thinking and Moral Critique. Retrieved from <https://eric.ed.gov/?id=ED338557>
- Polit, D.F., & Beck, C.T. (2017). *Nursing research: Generating and assessing evidence for nursing practice* (10th ed.). Wolters Kluwer Health. Philadelphia.
- Portney, L., & Watkins, M. P. (2009). *Foundations of clinical research: Applications to practice* (3rd ed.). Upper Saddle River, New Jersey, Pearson Prentice Hall.
- Sackett, D.L., Rosenberg, W.M., Gray, J.A., Haynes, R.B., & Richardson, W.S. (1996). Evidence based medicine: what it is and what it isn't. *British Medical Journal*, 312:71–72.
- Sales, A., Smith, J., Curran, G., & Kochevar, L. (2013). Models, strategies, and tools: Theory and implementing evidence-based findings into health care practice. *Journal of General Internal Medicine*, 21, S43-49. doi:10.1111/J.1525-1497.2006.00362.x

- Santo, L., Frander, E., & Hawkins, A. (2013, Mar-Apr). The use of standardized exit examinations in baccalaureate nursing education. *Nurse Educator*, 38(2):81-84. doi:10.1097/NNE.0b013e3182829c66.
- Shultz, M. E. (2011). Factors related to stress in nursing students [Honors Thesis]. *HIM 1990-2015, 1183*. University of Central Florida, STARS. Retrieved from <https://stars.library.ucf.edu/honorstheses1990-2015/1183>
- Sosa, M. E., & Sethares, K. A. (2015). An integrative review of the use and outcomes of HESI testing in baccalaureate nursing programs. *Nursing Education Perspectives*, 36(4), 237–243. <https://doi.org/10.5480/14-1515>
- Standardized test. (2015). In *The Glossary of Education Reform*. Retrieved from <https://www.edglossary.org/standardized-test/>
- Stecker, T. (2004). Well-being in an academic environment. *Medical Education*, 38, 465- 478.
- Stonecypher, K., Young, A., Langford, R., Symes, L., & Willson, P. (2015). Faculty experiences developing and implementing policies for exit exam testing. *Nurse Educator*, 40(4), 189-193. doi:10.1097/NNE.0000000000000152
- Sullivan, D. (2014, Mar-Apr). A concept analysis of “High stakes testing”. *Nurse Educator*, Mar-Apr, 39(2), 72-6. doi:10.1097/NNE.0000000000000021
- Teaching. (2018). In *The Free Dictionary by Farlex*. Retrieved from <https://www.thefreedictionary.com/teaching>

- Thompson, I. (2013). The Mediation of Learning in the Zone of Proximal Development through a Co-constructed Writing Activity. *Research in the Teaching of English*, 47(3), 247-276. Retrieved from <http://www.jstor.org/stable/24397856>
- Trigwell, K., Prosser, M., & Waterhouse, F. (1999). Relations between teachers' approaches to teaching and students approaches to learning. *Higher Education*, 37:73-83.
- Standardized test. (2016). Education Law & Legal Definition. US Legal, Incorporation [US Legal, Inc]. Retrieved from <https://definitions.uslegal.com/s/standardized-test-education/>
- Vygotsky, L.S. (1978). Interaction between learning and development. (M.Lopez-Morillas, Trans.). In Cole, M., V. & Vygotsky, L.S. (1986). *Thought and language*. (A. Kozulin, Trans.) Cambridge, MA: MIT Press. (Original work published 1934).
- Weinstein, C.E., Palmer, D.R., & Acee, T.W. (2016). User's Manual: Learning and study strategies inventory (3rd ed.). H&H Publishing Company. Retrieved from www.hhpublishing.com
- William, D. (2010). Standardized testing and school accountability. *Educational Psychologist*, 45(2); 107-12. doi: 10.080/00461521003703060
- Willson, P. (2011). Electronic standardized testing for advanced practice registered nursing (APRN) programs. In *Sigma Theta Tau 2011 Conference- STI*. Retrieved from http://www.stti.iupui.edu/pp07/congress11/willson_pamela.pdf
- Willson, P., & Goodman, J. (2015). Standardized testing to predict APN credentialing success: What is the science? *The Internet Journal of Advanced Nursing Practice*, 14(1), 1-6. doi:10.5580/IJANP.32179

- Willson, P., Martinez-Anderson, D., & Throckmorton, T. (2018). Use of standardized testing in advanced practice registered nurse (APRN) education. *The Internet Journal of Advanced Nursing Practice*, 17(1), 1-7, doi: 10.5580/IJANP.53542
- Young, A., Rose, G., & Willson, P. (2013). Online case studies: HESI exit exam scores and NCLEX-RN outcomes. *Journal of Professional Nursing*, 29(2S), S17-S21.
<http://dx.doi.org/10.1016/j.profnurs.2012.06.010>
- Young, A. & Willson, P. (2010). Predicting NCLEX-PN success with the HESI exit exam. *Journal of Practical Nursing*, 60(4):10-12. Retrieved from <https://search-ebSCOhost-om.su.idm.oclc.org/login.aspx?direct=true&db=rzh&AN=104880281&site=eds-live>.
- Zhou, Y., Graham, L., & West, C. (2016). The relationship between study strategies and academic performance. *International Journal of Medical Education*, 7, 324 - 332.
- Zweighthaft, E. (2013). Impact of HESI specialty exams: The ninth HESI exit exam validity study. *Journal of Professional Nursing*, 29(2S), S10-S16.
[doi.org/10.1016/j.profnurs.2012.06.011](http://dx.doi.org/10.1016/j.profnurs.2012.06.011)

Chapter Five

Summary and Conclusion

In response to the shortage of healthcare providers and rising health care costs, nursing educational programs have answered the call and addressed the need to produce safe, competent advanced practice nurses to fill the gap. Because of the COVID-19 pandemic, expansion of the nurse practitioner role and relaxed requirements allowed nurse practitioners to meet the demands of a burdened healthcare system (Boyle, 2020). Most states in the U.S. require successful completion of a graduate nursing program and national certification to practice as an APRN. Graduate level nursing education primarily uses standardized tests to provide evidence of pedagogical rigor for faculty teaching, measure advanced clinical skills, demonstrate professional practice competencies, and reveal readiness for the national certification exam (Willson & Goodman, 2015; Zweighaft, 2013).

Testing is an objective and standardized approach for measuring learned behavior, grounded on a sample of a specific behavior in a variety of settings. A standardized test employs uniformed and standard questions from a consistent bank of questions administered in a uniformed way using standard and consistent procedures for scoring in a way to ensure results are comparable of the relative performance of individual students or groups of students (Standardized Test, 2015). Over 25 years of literature on the evidence of standardized testing in (undergraduate) nursing education exists specifically utilizing proprietary standardized testing products. In nursing education, educational outcomes are measured in a variety of methods but primarily using standardized testing to determine preparation into professional nursing practice. Three proprietary, commercially prepared, standardized test products used in graduate nursing education include Elsevier's Health Education Systems, Incorporated (HESI) also known as the

HESI™, the Advanced Practice Educational Associates (APEA), and Fitzgerald Health Education Associates (FHEA). These computerized tests measure nursing core competencies and clinical knowledge in preparation for APN national certification (Nibert & Morrison, 2013).

The Reconceptualization of the Theory of Vygotsky's Zone of Proximal Development (RVZPD) by Eun et al. (2008) introduced a Third Voice, which strongly conceptualizes standardized testing as the invisible and inaudible participant in the educational process. Literature has shown predictive value with the use of standardized testing related to advanced practice certification success, and now, this strong theoretical fit offers a credible conceptualization of standardized testing as the mechanism used in the deliberation of the learning process between educator and student. The concept of Third Voice as presented within the Zone of Proximal Development (ZPD) can also be generalized across disciplines.

It is important to note the evidence of validity and reliability of standardized testing to predict undergraduate NCLEX-RN success, but there is limited literature to support validity and reliability to predict graduate APN certification success. There is also lack of test policy standardization in the use of standardized testing within nursing programs related to timing administration, weight of the test toward final course grade, remediation, and progression criteria. Also, to be considered are confounding factors affecting the use of standardized testing, i.e. English as a second language students, cultural considerations, technology, security, and confidentiality of testing and results. While insightful literature provides support of the use of standardized testing in nursing education, there is a substantial need to further study this issue within the advanced practice nursing educational realm.

Nursing Implications

The main purpose of nursing education is to impart meaningful nursing knowledge and clinical skill competencies on students for safe, competent, and professional practice. One of the means to confirm whether this purpose has been achieved or not, is through standardized testing results. It is fundamental for faculty to be vigilant about student developmental achievement and attend to adjusting courses and curricula, teaching strategies, and evaluation processes that help to guide promotion of student success. The principal stakeholder in this educational process is the student. Exploring students' learning styles to enhance knowledge acquisition is worthy of continued research. This study highlights the potential influence that standardized testing can have on faculty, students, and advanced practice nursing educational programs in pursuit of the common goal of students' APRN national certification success.

Next Steps

The contributions of standardized testing results to the learning process in advanced practice education that leads to certification success is not fully understood. An attempt to provide substantive data that captured the interaction standardized test results have on the educator and the student produced limited results. However, this study provides a template for further adjustments and strategic approaches in exploring standardized testing's influence on the educator, student, and nursing program. The following are just two examples of study designs under consideration by the PI: 1) develop an educational collaboration between APN testing product companies and APN nursing schools to explore using predictor standardized test products and specific teaching-learning strategies that lead to certification success, or 2) request Deans and Directors at the national level to identify and recruit APN faculty who lead certification success efforts to participate in a standardized testing use protocol pilot study to

determine best practices for certification success. These potential approaches could lead to solid data collection. Graduate nursing programs, educators, and students can benefit from improved understanding of the most strategic use of standardized testing results in their mutual pursuits of program effectiveness, teaching credibility, and student certification exam success.

References

- American Association of Nurse Practitioners Certification Board [AANPCB]. (n.d.). *American Association of Nurse Practitioners Certification Board*. Retrieved from <http://www.AANPcert.org/certs/index>
- Advanced Practice Educational Associates [APEA]. (n.d.). *Advanced Practice Educational Associates*. Retrieved from <http://www.apea.com/home>
- Boyle, P. (2020). U.S. physician shortage growing. *Association of American Medical Colleges*. Retrieved from <https://www.aamc.org/news-insights/us-physician-shortage-growing>
- Elflein, J. (2020). National per capita health expenditure in the United States from 1960-2020. *Statistica*. Retrieved from <https://www.statista.com/statistics/184955/us-national-health-expenditures-per-capita-since-1960/>
- Eun, B., Knotek, S. E., & Heining-Boynton, A. L. (2008). Reconceptualizing the zone of proximal development: The importance of the third voice. *Educational Psychology Review*, 20, 133-147. doi:10.1007/s10648-007-9064-1
- HESI (n.d.) *Health Educational Systems Incorporated*. Elsevier. Retrieved from <https://evolve.elsevier.com/education/APN-review-and-testing/>
- Martinez-Anderson, D. (2021). HESI APRN standardized testing results guided by Third Voice. *The Internet Journal of Advanced Nursing Practice*, 18(1). doi:10.5580/IJANP.54937
- Muhall, P. (2012). *Nursing research: A qualitative perspective*. Sudbury, Mass: Jones and Bartlett.

Standardized test. (2015). In *The Glossary of Education Reform*. Retrieved from <https://www.edglossary.org/standardized-test/>

Vygotsky, L.S. (1978). Interaction between learning and development. (M. Lopez-Morillas, Trans.). In Cole, M., V. Vygotsky. L.S. (1986). *Thought and language* (A. Kozulin, Trans.) Cambridge, MA: MIT Press.

Willson, P., & Goodman, J. (2015). Standardized testing to predict APN credentialing success: What is the science? *The Internet Journal of Advanced Nursing Practice*, 14(1), 1-6.
doi:10.5580/IJANP.32179

Zweighaft, E. (2013). Impact of HESI specialty exams: The ninth HESI exit exam validity study. *Journal of Professional Nursing*, 29(2S), S10-S16.
doi.org/10.1016/j.profnurs.2012.06.011

Appendix A

IRB Approval University of Texas at Tyler



INSTITUTIONAL REVIEW BOARD

uttyler.edu/research ■ Fax: 903-565-5858

08/15/2019

Dear Ms. Martinez-Anderson,

Your request to conduct the study, *Use of Standardized Test Results by Faculty and Students for Advanced Practice Nurse Certification Success* IRB #Sum2019-128 has been approved by The University of Texas at Tyler Institutional Review Board under expedited review Category 7 with waiver of signed consent, but with prospective consent and your instruments are amended to the application. This approval includes the written informed consents that are attached to this letter, and your assurance of participant knowledge of the following prior to study participation: this is a research study; participation is completely voluntary with no obligations to continue participating, and with no adverse consequences for non-participation; and assurance of confidentiality of their data.

In addition, please ensure that any research assistants are knowledgeable about research ethics and confidentiality, and any co-investigators have completed human protection training within the past three years, and have forwarded their certificates to the IRB office (G. Duke).

Please review the UT Tyler IRB Principal Investigator Responsibilities, and acknowledge your understanding of these responsibilities and the following through return of this email to the IRB Chair within one week after receipt of this approval letter:

- This approval is for one year, as of the date of the approval letter
- **The Progress Report form must be completed for projects extending past one year.** Your protocol will automatically expire on the one year anniversary of this letter if a Progress Report is not submitted, per HHS Regulations **prior** to that date (45 CFR 46.108(b) and 109(e): <http://www.hhs.gov/ohrp/policy/contrev0107.html>)
- Prompt reporting to the UT Tyler IRB of any proposed changes to this research activity
- **Prompt reporting to the UT Tyler IRB and academic department administration will be done of any unanticipated problems involving risks to subjects or others**
- Suspension or termination of approval may be done if there is evidence of any serious or continuing noncompliance with Federal Regulations or any aberrations in original proposal.
- Any change in proposal procedures must be promptly reported to the IRB prior to implementing any changes except when necessary to eliminate apparent immediate hazards to the subject.
- If you are using student emails to distribute surveys, always BCC them to facilitate confidentiality.
- Ensure that any online consent form, whether anonymous or not, always has the IRB# and approval date.
- Approval with signed written consent

Best of luck in your research, and do not hesitate to contact me if you need any further assistance. Sincerely,

Gloria Duke, PhD, RN

Gloria Duke, PhD, RN
Chair, UT Tyler IRB

Appendix B

THE UNIVERSITY OF TEXAS AT TYLER
INSTITUTIONAL REVIEW BOARD

IRB MODIFICATION REQUEST

IRB: SUM2019-128-MOD

Approved by: *David Pearson, Ph.D.*

Date: 2/10/2020

Date: 02/06/20

Principal Investigator: *Dinorah Martinez-Anderson*

Department: *Nursing*

IRB #: *SUM2019-128*

Project Title: *Use of Standardized Test Results by Faculty and Students for Advanced Practice Nurse Certification Success*

Original Approval Date: *August 22, 2019*

Please complete all sections as appropriate and submit to the UT Tyler IRB Chair.

IDENTIFICATION OF CHANGE(S)

A. **GENERAL**

- Change in Title of Protocol
- Resubmission to Grant/Contract Agency
- Change in Extramural Sponsor
- Change in Cooperating Institution
- Change in Status of Protocol (e.g., from "active" to "hold")

Explain any related changes: *Use of Standardized Test Results by Faculty and Students for Advanced Practice Nurse Certification Success: A Case Study*

Explain rationale for changes: *Change of title reflects the new study design*

B. **DESIGN**

- Change in Study Design

Explain any related changes: *Descriptive Correlational design changed to Case Study design*

Explain rationale for changes: *Constraints on participant access for data collection precluded continuing a descriptive correlational study.*

C. PERSONNEL

Change in investigators, faculty or staff:

Name: *Barbara S. McAlister*

Credentials: PhD, CNM, RN,

Contact Information: *bmcAlister@uttyler.edu/214-240-3035*

Name: *Barbara Haas*

Credentials: *PhD, RN*

Contact Information: *bhaas@uttyler.edu*

Change in Consultant/Collaborator

Explain any related changes: *Dr. McAlister replacing Dr. Zhaomin He as Chair and Dr. Haas is joining as committee member.*

Explain rationale for changes: *Dr. He resigned and student requested Dr. Haas as committee member for her related expertise.*

D. RISK

Change In Risk/Benefit Ratio (e.g., emergence of new side effects)

Explain any related changes: [Click here to enter text.](#)

Explain rationale for changes:

E. COST

Change in Subject Expense

Change in Subject Reimbursement

Explain any related changes: [Click here to enter text.](#)

Explain rationale for changes: [Click here to enter text.](#)

F. PROCEDURES INVOLVING SUBJECTS

Change in collection of blood or other body fluids

Change in subject evaluation (e.g., number of visits, etc.)

- Change in administration or dosage of drug
- Change in drug formulation
- Change/Deletion of any test
- Change/deletion of device

Explain any related changes: *The PI will follow up with selected participants by email requesting their willingness to discuss their preparation for the advanced practice nurse national certification exam.*

Explain rationale for changes: *The PI desires a more in-depth understanding of the process of exam preparation.*

G. STUDY POPULATION

- Change in sample size
- Change in eligibility criteria
- Change in exclusion criteria
- Alteration of study groups
- Other: *Click here to enter text.*

Explain any related changes: *The new sample size will include 4 participants: 2 students and 2 faculty members.*

Explain rationale for changes: *Each of the 4 selected participants completed all original study components.*

H. SUBJECT RECRUITMENT

- Change in recruitment procedures
- Change in ads, flyers, etc.

Explain any related changes: *Click here to enter text.*

Explain rationale for changes: *Click here to enter text.*

I. OTHER

- Any other significant changes

Explain any related changes: *Click here to enter text.*

Explain rationale for changes: *Click here to enter text.*

EXPLANATION OF CONSEQUENCES OF CHANGES

J. Modifications identified above require changes in:

Informed consent form (describe by highlighting or tracking of originally approved form)
(Student and Faculty amended consents attached)

K. Will these changes result in a change of the risk/benefit ratio?

Yes No

If Yes, please explain: [Click here to enter text.](#)

ELECTRONIC ENCLOSURES AS NEEDED FOR CHANGES INDICATED:

- Revised Informed Consent Form(s) (2)
- Letter from Sponsor
- Letter from Investigators indicating their removal or addition to study-*Dr. Haas sent email this afternoon to Dr. Pearson reflecting all faculty changes.*
- Revised Protocol (Date of Revised Protocol: [Click here to enter text.](#))
- Revised IRB Full Board Review Application Revised Investigator's Brochure
- Other: [Click here to enter text.](#)

SIGNATURE OF PRINCIPAL INVESTIGATOR

[Dinorah Martinez-Anderson](#)
Principal Investigator Signature
(Electronic submission of this form by PI indicates signature)

02/06/20
Date

ORS Office ONLY

Date Received: 2-10-20 ORS Staff: Curtis

Modification Reviewer: _____
DocuSigned by:
David Pearson
D0228914C651460...

Approved: X Not Approved: _____

Appendix C

IRB Approval South University



Date: September 11, 2019

Study Title: (IRB 9.10.19.DM) Use of Standardized Test Results by Faculty and Students for Advanced Practice Nurse Certification Success

IRB Review Type: Full Review

IRB Number: IRB00009705

Dear Ms. Dinorah Martinez-Anderson,

On behalf of South University's Institutional Review Board (IRB), I am writing to inform you that your study application has been approved.

All research must be conducted in accordance with this approved submission, meaning that you will follow the research plan you have outlined here, use approved materials, and follow South University policies.

Take special note of the following important aspects of your approval:

- The approval period for your study will expire 1 year from the date of this letter. If your study needs additional time, a Continuance Request form must be submitted by the Principle Investigator prior to the expiration of the current approval period. The Continuance Request form may be obtained from the South University IRB webpage.
- Any changes made to your study require approval from the IRB committee before they can be implemented. If changes are needed please fill out an Amendment Request form and submit to the IRB for review. The Amendment Request form may be obtained from the South University IRB webpage.
- If there are any unanticipated problems or event during your data collection, you must notify the Institutional Review Board Director. Reporting should occur as soon as possible after the Principle Investigator becomes aware of the unanticipated problems or event.
- Upon completion of the study, the Principle Investigator is responsible for submitting a Research Study Final Report (RSFR) form to the IRB. Completion of this form signifies the study has been completed and no further action will be taken on the

approved protocol. The RSFR form may be obtained from the South University IRB webpage.

- Please contact the Institutional Review Board Director at IRB@southuniversity.edu with your questions.

Best wishes as you conduct your research.

Regards,

Sarah A. Wills Digitally
signed by
Sarah A.
Wills Date:
2019.09.11
14:51:37 -
04'00'

Sarah A. Wills, Ph.D., MSNEd., RNC-OB, CNE
Institutional Review Board Director of Compliance and Training

9 Science Court
Columbia, S.C. 29203
Phone 803.935.4339
sawills@southuniversity.edu

Appendix D

Demographic Data Form (Student)

Name: _____ City of birth: _____ Birth month: _____

1. Your gender: ___ Male ___ Female

2. Your race/ethnic group:

___ White non-Hispanic

___ Black/African American non-Hispanic

___ Hispanic

___ Asian/Pacific Islander

___ Native American

___ Other, please specify _____.

3. Your age: _____

4. Your highest completed educational degree:

___ College degree

___ Master's degree

___ Doctoral degree

5. You primarily take NSG6440: ___ face-to-face (on-ground) OR ___ online

6. Are you working? ___ NO ___ YES

If yes, your occupation is: _____ and you work ___ hours per week.

7. Do you have financial difficulty? ___ NO ___ YES. If yes, how difficult it

1 2 3 4 5 6 7 8 9 10

A little difficult

Extreme difficult

8. Your current health status is

___ poor

___ fair

___ good

____ very good
____ excellent

9. In the past week, your average hours of sleep per day during weekdays was _____ and per day during weekends was _____.

10. Your marital status:

____ Single
____ Married
____ Divorced
____ Separate
____ Living
____ With a partner
____ Widowed

11. Do you have any children? ____NO ____YES

If yes, how many and their age(s)? _____

12. What role do you think the APEA Predictor tests and related products (e.g., The 3P exam, Clinical Guidelines Resource book, MyQBank, and the online review course modules) play in your *learning and study* for your certification exam success?

13. How do you perceive your University Predictor test score? Does that influence your learning or performance for the certification exam later? If so, how?

Thank you for taking part in this study!

Appendix E

Demographic Data Form (Faculty)

Name: _____ City of birth: _____ Birth month: _____

1. Your gender: ___ Male ___ Female

2. Your race/ethnic group:

___ White non-Hispanic

___ Black/African American non-Hispanic

___ Hispanic

___ Asian/Pacific Islander

___ Native American

___ Other, please specify _____

3. Your age: _____

4. Your highest completed educational degree:

___ College degree

___ Master's degree

___ Doctoral degree

5. Years of working as APN faculty: _____ years

6.

7. Times of teaching NSG6440: _____ times

8. You primarily teach NSG6440: _____ face-to-face (on-ground) or _____ online

9. Do you have financial difficulty? ___ NO ___ YES, if yes, how difficult it is?

 1 2 3 4 5 6 7 8 9 10

A little difficult

Extreme difficult

10. Your current health status is

___ poor

___ fair

___ good

___ very good

___ excellent

11. In the past week, your average hours of sleep per day during weekdays was _____ and per day during weekends was _____.

12. Your marital status:

- Single
- Married
- Divorced
- Separated
- Living
- With a partner
- Widowed

13. Do you have any children? ___NO __YES

If yes, how many and their age(s)? _____

14. What role do you think the APEA Predictor tests and related products (e.g., The 3P exam, Clinical Guidelines Resource book, MyQBank, and the online review course modules) play in your *teaching practices* for student certification exam success?

15. How do you perceive the APEA University Predictor test results? Do they have an influence on your teaching? If so, how?

Thank you for taking part in this study!

3. In my interactions with students in this subject I try to develop a conversation with them about the topics we are studying. _____
4. I feel it is important to present a lot of facts to students so that they know what they have to learn for this subject. _____
5. I feel that the assessment in this subject should be an opportunity for students to reveal their changed conceptual understanding of the subject. _____
6. I set aside some teaching time so that the students can discuss, among themselves, the difficulties that they encounter studying this subject. _____
7. In this subject I concentrate on covering the information that might be available from a good textbook. _____
8. I encourage students to restructure their existing knowledge in terms of the new way of thinking about the subject that they will develop. _____
9. In teaching sessions for this subject, I use difficult or undefined examples to provoke debate. _____
10. I structure this subject to help students to pass the formal assessment items. _____
11. I think an important reason for running teaching sessions in this subject is to give students a good set of notes. _____
12. In this subject, I only provide the students with the information they will need to pass the formal assessments. _____
13. I feel that I should know the answers to any questions that students may put to me during this subject. _____
14. I make available opportunities for students in this subject to discuss their changing understanding of the subject. _____

15. I feel that it is better for students in this subject to generate their own notes rather than always copy mine. _____

16. I feel a lot of teaching time in this subject should be used to question students' ideas. _____

Thank you for taking part in this study!

Appendix G

The Learning and Study Skills Inventory (LASSI)

Note: This is an example of the LASSI used for students at Colorado State University. Once the inventory is ordered and set up electronically with vendor, it will be available for administrator/principal researcher to use for this research study.

The Learning and Study Strategies Inventory is designed to gather information about learning, study practices and attitudes. Your scores should help you understand more about yourself and how you compare to others who have taken this assessment. With these results you can also take steps to make meaningful improvements to your learning and study skills.

You will be asked to respond to 60 statements. To help you decide which responses to select, here is an explanation of what is meant by each option:

- By **Not at all typical of me**, this would be true of you only in rare instances.
- By **Not very typical of me**, the statement would generally not be true of you.
- By **Somewhat typical of me**, the statement would be true about half the time.
- By **Fairly Typical of me**, the statement would generally be true of you.
- By **Very much typical of me**, this answer is not necessarily meant to describe you always, but it would be true almost all of the time.

A graph interprets your responses to the LASSI. The numbers on the left-hand side of the chart show percentile ranks. You can use these percentile ranks to compare your scores to other individual's scores. For example, if you scored in the 80th percentile in Attitude (ATT), you scored higher than 80 percent of other individuals answering the same questions.

75-100- If you scored above the 75th percentile on any of the ten LASSI scales, you probably do not have to give a high priority to improving your strategies in those areas.

50-75- If you scored between the 75th and the 50th percentiles on any of the ten scales, you should consider improving your strategies for those scales.

0-50- If you scored below the 50th percentile on any of the ten scales, you need to improve your skills to avoid serious problems succeeding in college.

Appendix H

Perceived Stress Scale (PSS)

The questions in this scale ask you about your feelings and thoughts during the **last month**. In each case, you will be asked to indicate by circling how often you felt or thought a certain way.

Name _____ Date _____

0 = Never 1 = Almost Never 2 = Sometimes 3 = Fairly Often 4 = Very Often

1. In the last month, how often have you been upset because of something that happened unexpectedly? 0 1 2 3 4
2. In the last month, how often have you felt that you were unable to control the important things in your life? 0 1 2 3 4
3. In the last month, how often have you felt nervous and “stressed”? 0 1 2 3 4
4. In the last month, how often have you felt confident about your ability to handle your personal problems? 0 1 2 3 4
5. In the last month, how often have you felt that things were going your way? 0 1 2 3 4
6. In the last month, how often have you found that you could not cope with all the things that you had to do? 0 1 2 3 4
7. In the last month, how often have you been able to control irritations in your life? 0 1 2 3 4
8. In the last month, how often have you felt that you were on top of things? 0 1 2 3 4
9. In the last month, how often have you been angered because of things that were outside of your control? 0 1 2 3 4
10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them? 0 1 2 3 4

Thank you for taking part in this study!

Appendix I

Qualitative Study Questionnaire- Student

1. Describe your experiences with standardized tests throughout your nursing education.
2. How does taking standardized tests make you feel?
3. What was your reaction to the results of your APEA Pre and University Predictor tests in your recent advanced nursing education program?
4. Can you describe your most commonly used study strategies to prepare for standardized tests?
5. After receiving your APEA Pre-Predictor test results, what study strategy(s) did you change to improve your next test attempt (University Predictor)?
6. Do you feel the test results accurately reflected your knowledge? Please explain.

Appendix J

Qualitative Study Questionnaire- Faculty

1. Describe your experiences with standardized tests throughout your nursing education.
2. How does administering standardized tests make you feel?
3. As an educator, what was your reaction to the students' APEA Pre and University Predictor test results during your most recent administration of the test?
4. Can you describe your most commonly used teaching strategies to prepare students for a standardized test?
5. After receiving the students' Pre-Predictor test results, what teaching strategies did you change to improve your students' next test attempt (University Predictor)?
6. Do you feel standardized tests results accurately reflect your teaching and students' advanced nursing practice knowledge? Please explain.

Biographical Sketch

NAME: Martinez-Anderson, Dinorah

POSITION TITLE: Doctoral Candidate, University of Texas at Tyler, College of Nursing and Health Sciences, Tyler, Texas 75799

EDUCATIONAL INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
Laredo Jr. College, Laredo, Texas	AA	05/1991	General Studies- Pre-Pharmacy
Central Texas College, Killeen, Texas	AAS	05/1992	Nursing-Associates Degree
Texas A&M University, Corpus Christi, Texas	MSN	05/2011	Nursing-Master of Science- Family Nurse Practitioner
Texas A&M University, Corpus Christi, Texas	Certificate	06/2015	Post Graduate Certificate- Nurse Educator
University of Texas at Tyler, Tyler, Texas	PhD	07/2021	Nursing

A. Personal Statement

As a first-generation college graduate, Spanish-Mexican-American, bilingual, Masters-prepared nurse practitioner and nurse educator, my program of research includes advanced practice nursing, culturally-informed health care, spiritual health in primary care, and standardized testing. By far the most intense learning in my educational trajectory has led me to lay groundwork related to the phenomenon of the role standardized testing plays in the educational process of advanced practice nursing education. My experience with standardized testing first began when taking my boards for registered nurse licensure. I also experienced it during my graduate level education to help me predict my readiness and potential national certification exam success. When I began my work in higher education, a mentor showed me about evaluation related to standardized testing and how to critically interpret results. She went further by informing me that there was no literature on the use of standardized testing in advanced practice. The seed was planted. I soon started my doctoral program and dived into review of literature. I discovered the need for theory-based practice to be foundational in clinical nursing and so I applied it to nursing pedagogy as well. This work is an opportunity to view standardized testing through the lens of Third Voice based on

the Reconceptualization of Vygotsky’s Theory of the Zone of Proximal Development (RVZPD). My immediate research plans will include further exploration of the role standardized tests can play in advanced nursing practice education.

B. Positions and Employment

University Experience

<i>Position</i>	<i>University</i>	<i>Dates</i>
Regional Assistant Director of Clinical Education & Graduate Nursing Faculty	South University, Austin MSN-FNP Graduate Program College of Nursing & Public Health	06/2019- present
Assistant Program Director, Academic Coordinator of Clinical Education & Graduate Nursing Faculty	South University, Austin MSN-FNP Graduate Program College of Nursing & Public Health	04/2017- 06/2019
Clinical Adjunct Professor	University of Texas at Tyler	09/2016- 12/2016
Clinical Assistant Professor	Texas State University	09/2014- 09/2016
Lecturer St. David’s School of Nursing	Texas State University Round Rock, Texas	01/2014- 08/2014
Clinical Teaching Assistant College of Nursing	Texas A&M University Health Science Center Round Rock, Texas	09/2013-05/2014

Professional Nursing Experience

<i>Position</i>	<i>Entity</i>	<i>Dates</i>
Nurse Practitioner	OCHNA Health- Direct Primary Care	10/2017- 06/2019
Nurse Practitioner	South Central Texas Healthcare/VA	01/2017- 05/2017
Lead Nurse Practitioner	Texas State University – Round Rock Student Health Center	09/2013- 09/2016
Nurse Practitioner	Matrix Medical Network Scottsdale, Arizona	10/2013- 12/2013
Director of Health Services and Nurse Practitioner	Southwestern University Georgetown, Texas	07/2007-09/2013
Middle School Nurse	Forbes Middle School- GISD Georgetown, Texas	07/2004-07/2007
Staff Nurse Medical- Surgical/Maternity	St. David’s Georgetown Hospital Georgetown, Texas	05/2001-07/2004
Public Health Nurse Translator	Williamson County & Cities Health District Cedar Park, Texas	06/1993-06/1999

C. Honors

2015 Johnson & Johnson School Health Leadership Fellow
2015 Favorite Professor-Alpha Chi National Honora Society- Alfred Noelle Chapter

D. Contributions to Science

Currently I have three publications. One is about cultural competence; it discusses the impact a study abroad service learning experience had on graduate nursing students' cultural competencies. The two most recent articles focus on the use of standardized testing in advanced practice nursing education. The intent of the latter two articles was to present standardized testing from the concept of Third Voice, a silent participant in the educational process within a specified time period according to the Reconceptualization of Vygotsky's Zone of Proximal Development. Graduate nursing educators can benefit from improved understanding of effective use of standardized testing results in their students' pursuits of national certification exam success.

Willson, P.A., Martinez-Anderson, D., Lee, S., & Dawkins, V. (2017). International interprofessional learning: Evaluating advanced practice nurses' cultural competencies. *Open Tuyu*. Retrieved from <http://opentuyu.com>

Willson, P., Martinez-Anderson, D., & Throckmorton, T. (2018). Use of standardized testing in advanced practice registered nurse (APRN) education. *The Internet Journal of Advanced Nursing Practice*. 17(1). doi:[10.5580/ijanp.53542](https://doi.org/10.5580/ijanp.53542)

Martinez-Anderson, D. (2021). *HESI APRN standardized testing results guided by third voice*. *The Internet Journal of Advanced Nursing Practice*. 18(1). doi: [10.5580/IJANP.54937](https://doi.org/10.5580/IJANP.54937)