

5-1-2018

# Using Song Lyrics In Teaching An Undergraduate Statistics Course

Joseph Marc Zagerman  
*University of New England*

Follow this and additional works at: <http://dune.une.edu/theses>

 Part of the [Educational Leadership Commons](#)

© 2018 Joseph Marc Zagerman

---

## Preferred Citation

Zagerman, Joseph Marc, "Using Song Lyrics In Teaching An Undergraduate Statistics Course" (2018). *All Theses And Dissertations*. 157.  
<http://dune.une.edu/theses/157>

This Dissertation is brought to you for free and open access by the Theses and Dissertations at DUNE: DigitalUNE. It has been accepted for inclusion in All Theses And Dissertations by an authorized administrator of DUNE: DigitalUNE. For more information, please contact [bkenyon@une.edu](mailto:bkenyon@une.edu).

USING SONG LYRICS IN TEACHING AN UNDERGRADUATE  
STATISTICS COURSE

By

Joseph Marc Zagerman

B.A. (Eastern University) 1997

M.B.A. (Eastern University) 2001

A DISSERTATION

Presented to the Affiliated Faculty of  
The College of Graduate and Professional Studies at the University of New England  
Submitted in Partial Fulfillment of Requirements  
For the degree of Doctor of Education

Portland & Biddeford, Maine

April 2018

Copyright 2018 by Joseph Marc Zagerman

Joseph Marc Zagerman  
April 2018  
Educational Leadership

USING SONG LYRICS IN TEACHING AN UNDERGRADUATE  
STATISTICS COURSE

ABSTRACT

Contemporary pedagogical theory examines the shift from passive to active instructional techniques in order to enhance student engagement and learning. The purpose of this qualitative phenomenological study was to develop a deeper understanding of the lived educational experiences of Millennials enrolled in an introductory statistics course when song lyrics were used as an instructional technique. Gardner's (2011) theory of Multiple Intelligence served as the theoretical framework of this study and provided implications for higher education. Seven traditional undergraduate students participated in this study in which song lyrics were used to inform and reinforce the six steps of hypothesis testing. Data was gathered through the use of 5-Minute Response forms and one-on-one interviews. Five themes surfaced from the data: Music/song lyrics serves as a valuable memory aid, music/song lyrics enhances student engagement, music/song lyrics serves as an effective teaching strategy, song selection and duration impact student disengagement, and the use of music/song lyrics enhances student focus. Participants described their experience in terms of "aha" and "wow" moments. Findings of the study were consistent with existing literature in terms of enhanced student engagement and learning. Implications of the study revealed that four intelligences, not just the musical intelligence dimension, benefitted from the use of song lyrics as an instructional technique.

Moreover, the use of Multiple Intelligence Theory is transformative in nature because it is inclusive. Further research recommends a more diverse sampling population and quantitative methodology.

University of New England

Doctor of Education  
Educational Leadership

This dissertation was presented  
by

Joseph Marc Zagerman

It was presented on April 9, 2018 and approved by:

Joanne Cooper, Ph.D.  
Lead Advisor  
University of New England

Heather Wilmot, Ed.D.  
Secondary Advisor  
University of New England

Douglas Clark, Ed.D.  
Affiliate Committee Member  
Eastern University

## ACKNOWLEDGMENTS

In keeping with the central theme of using song lyrics in the classroom, my acknowledgements are congruent with the Beatles' song, *I Get By with a Little Help from My Friends*.

First, to my best friend and wife, Gina. Thank you for putting up with my emotional liability during this educational journey. Date nights can now resume and be a part of our regular routine.

To my dissertation committee. Thank you! During my tenure at Franklin-Covey, I learned that wisdom is knowledge rightly applied. To my primary advisor, Dr. Joanne Cooper, thank you for sharing your wisdom with me. To my secondary advisor, Dr. Heather Wilmot, thank you for making me feel “safe” throughout the dissertation process. To my chosen committee member, Dr. Douglas Clark, thank you for your leadership, mentorship, and friendship. Each of you is a transformative leader.

To Dr. Michelle Collay, thank you for your leadership throughout the dissertation process.

To each of my UNE professors, thank you for making my learning process a transformative one. Individually and collectively, you are all wonderful educators.

To my Eastern University colleagues and friends, Rita Bozillo, Esq., Mark Lane, MBA, and Craig Boyd, MBA, thank you for your friendship and kind words throughout my doctoral program. I appreciated the many times each of you offered words of encouragement when I needed it most.

To my three dearly departed long-haired dachshunds—Maddie, Katie, and Walter—who crossed over The Rainbow Bridge during my first year in the doctoral program. Thank you for being such wonderful and loving pets. I think about you often. I will never forget you.

To my three current long-haired dachshunds—Gilligan, Gidget, and Bahama—and to my 19-year-old Siamese cat, Mulan, thank you for your unconditional love and friendship.

Finally, to my dear friend, Dr. Lori Furbush in Georgia. I am so blessed to call you my friend. You are such a wonderful person. Thank you for your encouragement. You are like having a fourth sister.

## TABLE OF CONTENTS

CHAPTER 1: INTRODUCTION .....	1
Statement of Problem .....	2
Purpose of the Study .....	2
Research Question .....	3
Conceptual Framework .....	3
Definition of Terms.....	4
Assumptions, Limitations, and Scope.....	4
Rationale and Significance .....	5
Conclusion.....	5
CHAPTER 2: LITERATURE REVIEW .....	6
Purpose of the Study .....	6
Theoretical Framework .....	6
Multiple Intelligence Theory .....	7
Conceptual Framework .....	9
Student Engagement Theory .....	10
Passive and Active Instructional Methods.....	11
Learning Preferences .....	12
Cognitive Impact of Music .....	13
Implementation of Music in College Classrooms .....	14
Summary.....	17

CHAPTER 3: METHODOLOGY.....	19
Rationale for a Qualitative Approach.....	19
Rationale for Phenomenology.....	19
Setting.....	21
Self as Researcher.....	22
Participants/Sample.....	22
Overview of the Phenomena.....	23
Data.....	23
Analysis.....	27
Ethical Issues, Reliability, and Validity.....	27
Participant Rights.....	27
Potential Limitations.....	28
Summary.....	29
CHAPTER 4: RESULTS.....	30
Participants/Sample Description.....	31
Analysis Method.....	32
Coding.....	32
Organization.....	33
Interpretation.....	33
Presentation of Qualitative Results.....	33
Theme #1: Song Lyrics as a Memory Aid.....	34
Theme #2: Enhanced Student Engagement.....	35

Theme #3: Effective Teaching Strategy .....	37
Theme #4: Song Selection May Impact Student Disengagement .....	38
Theme #5: Enhanced Focus .....	38
Essence of the Experience .....	39
Summary .....	40
CHAPTER 5: CONCLUSION .....	42
Interpretation of Findings .....	43
Limitations .....	45
Implications and Findings Related to the Literature .....	45
Recommendations for Action .....	49
Recommendations for Further Study .....	49
Conclusion .....	50
REFERENCES .....	51
APPENDIX A: THE FIVE-MINUTE RESPONSE PAPER .....	58
APPENDIX B: INTERVIEW PROTOCOL GUIDE .....	59
APPENDIX C: INSTITUTIONAL REVIEW BOARD APPROVAL .....	61
APPENDIX D: STUDY INVITATION .....	62
APPENDIX E: CONSENT FORM .....	64

LIST OF TABLES

TABLE 4.1. PARTICIPANT DESCRIPTIONS .....31

TABLE 4.2. THEMES AND SUBTHEMES .....33

## CHAPTER ONE

### INTRODUCTION

From an early age, the use of music and song lyrics often plays a vital role in children learning their ABCs and continues through adult years, where it can enhance college course content (Hall, 2010). Price (2010) indicates that Millennials prefer the use of technology, group activities, and interactive instructional practices. Younkin (2009), states, “Millennials have been raised in a technological era with instant access to information such as graphics, video, and music” (p. 72). Apple has made access to music readily available by way of iTunes, iPhones, iPods, and iPads. Warren (2012) comments that the iPad is the new blackboard for millennials. Gardner’s (2011) Multiple Intelligence Theory served as a breakthrough for educators seeking an alternative instructional technique that is more active in nature. According to Gardner (2011), there are eight areas of intelligence: linguistic, logical/mathematical, musical, visual, kinesthetic, interpersonal, intrapersonal, and naturalistic. Barrington (2004) contends that most universities focus only on the verbal/linguistic and logical/mathematical areas of intelligence. Campbell, Campbell, & Dickinson (1996) indicate that by focusing on only these two areas of intelligence, students have unrealized strengths. Unfortunately, faculty in higher education are often ill prepared to teach (Jawaharial, 2017). Rather, colleges place limited value on teaching skills (Why College Teaching is Difficult, n.d.). In contrast, public school teachers (K-12) must earn a bachelor’s degree, gain experience as a student teacher under the supervision of an experienced teacher, and then earn their teaching certification. Hanc (2016) contends that most college faculty are not educated to be teachers. College professors seem to be exempt from any type of teacher training. Jawaharial (2017) asserts that most professors want to help students learn better by integrating “active” instructional methods, but they don’t know how to do so. As a result,

professors often rely on lecture and the reading of PowerPoint slides. Faust & Paulson (1998) indicate the resistance among faculty in embracing active and cooperative learning is due to the belief that these instructional techniques are perceived as mandatory alternatives, rather than enhancements of lectures. Furthermore, many college professors are afraid of embracing active teaching strategies due to fear of student resistance (Prince & Weimer, 2017). Ferroni (2012) contends that “educators have been using music to effectively educate for as long as there has been music (p. 2).” However, the method and context in using music in the classroom to engage learners has changed.

### **Statement of the Problem**

According to Blumberg (2008), traditional higher education focuses primarily on passive instructional methods such as lecture, which frequently result in one-way instruction, disengaged students, and a lack of deep student learning. In 2015, 34.1% of full-time, first-year college students indicated feeling bored in class. For the period of 2000 through 2015, the mean of full-time, first-year college students feeling bored in class was 39.21% (Eagan, Stolzenberg, Ramirez, Aragon, Suchard, & Rios-Aguilar, 2016). Unfortunately, boredom impacts performance in achievement settings. Pekrun, Goetz, Daniels, Stupinsky, & Perry (2010) indicate that boredom is an unpleasant emotion, composed of lack of stimulation and physiological arousal, which can impact student learning. The researchers recommend that faculty members should seek to reduce student boredom and its negative effects. Hall (2010) recommends that educators embrace teaching methods that their students are comfortable with.

### **Purpose of the Study**

The purpose of this qualitative phenomenological study was to examine the lived educational experiences of undergraduate students enrolled in an introductory statistics course at

a private university in Pennsylvania when song lyrics were used as an alternative instructional technique in the classroom. The research focused on one generation of learners known as Millennials. Qualitative research to date indicates that using song lyrics as an alternative instructional technique in higher education courses—such as marketing, general business, political science, economics, social justice, geography, sociology, and psychology—enhances student performance, classroom engagement, and retention of concepts (Dai, 2013; Krasnozhon, 2013; Rozinski, 2015; Soper, 2010; Weinrauch, 2005).

### **Research Question**

The specific question that guided this research was: What are the lived educational experiences of undergraduate students in an introductory statistics course when song lyrics were used as an alternative instructional technique in the classroom?

### **Conceptual Framework**

The use of an alternative instructional technique served as the conceptual framework for this study and is further grounded in a theoretical framework encompassing Gardner's (2011) Multiple Intelligence Theory. According to Regioniel (2010), a conceptual framework differs from a theoretical framework in that it provides the direction that is missing in a theoretical framework. Key constructs of this study center around students' deep learning through active-based instructional practices known as engagement theory. Engagement theory involves the degree of attention, curiosity, interest, optimism, and passion that students show in the classroom (The Glossary of Education Reform, 2016). Learning improves when students are engaged in the subject matter. Variables impacting instructional practices include generational learning styles as well as educator teaching styles (Levonious, 2015).

### **Definition of Terms**

*Engagement theory*—The degree of attention, curiosity, interest, optimism, and passion that students show in the classroom (The Glossary of Education Reform, 2016).

*Learning-Centered Instruction*—The student is at the center of learning. The student assumes the responsibility for learning whereas the instructor is responsible for facilitating the learning. Thus, the power in the classroom shifts to the student (Merlot Pedagogy, 2017).

*Millennials*—Individuals born between 1982 and 2004 (Howe & Strauss, 2000, as cited by Horovitz, 2012).

*Multiple Intelligence Theory*—Intelligence theory established by Howard Gardner consisting of eight dimensions, which are linguistic, logical/mathematical, musical, visual, kinesthetic, interpersonal, intrapersonal, and naturalistic (Gardner, 2011).

### **Assumptions, Limitations, and Scope**

Based on the researcher's background as a college professor for the past 16 years and experience as an avid guitar player, three assumptions were made regarding this study. First, Millennials enjoy listening to music while they study. Second, using song lyrics as an alternative instructional technique promotes deep learning. Third, educators regularly look for alternative instructional methods that enhance student engagement.

One of the limitations of learning-centered teaching methods is that they represent change and sometimes cause students to disengage. According to Ellis (2015), students are most familiar with traditional lecture and exam format courses and may resist learning-centered instructional methods. Weinrauch (2005) cautions that the use of music as an instructional technique might be perceived as fluff or busy work by some educators and students. Griggs

(n.d.) states that Generation X learners have a distaste for “touchy feeling” teaching methods (p. 1).

### **Rationale and Significance**

The rationale for this study was motivated by the researcher’s desire to provide students with a learning experience that is informative, fun, and promotes the concept of deep learning. By analyzing the lived educational experiences of undergraduate students in an introductory statistics course, the researcher hoped to contribute to the body of knowledge known as contemporary pedagogical theory. Furthermore, the researcher strived to equip business educators with a pragmatic method of using music in the classroom to enhance the learning process of students.

### **Conclusion**

This chapter articulated the problem of passive instructional methods, which frequently result in disengaged, bored learners. The possible impact of using song lyrics as an alternative instructional technique on college students was presented and served as the conceptual framework for this study. Gardner’s (2011) Multiple Intelligence Theory (MI) and Fredericks, Blumenfeld, and Paris’s (2004) three dimensions of student engagement provided the theoretical framework for this study. Chapter 2 examines the theoretical framework and relevant literature, focusing on Multiple Intelligence Theory (MI), Student Engagement Theory, and the impact of Cognitive Learning Styles.

## CHAPTER TWO

### REVIEW OF THE LITERATURE

Music is a universal language. Music can heal, entertain, and inform listeners. Children often learn their ABCs using songs. English as a second language (ESL) students enhance their knowledge of a new language when it is tied to musical lyrics because the structure of language is congruent with the structure of musical lyrics. College professors often use music as an alternative instructional technique to better engage their students (Dai, 2103; Krasnozhan, 2013; Rozinski, 2015; Soper, 2010; Weinrauch, 2005).

#### **Purpose of the Study**

The purpose of this qualitative phenomenological study was to examine the lived educational experiences of undergraduate students in an introductory statistics course at a private university in Pennsylvania when song lyrics were used as an alternative instructional technique in the classroom. The research focused on a specific generation of learners—Millennials, born between 1982 and 2004 (Horovitz, 2012). Qualitative research suggests using lyrics as an alternative instructional technique in higher education enhances student performance, classroom engagement, and retention of concepts (Dai, 2103; Krasnozhan, 2013; Rozinski, 2015; Soper, 2010; Weinrauch, 2005). To conduct this literature review, the researcher used multiple sources of information, including scholarly journals, books, dissertations, and academic presentations, which were primarily accessed through the ERIC database.

#### **Theoretical Framework**

Regoniel (2010) indicates that a theoretical framework rests on a larger scale of purpose based on time-tested theories of how phenomena occur. In other words, a theoretical framework provides an overall depiction of relationships among things in a phenomenon. To better

illustrate this point, consider the following example of a theoretical framework: *Stimulus elicits response*. This example provides a broad perspective. The theoretical framework for this study is best articulated as *Multiple Intelligence Theory engages students*. Merriam (2009) further defines a theoretical framework as the “underlying structure, scaffolding, or frame of our study (p. 66).” Desjardins (2010) states that “it’s a logically structured representation of concepts, variables, and relationship . . . with the purpose of identifying what will be explored, measured or described. In her research planning process series of video tutorials, Rockinson-Szapkiw (2013) states that a theoretical framework is “a collection of interrelated concepts in which you ground your research.” Individually and collectively, these scholars posit that a theoretical framework serves as the foundation that guides our study. Emergent literature for this topic of study was grounded in the theoretical framework of Gardner’s (2011) Multiple Intelligence Theory, which advocates the engagement of students through active instructional practices appealing to all eight intelligences.

### **Multiple Intelligence Theory**

Gardner’s (2011) Multiple Intelligence Theory was developed in 1983 and presented in his book *Frames of Mind: The Theory of Multiple Intelligences*. Gardner’s book was informed by his earlier research in the 1970s, focusing on normal and gifted children and brain-damaged patients. Gardner opposes the notion that all human beings have a single type of intelligence. Rather, he posits the existence of multiple intelligences. All human beings have a unique blend of all eight intelligences: verbal/linguistic, logical/mathematical, musical/rhythmic, bodily/kinesthetic, visual/spatial, interpersonal, intrapersonal, and naturalistic, which was added in later years. Students may perform poorly in a given subject not because they cannot learn but because the strategy to teach them was inconsistent with their learning styles.

Significant research has been written on Multiple Intelligence Theory as it relates to K–12 education. In contrast, little research has been written on how Multiple Intelligence Theory can be applied to the education of adults in higher education. Barrington (2004) contends that Multiple Intelligence Theory is an inclusive theory that can help instructors teach diverse students in higher education because it takes a “wide view of intelligence and works towards teaching and assessing students using more than just two of the intelligences” (p. 423). Traditionally, higher education has focused on only the verbal/linguistic and logical/mathematical intelligences primarily through the use of lecture.

Kezar (2001) examines the implications of Multiple Intelligence Theory in higher education based upon three trends: access, acknowledgement of the needs of a diverse student body, and accountability. The concept of access is inclusive in nature and “challenges the notion that only linguistic or mathematically talented people will benefit from higher education” (p. 147). Rather, all individuals have natural talents that can be refined in higher education. Kezar (2001) indicates that meeting the needs of diverse learners is paramount in higher education and can be achieved through Multiple Intelligence Theory by incorporating music, group work, dance, and drawing into instructional assignments and exercises.

Accountability in higher education leverages Multiple Intelligence Theory in terms of integrating learning goals, curriculum, and instruction. Kezar (2001) stresses that university mission statements often discuss the importance of understanding oneself (intrapersonal intelligence), leadership development (interpersonal intelligence), and appreciation and competence in the arts (musical, kinesthetic, and spatial intelligences) but fail to focus on these outcomes in the curriculum. Bhattacharya & Sarip (2014) contend that creative and critical thinking are important skills for college learners. In order to achieve such skills, college students

need to be exposed to a variety of learning styles, which can be achieved through the use of Multiple Intelligence Theory by varied teaching methods to capture student attention, interests, and engagement. Tyler & Loventhal (2011) examine ways in which Multiple Intelligence Theory can enhance online instruction in higher education. For example, linguistic intelligence can be leveraged through group discussions, chat rooms, and writing activities. Interpersonal and intrapersonal intelligences can be addressed through peer collaboration and virtual presentations.

Madkour & Mohamed (2016) examine the impact of Multiple Intelligence Theory as integrated abilities for teaching and learning English in higher education in Saudi Arabia. The authors provide a variety of ways to engage students. For example, visual-spatial intelligence can be exploited by having students solve language problems, craft mind maps, or use language software. Musical intelligence can be leveraged through the use of listening, speaking poetry, songs, and voiced sounds. Tsou (2007) examines ways Multiple Intelligence Theory can apply to college students majoring in food and beverage management in Taiwan. By leveraging instructional methods to appeal to bodily-kinesthetic and interpersonal intelligences, student engagement and confidence was enhanced.

### **Conceptual Framework**

A conceptual framework differs from a theoretical framework in that it provides the direction that is missing in a theoretical framework. A conceptual framework does not already exist. A conceptual framework is also called a research paradigm because it outlines the input, process, and output of the research project (Regioniel, 2010). A hypothetical example of a conceptual framework is *New teaching method improves students' academic performance*. The conceptual framework for this study is best framed as *Using song lyrics as an alternative*

*instructional technique enhances student engagement and learning.* Ravitch and Riggan (2016) indicate that a conceptual framework is an overarching and evolving argument based on the relationship of reason (why the topic matters) and rigor (alignment of questions and methodology), which encompasses personal interests, identity and positionality, and literature review in terms of topical research and theoretical frameworks.

The researcher's personal interests are based on intellectual goals driven by his social memberships (race, gender, nationality, etc.) and his positionality at the time (college professor)—why it is important to him. As a college professor, the researcher enjoys the practitioner side of teaching. The topical research is a subset of the literature review process focusing on similar empirical work already conducted on the researcher's topic of interest. Once again, the researcher's theoretical framework is a tighter synthesis of theory examining relationships of empirical work conducted during the literature review process.

### **Student Engagement Theory**

Engagement theory can be parsed into intellectual engagement, emotional engagement, behavioral engagement, physical engagement, social engagement, and cultural engagement. Intellectual engagement is reflected in instructional methods that stimulate student interest and curiosity. Emotional engagement focuses on the relationship aspect of students and faculty. Behavioral engagement reinforces behaviors that promote positive learning. Physical engagement uses kinesthetic learning activities. Social engagement promotes social interaction among students. Cultural engagement provides an inclusive and welcoming environment for all students from diverse backgrounds.

Fredericks, Blumenfeld, and Paris (2004) further package student engagement in terms of three dimensions: affect, cognition, and behavior. The affect dimension consists of enthusiasm,

interest, and belonging. The cognition dimension involves deep learning and self-regulation. Time and effort, interaction, and participation are components of the behavior dimension.

### **Passive and Active Instructional Methods**

According to Blumberg (2008), traditional higher education primarily focuses on passive instructional methods such as lecture, which frequently results in one-way instruction and disengaged students. Thus, educators are continually seeking alternative teaching methods that are active in nature, resulting in enhanced student engagement. Contemporary pedagogical theory examines the shift from passive to active instructional practices in which learners instead of faculty are the focus (Feden, 2012). According to McGlynn (2005), the focus of learning-centered and student-centered classrooms emphasizes the importance of empowering students to become critical thinkers and practice metacognition.

Robinson & Hope (2013) indicate that college graduates and faculty are often ill-prepared to teach in higher education because they lack needed instructional skills, facilitation skills, and ability to create lessons plans. Large universities tend to focus on supporting and requiring scholarly research instead of emphasizing practitioner skills. Ward (2001) espouses, “the mediocre teacher tells, the good teacher explains, the superior teacher demonstrates, and the great teacher inspires” (cited by Robinson & Hope, 2013, p. 2).

According to Ellis (2015), students are most familiar with traditional lecture and exam format courses. Unfortunately, learning-centered teaching methods represent change and sometimes cause students to disengage. To better understand student resistance with innovative instructional methods, Ellis (2015) interviewed 172 students to better learn why they are discouraged with learning-centric instructional methods. Eight themes served as the conceptual framework and potential reasons for resisting learning-centric teaching. First is experience with

methods. Students prefer conventional instructional methods. Second are instructional conceptions. These conceptions revolve around perceived inappropriateness of the method. Third is risk tolerance, which is a lack of willingness to experience a new teaching method. Fourth are environmental constraints such as large class size. Fifth is influence of others, which encompasses influence of the instructor and influence of classmates. Sixth is perceived risks in terms of effect on grades and learning. Seventh is perceived workload encompassing course difficulty, clarity, and increased time. Eighth is context-specific motivation, which includes lack of interest in the subject matter, lack of control over learning, and lack of confidence or self-efficacy. Ellis (2015) further indicates that student perception may change over the course term, but different students experience different barriers to change, which represents a challenge for faculty.

### **Learning Preferences**

Warren (2012) highlights key learning differences between generations. Baby Boomers were taught in a linear fashion and primarily by lecture. Generation Xers learned in a structured environment consisting of lecture and small group activities. Millennials embrace a constructivist and flexible learning environment. According to Price (2010), Millennial college students prefer professors who are energetic, flexible, alert, helpful, and easy to talk to. Professors should be techno-savvy, current, humorous, and relaxed. Unlike Baby Boomers and Generation Xers who rely primarily on lecture and reading physical books for information, Millennials prefer the use of technology, group activities, interactive instructional practices, relevant examples, and “fun” in the classroom. According to Warren (2012), the iPad is their new blackboard.

## **Cognitive Impact of Music**

Music is processed on the right side of the brain and activates the intuitive side of the brain. Warren (2008) indicates that the primary auditory cortex first encodes music. Then it is extracted by primary and higher auditory cortices. Levitin (2007) indicates listening to music results in enhanced memory cues. When one hears a song for the first time, a link is established between the song and what the individual is doing at that specific time. Hearing the song in the future brings back the initial memory cue link. From both a cognitive and learning standpoint, memory is enhanced.

Black (2014) provides findings from a concert-lecture examining the impact of music on emotion and the brain and found that people experience a chemical reaction when listening to music. It is this reaction that allows them to quickly determine if they like a musical piece based on their own emotional reaction to it. Hall (2010) espouses the benefits of using music as an aid in comprehension and recall. Citing several scholars and researchers on pedagogy, education, and cognitive theory (Andenoro & Ward, 2008; Callahan & Rosser, 2007; Dewey, 1938; Gardner, 1999; Stillman, 2006; Williams, 2006; Younkin, 2009; Zull, 2002), Hall (2010) examines using music as an alternative teaching pedagogy in the context of experiential learning, personal experience, multiple intelligence theory, and brain function using sensing, integrating, and acting components of the cerebral cortex. Hall (2010) first reflects on the power of music as a teaching tool for children in learning their ABCs. For adult learners, music provides a fresh and innovative approach to the traditional classroom of straight lecture. Younkin (2009) indicates “students have been raised in a technological era with instant access to information, such as graphics, video, and music” (p. 72). As a result, music provides a context that a student

can easily relate to. Furthermore, music creates a personal experience for students, which stimulates thought and reflection.

Bloom's revised taxonomy (Heer, 2012) also contributes to contemporary pedagogical theory by examining intended learning outcomes by way of two distinct dimensions. The first dimension of Bloom's revised taxonomy is the cognitive process dimension consisting of remembering, understanding, applying, analyzing, evaluating, and creating. The second dimension of Bloom's revised taxonomy is the knowledge dimension consisting of factual, conceptual, procedural, and metacognitive knowledge. It appears that the highest levels of instruction are the most engaging, thereby resulting in metacognitive knowledge.

### **Implementation of Music in College Classrooms**

Several academic disciplines have successfully implemented the use of song lyrics as an alternative instructional technique. Weinrauch (2005) used music as a metaphor when teaching college marketing courses. The concept of using music as a metaphor involved the transfer of ideas from one domain to another; in other words, applying musical lyrics in place of marketing concepts in order to suggest a likeness between both. The goal of using music as a metaphor was to "generate student interest and promote interactive student learning" (p. 109). Weinrauch (2005) accomplished this goal through a variety of metaphorically experiential exercises by having students listen to songs, answer questions related to the songs but in the context of marketing concepts, application of songs related to marketing concepts in the form of a short-written paper, and student-selected songs tied to marketing concepts with findings presented in both an oral presentation and three-page paper. Through qualitative feedback, Weinrauch (2005) determined that students valued different perspectives when using music in the classroom, found

the use of music motivational, learned marketing principles in a creative manner, and considered the use of music as a welcome change from traditional teaching approaches such as lecture.

Rozinski (2015) used music and lyrics to teach political theory to undergraduate college students. Rather than linking musical lyrics to course concepts, Rozinski (2015) used music to make analogies to concepts used by political theorists. In other words, Rozinski (2015) linked songs to specific theorists instead of to general course topics. Rozinski (2015) selected and used more than twenty songs, from various genres, to introduce difficult concepts, apply difficult concepts, reinforce students' memory, and to provide biographical information about various theorists. Rozinski's (2015) students found the use of music to be fun, to enhance their understanding, to expand their critical thinking skills, and to serve as a memory aid. Rozinski (2015) recommends using music in the middle of class, after students have been thinking about concepts and theorists.

In order to teach economic principles of change in demand and change in quantity demanded to traditional undergraduate college students in his economics course, Krasnozhan (2013) used Beyoncé's popular song *Irreplaceable*, which focuses on personal relationships. This particular song was selected because it has an appropriate "hook" that ties well to the concept of demand. The chorus of the song effectively contrasts the concepts of change in demand and change in quantity demanded. Krasnozhan (2013) found the song appealing to both female and male students. Krasnozhan (2013) had students create a qualitative analysis of the song in a summary table by answering a variety of questions. Students also had to create a graphic contrasting the price of a relationship vs. the quantity of a relationship. Krasnozhan (2013) found that students enjoyed the active learning involved instead of traditional lecture and textbook examples.

Soper (2010) used musical lyrics from rock and roll songs to engage his students in his traditional undergraduate political science courses. In order to complement concepts presented in his class lectures, Soper would play a song and then initiate a discussion regarding the song, tying it back to the political concepts under study. Soper (2010) used songs with both pertinent lyrics and catchy tunes; his findings indicated that student engagement was enhanced, and student energy level was boosted. Using music as an alternative instructional technique was extremely popular and well received by his students, and music enhanced the learning process by helping students make meaningful connections.

Levy & Byrd (2011) used popular song lyrics to teach principles of social justice in their traditional undergraduate college courses. Students were provided with a handout including artist information, contextual information, song lyrics, and discussion questions. Before playing the song in class, the authors would dim the lights and show a picture of the particular artist on the screen. The authors found that using musical lyrics in the classroom stimulated critical thinking and reflection and generated thoughtful discussions.

Jurmu (2005) implemented musical lyrics in teaching his traditional undergraduate physical geography course. Students would first have to find a song with musical lyrics that tied to physical geography concepts. Second, students had to provide the lyrics to the song. Third, students had to answer a series of questions. Fourth, students had to present their findings. Song choices and student analysis were intriguing. For example, the Jimmy Buffet song *Volcano* examined the eruption of a volcano. John Denver's *Rocky Mountain High* examined a meteor shower and why it is better viewing it atop a mountain. Jurmu (2005) concluded that the use of music maximized student involvement, understanding, and responsibility in their own learning.

Leck (2006) used a mixed-methodology when using music to teach personality theory in her traditional undergraduate college psychology courses. For one of her classes, Leck used lecture alone. In another class, Leck used musical lyrics to complement the personality theory under study that week. From a quantitative standpoint, students scored an average of 11 points higher on exams when music was incorporated into the class. From a qualitative standpoint, Leck (2006) found that her students felt the use of music aided their understanding, made lectures more interesting, helped in applying concepts to the real world, served as a resource for future psychology courses, and was extremely beneficial as an instructional technique.

Using music and/or song lyrics as an alternative instructional technique in the classroom appears to be a common theme among several college professors. However, researchers comment on the time investment needed to identify songs in the context of course concepts. In particular, educators would need to be familiar with songs from many different genres. Students may view the instructional method as potential “fluff” rather than viable student-centric learning. Ethical issues may arise if students disregard copyright laws when finding music (Weinrauch, 2005). Downloading and/or uploading of copyrighted songs on a peer-to-peer file sharing service are illegal. It is critical that students use songs from a purchased CD or paid music service such as iTunes (Weinrauch, 2015).

### **Summary**

The literature suggested that using song lyrics as an alternative instructional technique is viable in higher education to enhance student engagement and learning. Students in college marketing, general business, political science, economics, social justice, geography, and psychology courses seemed to enjoy the use of music as viable and engaging in applying course concepts. Multiple Intelligence Theory (MI) was presented in the context of cognitive science

and learning. Chapter 3 provides the rationale and framework for qualitative research methodology. Phenomenology is explained in further detail.

## CHAPTER THREE

### METHODOLOGY

This study sought to answer the following research question: What are the lived educational experiences of undergraduate students in an introductory statistics course when song lyrics were used as an alternative instructional technique in the classroom?

#### **Rationale for a Qualitative Approach**

The power of qualitative research is its ability to provide intricate literal descriptions of how people experience a specific research topic. Qualitative research provides a human perspective on an issue in terms of views, feelings, and beliefs. In contrast to quantitative research, a qualitative methodology is more elastic and allows for greater freedom and communication between the researcher and study participant through open-ended questioning and probing. Thus, a qualitative approach is a viable methodology for this study because it allows participants (students) “to interpret their lived experiences, construct their worlds, and apply meaning to their experiences” (Merriam, 2009, p. 5). Perhaps the greatest benefit of a qualitative approach is that it allows participants (students) to provide a rich description of their lived academic experience regarding music an alternative teaching pedagogy.

#### **Rationale for Phenomenology**

Merriam (2009) indicates that phenomenology is “both a school of philosophy associated with Husserl (1970) and a kind of qualitative research” (p. 24). From the philosophy perspective, the focus lies on the experience itself and how experiencing something is transformed into consciousness. The research perspective of phenomenology examines the “essence of the experience” (p. 25). According to Johnson & Christensen (2008), phenomenologists seek to answer the question “What is the meaning, structure, and essence of

the lived experience of this phenomenon either by an individual or by many individuals?” (p. 57). Based on the literature of van Manen (1990) and Moustakas (1994), Creswell (2013) further parses phenomenology into two approaches. Van Manen’s (1990) hermeneutical phenomenology is a descriptive and interpretive research methodology that focuses on lived experience (phenomenology) and on interpreting the “texts” of life (hermeneutics).

The second approach is Moustakas’s (1994) empirical, transcendental, or psychological phenomenology. In this approach, the researcher is required to “bracket” or temporarily put aside personal attitudes and beliefs concerning a phenomenon before engaging the research respondents through interviews. The concept of bracketing personal attitudes and beliefs heightens the consciousness of the researcher, thereby allowing the researcher to see and examine the phenomenon from the perspective of those who experienced it.

For this study, the researcher embraced Creswell’s (2013) endorsement of Moustakas’s (1994) psychological phenomenology because it offered systematic steps in the research process. Given the researcher’s direct participation in the classroom of study, bracketing was seen as particularly helpful. The first step in Moustakas’s (1994) process is to determine if a phenomenological approach is ideal for the research problem being studied. Undoubtedly, a phenomenological approach allowed the researcher to understand several individuals’ common or shared experiences of a phenomenon, which was the use of song lyrics as an alternative instructional technique. The second step in the process was to identify an emergent topic of interest to study. The specific phenomenon of interest of this study was to study the experience of learning in which song lyrics were used as an alternative instructional. The third step in the process to fully describe how participants viewed the phenomenon involved bracketing out the researcher’s own experiences so that personal bias was eliminated. The fourth step in the

process was to collect data from individuals who have experienced the phenomenon.

Polkinghorne (1989) as cited by Creswell (2013) recommends interviewing 5–25 participants.

The researcher interviewed seven undergraduate students enrolled in an introductory statistics course regarding their experience with the phenomenon, which was the use of song lyrics as an alternative instructional technique in the classroom. Specific interview questions were broad and centered around two key questions:

1. What have you experienced in terms of the phenomenon?
2. What contexts or situations have typically influenced or affected your experiences of the phenomenon?

The next step in the process is known as phenomenological data analysis. During this process, the researcher reviewed interview transcriptions and highlighted significant statements regarding how participants experienced the phenomenon. Muoustakas (1994) refers to this as the process of horizontalization. Once completed, the researcher developed clusters of meaning into significant themes. The penultimate step was to craft structural and textural descriptions of what participants experienced. The final step in the process was to write a composite description that presented the essence of the phenomenon. This process is known as essential structure.

### **Setting**

A private coeducational university in Pennsylvania served as the setting of the study. The university employs more than 146 full-time faculty and has an undergraduate student to faculty ratio of 10:1. There are seven colleges and schools within the university. For the setting of this study, the College of Business and Leadership (CBL) served as the focus. CBL offers seven undergraduate, ten graduate programs, and five minors. The researcher has been with the

university for 16 years as an affiliate faculty member, thereby providing easy access to both the setting and participants.

### **Self as Researcher**

I am known as a Baby Boomer because I was born in 1959. Inasmuch as I was taught in a linear fashion during my early school days, I do not like learning based on lecture alone. As an undergraduate, graduate, and current doctoral candidate, I believe that if a learning experience is not only informative but also fun, enjoyable, and engaging, I got more out of the learning experience. I enjoy reading books, but I am also an early adopter of emergent technologies. Somewhat inconsistent with being a Baby Boomer, I am extremely tech savvy and value everything made by Apple. As a college professor for the past 16 years, I regularly attend faculty development training sessions and educational conferences, where common themes are the benefits of active versus passive instructional techniques, the importance of engaging learners, the flipped classroom, and learner-centric pedagogy. Outside of higher education, I have worked in corporate training and development for more than twenty years. These experiences have contributed to and have shaped my beliefs about ideal instructional practices in higher education. Before embarking on this phenomenological study, it was important to bracket out my personal beliefs and biases about instructional techniques and student learning in higher education.

### **Participants/Sample**

Merriam (2009) indicates that purposeful sampling involves selecting “information-rich” cases to study so that one can learn more about issues of central importance (p. 77). In purposive sampling, it is important to establish participant selection criteria. For this study, participant selection criteria included the following: traditional undergraduate business students, between 18

and 23 years of age who were of the Millennial generation and enrolled in an introductory statistics course during the fall of 2017. All participants were drawn from the same course. The total number of participants for this research study was initially eight (8), but one student dropped out of the course prior to the study. The setting of the study was a private coeducational university in Pennsylvania.

### **Overview of the Phenomena**

The researcher taught an introductory statistics course to seven undergraduate students during the fall of 2017. The phenomena involved the use of song lyrics as an alternative instructional technique. Specifically, the researcher integrated the lyrics from chosen popular songs to reinforce the concept of hypothesis testing over a period of three weeks.

### **Data**

The course being studied was an undergraduate introductory statistics course that met on Thursday nights from 6:30 pm to 9:00 pm over 14 weeks during the fall 2017 term. Musical lyrics from six popular songs were used as an alternative instructional technique in the classroom on three specific dates: November 2, 2017, November 9, 2017, and November 16, 2017.

On November 2, 2017, the topic under study was two-tailed hypothesis testing with an unknown population standard deviation. Students were instructed to solve the following problem:

*Pete's PVC Emporium is the primary distributor of specialized PVC tubing for the plumbing industry. PVC pipes are cut to a preferred industry standard length of 6 feet. The company's quality control expert, Pete Jr., samples 18 PVC pipes per day to ensure they are at the 6-foot length. Today's sample of 18 PVC pipes resulted in a mean length of 6.25 feet with a sample standard deviation of .06 inches. At the .05 level of significance, is the PVC cutting machine properly cutting 6-foot lengths?*

On November 9, 2017, the topic under study was the Chi-Square Test of Independence. At this class session, students were instructed to solve the following question:

*Of 100 women in a sample, 45 had donated blood in the previous year. Of 200 men, 60 had donated blood in the previous year. At the .05 level of significance, did gender make any difference as to whether or not a person donated blood?*

Analysis of variance (ANOVA) served as the topic for the November 16, 2017 class. Students were instructed to solve the following scenario:

*An industrial psychologist has examined the levels of absenteeism (days absent per year) of workers in three different work environments (morning shift, afternoon shift, and night shift.) At the .05 level of significance, is absenteeism equal for all shifts? Absenteeism is summarized as follows:*

<i>Day Shift</i>	<i>Afternoon Shift</i>	<i>Night Shift</i>
3	6	5
4	4	6
3	5	4
5	4	3
7		5
<i>N = 5</i>	<i>N = 4</i>	<i>N = 5</i>

In solving each of the three scenarios, students were instructed to perform a hypothesis test using the six steps for hypothesis testing. The six steps for hypothesis testing are:

1. State the null and alternative hypothesis.
2. Indicate the level of significance.

3. Determine the critical value using the appropriate supplied table.
4. State the rejection rule.
5. Calculate the test statistic.
6. State your conclusion.

Appropriate tables were supplied, along with formulas needed to calculate the test statistic.

Song lyrics were used as an alternative instructional technique to reinforce each of the six-steps for hypothesis testing. Each of the six songs selected by the researcher were played on YouTube and showed on the overhead screen in class. Students were asked to assemble in small groups to determine the basic message of the song. After the small groups discussed the song, the researcher asked a series of questions: What did you like or dislike about the song? What was the basic message of the song's lyrics? How did the lyrics apply to a specific step in hypothesis testing? In the case of Billy Joel's *Uptown Girl*, students indicated that the song was about a blue-collar guy, an auto mechanic who tries to impress a wealthy uptown girl when she brings her car in for repairs. Through continued questioning, students indicated that the song suggests that opposites attract. The researcher then asked, How does the song *Uptown Girl* apply or relate to a specific step in hypothesis testing? Students responded by stating that the first step in hypothesis testing was all about opposites—state the null hypothesis and the alternative hypothesis.

John Legend's *All of Me* was the song choice to reinforce Step 2: Indicate the level of significance. The Jonas Brothers' song *Critical* was used to reinforce Step 3: Determine and state the critical value. Bonnie Raitt's *I Can't Make You Love Me* served as the song choice to reinforce Step 4: State the rejection rule. Brian McKnight's *Back at One* served as the song

choice to reinforce Step 5: Calculate the test statistic. Finally, Garth Brooks' song *Unanswered Prayers* served as the song choice to reinforce Step 6: State your conclusion.

Five-Minute Response Forms (see appendix A) were distributed at the end of class sessions on November 2, 2017, November 9, 2017, and November 16, 2017, seeking participant feedback about using song lyrics as an alternative instructional technique. Angelo & Cross (1993) espouse the benefits of a One-Minute Response Paper as an effective assessment technique. Angelo & Cross's (1993) One-Minute Response Paper, as well as Brookfield's (1995) Critical Incident Questionnaire served as the foundation for the principal investigator's Five-Minute Response Paper, which also served in the context of triangulation, as secondary data, in reinforcing information gleaned during one-on-one participant interviews.

Interviews with participants began on November 17, 2017 and were completed December 20, 2017. The principal investigator's on-campus office served as the interview venue. The length of participant interviews ranged from 18 to 30 minutes. Interviews were recorded by the principal investigator using a Sony digital voice recorder model ICDBX140 and his Apple iPhone X. The researcher used a semi-structured interview format to guide the interview. Benefits of a semi-structured format allows for question flexibility (Merriam, 2009). An Interview Protocol Guide (see appendix B) was used for the interview process to ensure a proper flow. Interview questions focus on two critical areas:

1. Describe your experiences in class when we used song lyrics as an instructional technique.
2. At what moment did you feel most/least engaged when song lyrics were used in class?

These questions were adapted from Brookfield's Critical Incident Questionnaire (1995).

### **Analysis**

The principal investigator transcribed all seven interviews to hard copy using Microsoft Word. Each transcription was member checked for accuracy by each participant. The principal investigator then highlighted significant statements about how participants experienced the phenomenon. This is known as *horizontalization* (Moustakas, 1994). Once completed, the principal investigator transferred significant statements to Microsoft Excel for further theme, sub-theme, and coding analysis. From this, the principal investigator crafted structural and textural descriptions of what participants experienced. Finally, a composite description known as essential structure was written, which presented the essence of the phenomenon of using music as an alternative instructional method in the classroom.

### **Ethical Issues, Reliability, and Validity**

Ethical issues typically involve the data collection phase and include informed consent procedures, deceptive activities, benefits versus risks of study, and participant confidentiality (Creswell, 2013). The researcher conducted the study in an ethical manner. According to Lincoln & Guba (1985) reliability in qualitative research is best discussed in terms of dependability or consistency. Rather than seeking replication of results, results should make sense and be consistent with the data collected. The concept of validity in qualitative research is best discussed in terms of “something other than reality itself,” which can never be grasped. In other words, the findings should be credible given the data presented (Lincoln & Guba, 1985, p. 150). The findings of this study were dependable, consistent, and credible given the data presented.

### **Participant Rights**

The research study was submitted to the University of New England’s Institutional Review Board and approved on November 1, 2017, reference number 092517-007 (see appendix

C). To ensure the study was conducted in an ethical manner, participants were given a detailed explanation of the study including risks, time commitments, confidentiality issues, and consent procedures as part of the Study Invitation (see appendix D). Participation in the study was voluntary. However, informed consent materials were required by way of a signed Consent Form (see appendix E). Participants could withdraw from the study at any point in time.

Participant confidentiality was maintained throughout the study. The principal investigator was the only person collecting the data to ensure the confidentiality of the university and participants, as well as to provide uniform collection procedures. The principal investigator coded participants with a number (i.e., Participant 01, Participant 02, etc.) to protect their confidentiality and maintain organization of the data throughout the study by using a secured Excel document with each student's name and corresponding unique Participant ID number. The data was kept on only one personal laptop computer, which was password protected and accessed only by the principal investigator, with an online backup, which was also password protected. Identifying information was removed from the investigator's computer after the study's completion and will not be accessible for future study uses. Completed pre- and post-participant answers to statistical problem exercises, as well as Five-Minute Response Papers, were kept in a locked box in the principal investigator's home office. Individual responses were reported without individuals' names.

### **Potential Limitations**

The researcher conducted research on an introductory statistics course he taught during the Fall 2017 semester. The researcher worked at a private university in Pennsylvania, which resulted in bias itself. To mitigate bias in this small study, the researcher encouraged participants in the study to be truthful and candid instead of providing information participants felt the

researcher wanted to hear. Furthermore, in order to reconcile the power imbalance of interviewing the researcher's own students, he delayed student interviews until after the course ended. The researcher bracketed out his assumptions regarding ideal instructional techniques for higher education before beginning his phenomenological study. Creswell (2013) suggests embracing LeVasseur's (2003) definition of bracketing in which the researcher "suspends their understandings in a reflective move that cultivates curiosity" (p. 83). Creswell (2013) further indicates that Moustakas's (1994) methodology may be too structured.

Learning-centered teaching methods represent change and sometimes cause students to disengage. According to Ellis (2015), students are most familiar with traditional lecture and exam format courses and may resist learning-centered instructional methods. Weinrauch (2005) cautions that the use of music as a teaching pedagogy might be perceived as fluff or busy work by some educators and students. Griggs (n.d.) states that Generation X learners have a distaste for "touchy feely" teaching methods (p. 1).

### **Summary**

Chapter 3 provided an overview of the proposed research methodology. A compelling rationale for qualitative research and phenomenology was offered. An in-depth setting of the problem was given along with an appropriate description of purposeful sampling. Data collection methods and analysis were presented in the context of Moustakas's (1994) procedural steps for psychological/transcendental phenomenology. Potential limitations and the concept of bracketing were discussed to set aside the researcher's experiences and feelings about instructional methods in higher education. Chapter 4 examines each participant's experience with music as an alternative instructional technique by analyzing the data for key themes.

## CHAPTER 4

### RESULTS

The purpose of this phenomenological case study was to examine the impact of using song lyrics as an alternative instructional technique with traditional undergraduate business students enrolled in an introductory statistics course. Research presented in the literature review showed a positive effect on student classroom engagement. The research question used to guide this study was:

What are the educational experiences of undergraduate business students enrolled in an introductory business statistics course when song lyrics are used as an alternative instructional technique?

Each participant was asked specific questions about their educational experience when song lyrics were used as an alternative instructional technique in the classroom. This was first accomplished through the use of a Five-Minute Response Paper at the end of each class on November 2, 2017, November 9, 2017, and November 16, 2017. Additionally, semi-structured one-on-one interviews were conducted with each participant beginning on November 17, 2017 and completed by December 20, 2017. All participants had the opportunity to conduct a member check of his/her interview transcript.

Five themes emerged: Recall Aid, Enhanced Student Engagement, Effective Teaching Strategy, Song Selection May Impact Student Disengagement, and Enhanced Focus. Each theme produced its own subthemes. The Recall Aid theme included the sub-themes: Songs Lyrics Provide Sequential Steps for Hypothesis Testing, Essence Of Songs Lyrics Tied To Individual Steps In Hypothesis Testing, and Music and Song Lyrics Serve as an Effective Mnemonic Device. The Student Engagement theme included the subthemes: Use of Music in a College

Classroom is Fun and Enjoyable, and the Use of Music and Song Lyrics Involves Students in the Learning Process. The Effective Teaching Strategy theme included the sub-themes: Music and Song Lyrics are a Clever Use of Multiple Intelligence Theory, Learning Preferences of Millennials Include Listening to Music, and Music and Songs Lyrics Should Blend with Other Teaching Strategies. The Song Selection May Impact Student Disengagement theme included the sub-themes: Song Choice is Important for Student Engagement, and Duration of Song Impacts Attention Span. The Enhanced Focus theme included the sub-themes: Students Regularly Listen to Music When Studying; Provides a Calming Influence, and High School Teachers Played Classical Music During Exams to Enhance Student Focus.

### **Participants/ Sample Description**

For this study, purposive sampling was used to establish the following participant selection criteria: traditional undergraduate business students, between 18 and 23 years of age, who were of the Millennial generation, and enrolled in an introductory statistics course during the fall of 2017 at a private coeducational university. All participants were drawn from the same course. The total number of participants who consented to be interviewed for this study were seven (7). Participant descriptions are profiled in Table 4.1.

Table 4.1

#### *Participant Description*

<b>Participant ID</b>	<b>Age</b>	<b>Race</b>	<b>Gender</b>	<b>Major</b>	<b>Academic Status</b>	<b>Student Athlete</b>
01	20	White	Male	Management	Sophomore	Men's Lacrosse
02	20	White	Male	Marketing	Sophomore	Men's Baseball
04	20	White	Male	Management	Sophomore	Men's Lacrosse

Participant ID	Age	Race	Gender	Major	Academic Status	Student Athlete
05	20	White	Female	Accounting	Sophomore	Women's Field Hockey
06	20	White	Male	Accounting	Sophomore	Men's Golf
07	19	White	Female	Marketing and Education	Freshman	Women's Golf
08	21	White	Male	Marketing	Junior	Men's Basketball

Participant 03 (not listed) was a 20-year-old international student from Asia who stopped coming to class prior to the study.

### **Analysis Method**

This qualitative phenomenological study used both a Five-Minute Response Paper at the end of three individual class sessions and individual interviews to assess the educational experiences of participants when song lyrics were used as an alternative instructional technique in class. Qualitative data was coded, organized, and interpreted as follows.

### **Coding**

First, all transcripts were member checked by each participant for accuracy. Once member checks were completed, the researcher highlighted significant statements on each transcript. The principal investigator then transferred significant statements to Microsoft Excel for further theme, subtheme, and coding analysis. The principal investigator then crafted structural and textural descriptions of what participants experienced. Finally, a composite description known as essential structure was written that presented the essence of the phenomenon of using music as a metaphor in the classroom (Moustakas, 1994). Five Minute Response Papers were used in the context of triangulation as secondary data in validating key themes provided during one-on-one participant interviews.

## Organization

Once the researcher coded all transcripts, he used Excel to organize his data. The researcher was able to organize themes, subthemes, and overarching codes into one Excel document. Each theme was color coded and a label was applied for easier sorting.

## Interpretation

After creating the Excel document, the researcher began to interpret the data. Five overarching themes emerged with several associated subthemes. In order to temper his biases, the data was viewed in the context of Multiple Intelligence Theory, Engagement Theory, and Cognitive Impact. Cutcliffe (2003) states that one method of bracketing is writing memos throughout data collection and analysis as a means of examining and reflecting upon the researcher's engagement with the data. As a result, memoing was used by the researcher as a standard bracketing technique in recording reflective notes about what was learned from the data.

## Presentation of Qualitative Results

A review of Table 4.2 indicates the themes and subthemes developed from the data analysis. The themes and subthemes represent data provided from seven participant interviews, as well as from review of Five-Minute Response Papers, which were completed at the end of three separate class sessions.

Table 4.2

### *Themes and Subthemes*

<b>Theme</b>	<b>Subtheme</b>
Music and song lyrics used as a recall/memory aid	Song lyrics provide sequential steps for hypothesis testing Essence of specific songs and lyrics tied to individual steps in hypothesis testing Music and song lyrics serve as an effective pneumonic device

Theme	Subtheme
Enhanced student engagement	Use of music in a college classroom is fun and enjoyable Use of music and song lyrics involves students in the learning process
Effective teaching strategy	Music and song lyrics are a clever use of Multiple Intelligence Theory Learning preferences of Millennials include listening to music Music and song lyrics should blend with other teaching strategies
Song selection may impact student disengagement	Song choice is important for student engagement Duration of song impacts attention span
Enhanced focus	Students regularly listen to music when studying; provides a calming influence. High school teachers played classical music during exams to enhance focus.

### **Theme #1: Music and Song Lyrics Used as a Recall/ Memory Aid**

Participants reported the use of song lyrics as an alternative instructional technique served as a valuable memory/recall aid when applying the required steps of statistical hypothesis testing. In particular, Participant 01 reported, “When listening to and then applying the lyrics from several popular songs, it helped me to remember the six steps of hypothesis testing.” Participant 05 indicated, “When we used music in the classroom, I was able to remember what step of hypothesis testing each song related to.” Participant 06 stated, “I listen to music all the time when I’m studying. I find that it helps me to remember important things from class.” In the course of the researcher’s one-on-one interviews with participants, several subthemes began to emerge.

**Subtheme 1: Song lyrics provide sequential steps for hypothesis testing.** Participant 02 revealed, “The use of listening to various songs in class was extremely helpful in identifying each of the steps we had to do for hypothesis testing.” Participant 07 indicated, “When we tried to solve a statistical problem using hypothesis testing before relating it to music, I wasn’t quite

sure what we were supposed to do. But using songs for each step really helped me in remembering the steps in order.” Participant 08 indicated, “I’m glad we talked about each of the steps and songs in order. It made it easier to follow.”

**Subtheme 2: Essence of song lyrics tied to each step of hypothesis testing.** Participant 04 was visibly excited in pointing out, “I couldn’t believe how songs related to each of the six steps.” Participant 08 said, “I get nervous trying to remember formulas and terms. But when we related different songs to each step of hypothesis testing, it made sense to me.”

**Subtheme 3: Music and song lyrics serve as an effective mnemonic device.** Participants reported using music as an alternative instructional technique served as an effective mnemonic device when remembering the steps of hypothesis testing. Participant 02 stated, “I think it was great. It was definitely like a nice helpful way of remembering the steps for hypothesis testing.” Participant 04 indicated, “I could see my progress improve when we solved the problem a second time after we used music in class. I could think back to each song and remember what I was supposed to do for hypothesis testing.” Participant 06 noted, “It’s really interesting how songs can be used in class to help us in remembering important statistical stuff.”

## **Theme #2: Enhanced Student Engagement**

Participants seemed to be very much aware how the use of song lyrics motivated everyone in class. Participant 01 noticed, “The class got very involved when listening to music. It was fun.” Participant 05 indicated, “Everyone in my generation likes listening to music. It made us want to share our ideas how the songs related to statistics.” Participant 07 stated, “Students want to be involved instead of listening to boring lectures. I really enjoyed the songs we talked about.” In this thematic category, three subthemes emerged: Use of music is fun, involves students in the learning process, and makes class enjoyable.

**Subtheme 1: Use of music in a college class is fun and enjoyable.** Most participants reported that the use of music in a statistics class is fun. Participant 02 indicated, “You don’t usually listen to music in a college class, especially when you’re using it to learn something. So, when you do that, it’s different and fun.” Participant 04 said, “Instead of listening to the professor just lecture, it was more interactive and fun.” Participant 05 reported, “It kept my attention because it was different from what we usually do. I was happy with it because it was fun.” Participant 01 indicated, “Attending a night class is often difficult and sometimes I even fall asleep. When we used music in class it made class enjoyable and go by quickly.” Participant 07 indicated, “For a couple of weeks, I wasn’t feeling well. It was hard for me to get involved and interact. But when we used music in class, it made class more enjoyable for me.”

**Subtheme 2: Use of music and song lyrics involves students in the learning process.** Overwhelmingly, participants reported that the use of song lyrics involved students in the learning process. Participant 02 noted, “Talking about each song and what it meant to each step of hypothesis testing was good stuff and helped me to feel engaged.” Participant 01 said, “I was most engaged when we used music in class because I wanted to do better the second time around in solving the stats problem.” Participant 5 stated, “When we talked about the song and talked about the steps in hypothesis testing, I really felt engaged because we were building that connection.” Although participant 06 was indifferent to the use of music in class, he indicated that, “This was a new experience for me. I never tied music to the subject being studied. It did seem to get everyone in class involved.”

### **Theme #3: Effective Teaching Strategy**

In this thematic category, three subthemes emerged: clever use of Multiple Intelligence Theory, learning preferences of Millennials, and blend with other teaching strategies.

**Subtheme 1: Music and song lyrics are a clever use of Multiple Intelligence Theory.**

Participant 07 is a dual major, majoring in marketing and education. She indicated, “In one of my education classes, I learned about Gardner’s Multiple Intelligence Theory. Some kids struggle with just lecture. Professors should appeal to all learning styles. What you did in class with music was clever.” Participant 07 was the only participant familiar with Multiple Intelligence Theory.

**Subtheme 2: Learning preferences of Millennials include listening to music.** Most of the participants indicated that they listen to music when studying for exams or writing papers. Participant 01 indicated, “I listen to upbeat music when writing a paper because it keeps me awake and helps me to write.” Participant 02 stated, “I usually listen to soft music when studying because it sets the pace for studying. I’ll listen to Christian contemporary music such as Elevation.” Participant 04 reported, “Listening to music when I write papers helps me to get through it.” Participant 06 stated, “I usually listen to hip hop or country when writing papers because it clears my head.” Participant 07 states, “I only listen to classical music when studying for tests. I can’t listen to music when reading or writing papers.”

**Subtheme 3: Music and song lyrics should blend with other teaching strategies.**

Participant 05 stated, “I wish my other professors used music in class. All they do is lecture. Class gets too predictable.” Participant 07 indicated, “I would continue to use music in class but not all the time. Otherwise, class will become too predictable. Be sure to use with other methods of teaching.”

**Theme #4: Song Selection May Impact Student Disengagement**

In this thematic category, two subthemes emerged: Song choice/genre is important, and duration of song impacts attention span.

**Subtheme 1: Song choice/genres is important for student engagement.** Most of the participants had no issue with song choices selected by the researcher. However, three participants expressed potential disengagement regarding song choice/genre. Somewhat amusingly, Participant 01 indicated, “I never heard Bonnie Raitt’s *I Can’t Make You Love Me* before. It related perfectly to state the rejection rule in hypothesis testing, but the song was very depressing. I wanted to go back to my dorm and cry for two hours.” Participant 02 stated, “The song *Call Me Maybe* is not one of my favorites. I really didn’t want to listen to the song. Participant 08 indicated, “If I knew the song being played, it made me more interested in listening.” In contrast, Participant 04 mentioned, “It was interesting how song choice related to what we were learning.”

**Subtheme 2: Duration of song impacts attention span.** Participant 01 indicated, “Some songs were just too long. I get the point already. Maybe it’s not important to play the entire song.” Participant 06 stated, “It’s better to play part of a song, otherwise it can be distracting.” Participant 07 indicated, “Playing just part of a song is probably more effective. Maybe play the first verse and chorus so people don’t get bored or lost.” In contrast, Participant 05 indicated, “Listening to each song was interesting and not distracting. It’s important to get the entire message from each song.”

### **Theme #5: Enhanced Focus**

In this thematic category, two subthemes emerged: Regularly listen to music while studying and high school teachers played classical music during exams.

**Subtheme 1: Students regularly listen to music when studying; provides a calming influence.** Overwhelmingly, participants mentioned the relaxing nature of listening to music when they study. Participant 01 stated, “I listen to upbeat techno stuff. It keeps me awake.”

Participant 02 mentioned, “I listen to soft music when studying because it helps set the pace for studying.” Participant 04 indicated, “When writing papers, I actually listen to hip hop music because it keeps me upbeat and focused.” Participant 07 seemed to echo the comments of four other participants in that, “I always listen to music when I study because it helps to keep me focused.”

**Subtheme 2: High school teachers played classical music during exams to enhance focus.** Participants experienced listening to classical music during exams while in high school. Participant 04 also mentioned, “My high school teacher played classical music during exams or when we had group activities in class.” Participant 06 indicated that, “My high school teacher played classical music whenever we took exams. It relaxes you.”

### **Essence of the Experience**

The overall essence of the participant experience in this study is that it is one of acceptance and efficacy when music/song lyrics were used as an alternative instructional technique in the classroom. Participants expressed their experience in terms of “aha” and “wow” moments. When song lyrics were used as an alternative instructional technique to complement course content, participants not only accepted and enjoyed the process but felt deeply engaged with what they were learning. These were known as the “aha” moments—class was fun and enjoyable. The “wow” moments were expressed in terms of how using song lyrics in the classroom actually works in reinforcing course content and enhancing recall, primarily as a mnemonic device.

### **Summary**

The purpose of this phenomenological study was to examine the educational experiences of traditional undergraduate students enrolled in an introductory statistics class when song lyrics

were used as an alternative instructional technique. Participants who met the criteria were interviewed for this study. Each participant was asked specific questions regarding their experience, feelings, and engagement when music was used as an alternative instructional technique in the classroom.

Findings from the data are encouraging when using music and song lyrics as an alternative instructional technique in the classroom. From a cognitive standpoint, music and song lyrics served as valuable recall and memory aid for course concepts. It allowed students to effectively “peg” in their memory the six steps of hypothesis testing. Moreover, the use of music and song lyrics reduced the task level tension of memorizing required steps and formulas in statistics. Rather, it made the six steps of hypothesis testing easy to understand, orderly, applicable, and memorable. With regard to student engagement, the use of music and song lyrics made class more fun, enjoyable, and involved students in the learning process. In particular, students had to reflect upon each song, interface with their classmates, and apply critical decision-making skills. The process was found to be interactive and included students in the learning process. The use of music and song lyrics was perceived as a clever instructional technique, which should be blended with other teaching strategies. Additionally, music should continue to be exploited as an instructional technique with Millennials because they listen to music on a regular basis when studying or writing papers. Data findings also revealed that song choice and the duration of each song may impact student engagement in a positive and or negative context. In this study, the researcher had selected the six songs for discussion. Perhaps, it would have been more prudent to have students select appropriate songs to reinforce course concepts. Finally, the use of music and song lyrics enhanced the focus of students. The researcher learned that students were exposed to listening to classical music when taking exams

in high school. Students revealed that their high school experiences helped to focus them on the task at hand. The findings revealed that the use of music complements the learning process for Millennials because it enhances their focus with the course material.

In the next chapter, findings from this study are compared to the existing literature about using song lyrics as an alternative instructional technique in the classroom. Additionally, both the themes and subthemes that were used to answer the research question are addressed. Finally, implications for theory, practice, and further research are explored.

## CHAPTER 5

### CONCLUSION

This qualitative phenomenological study examined the experiences of seven traditional undergraduate students when song lyrics were used as an alternative instructional technique. As a phenomenological study, the research was focused on the lived educational experiences of the participating students in their introductory statistics course. Previous research on instructional methods has indicated that traditional higher education primarily focuses on passive instructional methods such as lecture, which frequently results in one-way instruction, boredom, disengaged students, and a lack of deep student learning (Blumberg, 2008). Boredom tends to impact performance in achievement in educational settings (Pekrun, Goetz, Daniels, Stupinsky, & Perry (2010). In contrast, positive effects on student engagement and learning are reported when music and song lyrics are used as an alternative instructional technique (Jurmu, 2005; Krasnozhan, 2013; Leck, 2006; Levy & Byrd, 2011; Rosinski, 2015; Soper, 2010; Weinrauch, 2005).

Purposive sampling was used to establish the following participant selection: Traditional undergraduate business students, between 18 and 23 years of age, who were of the Millennial generation and enrolled in an introductory statistics course during the fall of 2017 at a private coeducational university in Pennsylvania. All participants were drawn from the same course. The total number of participants who consented to be interviewed for this study was seven. In order to develop a more thorough understanding of the experiences of these seven undergraduate business students when song lyrics were used as an alternative instructional technique, Five-Minute Response Forms were distributed at the end of class sessions on November 2, 2017, November 9, 2017, and November 16, 2017, seeking participant feedback about using song

lyrics as an alternative instructional technique. Five-Minute Response Forms also served in the context of triangulation as secondary data in reinforcing information gleaned during one-on-one participant interviews. One-on-one interviews with the seven participants began on November 17, 2017 and were concluded by December 20, 2017.

### **Interpretation of Findings**

The interpretation of the findings is linked to the research question that framed the basis for this study. The primary research question was: What are the lived educational experiences of undergraduate students in an introductory statistics course when song lyrics are used as an alternative instructional technique in the classroom? Findings from the data resulted in five significant themes: Music used as a memory aid, enhanced student engagement, effective teaching strategy, song selection may impact student disengagement, and enhanced focus.

#### **Memory Aid**

Based on collective participant feedback, using song lyrics as an alternative instructional technique does appear to have a positive impact on recollection of course concepts. Cognitively, music and song lyrics served as valuable recall and memory tool because it served to aid students in remembering the six steps of hypothesis testing. Furthermore, the use of music and song lyrics made the six steps of hypothesis much easier to understand and memorable because it was tied to lyrics from popular songs. The use of music and song lyrics makes understanding difficult concepts or statistical formulas much easier to remember.

#### **Student Engagement**

The use of music and song lyrics as an alternative instructional technique in a statistics course made class more fun and enjoyable. Instead of listening to a passive and boring lecture, which appears to be the norm in their college courses, students were able to enjoy listening to

and applying popular songs to the steps of hypothesis testing. Of greater significance, it involved students in the learning process. Students found it enjoyable to reflect upon each song with their classmates and apply critical decision-making skills.

### **Teaching Strategy**

The use of music and song lyrics was perceived as a clever instructional technique, which should be blended with other teaching strategies. Because Millennials listen to music on a regular basis when studying or writing papers, it was noted that music should continue to be exploited as an instructional technique in the classroom. Furthermore, the use of music and song lyrics effectively leveraged and addressed the musical dimension of Gardner's (2011) theory of Multiple Intelligence.

### **Song Selection**

In this study, the researcher had selected the six songs for class discussion and application. Perhaps, it would have been more effective to have students select appropriate songs to reinforce course concepts. By doing so, students would have been more interested in their genre of choice. Song choice and the duration of each song did indeed impact some of the students in a negative way. This was due to fact that the song was perceived as not enjoyable or simply too long to listen to, which resulted in some level of disengagement.

### **Enhanced Focus**

The use of music and song lyrics enhanced the focus of students. The researcher learned that students were exposed to listening to classical music when taking exams in high school. Students revealed that their high school experiences helped to focus them on the task at hand. The findings revealed that the use of music complements the learning process for Millennials because it enhances their focus with the course material.

Collectively, the findings show that participants were excited and seemed to enjoy the use of song lyrics in the classroom. More importantly, participants were pleasantly surprised how effective the use of song lyrics were in reinforcing course concepts.

### **Limitations**

Limitations of the study were threefold. First, sample size was relatively small, although from a qualitative standpoint, interviewing seven participants for a phenomenological study was considered acceptable. In contrast, the sample size of seven participants was not statistically valid for any type of quantitative methodology. Ultimately, results of this study cannot be generalized to any larger population. The second limitation of the study involved the fact that the principal investigator also served as the participants' professor for the introductory statistics course being studied. Although the principal investigator urged participants to be truthful in their responses, potential bias was possible. In other words, participants may have responded to questions in a certain way, in order to please their professor. In light of this, the principal investigator conducted one-on-one interviews after the course was completed. This was an attempt to resolve any issues of power imbalance between the principal investigator and the participants. Unfortunately, the researcher used his on-campus office as the venue for one-on-one interviews and should have selected a neutral site to further resolve issues of a power imbalance. A third limitation is that all participants were white. Further research is needed that includes students of color.

### **Implications and Findings Related to the Literature**

The results of this phenomenological study are useful for faculty in higher education who are seeking alternative instructional methods that are more active and engaging in nature. Findings from the data indicate how the use of song lyrics not only engages students but also has

a positive impact on their recollection of course concepts. The findings of this study supported current literature, indicating that the use of music and song lyrics as an alternative instructional technique enhanced student engagement and served as a valuable learning aid.

Weinrauch (2005) used musical lyrics when teaching college marketing courses. Students found the use of music to be fun and served as a valuable memory aid (Weinrauch, 2005). Rozinski (2015) implemented musical lyrics to teach political theory to his undergraduate college students. Rozinski (2015) reported that students found the use of music to be fun, enhanced their understanding, expanded their critical thinking skills, and served as a memory aid. In order to teach economic principles of change in demand and change in quantity demanded to traditional undergraduate college students in his economics course, Krasnozhan (2013) integrated lyrics from Beyoncé's popular song *Irreplaceable*. Krasnozhan (2013) found that students enjoyed the active learning involved instead of traditional lecture and textbook examples. Jurmu (2005) implemented musical lyrics in teaching his traditional undergraduate physical geography course. Jurmu (2005) concluded that the use of music maximized student involvement, understanding, and responsibility for their own learning. Levy & Byrd (2011) applied popular song lyrics to teach principles of social justice in traditional undergraduate college courses. The authors found that using musical lyrics in the classroom stimulated critical thinking, reflection, and generated thoughtful discussions. Soper (2010) used musical lyrics from rock and roll songs to engage his students in his traditional undergraduate political science courses. Soper's (2010) findings indicated that student engagement was enhanced, student energy level was boosted, and the learning process was enhanced by being able to make more meaningful connections to the concepts. Finally, Leck (2006) used a mixed-methodology when using music to teach personality theory in her traditional undergraduate college psychology

courses. Leck (2006) found that her students felt the use of music aided their understanding, made lectures more interesting, helped in applying concepts to the real world, served as a resource for future psychology courses, and was extremely beneficial as an instructional technique.

Differences in the current study, in relation to existing literature, rested on implementation of using song lyrics in the classroom rather than findings. For example, Weinrauch (2005) and Jurmu (2005) had students select their own songs in reinforcing course concepts. In contrast, the researcher of this study, not his students, selected songs to be used in the classroom. Rozinski (2015) used music in the middle of class in order to provide a more appropriate context. In this study, the researcher introduced musical lyrics at the beginning of class. Levy & Byrd (2011) distributed a handout with contextual information and dimmed the lights when music was played in class. The researcher of this study did not implement such methods. Leck (2006) used a mixed-methodology involving two separate groups for her study. In contrast, this study was qualitative in nature and involved only one group of participants.

Multiple Intelligence Theory (Gardner, 2011) provided an appropriate theoretical framework for this study. Gardner (2011) asserts that if educators apply Multiple Intelligence Theory to the design of their learning environments, the ability to engage students, dissolve misconceptions, and build firmer and more flexible understandings is increased. The impact of Multiple Intelligence Theory, specifically the use of music and song lyrics in the classroom, can further be applied to the three cornerstones of Student Engagement Theory: affect, cognition, and behavior (Fredericks, Blumenfeld, & Paris, 2004). By appealing to a student's musical intelligence dimension, interest and enthusiasm was heightened, because discussing the meaning of song lyrics was an active rather than passive instructional method. Second, from a cognitive

perspective, the use of integrating music and song lyrics in the classroom enhanced learning by stimulating both hemispheres of the brain and promoting deep learning. Third, the use of music and song lyrics in the classroom enhanced student interaction and behavior by engaging the senses through listening and analysis of lyrics.

Interestingly, using song lyrics in the classroom engaged not only a student's musical intelligence but also their interpersonal, intrapersonal, and linguistic intelligences. Interpersonal intelligence focuses on understanding others and working together. Students gained different perspectives by listening to different genres and then unpacking the meaning of the lyrics through discussion with their classmates. Intrapersonal intelligence involves how an individual understands his /her life and makes decisions how to live. In this study, the use of song lyrics helped students make sense of the world/specific situations and in some cases build strong self-esteem. Linguistic intelligence was enhanced by the actual song lyrics themselves.

On a broader scale, this study has implications for transformative leadership in the classroom. Faculty can become better agents of change by being more inclusive of all learning styles and intelligences through building a community of learners by incorporating more active instructional practices.

According to Ellis (2015), students are most familiar with traditional lecture and exam format courses and may resist learning-centered instructional methods. Furthermore, Weinrauch (2005) cautions that the use of song lyrics as an alternative instructional technique might be perceived as fluff or busy work by some educators and students. Consequently, the results of this study are also meaningful to the generation of learners known as Millennials in that they remain open to alternative instructional techniques aimed at leveraging their preferred methods of learning—encompassing technology (the use of YouTube music videos and/or Apple iTunes)

and shared learning in the classroom. Participants in this study were of the Millennial generation and found the use of song lyrics as an alternative instructional method to be enjoyable, entertaining, engaging, and served as a valuable learning aid.

### **Recommendations for Action**

The rationale and significance for this study was motivated by the researcher's desire to provide students with a learning experience that effectively complemented course concepts by being informative, engaging, and fun. The most significant recommendation for action is aimed at faculty in higher education. First, from a professional development standpoint, faculty are encouraged to review principles of Multiple Intelligence Theory (Gardner, 2011), Student Engagement Theory (Fredericks, Blumenfeld, & Paris (2004), Contemporary Pedagogical Theory (Feden, 2012), and the Cognitive Impact of Music (Levitin, 2007). Second, when crafting or designing courses, faculty should embrace principles of Revised Bloom's Taxonomy (Heer, 2012) in order to achieve principles of deep learning. When planning for classroom activities, faculty could easily incorporate the use of music in the classroom. This can be accomplished by using song lyrics as an alternative instructional technique, playing background music during class activities, or simply bringing an instrument to class to sing songs that reinforce course content. Ultimately, the researcher recommends that instructional methods should be more active and student-centric, rather than, passive and instructor-centric.

### **Recommendations for Further Study**

This study and most of the existing literature focused on the qualitative aspects of integrating song lyrics as an instructional technique in higher education. Given an appropriate sample size, further research should examine the quantitative findings of using music as a pedagogy in the classroom. It is recommended that hypothesis testing for matched/related

sample tests be considered to examine if there is a significant difference between measures before and after treatment of the phenomenon. Additionally, not only white students, but students of color need to be included in future research on the topic of using music as an alternative instructional technique.

### **Conclusion**

This study examined the lived educational experiences of undergraduate students in an introductory statistics course when song lyrics were used as an alternative instructional technique in the classroom. This study was aimed at students who were in the Millennial Generation and underscores the many benefits of active rather than passive instructional techniques, perhaps especially for Millennials. The findings concluded that students were more engaged in class, experienced greater focus, and found that the use of music served as a valuable learning aid in remembering critical course concepts. In terms of current theory and research on the topic, this study added to the concept of Contemporary Pedagogical Theory, which was already well-established by the previous literature. However, this study and most of the current literature focused on the qualitative aspects of using music as an alternative instructional technique in the classroom. Opportunities for further study should include those using a viable quantitative methodology.

## REFERENCES

- Barrington, E. (2004). Teaching to student diversity in higher education: How multiple intelligence theory can help. *Teaching in Higher Education, 9*(4), 421–434.
- Bhattacharyya, E., & Sarip, A. (2014). Learning styles and its impact in higher education and human capital needs. *Social and Behavioral Sciences, 123*, 485–494. Retrieved from <https://doi.org/10.1016/j.sbspro.2014.01.1448>
- Berk, R.A. (2008). Music and music technology in college teaching: Classical to hip hop across the curriculum. *International Journal of Technology in Teaching and Learning, 4*(1), 45–67. Retrieved from [http://www.ronberk.com/articles/2008\\_music.pdf](http://www.ronberk.com/articles/2008_music.pdf)
- Black, M. (2014, August 22). This is your brain on music: Maestro's concert-lecture shines a light on how we listen. *The Australian*.
- Blumberg, P. (2008). *Developing learner-centric teachers: A practical guide for faculty*. San Francisco, CA: Jossey-Bass.
- Boundless. What is pedagogy? *Boundless Education*, 26 May, 2016. Retrieved from <https://www.boundless.com/education/textbooks/boundless-education-textbook/curriculum-and-instructional-design-3/instructional-design-14/what-is-pedagogy-48-12978/>
- Campbell, L., Campbell, B., & Dickinson, D. (1996). *Teaching and learning through multiple intelligences*. Boston, MA: Allyn & Bacon.
- Creswell, J.W. (2013). *Qualitative inquiry & research design: Choosing among five approaches* (3rd ed.). Thousand Oaks, CA: Sage Publications.
- Dai, Y. (December 2013) Comparing discussion and lecture pedagogy when teaching oral communication in business course. *Research in Higher Education Journal, 22*.

- Dallimore, E. J. (2004). Classroom participation and discussion effectiveness: Student generated strategies. *Communication Education, 53*(1), 103-115.
- Desjardins, F.J. (2010, July 19). Theoretical frameworks [Video file]. Retrieved from <https://www.youtube.com/watch?>
- Eagan, M. K., Stolzenberg, E. B., Ramirez, J. J., Aragon, M. C., Suchard, M. R., & Rios-Aguilar, C. (2016). *The American freshman: Fifty-Year trends, 1966–2015*. Los Angeles, CA: Higher Education Research Institute, UCLA.
- Ellis, D. E. (2015, April 1). *Innovative higher education: What discourages students from engaging with innovative instructional methods: Creating a barrier framework*. Springer. DOI:10.1007/s10755-014-9304-5
- Faust, J.L., & Paulson, D.R. (1998). Active learning in the classroom. *Journal on Excellence in College Teaching, 9*(2), 3-24.
- Feden, P. D. (2012). Teaching without telling: Contemporary pedagogical theory put into practice. *Journal on Excellence in College Teaching, 23*(2), 5–23.
- Ferroni, N. (2012, November 8). *Using music in the classroom to educate, engage, and promote understanding*. Retrieved from [https://www.huffingtonpost.com/nicholas-ferroni/music-in-the-classroom\\_b\\_2072777.html](https://www.huffingtonpost.com/nicholas-ferroni/music-in-the-classroom_b_2072777.html)
- Fredericks, J.A., Blumenfeld, P., and Paris, A. (2004). School engagement: Potential of the concept, state of the evidence. *Review of Educational Research, 74*, 59–109. <https://doi.org/10.3102/00346543074001059>
- Gardner, H. (2011). *Frames of mind: The theory of multiple intelligences* (3rd ed.). New York, NY: Basic Books.

- Griggs, J. (n.d.). Generational learning styles. *Florida Institute of Technology*. Retrieved from [http://web2.fit.edu/ctle/documents/Course\\_Design/Generational%20Learning%20Styles%20Handout.pdf](http://web2.fit.edu/ctle/documents/Course_Design/Generational%20Learning%20Styles%20Handout.pdf)
- Hall, J. L. (2010). Teaching with music: An alternative pedagogy for leadership educators. *Journal of Leadership Studies*, 3(4), 108–110. DOI: 10.1002/jls.20147
- Hanc, J. (2016, June 22). *Teaching professors to become better teachers*. Retrieved from <https://www.nytimes.com/2016/06/23/education/teaching-professors-to-become-better-teachers.html>
- Heer, R. (2012, March). Revised bloom's taxonomy. Retrieved from <http://www.celt.iastate.edu/teaching/effective-teaching-practices/revised-blooms-taxonomy>
- Horovitz, B. (2012, May 4). After gen x, millennials, what should next generation be? Retrieved from <http://usatoday30.usatoday.com/money/advertising/story/2012-05-03/naming-the-next-generation/54737518/1?loc=interstitialskip>
- Jawaharial, M. (2017, July 19). *Professors must learn how to teach*. Retrieved from [https://www.huffingtonpost.com/entry/professors-must-learn-how-to-teach\\_us\\_593b66e4e4b0b65670e56a80](https://www.huffingtonpost.com/entry/professors-must-learn-how-to-teach_us_593b66e4e4b0b65670e56a80)
- Johnson, B., & Christensen, L. (2008). *Educational research: Quantitative, qualitative, and mixed approaches*. Thousand Oaks, CA: Sage Publications.
- Jurmu, M. C. (2005). Implementing musical lyrics to teach physical geography: A simple model. *The Journal of Geography*, 104(4), 179–186. Retrieved from <http://search.proquest.com/docview/216838739?accountid=10559>

- Kezar, A. (2001). Theory of multiple intelligences: Implications for higher education. *Innovative Higher Education*, 26(2), 141–154.  
[https://www.researchgate.net/publication/225870611\\_Theory\\_of\\_Multiple\\_Intelligences\\_Implications\\_for\\_Higher\\_Education](https://www.researchgate.net/publication/225870611_Theory_of_Multiple_Intelligences_Implications_for_Higher_Education)
- Krasnozhon, L. A. (2013). Using popular music to teach principles of economics: Beyoncé's take on demand and quantity demanded. *Journal of Private Enterprise*, 28(2), 139–149.  
Retrieved from <http://search.proquest.com/docview/1365183807?accountid=10559>
- Leck, K. (2006). Teaching personality theory using popular music. *Teaching of Psychology*, 33(1), 34–36.
- Levy, D.L., & Byrd, D.C. (2011). Why can't we be friends? Using music to teach social justice. *Journal of the Scholarship of Teaching and Learning*, 11(2), 64–75.
- Levonius, D. (2015). Generational differences in the classroom. *Association for Talent Development*. Retrieved from  
<https://www.td.org/Publications/Newsletters/Links/2015/02/Generational-Differences-in-the-Classroom>
- Levitin, D.J. (2007). *This is your brain on music: The science of a human obsession*. New York, NY: Plume/Penguin.
- Lincoln, Y.S., & Guba, E.G. (1985). *Naturalistic inquiry*. Thousand Oaks, CA: Sage Publications.
- McGlynn, A.P. (2005). Teaching millennials, our newest cultural cohort. *The Education Digest*, 71(4), 12-16. Retrieved from  
<http://search.proquest.com/docview/218179285?accountid=10559>

- Madkour, M., & Mohammed, R. (2016). Identifying college students' multiple intelligences to enhance motivation and language proficiency. *English Language Teaching*, 9(6), 92-107. Retrieved from DOI: 10.5539/elt.v9n6p92
- Merriam, S. B. (2009). *Qualitative research: A guide to design and implementation*. San Francisco, CA: Jossey-Bass.
- Merlot Pedagogy (2017). Learning-centered teaching. Retrieved from <http://pedagogy.merlot.org/LearnerCenteredTeaching.html>.
- Moustakas, C. (1994). *Phenomenological research methods*. Thousand Oaks, CA: Sage Publications.
- Pekrun, R., Goetz, T., Daniels, L., Stupinsky, R., & Perry, R. (2010). Boredom in achievement settings: Exploring control-value antecedents and performance outcomes of a neglected emotion. *Journal of Educational Psychology*, 102(3), 531–549.
- Pelletier, S. G. (Fall 2010). Success for adult students. *Public Purpose*. Retrieved from [http://www.aascu.org/uploadedFiles/AASCU/Content/Root/MediaAndPublications/PublicPurposeMagazines/Issue/10fall\\_adultstudents.pdf](http://www.aascu.org/uploadedFiles/AASCU/Content/Root/MediaAndPublications/PublicPurposeMagazines/Issue/10fall_adultstudents.pdf)
- Price, C. (2010). Why don't my students think I'm groovy?: The new "R's" for engaging millennial learners. Retrieved from <http://www.drto mlifvendahl.com/Millennial%20Characturistics.pdf>
- Prince, M., & Weimer, M. (2017, November 2). *Understanding student resistance to active learning*. Retrieved from <https://www.facultyfocus.com/resources/teaching-strategies-techniques/active-learning/student-resistance-active-learning/>
- Ravitch, S.M., & Riggan, M. (2016). *Reason & rigor: How conceptual frameworks guide research* (2nd ed.). Los Angeles, CA: Sage Publications.

- Regioniel, P. (2010). What is the difference between the theoretical and conceptual framework? Retrieved from <https://college-college-life.knoji.com/what-is-the-difference-between-the-theoretical-framework-and-the-conceptual-framework/>
- Robinson, T. E., & Hope, W. C. (2013). Teaching in higher education: Is there a need for training in pedagogy in graduate degree programs? *Research In Higher Education Journal*, 21, 1-11.
- Rockinson-Szapkiw, A. {The Doctoral Journey}. (2013.June 6). *The research planning process: The theoretical framework* {Video file}. Retrieved from [https://www.youtube.com/watch?v=VkiKK8sj\\_bs](https://www.youtube.com/watch?v=VkiKK8sj_bs)
- Rozinski, T. (2015). Using music and lyrics to teach political theory. *PS, Political Science & Politics*, 48(3), 483–487. doi: <http://dx.doi.org/10.1017/S1049096515000293>
- Saldana, J. (2016). *The coding manual for qualitative research*. Thousand Oaks, CA: Sage Publications.
- Soper, C. (2010). Rock and roll will never die: Using music to engage students in the study of political science. *PS, Political Science & Politics*, 43(2), 363–367. DOI: <http://dx.doi.org/10.1017/S1049096510000296>
- Tsou, H. (2007). To apply multiple intelligences in college students in taiwan. *The Journal of Human Resource and Adult Learning*, 3(2), 7–11. Retrieved from <http://www.hraljournal.com/Page/2%20Hui-fen%20Tsou.pdf>
- Tyler, C., & Loventhal, G. (2011). Can multiple intelligences enhance learning for higher education on-line instruction? *E-Leader Vietnam*. Retrieved from <https://www.g-casa.com/conferences/vietnam/paper/Tyler.pdf>

The Glossary of Education Reform (2016, February 18). Student engagement. Retrieved from [edglossary.org/student-engagement/](http://edglossary.org/student-engagement/)

Van Manen, M. (1990). *Researching lived experience*. New York, NY: State University of New York Press.

Warren, L. (2012, June 27). Are learning differences between generations a myth? Retrieved from <http://www.microassist.com/learning-dispatch/arelearning-differences-between-generations-a-myth/>

Why College Teaching is Difficult (n.d.). Retrieved from <https://learnercenteredteaching.wordpress.com/articles-and-books/why-college-teaching-is-difficult/>

Weinrauch, J. D. (2005). An exploratory use of musical metaphors to enhance student learning. *Journal of Marketing Education*, 27(2), 109–121. Retrieved from <http://search.proquest.com/docview/204412305?accountid=10559>

Younkin, W. (2009). Pedagogical and andragogical challenges in leadership education. *Journal of Leadership Studies*, 2(4), 72–74.

APPENDIX A:  
THE FIVE-MINUTE RESPONSE PAPER

**Participant ID: (pre-populated with participant ID)**

In concise, well-planned sentences, please answer the five questions below:

1. What was your experience with the use of song lyrics as an alternative instructional technique in the classroom tonight?
  
2. What about the use of song lyrics as an alternative instructional technique surprised you the most? (This could be something about your own reactions to what went on, or something that someone else did, or anything else that occurs to you.)
  
3. What action that anyone (professor or student) took in tonight's class did you find most helpful when song lyrics were used as an alternative instructional technique in complementing (hypothesis testing or chi-square test for independence or analysis of variance)?
  
4. What action that anyone (professor or student) took in tonight's class did you find most puzzling when song lyrics were used as an alternative instructional technique in complementing (hypothesis testing or chi-square test for independence, or analysis of variance)?
  
5. What question(s) remain uppermost in your mind regarding (hypothesis testing or chi-square test for independence or analysis of variance)? (Is there anything else you didn't understand?)

APPENDIX B:  
INTERVIEW PROTOCOL GUIDE

**Participant ID:** \_\_\_\_\_ (This will be pre-populated with the unique Participant ID number for each participant.)

**Date of Participant (Student) Interview:**

**Participant's Birth Year:**

**Beginning of Interview:**

- Take a few moments to reintroduce my topic of study.
- Reinforce that the participant's name/identity will not be published in my study. Participants will only be referred to by their alias identifier such as Participant ID 01, 02, 03, etc.
- Inform the participant that I will soon be recording our interview.
- Inform the participant that they do not have to answer any specific question(s) if they do not want to.
- Remind the participant they can end or withdraw from the interview at any time.
- Ask the participant if they have any questions. If so, I will answer their specific questions.
- Start the recorder.

**Interview Questions:**

3. Describe your experiences in class when we used song lyrics as an alternative instructional technique.
4. What were your thoughts, feelings, and emotions when song lyrics were used during the lesson?
5. At what moment did you feel most engaged when song lyrics was used?
6. What aspects of the lesson contributed to you being engaged?

7. At what moment did you feel disengaged when song lyrics were used?
8. What aspects of the lesson contributed to you being disengaged?
9. In what ways do you use music/song lyrics to help you study and/or learn?
10. Describe the benefits or challenges of using music/song lyrics to help you study and/or learn.
11. How do you think music/song lyrics should be used in the classroom?
12. Is there anything else that I did not ask you that you would like to share with me?

**End of the Interview:**

- Spend a few moments thanking the participant for their time and willingness to be interviewed.
- Stop recording the interview.
- Remind the participant that they can receive a copy of our interview transcript.
- Inform the participant that I may contact them in the near future should I have any follow-up questions.
- Ask the participant if they have any questions.
- Thank the participant once again for their time.

APPENDIX C:  
INSTITUTIONAL REVIEW BOARD APPROVAL



Institutional Review Board  
Olgun Guvench, Chair

**Biddeford Campus**  
11 Hills Beach Road  
Biddeford, ME 04005  
(207)602-2244 T  
(207)602-5905 F

**Portland Campus**  
716 Stevens Avenue  
Portland, ME 04103

To: Joseph Zagerman

Cc: Joanne Cooper

From: Olgun Guvench

Date: November 1, 2017

Project # & Title: 092517-007, Music as a Pedagogy in an Undergraduate Introductory Statistics Course (Initial)

The Institutional Review Board (IRB) for the Protection of Human Subjects has reviewed the above captioned project, and has determined that the proposed work is exempt from IRB review and oversight as defined by 45 CFR 46.101(b)(2).

Additional IRB review and approval is not required for this protocol as submitted. If you wish to change your protocol at any time, you must first submit the changes for review.

Please contact Olgun Guvench at (207) 221-4171 or [oguvench@une.edu](mailto:oguvench@une.edu) with any questions.

Sincerely,

A handwritten signature in black ink, appearing to be "Olgun Guvench", written over a light blue rectangular background.

Olgun Guvench, M.D., Ph.D.  
IRB Chair

IRB#: 092517-007  
Submission Date: 9/17/17  
Status: Exempt, 45 CFR 46.101(b)(2)  
**Status Date: 11/1/17**



## APPENDIX D

## STUDY INVITATION

November 2017

Dear Potential Study Participant:

As a doctoral student completing my dissertation study through the University of New England, I am inviting you to participate in a research study.

**Research Question:**

1. What is the experience of undergraduate students in an introductory statistics course when song lyrics are used as an alternative instructional technique in class?

**Study's Purpose:** The purpose of this qualitative phenomenological study is to examine the impact of using song lyrics as an alternative instructional tool with undergraduate students in an introductory statistics course at a private university in Pennsylvania.

**Procedures:** Your participation in this research study is completely voluntary. If you wish to participate in this research study, please sign and return the Consent Form document on November 2, 2017. You may pull out of the study at any time if you choose to. Song lyrics as an alternative instructional technique will be used on three class sessions: November 2, 2017, November 9, 2017, and November 16, 2017. The first class will examine two-tailed hypothesis testing when the population standard deviation is unknown. The second class will examine chi-square test for independence. The third class will examine analysis of variance (ANOVA). During each of these three classes, you will be given a statistical problem to answer using the specific inferential statistical technique being studied during that particular class. You will submit your completed answers to the principal investigator who also serves as your professor. Then, music as a metaphor will be used to reinforce each of the steps needed to solve the particular problem. You will then be given the same statistical problem to solve once again. You will submit your answers a second time.

The study also includes completion of a Five-Minute Response Paper after each of the three class meetings. Follow-up interviews are scheduled for November 17, 2017 through December 20, 2017. Interviews will be conducted in person in my on-campus office at a mutually convenient time and are expected to last between 20 and 30 minutes. Interviews will begin on November 17, 2017 and be completed by December 20, 2017. A sign-up sheet will be used on the day of the first teaching segment to schedule interviews. Interviews will be using a Sony digital voice recorder model ICDBX140 and an iPhone and then transcribed by the researcher. The study will run from approximately November 2, 2017 to December 20, 2017. I do not foresee this study presenting any risks or hardship on you, other than the time to invest in it. Upon your written request, I can send you a copy of my completed dissertation once it is finished and successfully

defended. If you choose not to participate in this research study, you will not need to sign the consent form or be required to complete the Five-Minute Response Form or interview. However, you will still be taking part in the lesson for that day. Your involvement or exemption in the study will have no influence on grading or performance assessment in the course.

**Confidentiality:** Your identity will be protected throughout the study and thereafter. Only I, the principal investigator, will have access to your information. The principal investigator will be the only person collecting the data to ensure the confidentiality of the university and participants, as well as to provide uniform collection procedures. Follow-up verbal/signed and written reports and discussions will identify you only as a number (i.e. Participant #01). The principal investigator will code participants with a number (i.e. Participant 01, Participant 02, etc.) to protect their confidentiality and maintain organization of the data throughout the study by using a secured Excel document with each student's name and corresponding unique Participant ID number. The data will be kept on only one personal laptop computer, which is password protected and accessed only by the principal investigator, with an online backup, which is also password protected. Identifying information will be removed from the principal investigator's computer after the study's completion and will not be accessible for future study uses. Completed pre and post participant answers to statistical problem exercises as well as Five-Minute Response Papers will be kept in a locked box in the principal investigator's home office. Individual responses will be reported without one's name. Your name will not be shared with anyone else. Your confidentiality will be protected in compliance with the University of New England's research with human participants' policies and procedures.

**Compensation:** No monetary or non-monetary compensation will be provided for your input or time.

**Questions:** If you have any questions or concerns regarding this study and your participation, you may contact me, the principal investigator, via e-mail at [joezagerman@gmail.com](mailto:joezagerman@gmail.com) or via my home phone personal line at 610-323-4417. You also may contact Dr. Joanne Cooper at the University of New England at [jcooper5@une.edu](mailto:jcooper5@une.edu) or by phone at 808-292-0543.

Thank you for your valuable insights and willingness to participate in this research study. Your contribution not only supports my dissertation study, but also contributes to the field of contemporary pedagogical theory.

Sincerely,  
Joseph Marc Zagerman, Doctoral Candidate, University of New England

APPENDIX E  
CONSENT FORM

November 2017

**TITLE OF STUDY**

USING SONG LYRICS IN TEACHING AN UNDERGRADUATE STATISTICS COURSE

**PRINCIPAL INVESTIGATOR (PRINCIPAL INVESTIGATOR and COURSE PROFESSOR)**

Joseph Marc Zagerman  
Doctoral Candidate  
University of New England  
610.308.4572  
joezagerman@gmail.com

**PURPOSE OF STUDY**

You are being asked to take part in a research study. The total number of participants anticipated for this study is 8. Before you decide to participate in this study, it is important that you understand why the research is being done and what it will involve. Please read the following information carefully. Please ask the principal investigator if there is anything that is not clear or if you need more information. The purpose of this study is to examine the impact of using music as a pedagogical tool on undergraduate students in an introductory statistics course at a private university in Pennsylvania.

**STUDY PROCEDURES**

Song lyrics as an alternative instructional technique will be used for three specific classes: November 2, 2017, November 9, 2017, and November 16, 2017. The first class will examine two-tailed hypothesis testing when the population standard deviation is unknown. The second class will examine chi-square test for independence. The third class will examine analysis of variance (ANOVA). During each of these three classes, you will be given a statistical problem to answer using the specific inferential statistical technique being studied during that particular class. You will submit your completed answers to the principal investigator who also serves as your professor. Then, music as a metaphor will be used to reinforce each of the steps needed to solve the particular problem. You will then be given the same statistical problem to solve once again. You will submit your answers a second time. At the end of each class, you will complete a Five-Minute Response Paper to shed light on your learning experience that evening. The principal investigator will schedule one follow-up interview with you between the dates of November 17, 2017 and ending December 20, 2017 to further understand your lived experiences regarding the use of music in the classroom. Interview questions focus on two critical areas:

1. Describe your experiences in class when we used song lyrics as an alternative instructional technique.
2. At what moment did you feel most/least engaged when song lyrics were used in class?

Interviews will be conducted in person in my on-campus office at a mutually convenient time and are expected to last between 20 and 30 minutes. Interviews will begin on November 17, 2017 and be completed by December 20, 2017. A sign-up sheet will be used on the day of the first teaching segment to schedule interviews. Interviews will be recorded by the principal investigator using a Sony digital voice recorder model ICDBX140 and an iPhone X. Interviews are expected to last between 20 and 30 minutes and will be transcribed by the researcher.

## **RISKS**

This study will not present any known risks throughout the process, other than inconveniencing you for your time to complete a Five-Minute Response Paper after each class and time needed for a personal interview with the Principal investigator (approximately 20–30 minutes) to be held between the dates of November 10, 2017 through December 20, 2017.

## **BENEFITS**

Potentially, you stand to benefit from the research findings in terms of enhancing your own deep learning by exploiting the musical dimension of Multiple Intelligence Theory in future educational settings. Additionally, the research may equip business educators with pragmatic methods of using music/song lyrics in the classroom to enhance the learning process of students. Finally, the study aims to contribute to the body of knowledge known as contemporary pedagogical theory.

## **CONFIDENTIALITY**

Your responses to the statistical problems, Five-Minute Response Papers, and questions asked during your follow-up interview will be confidential. Please do not write any identifying information on your statistical problem exercises or Five-Minute Response Paper. Every effort will be made by the principal investigator to preserve your confidentiality including the following:

- Assigning code names/numbers for participants that will be used on all research notes and documents. The principal investigator will code participants with a number (i.e. Participant 01, Participant 02, etc.) to protect their confidentiality and maintain organization of the data throughout the study by using a secured Excel document with each student's name and corresponding unique Participant ID number.
- Keeping notes, interview transcriptions, and any other identifying participant information in a locked file cabinet in the personal possession of the principal investigator.

Your confidentiality will be protected in compliance with the University of New England's research with human participants' policies and procedures.

**COMPENSATION**

No money or non-monetary compensation will be provided for your input or time.

**CONTACT INFORMATION**

If you have questions at any time about this study, or you experience adverse effects as the result of participating in this study, you may contact the principal investigator whose contact information is provided on the first page.

**VOLUNTARY PARTICIPATION**

Your participation in this study is voluntary. It is up to you to decide whether or not to take part in this study. If you decide to take part in this study, you will be asked to sign a consent form. After you sign the consent form, you are still free to withdraw at any time and without giving a reason. Withdrawing from this study will not affect the relationship you have, if any, with the principal investigator. If you withdraw from the study before data collection is completed, your data will be returned to you or destroyed. If you choose not to participate in this research study, you will not need to sign the consent form or be required to complete the Five-Minute Response Form or interview. However, you will still be taking part in the lesson for that day. Your involvement or exemption in the study will have no influence on grading or performance assessment in the course.

**CONSENT**

I have read, and I understand the provided information and have had the opportunity to ask questions. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving a reason and without cost. I understand that I will be given a copy of this consent form. I voluntarily agree to take part in this study.

Participant's signature \_\_\_\_\_ Date \_\_\_\_\_

Investigator's signature \_\_\_\_\_ Date \_\_\_\_\_