3-22-2016

The Relationship Between Learning Styles and the Choice of Learning Environment for Hospitality and Tourism Undergraduate Students

Gunce Malan-Rush

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The Relationship Between Learning Styles and the Choice of Learning Environment for Hospitality and Tourism Undergraduate Students

by

Gunce Malan-Rush

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Curriculum and Instruction with an Emphasis in Adult Education
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Date of Approval:
March 3, 2016

Keywords: MBTI, Personality, Introduction to Hospitality, Online, Face-to-face

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Dedication

This work is dedicated to my parents, Ummahani and Nuri as well as my husband, Mike for believing in me and standing by me. The best is yet to come . . . .
Acknowledgments

I was very fortunate to have my family, my professors, and friends support me throughout my graduate experience. I would like to thank my parents Ummahani and Nuri for helping me go after my dreams. We did it, Mom and Dad!

My deepest appreciation also goes to my husband, Mike, for his encouragement, support and the sacrifices you have made along this journey with me. Most of all, thank you for loving me, learning with me, taking care of me, and believing in me. You make me want to be a better person every single day!

I would like to extend an extra special thanks to Dr. Waynne James, my major advisor, for her excellent guidance, endless patience with my accent and my questions, and most of all her invaluable time and advice. I would also like to thank my dissertation committee members, Dr. Cihan Cobanoglu for his expertise in Hospitality and Tourism Education and his priceless support. I would like to thank Dr. Bill Young for his guidance throughout my doctoral journey. Finally, I would like to thank Dr. Jeffrey Kromrey for his invaluable support and guidance to improve my dissertation.

A special gratitude also goes to John McKibbon who funded me throughout my doctoral degree with M3 Center. I learned such a great deal through his support. In addition, I would like to extend a special thanks to Karen Harper who took care of me with everything she could do. Your willingness to stand by my side through it all will not be forgotten and I will always be grateful!
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Abstract

The purpose of this study was to explore the relationship between learning styles and the choice of learning environment for Hospitality and Tourism undergraduate students. An anonymous two-part survey was sent to the instructors of Introduction to Hospitality and Tourism Management courses (both online and face-to-face) in four schools in the state of Florida. The survey was designed to gather information related to the following three research questions related to MBTI profiles for undergraduate students in attempt to identify differences between students enrolled in online classes and those in face-to-face classes. In order to determine the probability of predicting course choice behavior of undergraduate Hospitality and Tourism students, the following factors were controlled in this research: age; gender; enrollment status; employment status; university; whether they had taken an online course previously in high school, college, or other places; how many online courses they previously took; and who helped them select the delivery mode of their courses.

There were 323 usable responses, which included a majority of the most common types as ESTJ. When the differences between online and face-to-face course students were analyzed through chi-square tests, the results showed significant differences between two groups for all four profiles. Overall, the most common profile for face-to-face students was ESTJ, while the most common profile for online students were ISTP. In order to examine the unique contribution of learning styles on Hospitality and Tourism
students’ course choice, a hierarchical logistic regression model was used. The results of the model indicated that only profile one (P1) and profile four (P4) were significant predictors among the four profiles, along with the total number of online courses previously taken.

The conclusions suggested that by looking at P1, P4, and toc1, with a 95% confidence level, the probability of students choosing face-to-face classes can be predicted if the students are extrovert, judging, and previously had taken less than five online courses. If learning styles can be determined ahead of time, students can choose appropriate courses, instructors can develop teaching strategies that will match students’ desirable learning styles, and the number of face-to-face and online courses can be adjusted in each program to offer an appropriate number of courses each semester.
Chapter 1

Introduction

The diversity in learners' learning efforts (Grasha, 1996; Wratcher, Morrison, Riley & Scheirton, 1997) and learners’ preference for certain methods of learning over others have been recognized by many researchers (Allen & Seaman, 2007; Diaz & Cartnal, 1999; Harrington, & Loffredo, 2010; James & Blank, 1995; Kemp & Morrison, 1998; Prensky, 2001; Thompson, 1998; Young & Norgard, 2006).

Beder (1990) described the four purposes of adult education as: to facilitate learning; to support and maintain learner; to promote productivity; and to enhance personal growth. Because not everyone learns the same way, differences among learners can be identified as each individual’s preferred method of receiving the information, processing it, and using it to acquire and apply to further knowledge. This is widely referred to as personality type and as learning style (Lucas, 2007). As Bransford, Brown, and Cocking (2000) summarize “How people take in information and prioritize that information to make decisions is the basic facet of how people learn” (p. 131). Grasha (1996) defined learning styles as “personal qualities that influence a student’s ability to acquire information, to interact with peers and the teacher, and otherwise to participate in learning experiences” (p. 41).

Furthermore, Grasha (1996) and Cassidy (2004) stated that even though there are different learning styles, each learner possesses some of each, and in a perfect
environment, learners would have a balance of all. However, in reality, learners prefer one or two styles more frequently compared to other styles. Dowdall (1991) and Zonash and Naqvi (2011) suggested that learners could be encouraged to favor certain learning styles through particular teaching styles or course structures.

Although many faculties are aware of the different types of learners, not all are willing to employ a variety of teaching activities to accommodate different learners. In addition, some faculty may think whatever works for traditional face-to-face classes will also work for online classes, so the assumption is that learners’ preferences for both course types should be the same and that no modification is needed (Diaz & Cartnal, 1999; Wu & Alrabah, 2009).

However, if there were no differences in learning styles, the success rate for students in both learning environments would be expected to be somewhat similar when faculty members use the same type of teaching/learning activities that have worked in face-to-face environments in the online environment (Lawrence & Abel, 2013). Since optimal learning is dependent on the preferred learning style, it is important to acknowledge the impact of learning styles on students’ overall experiences with the specific learning environment choice (Lawrence & Abel, 2013).

**Statement of the Problem**

Although research has provided feedback about the use of learning style instruments in online and face-to-face education (Allen & Seaman, 2007; Harrington, & Loffredo, 2010), no formal research has been found on the relationship of learning styles and course choice. In addition, there had been no research that explored the course choice of undergraduate Hospitality and Tourism students controlling for age;
gender; enrollment status; employment status; university; whether they had taken an online course previously in high school, college or other places; how many online courses they previously took; and who helped them select the delivery mode of their courses. Previous research has found non-personality related factors like age, employment status, flexibility, and difficulty level as reasons to explain why students choose online versus face-to-face classes (Northrup, 2002; Young & Norgard, 2006).

Horton, Clarke, and Welpott (2005) identified the personality differences between the US college graduates and Hospitality and Tourism management graduates by using the Myers-Briggs Type Indicator (MBTI). The result indicated that Hospitality and Tourism management students possessed different personality styles than the general US college graduate population. Since Hospitality and Tourism students indicated different personality styles than the general US college graduates, investigation of the impact of the styles on their course choice might reveal information for program coordinators in terms of the need for more or fewer online classes, information for advisors to guide students in their course choice, and also information for faculty in designing their courses to consider a variety of learner needs.

Finally, no research literature was found that specifically looked at the relationship between learning styles and Hospitality and Tourism students’ course choice, controlling for age, gender, enrollment status, employment status, university, whether they had taken an online course previously in high school, college, or other places, how many online courses they previously taken, and who helped them select the delivery mode of their courses. The study aimed to offer specific MBTI profiles for Hospitality and Tourism students according to course preferences.
Purpose Statement

The purpose of this study was to explore the relationship between learning styles and the choice of learning environment for Hospitality and Tourism undergraduate students. In this study, the choice of learning environment involves the course choice of online or face-to-face courses. Previous research has found non-personality related factors like age, employment status, flexibility, and difficulty level as possible factors to explain why students choose online versus face-to-face classes (Northrup, 2002; Young & Norgard, 2006). In order to investigate the unique contribution of learning styles on the course choice of the students, the combination of age; gender; enrollment status; employment status; whether they have taken an online course previously in high school, college, or other places; how many online courses they previously took; and who helped them select the delivery mode of their courses.

Research Questions

The research questions guiding this study were:

1. What percentages of the Hospitality and Tourism students are classified into each MBTI profile?

2. Do the percentages of the Hospitality and Tourism students in each MBTI profile differ between those in online classes and those in face-to-face classes?

3. To what extent, do different MBTI profiles predict Hospitality and Tourism students’ course choice controlling for age; gender; enrollment status; employment status; university; whether they have taken an online course previously in high school, college, or other places; how many online course
they previously took; and who helped them select the delivery mode of their courses?

**Significance of the Study**

The idea for this study surfaced from personal experience and observation of the academic advisor/faculty-student and student-student relationship. Learning environments are rapidly changing; there is no necessity to attend a physical classroom, since many programs are offering 100% online versions so students can get their education from the privacy of their homes (Rogowsky, Calhoun, & Tallal, 2015). The variety of courses increased even more with the availability of both online and face-to-face options for the same courses. Students often seek opinions from their academic advisors, faculty, and senior-level students about course options and their potential for success in those courses.

A noticeable gap existed between online and face-to-face course options in higher education. From 2010 to 2011, the acceptance of online learning environments among higher education institutions increased tremendously and the focus shifted to whether learning outcomes are comparable between online or face-to-face offerings (Allen & Seaman, 2011).

Furthermore, Hillstock (2005) stated that students in higher education needed to consider their best method of learning prior to course selection --whether online or face-to-face-- in order to guarantee a higher success rate. There are more than 200 Hospitality and Hotel Management degree programs across the United States. In Florida, there are about 30 programs that offer Hospitality, Tourism, and Recreation Management (Dodge, 2014). As such, this study aimed to explore the specific type of
learners within Hospitality and Tourism schools and their course choice. This knowledge could be critical in guiding students in their course choice and could help for future planning of the programs in content, focus, and structure to ensure student success both in school and in the global work force.

**Theoretical Framework**

The basis for this study was drawn from the type theory proposed by Jung (1971). Type theory states that there is a reason behind each human behavior, “what appears to be random behavior is actually the result of differences in the way people prefer to use their mental capacity” (p.20). Individuals generally engage in one of the two mental functions: perceiving or sensing. Perceiving is taking in information that is provided objectively, while sensing is acquiring the information through five senses. Others acquire it through “intuition” or organizing the information and coming to conclusions that is called “judging”. Some organize the information through logical, objective analysis that is called “thinking”, others through reference to its impact on others that is called “feeling” (Osborne, 2012). Although everyone takes in information and makes decisions, some prefer to do more perceiving; others prefer to do more judging.

Furthermore, Jung (1971) indicated that each person seems to be more involved by either the external world, which is called “extraversion”, or the internal world, which is called “introversion”. Although individuals can have different preferences for different situations and may use both worlds to recharge, one of them usually is more dominant (Myers, 1998). Jung’s type theory was incorporated into the instruments developed by Myers and Briggs (MBTI). By using MBTI, students’ course choice behavior was explored in order to investigate the predictability of course choice from the identified
learning styles of the individuals.

**Limitations**

The limitations of research are often characteristics of the methods that affect the interpretation of the study results (Leedy & Ormrod, 2005). The first limitation of this study was the data collection method; the sample was drawn using purposeful sampling, so the study results are only valid for those students in Hospitality and Tourism schools that match the criteria of offering undergraduate Introduction to Hospitality and Tourism Management course both online and face-to-face during spring semester 2016. In addition; respondents only answered the MBTI Form M online version along with the demographic questions, observations in the natural setting were not conducted to confirm the reported ways of learning. The third limitation was related to the time-constraints; the data collection only occurred the first week of the semester (January 6-17), students who added or dropped the class after the first week were not included in the sample. Finally, the length of the questionnaire for MBTI Form M online version might have created questionnaire-fatigue and may have influenced the validity of student’s responses, but it was assumed that the respondents completed the questionnaire objectively.

**Delimitations**

The study only included the Hospitality and Tourism Schools that offered undergraduate Introduction to Hospitality and Tourism courses both face-to-face and online version during spring semester 2016 in the state of Florida. There were 30 colleges and universities that offer Hospitality and Tourism Management degree (Dodge, 2014), but not all the schools were teaching the Introduction to Hospitality and
Tourism course as both online and face-to-face in the same semester during spring semester 2016. In addition, although there were various ways of describing learning styles, this study was limited to the description of learning styles as provided by MBTI Form M.

**Definition of Terms**

These are the operational definition of the terms used in the study.

**Employment status:** Whether the student is employed (part-time or full-time) or not.

**Enrollment status:** The number of credits the student is taking per semester: 12 credits or more per semester to be defined as full-time or 6-11 credits per semester to be defined as part-time.

**Face-to-face class:** Students and the instructors meet in a specific classroom at a specific time on a regular basis in the presence of each other.

**Hospitality and Tourism undergraduate students:** For the purpose of this study, students who were enrolled in Introduction to Hospitality and Tourism Management courses within online or face-to-face class during spring semester 2016.

**Learning styles:** Multiple levels of information processing from perceptual to metacognitive that help learners to be grouped according to the type of most common function they practice (Kozhevnikov, 2007).

**Learning environment:** For the purpose of this study, learning environment will consist of both online and face-to-face classroom settings.

**Myers-Briggs Type Indicator:** The personality inventory designed to identify an individual’s preferences on eight characteristics implicit in Jung’s type theory (Myers, McCaulley, Quenk, & Hammer, 1998).
Online class: 80% or more of the course content delivery, interactions, and activities occur online (Allen & Seaman, 2013).

Prior online courses taken: Whether the student took any previous online course or not.

Organization of the Study

Chapter 1 includes the statement of the problem, purpose, research questions, theoretical framework, limitations, delimitations, definition of terms, and organization of the study. Chapter 2 includes a review of literature concerning the concept of learning styles, the importance of learning styles, concerns about learning styles, face-to-face learning environments, online learning environments, and Hospitality and Tourism schools. Chapter 3 reports the procedures utilized in this study including the research design, population and sample, instrumentation, validity and reliability, data collection, and data analysis. Chapter 4 covers the presentation of the findings. Finally, Chapter 5 presents the summary, conclusions, implications and recommendations.
Chapter 2

Review of Related Literature

The purpose of this study was to explore the relationship between learning styles and the choice of learning environment for Hospitality and Tourism undergraduate students. The parts of this chapter include, the concept of learning styles, the importance of learning styles, concerns about learning styles, face-to-face learning environments, online learning environments, Hospitality and Tourism schools and summary.

The Concept of Learning Styles

Because of the complexity of the learning process for adults, practitioners and researchers still cannot agree on a single definition. However, the most common definition of learning style was described as how learners react to their learning environment (James & Blank, 1993). Keefe (1987) pointed out that learning styles include cognitive styles (information processing), affective styles (aspect of personality) and physiological styles (biologically-based responses). Lawrence (2009) argued that learning styles come from nature, but also through nurture since individuals learn to recognize environmental opportunities.

Furthermore, Keefe (1987) noted that since learning is an internal process, change of behavior could be observable. Jung (1921) believed that human behaviors cluster in particular patterns uncover mindsets and distinct way of processing information. Each
individual is born with a natural tendency for one type. Furthermore Jung argued that all conscious mental activity occurs in two perception processes (Sensing [S] and Intuition [N]) and two judgment processes (Thinking [T] and Feeling [F]), everyone uses a combination of these four processes, but they differ in how much and how well they are used. Individuals may use the dominant process in their outer world (Extrovert [E]) or in their inner world to make decisions (Introvert [I]). In addition, they can also make their outer world decisions organized and planned or they can make their outer decisions spontaneously (Lawrence, 1984).

Lawrence (2009) believed that type theory provides a unique way of looking at psychological nature, it is a preference category rather than a mind set and comes with individual mental processing that is specific to a particular type. Using psychological type can help students discover their unique potential, since types can initially affect the life of the individual with family and friends, at school, or on a job. In addition, understanding the audiences' mental processing can help reach them better in terms of instruction, supervision, and guidance.

Lawrence (1997) disclosed that type and learning style are certainly not synonymous but type reveals important information about the learning preferences. There is evidence that individuals may change their learning strategies from situation to situation, and from teacher to teacher, depending on the learning activities required in each setting (Allen & Seaman, 2007; Bransford et al., 2000; Harrington & Loffredo, 2010). However, Lawrence (2009) ascertained that type preferences exhibited by the MBTI are a part of learning strategies that can be expected to remain the same across situations. The author defined learning style in differing aspects:
Cognitive style in the sense of preferred or habitual patterns of mental functioning: information processing, formation of ideas and judgments. . . . Patterns of attitudes and interests that influence what a person will attend to in a potential learning situation. A disposition to seek out learning environments compatible with one’s cognitive style, attitudes and interests and to avoid environments that are not congenial. Similarly, a disposition to use certain learning tools to use them successfully, and to avoid other tools. (Lawrence, 2009, p. 38)

Lawrence (1984, 1997) acknowledged that more than 80% of the studies were able to analyze learning styles from the MBTI four opposite pairs without using the 16 preference types. How each pair (E-I, S-N, T-F, J-P) affects overall learning was characterized into three categories in terms of cognitive style, study style, and instruction in which each category provides information about the individual learning aspects. In addition, Elliott (2006) in his study of Psychology students’ MBTI profiles for online and face-to-face courses suggested that an individual’s tendency for either introversion or extroversion has an effect upon which type of course produce a higher comfort level.

**The Importance of Learning Styles**

Recognition of individuals’ preferred learning styles with the hope of greater academic achievement where learning improves is a common practice within the field of education (Rogowsky et al., 2015). While there is evidence that, when asked, individuals indicate preferences for how they want the information to be presented to them, there is limited empirical evidence that the level of learning improvement from instruction based on preferred learning styles exists (Pashler, McDaniel, Rohrer, & Bjork, 2008). Recent research has focused on discovery of best practices and methods of instructions in order to promote highest possible student success (Linda, 2012).
Pashler and colleagues (2008) defined learning styles as “the concept that individuals differ in regard to what mode of instruction or study is most effective” (p. 105). Sternberg, Grigorenko, and Zhang (2008) also described learning styles as a concept that is based on both ability and personality that individuals prefer one approach over another depending on their learning needs. According to learning style theory, individuals perceive, process, and understand in a particular way that is consistent with their style, thus the harmony between the individual style and learning activities provides a positive impact in learning performance (Felder & Brent, 2005).

In addition, learning styles theory asserts that struggling to learn new material might be from not being taught in a mode that the individual prefers. Individuals with learning styles that are not compatible with the instructors’ teaching methods need to work harder to learn or learn only some of the material that is covered in a particular setting (Irvine & York, 1995). Thus educators and trainers should recognize the individual learning styles that their audiences prefer (Rogowsky et al., 2015).

While much has been written about advantages and disadvantages of both online and face-to-face learning environments, less is known about specific personal characteristics of the individual learners in each environment (Lawrence & Abel, 2013). Researchers looked for the significant differences between online class students and face-to-face class students.

Wang and Newlin (2000) compared three online and three face-to-face psychology statistics class students who received the same syllabus, same homework assignments, same midterm and final exams from the same instructors during fall, spring, and summer terms ($n = 117$). The data collection involved seven cognitive-motivational
surveys (Academic Locus of Control Scale; Learning Styles Inventory; Need for Cognition Scale; Approaches to Studying Inventory; WOFO (Work Orientation and Family Orientation Scale); Style of Processing Questionnaire) and an online-class activity and study habits survey. The only difference between the online and face-to-face versions of the course was the online version of the class had an online study group component, so students were to have group study sessions. The researchers compared the online and face-to-face version of the psychology statistics class in terms of the students' psychological (cognitive-motivational) and demographic characteristics. The study found that online students exhibited more external locus of control and there was no difference in demographic characteristics between face-to-face and online class students in Psychology major.

In another study, Lam (2009) investigated the effectiveness of web-based courses on technical learning by using six web-based and three face-to-face undergraduate courses in two academic years ($N = 364$). The researcher collected the data from class records and students' records from the university system. The study found no significant difference between two learning environments on student performance. However, gender was only significant in face-to-face classes. In terms of ethnicity, read rate, hit rate, total score, and communication method, there were no significant differences. In addition, grade point average (GPA) was only significant predictor at a significance level of zero.

Whereas, Bye, Smith, and Mongham (2009), in their quasi-experimental study, compared the post-course ratings of online discussions with peers and in-class reflection with one-time feedback. The study included students from the experimental
group \( n = 11 \) and students from the comparison group \( n = 14 \) from the Organization and Community Practice II course. Five forms of data were collected: pre- and post-self assessment of student, end-of-semester student ratings, course satisfaction, preferred reflection format, and course grade. The study found significant differences between the two learning environment in terms of student expectations. Younger students expected to gain more knowledge and understanding in addition to more apt to create changes in the learning environment.

Graf and Kinshuk (2007) argued that the varieties of student learning approaches are commonly recognized by educational researchers and theorists, because of the acceptance of individual personality characteristics. Laney (2005) also argued that personality traits exclude the preferred method of taking in information, studying common cluster of traits that produce certain behavior patterns should help finding the reasoning, since the gene formulas compromising human brain chemicals and neurotransmitters are 99.9% are the same among humanity.

Beginning adult learning research was mainly interested in the individual learner, how the learner processes information and what this information initiates a change in the adult learner. Later research focused more on the context where learning takes place and the external factors that adult learners need to consider (Merriam, 2008).

Liu (2007) also suggested that when using learning styles inventories, educational programs could use the information and adapt instructional strategies that are compatible with students’ desires. Another study found significant differences between black and white students in online learning environments; white students were performing better than black students (Lu, Yu, & Liu, 2003). However, Wallace and
Clarina (2005) found no difference between black and white students in the online learning environment. In sum, researchers have found mixed and inconclusive results on the impact of personal characteristics and demographics on student learning (Lawrence & Abel, 2013).

**Concerns About Learning Styles**

While the importance of learning style is widely accepted among the researchers and theorists, there are also some concerns that are worth considering. Coffield, Moseley, Hall, and Ecclestone (2004) suggested that because of the number of instruments that have been developed to assess the individual learning styles, it is hard to develop a unified result, learning styles are divided into three linked areas of activity: theoretical, pedagogical and commercial. In addition, the research on learning styles spread across the disciplines of psychology, education, business, and sociology and, in each discipline, researchers tend to interpret findings with their own terms, the competition among disciplines led to variety of different assessment instruments over the time (Coffield et al., 2004).

Another concern is the variety of definitions of learning styles: some researchers believed style is a trait that is stable; other believed that it is a trait that can be changed through learning experience (Choi, Lee, & Kang, 2009). Furthermore, some researchers argued that learning styles affect preference and outcomes; while others disagreed and claimed learning styles do not affect preference and outcomes, in fact, the facilitator should encourage students to adapt to different learning methods (Loo, 2002). According to Mayer (2009), there is a lack of experimental tests in the literature regarding learning styles theory, since the concept is missing empirical findings (Mayer,
Technology has made an impact on education, has helped expand and added new dimensions to the traditional classroom education. Greer and Mott (2010) stated that students’ demonstration of technological competencies is vital in order for an instructor to meet the diverse learning needs of the students. The authors further explained the three distinct technological competency areas as (a) basic technological skills which is defined as “the operation of applications for personal communication” (p. 32) such as word processing; (b) professional technological skills which is defined as “The higher, intermediate levels for professional communications” (p. 32) such as certified signature use in emails; (c) application of technology in instruction which is defined as “the technological competency of instructors approximates or matches the progression of the technological tools created” (p. 33).

The rapid changes in technology also encouraged teachers, instructors, and learners for greater use of the available technology and self-initiated learning environments (Song, 2010). Moore (2005) described the traditional (also known as face-to-face) learning environment as having cognitive presence; in which learner has an interaction with the content; teaching presence, in which the learner has an interaction with instructors; and social presence, in which the learner has an interaction with classmates.

Kirtman (2009) identified key factors in the face-to-face learning environment as access to peer questions and corresponding answers about the topic, regular weekly meetings, active learning, participation, and access to the facilitator. Simmons, Jones,
and Silver (2004) also portrayed face-to-face classes as learning environments where the facilitator is responsible for creating the structure of a traditional course in which learners attend a physical classroom at a specific time.

Rodriguez, Ooms, Montanez, and Yan (2005) found that student perceptions of the quality of the education received increased their motivation and increased motivation results at a higher satisfaction rate in course experience, which directly affects the comfort level with technology. Harper, Chen, and Yen (2004) described the traditional face-to-face classroom environment as overcrowded, time consuming, with little or no difference in terms of the capacity of students learning.

**Online Learning Environments**

The first distance education in literature was Pitman’s correspondence course teaching workers in Business Administration a more efficient method of note taking called shorthand in 1840s (Clark & Riley, 2001). With technology and the corresponding tools, learning opportunities that are not possible in a face-to-face classroom setting become possible through distance education (Howard, Schenk, & Discenza, 2004).

Simmons et al. (2004) described online courses, also known as web-based and distance education, as learning environments where the learner is more responsible for the experience. Moore (2005) also defined online learning as planned learning that occurs in a different place than where teaching occurs, thanks to special course design, instructional techniques and communications through technology. With the development of the computer and the Internet in 20th century, an explosion of access to learning occurred (Linda, 2012). Online classes were designed to make education
accessible to any student to enhance the programs by providing flexibility (Dutton, Dutton, & Perry, 2002).

Derntl and Motschnig-Pitrik (2004) found that blended or distance learning environments (face-to-face and web-based combinations) help students enhance the process of learning and advance self-directed learning through alternating teaching strategies along with technology. Thus, a shared learning process that allows for self, peer, and instructor reflection and assessment emerged with instructors’ recognition of technology and control with meaningful engagement activities (Greer & Mott, 2010).

In their comparison of online and face-to-face classes, Kitsantas and Chow (2007) concluded that students were more likely to approach their online facilitator, because it was more effective to obtain help from the instructor via electronic tools that allow students the time to prepare their questions by limiting the feelings of embarrassment. On the other hand, the authors also stated that students with high self-efficacy would seek assistance without seeing it as a threat. Ng’ambi and Brown’s (2009) research also supported the previous finding that students preferred to use technology for discussing concerns even in a face-to-face course structure. However, Lei and Gupta’s (2010) study of the relationship between online learning and learner’s intention suggested that online students rely on their feelings without requiring logic.

Online learning has become a very common phenomenon in U.S. higher education (Allen & Seaman, 2007; Harrington & Loffredo, 2010; Song, Singleton, Hill, & Koh, 2004; Young & Norgard, 2006). Numerous researchers have investigated the various aspects of this phenomenon of online learning. The implications of learning online versus face-to-face (Fortune, Spielman, & Pangelinan, 2011; Harrington & Loffredo,
2010), student’s acceptance of online learning in Hospitality and Tourism schools context (Lucas, 2007; Song, 2010), the impact of student characteristics on learning environments (Wang & Newlin, 2000), outcome performance differences between these two learning environments (Ferguson & Tryjankowski, 2009; Hylton, 2008), and the reasoning behind student’s preference of face-to-face classes (Ballard, Stapleton, & Carroll, 2004; Harrington & Loffredo, 2010; Young & Norgard, 2006; Zeng & Perris, 2004) have all been researched.

Despite the increased offerings of online courses, little is known about the effectiveness of this mode for specific student populations (Moore, 2005). Dille and Mezack (1991) suggested that because online courses often trigger social isolation and require greater reliance on independent learning skills, students with less need for concrete experiences may be expected to fit better in this learning environment, while students with greater sensitivity to feelings require more interactions with peers and instructors.

That is to say, students who needed concrete experiences and were not able to think abstractly were at high risk in an online learning environment. Similarly, Gee (1990) revealed that students with both social and applied learning styles performed much better in face-to-face classes, while students who favored an independent learning environment performed better in online classes.

Online class students seem to have fewer constraints than face-to-face class students (Huff & Edwards, 2001; Moore, 2005). In addition, online class students are free to learn at their own pace with no travel costs to get to the classroom (Lin & Hsieh, 2001). Also, the balance of power in the classroom is more equally shared (Roberts-
and younger students are more comfortable with the online learning environment (Lam, 2009). Whereas, students who are not techno-savvy may feel frustrated; students who are not strong in writing and reading skills may also be at a distinct disadvantage (Sweeney & Ingram, 2001). The online learning environment might constrain the students who thrive on face-to-face interaction, spontaneous discussion, and/or immediate feedback (Lawrence & Abel, 2013).

Dewar and Whittington (2000) asked 21 graduate students who were familiar with the Myers-Briggs Type Indicator (MBTI) and who had experience with online classes to participate in an online discussion about how their MBTI type related to their online experiences—the researchers found no differences. Lucas (2007) examined 47 students’ preference for online courses in two graduate online courses. Harrington and Loffredo (2010) examined 166 college students’ preference for online versus face-to-face instruction with MBTI and found students prefer online classes more. There is a common ground among researchers that online education and traditional instruction varies, as far as transfer of learning; however, the “majority found no significant difference between the delivery mode” (Donavant, 2009, p. 228).

**Hospitality and Tourism Schools**

The Hospitality and Tourism industry contains about one quarter of the total service sector employees (Rakicevik, Miladinoski, & Stresozka, 2008). Hospitality industry continues to expand despite economical problems and this growth could be transformed into an increasing demand for a competent workforce that will come from Hospitality and Tourism programs (Gursoy, Rahman, & Swanger, 2012).
Even though ongoing changes in the hospitality curriculum are inevitable, the impact of technology also cannot be ignored (Airey & Trive, 2005). Earlier studies suggested that hospitality students are expected to have solid computer skills, which supports online or mixed learning environments in which the instruction occurs via technology (Busby & Huang, 2012).

Horton, Clarke, and Welpott (2005) conducted a longitudinal study of personality assessment for undergraduate human resource management classes by using MBTI Form G questionnaire between fall 2000 to spring 2004 ($N = 884$). The percentages of students who were classified into each MBTI profile was compared to the percentages of the population who were classified into those MBTI profiles. The study found that Hospitality and Tourism students have distinct personality styles compare to general US college graduate population. On this sample, 73% were extroverts; in addition, the sample substantially over represented sensing, feeling, and perceiving profiles. Similarly, ESTP, ESFP, ENFP and ENTP were the most common profiles among the student population.

Furthermore, Ehrbar (1993) suggested that Hospitality programs should produce graduates who are technology competent in order to qualify for a job in the global market. Thus, Hospitality and Tourism Programs should produce graduates with the needed skills and tools to make them competitive in a rapidly changing and developing global market (Christina, Chi, & Gursoy, 2009; Gursoy et al., 2012; Swanger & Gursoy, 2010). Similarly, Hospitality and Tourism programs are expected to provide an education that not only improves eligibility in the global employment, but also secures success in the industry (Gursoy et al., 2012).
Today’s students are raised on music television, video games, emails, and instant messaging in a new, unconstrained learning environment that makes them digital natives with distinct experiential thinking patterns and behaviors that diverge from traditional students (Prensky, 2001). Roblyer, Davis, Mills, and Pape (2008) found that using student characteristics and learning environments make it easier to predict student success than student failure. In other words, learner characteristics along with the learning environment have a significant effect on student success.

There is an existing gap between what is needed by the industry and what is being taught in Hospitality and Tourism schools (Bilgihan, Berezina, Cobanoglu, & Okumus, 2014; Cheung & Law, 2002; Collins, 2004; King, McKercher, & Waryszak, 2003; Malan, Cobanoglu, & Waldo, 2015; Nadkarni, 2003). Similarly, Collins (2004) and Nadkarni (2003) stated that the gap between what is being taught and what should be taught is transferred to Hospitality and Tourism education settings, particularly through technology-related courses or courses that utilize technology, such as web-based, online curriculum.

Graf and Kinshuk (2007) pointed out that educational theorists and researchers believe that the consideration of learning styles could immensely help student learning in an effective way. Given the previous research that has provided extensive background for Hospitality and Tourism schools and student course choice, the differences in learning styles between students who enroll in an online course and face-to-face course is vital information for Hospitality and Tourism schools in terms of planning, scheduling, and ensuring student success (Diaz & Cartnal, 1999).

In the past, studies have ranked Hospitality and Tourism subject areas, course
content, influence of technology, required skills, and industry expectations (Bilgihan et al., 2014; Cheung & Law, 2002; Collins, 2004; King et al., 2003; Malan et al., 2015; Nadkarni, 2003). Studies suggested that successful Hospitality and Tourism schools should provide a curriculum that involves substantive knowledge, skills, and values (Dopson & Tas, 2004). However, in order to accomplish this, it is necessary to incorporate student perceptions and preferences of how they want to receive the needed education (Pashler et al., 2008).

Finally, although there has been literature studying delivery modes for college courses, this researcher is unaware of any study that incorporated an approach focused on the impact of individual learning styles (using MBTI) of undergraduate Hospitality and Tourism students on the choice of learning environment research. It was the magnitude of MBTI’s use in higher education that led to the selection of this assessment tool for the purposes of this study. When they are asked, students have a preference on how they want the information to be presented to them and these individual learning styles have an impact on the success of learners.

There are studies that show student majors and the program of the study make a difference for learners since specialization in different majors and programs tend to favor a particular teaching method (Healy, Kneale, & Bradbeer, 2005; Jones, Reichard, & Mokhtari, 2003; Nulty & Barrett, 1996). As such, this study aims to explore the specific types of learners within Hospitality and Tourism schools and their course choice. This knowledge would be critical in guiding students in their course choice and would help future planning of the programs in content, focus, and structure to ensure student success both in school and in the global work force.
Summary

This chapter discussed the literature related to this study. Researchers and practitioners disagree on an exact definition and usage of the concept of learning styles. MBTI, as an instrument, is a widely used valid and reliable tool for higher education. For both, teaching techniques and use of various learning activities, researchers and practitioners agree on the use of different techniques for online and face-to-face learning environments. There is a gap between what the Hospitality and Tourism Industry want to hire right out of the college and what the Hospitality and Tourism programs graduate still exist.
Chapter 3

Methods

The purpose of this study was to explore the relationship between learning styles and the choice of learning environment for Hospitality and Tourism undergraduate students. The parts of this chapter include the research design, population and sample, instrumentation, validity and reliability, data collection, and data analysis.

Research Design

This is a quantitative study that used correlational research design because the factors that influenced the phenomenon under study were not specifically manipulated with control (Holton & Burnett, 2005). Creswell (2009) defined quantitative research as involving statistical data and objective measures to comprehend and illustrate a phenomenon. Furthermore, a research design is selected to plan, create, and carry out the research to maximize the validity of the findings (Creswell, 2009).

Keppel and Zedeck (1989) noted that when participants were not randomly assigned to any specific group, there was no opportunity to test different conditions within an experiment so purposeful sampling will be used. The data source for this research was primary. All the data were collected through an online survey only from undergraduate Hospitality and Tourism students who were enrolled in any Hospitality and Tourism program in the state of Florida that offered undergraduate Introduction to Hospitality and Tourism courses both online and face-to-face during spring semester 2016. Creswell
(2009) described the survey method as a quantitative method to gather numerical data from a representative sample of subjects.

**Population and Sample**

The population for this study was identified as the students who were enrolled in either online or face-to-face undergraduate Introduction to Hospitality and Tourism Management courses during spring semester 2016 in state of Florida. There are more than 200 Hospitality and Hotel Management degree programs across the United States. In Florida, there are about 30 programs; however, only 12 of them offer Hospitality Management Programs and teach Introduction to Hospitality and Tourism Management courses (Dodge, 2014). In order to be included in the study, participants had to meet the following inclusionary criteria: being enrolled in either the online or face-to-face versions of the undergraduate course Introduction to Hospitality and Tourism Management during spring semester 2016 in a school that offers this course in both options at the same time. There were four schools identified during Fall 2015 as meeting this criterion of offering both online and face-to-face versions of the Introduction to Hospitality and Tourism Management class.

Purposeful sampling was used to obtain the participants from each school. Schools were selected depending on the criteria that they offer both the online and face-to-face versions of the Introduction to Hospitality and Tourism Management course. The number of students was determined according to class size of the selected schools for spring semester 2016. The instructors for each school were sent emails and asked to provide the link for the survey to their students. Students started the survey with the demographic questionnaire that started with assigning each student a personal ID that
consisted of their initials (first name, middle name, and last name), birth month and day of birth (e.g., GMR-1107). Students who did not have a middle name entered their initials with an “X” in between (e.g., GXM-1107). Then students were asked to provide information on their enrollment status; university; whether they have taken an online course previously in high school, college, or other place, and who helped them select the delivery mode of their courses. At the end of the demographic survey, they had the link to take the MBTI survey. Students were provided with a generic login name “Learningstyles” and password “Spring2016” and then they began to take the instrument by entering their first name, last name, the same Personal ID they enter for the beginning demographics survey (their initials, birth month and day of birth), gender, age, and employment status. Then they were directed to the instrument. The actual population was identified as 803 students for Spring 2016. With a 95% confidence level, the odds ratio \( OR = 4.7, \) Cohen’s \( d = 0.8 \) for a large effect size (Chen, Cohen, & Chen, 2010), and a tolerance value = 0.7 with no serious problem of collinearity (Menard, 2002), a minimum of 240 participants was required.

**Instrumentation**

Students started the demographic questionnaire by entering a personal ID that consisted of their initials, birth month, and day of birth (e.g., GMR-1107). See Appendix A for a copy of the demographic survey form. Students who did not have a middle name entered their initials with an “X” in between (e.g., GXM-1107). Then students were asked to provide information on their enrollment status; whether they had taken an online course previously in high school, college, or other; who helped them select the delivery mode of their courses; and what school they were attending. At the end of the
demographic survey, they had the link to take the MBTI instrument as a part of this research. Students were provided with a generic login name “Learningstyles” and password “Spring2016”, then they were able to take the instrument by entering their first name, last name, the same Personal ID they entered for the beginning of the demographic survey (their initials, birth month and day of birth), gender, age, and employment status.

Beginning in the 1940s, the mother and the daughter team of Myers and Briggs started to work on the MBTI from Jung’s type theory that considered the ways people collect information, process it, and then make judgments different from others (Bishop-Clark, Dietz-Uhler, & Fisher, 2007). Furthermore, type theory indicated how differences in experiencing life events and making decisions could be valuable and promote understanding (Ehrman & Oxford, 1995).

Type theory has been widely accepted, applied, and eventually assessed through the development of the MBTI since 1962 (Myers et al., 1998). MBTI is a psychometric tool in which type descriptions reflect a model of development involving an entire lifespan (Myers et al., 1998). It measures psychological preferences and how people perceive and learn from the world. These psychological preferences are based on typological theories from Jung’s book Psychological Types (1921). Jung believed that there were two dichotomous pairs of cognitive functions: the rational and the irrational functions. These functions can be expressed either in an introvert or an extrovert fashion. From there, Myers-Briggs fitted the cognitive functions to personality types (Myers, 1998). See Table 1 for the Myers-Briggs categories of preferences and a brief description of what each type encompasses.
MBTI consists of items that indicate how respondents usually act or feel in certain situations. It was designed to identify a person’s preferences on four pairs of opposites (Lawrence, 2009). These four dimension of preferences are: **Extroverts** (E) versus **Introverts** (I) that measures how and where one receives energy, **Sensing** (S) versus **Intuitive** (N) that assesses how one perceives and processes, **Thinkers** (T) versus **Feelers** (F) that identifies the decision making processes, and lastly **Judgers** (J) versus **Perceivers** (P) that indicates lifestyle and orientation to the outer world in regards to the Thinking or Feeling component (Myers et al., 1998).

Table 1

**Myers-Briggs Categories of Preferences Based on World View, Structure, Decision Making, and Information Processing**

<table>
<thead>
<tr>
<th>World View</th>
<th>Structure</th>
<th>Decisions</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extroversion (E)</td>
<td>Judging (J)</td>
<td>Thinking (T)</td>
<td>Sensing (S)</td>
</tr>
<tr>
<td>Focus on the outer world</td>
<td>Decide things while dealing with the outside world</td>
<td>Consider logic and consistency when making decisions</td>
<td>Focus on the basic information</td>
</tr>
<tr>
<td>Introversion (I)</td>
<td>Perceiving (P)</td>
<td>Feeling (F)</td>
<td>Intuition (N)</td>
</tr>
<tr>
<td>Focus on the inner world</td>
<td>Decide things while dealing with the inner world</td>
<td>Consider people and special circumstances when making decisions</td>
<td>Interpret and add meaning to the information</td>
</tr>
</tbody>
</table>

**Extroverts** draw energy from the external world while **Introverts** draw energy from their inner world; **Sensing** individuals focus on logical facts while **Intuitives** interpret information based on relationships; **Thinkers** make decisions based on logical facts.
while *Feelers* are very sensitive to their feelings; and *Judgers* are orderly and work in a linear fashion while *Perceivers* prefer flexibility and spontaneity (Bishop-Clark et al., 2007, McCaulley, 1990). From the four dimensions, there are 16 possible personality types reported by the MBTI. See Table 2 for the 16 types of personality presented as four-letter codes, representing the four of eight main dimensions. (The 4 being ST, SF, NF, and NT).

Table 2

*The 16 Types of Personalities from MBTI*

<table>
<thead>
<tr>
<th>Personality Types</th>
<th>ST</th>
<th>SF</th>
<th>NF</th>
<th>NT</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISTJ</td>
<td>ISFJ</td>
<td>INFJ</td>
<td>INTJ</td>
<td></td>
</tr>
<tr>
<td>ISTP</td>
<td>ISFP</td>
<td>INFP</td>
<td>INTP</td>
<td></td>
</tr>
<tr>
<td>ESTP</td>
<td>ESFP</td>
<td>ENFP</td>
<td>ENTP</td>
<td></td>
</tr>
<tr>
<td>ESTJ</td>
<td>ESFJ</td>
<td>ENFJ</td>
<td>ENTJ</td>
<td></td>
</tr>
</tbody>
</table>

*Note.* E = Extrovert, F = Feeling, I = Introvert, J = Judging, N = Intuition, P = Perceiving, S = Sensing, and T = Thinking.

The MBTI =Form M is a 93-item forced-choice inventory based on Jung’s (1921) type theory. It is divided into three parts: part one contains 26 questions that force an individual to select from two options about usual actions and feelings. For example, “Do you tend to spend a lot of time (a) by yourself or (b) with others?” Part two contains 47 word pairs that forces an individual to choose the most appealing word in terms of what the word means. One example is “scheduled” or “unplanned.” Finally, part three contains 20 paired word phrases that force the individual to pick the closest option about their actions and feelings. For example, “At parties do you (a) sometimes get
bored or (b) always have fun?” (Myers et al., 1998).

The instrument is designed to identify the respondent’s cognitive and affective preferences. Form M, published in 1998, is a re-design of the instrument aimed at improving the precision of reporting within the dichotomies, particularly at the mid-point as well as eliminating separate scoring keys related to gender (Myers et al., 1998). The revised Form M also aimed to make clearer distinctions among preferences by eliminating all peripheral questions not pertinent to preference typing.

Although there is no time limit, Form M is designed for completion in as little as 15 to 20 minutes. It is designed for comprehension at the seventh grade reading level and is meant for use with a normal population over 14 years of age. The scoring is as follows: each response is assigned one point, points are summed for each scale, the section with the most points is assigned as the respondent’s preference on each of the four dimensions producing a four-letter type like profile, such as ESTP, ISTJ, etc. (Myers et al., 1998).

Validity. The scales for the MBTI are polarized dichotomies with no option for an in-between answer (Myers et al., 1998). Bishop-Clark et al. (2007) suggested that MBTI is “one of the best researched and most widely accepted of the instruments measuring cognitive styles and personality” (p. 493). MBTI has been used in numerous research studies in the areas of counseling, education, career-workforce, and teamwork (Rodriguez et al., 2005). It has also been used in relation to online learning (Ally & Fahy, 2005; Aragon, 2004; Gunawardens & Boveried, 1993; Hillstock, 2005; Papp, 2001).

An assessment is said to be valid based on the extent or degree to which it truly
measures what it claims (or intends) to measure. In terms of content validity that questions how well the sample items represent the domain of items (Garson, 2006) in appropriateness and completeness (O'Brien, 2005), the item selection process for the MBTI assessment addressed the content validity of the four-scale inventory. Item response theory (IRT) was used to determine that the scale items were measuring what they intended to be measured for the MBTI (Myers et al., 1998).

Criterion-related validity questions how well the assessment predicts future or estimates current performance on some valued criterion (Garson, 2006; O'Brien, 2005). Myers and colleagues (1998) demonstrated evidence for criterion-related validity through comparisons of the MBTI with numerous other instruments.

Construct validity questions how well the assessment results can be interpreted as a meaningful measure of some quality or characteristic (Garson, 2006; O'Brien, 2005). Myers et al. (1998) cited several exploratory factor analyses that produced results that were nearly identical to the four-factor model hypothesized by the MBTI assessment.

**Reliability.** The spilt-half reliability for the MBTI Form M was performed by pairing items according to item statistics using item format (word pair versus phrase question). In addition, item-to-total correlations and average value of the difficulty parameter defined by IRT was performed.

Maximum amount of item information (a function of IRT parameters) and the subscale coverage were tested in order to determine whether the item was an original Form G item or a new or revised item referred to as logical split-half. (Myers et al., 2003, p. 160)

In third edition of the *MBTI Manual* (3rd ed.), reliability and validity of the instrument was compared between Form G and Form M. Form M is the new standard form of the
MBTI. Form M “contains the newest items, the most precise scoring procedures, and the most current standardization samples to produce scoring weights” (Myers et al., 1998, p. 106). It was designed specifically to improve the precision of reporting within the dichotomies and eliminate separate scoring keys related to gender.

An opportunity was also taken during the development of the new form to eliminate those items not associated with typing the individual. As a measure of internal consistency, Myers et al. (1998) used Coefficient Alphas that are defined as the “average of all of the item correlations” (p. 161). As evidenced by the data provided in Table 3, there were no significant differences in the coefficients between the methods; respondents were consistent in their answers.

Results of the confirmatory factor analysis utilizing Form M in MBTI Manual yields an excellent fit to the four-factor model of Jung’s personality theory (“the adjusted goodness of fit was .949 and the non-normed fit index was .967; the median of the fitted residuals was -0.08”) (Myers et al., 1998, p. 173). Logical and split-half reliability coefficients range from $r = 0.89$ to $r = 0.94$ ($n = 3,036$) for Form M. The MBTI Manual (Myers et al., 1998) reported internal consistency with continuous scales based on coefficient alpha ranging from $r = 0.88$ to $r = 0.93$ ($n = 2,859$).

Test-retest reliability estimates to measure stability or replication over time were additionally performed on the MBTI. Myers et al. (2003) indicated that “MBTI was administered to a sample group of people followed by a second administration to the same group after an adequate amount of time had lapsed to allow for decay of memory from their previous response choices” (p. 161).

The results indicated that the test-retest reliabilities of the MBTI showed consistency
over time. There was evidence that if there was any change in the participant’s result, the changes in type were usually on one preference and in the scale that individual initially scored low preference clarity.

Table 3

*Internal Consistency of Form M Continuous Scores Based on Coefficient Alpha*

<table>
<thead>
<tr>
<th>Source</th>
<th>Gender</th>
<th>n</th>
<th>E-I (α)</th>
<th>S-N (α)</th>
<th>T-F(α)</th>
<th>J-P(α)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M and F</td>
<td>2,859</td>
<td>0.91</td>
<td>0.92</td>
<td>0.91</td>
<td>0.92</td>
<td></td>
</tr>
<tr>
<td>National Sample</td>
<td>M</td>
<td>1,330</td>
<td>0.91</td>
<td>0.93</td>
<td>0.90</td>
<td>0.93</td>
</tr>
<tr>
<td></td>
<td>F</td>
<td>1,529</td>
<td>0.90</td>
<td>0.91</td>
<td>0.88</td>
<td>0.92</td>
</tr>
</tbody>
</table>


In addition, the *MBIT Manual* summarizes test-retest reliability of the instrument with intervals of up to 50 years between test administrations. Even with life changes, instrument changes, and instrument scoring procedures over the long-time intervals, 54% of the individuals changed not at all or on just one scale (Myers et al., 2003). On the shorter test-retest intervals, about 75% of the individuals did not change on individual scales and about 90% agreement was found in some samples that used the newer Form M version of the indicator (Zeisset, 2000).

**Data Collection**

Prior to this study, an approval from the Institutional Review Board (IRB) from University of South Florida was required. IRB evaluated and accepted the proposal to conduct this study. See appendix B for a copy of the USF IRB response. Dillman
(2007) argued that the implementation of the questionnaires including multiple contacts, contact method, incentives, personalization, sponsorship and how the process is being explained have tremendous influence on response rate. For the purpose of this study, the instructors of the four programs in Florida that offer both online or face-to-face Introduction to Hospitality and Tourism courses for spring semester 2016 were contacted two weeks before the courses start with a pre-notice email that requested their help. See Appendix C for a copy of the email. Previous research has shown that pre-notice increases the response rate (Dillman, 2007). The second contact was sent the day before the semester started along with the participation email. See Appendix D for a copy of the participation email.

The instructors were asked to forward the email to their students for the first week of the semester. Among the four schools, one of them started the semester on January 6th and the other three started on January 11th. Since the data were collected only during the first week of the semester, the third day of the semester a reminder was sent to the instructors. For the 10 sections of the face-to-face courses, each instructor gave students 20 minutes to take the survey at the end of their class from Monday through Thursday. Each day, the data were extracted from Qualtrics and saved to Qualtrics in an attempt to separate each school and instructor. The instructors of five sections of online classes along with two sections of mixed classes sent the survey link to their students for Friday through Sunday. Again, the data were extracted from Qualtrics each day.

The email included the link for the demographic questionnaire that already had the link for MBTI Form M. See Appendix E for a copy of student link, instructions, and
demographic survey. The Consulting Psychologists Press (CPP) granted permission to access the MBTI Form M version through their online assessment system SkillsOne. See Appendix F for a copy of the support letter. The CPP gathered all the student data from the MBTI Form M and provided the scores to the researcher. The researcher was the only person who had access to the completed MBTI scores/profiles.

Students started the demographic questionnaire by entering a personal ID that consisted of their initials, birth month, and day of birth (e.g., GMR-1107). Students who did not have a middle name entered their initials with an “X” in between (e.g., GXM-1107). Then students were asked to provide information on their enrollment status; whether they have taken an online course previously in high school, college, or other places; who helped them select the delivery mode of their courses; and what school they were attending. For the online course experience, the participants were provided with a skip pattern, according to their answer to whether they have taken an online course previously, the following question changed in order to achieve a more dynamic interaction (Dillman, 2007). At the end of the demographic survey, students were directed to a page that had the login (“Learningstyles”) and password (“Spring2016”) along with the link for the MBTI Form M questionnaire in order to continue with the SkillsOne website where they began to take the instrument by entering their first name, last name, the same Personal ID they enter for the beginning demographic survey (their initials, birth month and day of birth), gender, age, and employment status, then they were directed to the instrument. Students were instructed to use the exact Personal ID for both surveys in the instructions part.

Myers et al. (1998) stated that creating the appropriate environment for the
participant is critical in order to produce the best-fit type for each respondent. In an attempt to create the necessary environment for the participants, the researcher provided an introduction with the following information: (a) taking the MBTI was voluntary; (b) there were no right or wrong answers; (c) the participant was the judge of the accuracy of results and would be provided with their results upon request; (d) participant’s individual MBTI results would remain confidential; CPP would gather all the student data from the MBTI Form M and would provide the scores to the researcher who would then match the MBTI scores to the demographic questionnaire by using the Personal ID that consisted of students’ initials, birth month and day of birth (e.g., GMR-1107); (e) participants would receive a copy of their MBTI profile; and (f) participants would be provided with the contact information of the researcher for further questions. The data will be kept for three years by the researcher in a secure server; after the three years the data will be destroyed.

Data Analysis

The MBTI results for each student along with the descriptive data were analyzed using SAS (V.9.4). Dillman (2007) pointed out four types of potential survey errors: coverage, sampling, nonresponse, and measurement. He further proposed that each survey has a certain coverage error, but it is hard to specify an exact number, whereas sampling error can be calculated for each variable based on the distribution of the respondents’ answers and number of completed questionnaires. Sampling error is mainly dependent on sample size, for an average population of 800 plus students, with 95% confidence level, the odds ratio ($OR = 4.7$, Cohen’s $d = 0.8$) for a large effect size (Chen et al., 2010), and a tolerance value $= 0.7$ with no serious problem of collinearity
(Menard, 2002), a minimum of 240 participants were required. However, the sampling error cannot be used as a single determinant for overall survey errors without considering the presence of nonresponse, measurement, and coverage error.

For the nonresponse error, data were examined for missing data. Brick and Kalton (1996) and Groves et al. (2004) identified noncoverage, total nonresponse, and item nonresponse as the three main sources of missing data in survey research. For the purpose of this study, since the sampling frame covered the entire population, noncoverage was not a main concern. In addition, total nonresponse was not possible since the participant is forced to answer at least three questions in the demographic survey. Furthermore, the participants were not able to take MBTI Form M, if they did not complete the demographic survey.

In terms of item nonresponse, for the demographic part as suggested by Cheema (2014) listwise deletion method was used. This method, also known as complete case method (McKnight, McKnight, Sidani, & Figuerodo, 2007), involves discarding observations with missing values. For the MBTI results, because unfinished surveys would not generate a profile, only the students who had a profile from the MBTI were included in the data set.

The research questions of this study were:

1. What percentages of the Hospitality and Tourism students are classified into each MBTI profile?

2. Do the percentages of the Hospitality and Tourism students in each MBTI profile differ between those in online classes and those in face-to-face classes?
3. To what extent, do different MBTI profiles predict Hospitality and Tourism students’ course choice controlling for age; gender; enrollment status; employment status; university; whether they have taken an online course previously in high school, college, or other places; how many online courses they previously took; and who helped them select the delivery mode of their courses?

In order to answer research question one, the most frequent profiles were determined using descriptive statistics from the MBTI results and the results were reported using confidence interval.

To answer research question two, Chi-square analyses were used to determine whether differences existed.

To answer research question three, a hierarchical logistic regression analysis was performed in which the MBTI profiles of Hospitality and Tourism undergraduate students were examined for its unique contribution to student course choice after combination of age; gender; enrollment status; employment status; university; whether they have taken an online course previously in high school, college, or other places; how many online courses they took before; and who helped them select the delivery mode of their courses.

Hierarchical logistic regression is an advanced form of linear regression that is used to assess the impact of independent variables for studying data with group structure and a binary response variable (Wong & Mason, 1985). This analysis allows the researcher to determine the weights of regression coefficients while considering the full sample (Aiken & West, 1991; Bryk & Raudenbush, 2002).
**Coding**

The logistic regression estimated separately by maximum likelihood for all schools (4 Hospitality and Tourism Colleges) with the response variable of course choice as a dichotomy distinguishing between online course (1) and face-to-face course (0). The regressors are learning styles: four different overall profiles from MBTI in scale format; Profile 1 (Extrovert or Introvert), Profile 2 (Sensing or Intuitive), Profile 3 (Thinking or Feeling), Profile 4(Judging or Perceiving); age (scaled); gender (dichotomy: female= 1, male = 0); enrollment status (dichotomy: part-time = 1, full-time = 0); employment status (Full-time = 1; Part-time = 2; Not working = 3; and Retired = 4); university (University A [1], University B [2], University C [3], University D [4]); online course previously taken (dichotomy: yes, no = 0); number of online courses taken before (dichotomy: yes = 1 or no = 0); online course taken before in high school (POEH) nominal, in college (POEC) nominal, in other places (POEO) nominal; and who helped in selecting the mode of courses (dichotomy: yes Advisor = 1, no Advisor = 0), (dichotomy: yes Parent(s) = 1, no Parent(s) = 0), (dichotomy: yes Instructor(s) = 1, no Instructor(s) = 0), (dichotomy: yes Friend(s) = 1, no Friend(s) = 0), and (dichotomy: yes Others = 1, no Others = 0).

According to Hermalin and Mason (1980), learning style may or may not impact course choice and the coefficients and intercepts may vary across schools and learning styles, it is the task of comparative analysis to consider why.

**Summary**

This chapter described the research methods that were utilized in conducting this study. The overview of the research design discussed the participant criteria and the type of the sampling approach. The data collection section described online collection
of survey results both with Qualtrics and the SkillsOne websites. The discussion of data analysis consisted of combining the two data sources from Qualtrics and the SkillsOne websites for analysis through SAS. The coding section described the verification of the instruments and how the data were addressed.
Chapter 4

Findings

The purpose of this study was to explore the relationship between learning styles and the choice of learning environment for Hospitality and Tourism undergraduate students. The parts of this chapter include a description of the sample, findings by research questions, and observations.

Description of the Sample

In this study, respondents were selected from four Hospitality and Tourism programs in the state of Florida. The sample was drawn using purposeful sampling, so the study results are only valid for those students in Hospitality and Tourism schools that match the criteria of offering undergraduate Introduction to Hospitality and Tourism Management courses both online and face-to-face during spring semester 2016. For Spring 2016, there were total of 803 students enrolled in the four schools in the state of Florida. There were total of 17 sections (10 face-to-face, 5 online, and 2 mixed sections). There were 450 participants who responded to the first survey that was the demographic survey, but there only 323 students responded to the second survey, which was the MBTI. This represented about 40.2% of the study population.

In terms of item nonresponse, for the demographic survey part as suggested by Cheema (2014) listwise deletion method was used. This method also known as complete case method (McKnight et al., 2007) involved discarding observations with
missing values. From 127 responses, there were 17 respondents who partially completed the demographics part, so they were removed from the data file. For the MBTI results, because unfinished surveys would not generate a profile, only the students who had a profile from the MBTI were included in the data set. CPP only sent the data file for participants who completed the entire instrument so the researcher was unaware of the incomplete MBTI profiles.

The data presented in Table 4 include the demographic information in this study. Out of 323 respondents, 230 (71.2%) were females, and 93 (28.8%) were males. In relation to age, years ranged between 18-56. There were 258 (80%) students between the ages of 18-24 years, 45 (14%) students between the ages of 25-30 years, and 20 (6%) students over 30 years. In terms of employment, no student reported being retired, 75 (23.2%) students were working full time, 49 (15.8%) students were working part time, and 199 (62%) students were not working. There were 266 (82.3%) participants who were full-time students and only 57 (17.7%) of them were part time. In terms of prior online course experience in high school, 285 (88%) students reported they had not taken any online courses, while 38 (22%) participants reported they had taken at least one online course.

There were 194 (60%) participants who reported they took at least one online class, while 129 (40%) students reported they had not taken any online course. When participants were asked about their online course experience in other places, they were asked to type the place and number of their online course experiences. There were 321 (99.4%) students reported they had not taken any online course, while 2 (0.6%) students who reported they had taken online courses in other places, but they did not
identify the specific place. In terms of who helped them in their course selection, 234 (72.4%) students reported that they got help from their advisors, 115 (35.6%) students indicated they got help from their friends, 105 (32.5%) students reported they got help from Instructors, 25 (7.7%) students stated they got help from their parents, and 60 (18.6%) students reported they chose their courses themselves.

Table 4

*Demographic Characteristics of Hospitality and Tourism Students*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>230</td>
<td>71.2</td>
</tr>
<tr>
<td>Male</td>
<td>93</td>
<td>28.8</td>
</tr>
<tr>
<td>Total</td>
<td>323</td>
<td>100.0</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-24 years</td>
<td>258</td>
<td>80.0</td>
</tr>
<tr>
<td>25-30 years</td>
<td>45</td>
<td>14.0</td>
</tr>
<tr>
<td>31 and above years</td>
<td>20</td>
<td>6.0</td>
</tr>
<tr>
<td>Total</td>
<td>323</td>
<td>100.0</td>
</tr>
<tr>
<td>Employment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full-time</td>
<td>75</td>
<td>23.2</td>
</tr>
<tr>
<td>Part-time</td>
<td>49</td>
<td>15.8</td>
</tr>
<tr>
<td>Not Working</td>
<td>199</td>
<td>62.0</td>
</tr>
<tr>
<td>Total</td>
<td>323</td>
<td>100.0</td>
</tr>
<tr>
<td>Enrollment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Part-time</td>
<td>57</td>
<td>17.7</td>
</tr>
<tr>
<td>Full-time</td>
<td>266</td>
<td>82.3</td>
</tr>
<tr>
<td>Total</td>
<td>323</td>
<td>100.0</td>
</tr>
</tbody>
</table>

*N = 323*
Findings by Research Question

Research question 1: What percentages of the Hospitality and Tourism students are classified into each MBTI profile? In order to answer research question one, the most frequent profiles were determined using descriptive statistics from the MBTI results and the results were reported using confidence intervals for proportions. Table 5 presents the numbers for the MBTI profiles. For profile one (P1), 196 students were extroverts, with a 95% confidence level; Extrovert Hospitality and Tourism students comprised between 54-68% of the sample. On the other hand, 127 students were introverts with 95% confidence level Introvert Hospitality and Tourism students consisted of between 31-48% of the sample. For MBTI types in general, 75% of the population was extroverted. Results from this study indicated that even though the majority of the Hospitality and Tourism students were extroverted, the percentage was little smaller compared to overall MBTI profile data of the population. This might be due to increased number of online classes within Hospitality and Tourism and the involvement of the technology. The combination of profile one describes opposite preferences for where attention is focused: for extroverts, it is focused on the outer world of people and things, while for introverts it is focused on the inner world of ideas.

For profile two (P2), 78 students were the intuition type, with a 95% confidence level; Intuitive Hospitality and Tourism students constituted between 16-35% of the sample. On the other hand, 245 students fell under sensing, with a 95% confidence level; Sensing Hospitality and Tourism students included between 70-81% of the sample. Similar to profile one, 75% of the general population is also considered to be a sensing
type. The combination of profile one describes opposite preferences of perceived or acquired information; sensing individuals acquire information through their five senses, while intuitive individuals perceive information by considering meanings, relationships, and possibilities.

Table 5

**MBTI Profiles of Hospitality and Tourism Students**

<table>
<thead>
<tr>
<th>Profiles</th>
<th>Frequency</th>
<th>%</th>
<th>Cumulative Frequency</th>
<th>Cumulative %</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1 (E/I)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extrovert</td>
<td>196</td>
<td>60.68</td>
<td>196</td>
<td>60.68</td>
</tr>
<tr>
<td>Introvert</td>
<td>127</td>
<td>39.32</td>
<td>323</td>
<td>100.00</td>
</tr>
<tr>
<td>P2 (S/N)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensing</td>
<td>245</td>
<td>75.85</td>
<td>245</td>
<td>75.85</td>
</tr>
<tr>
<td>Intuition</td>
<td>78</td>
<td>24.15</td>
<td>323</td>
<td>100.00</td>
</tr>
<tr>
<td>P3 (T/F)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thinking</td>
<td>204</td>
<td>63.16</td>
<td>204</td>
<td>63.16</td>
</tr>
<tr>
<td>Feeling</td>
<td>119</td>
<td>36.84</td>
<td>323</td>
<td>100.00</td>
</tr>
<tr>
<td>P4 (J/P)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Judging</td>
<td>223</td>
<td>69.04</td>
<td>223</td>
<td>69.04</td>
</tr>
<tr>
<td>Perceiving</td>
<td>100</td>
<td>30.96</td>
<td>323</td>
<td>100.00</td>
</tr>
</tbody>
</table>

*N = 323*

For profile three (P3), there were 204 students who were under the thinking profile, with a 95% confidence level; thinking Hospitality and Tourism students fell between 56-69% of the sample. On the other hand, 119 students were feelers, with a 95% confidence level, feeling Hospitality and Tourism students comprised between 29-46%
of the sample. Previously for women, 60% were feelers and 40% were thinkers.

However, recent changes in MBTI respondents indicated equal distribution for profile three (Harrington & Loffredo, 2010). Furthermore, previous research found that two-thirds of women are feelers and two-thirds of men are thinkers (Elliott, 2006; McCaulley, 1990). The generalization of women being feelers was not supported for this particular population. This profile describes how the decisions are made, thinking types make decisions through using logic, while feeling types make decisions through prioritizing.

For profile four (P4), there were 223 students who fell under the judging type, with a 95% confidence level, judging Hospitality and Tourism students constituted between 63-75% of the sample. On the other hand, 100 students were under the perceiving type, with 95% confidence level, perceiving Hospitality and Tourism students constituted between 23-41% of the sample. This profile determines an individual’s preferred function between judging attitude using thinking or feeling and perceiving attitude using sensing or intuition. Judging attitude tends to be more careful and inhibited, while the perceiving attitude tends to be more spontaneous and even careless.

From the combination of the four profiles, the most common profile for Hospitality and Tourism undergraduate students in this study was reported as ESTJ, being extrovert, sensing, thinking, and judging. Extroversion refers to finding energy in things and people, preferring interaction, needing sociability, and potentially to grasping the big picture in an environment with a stable reality structure. Sensing refers to concrete, matter-of-fact information that can be acquired directly and exactly by detail-oriented individuals. Thinking refers to analytical and cause-and-effect type of mental processing that values fairness and objectivity in evaluating information. Judging refers
to decisiveness and closure as the orientation to the outer world (Myers et al., 1998).

**Research question 2:** Do the percentages of the Hospitality and Tourism students in each MBTI profile differ between those in online classes and those in face-to-face classes? To answer research question two, Chi-square analyses were used to determine the differences between participant responses. The data are presented in Table 6 and indicate that when student profiles in online classes were compared to student profiles in face-to-face classes, each profile showed significant differences. For Profile 1, the differences of percentages between extrovert or introvert profiles for online and face-to-face course choice were significant, \( X^2 (1, N = 323) = 123.2714, p < .05 \). See Table 6 for Chi-square values for each profile. From the extrovert students, 63% were face-to-face class students, 37% of them were online class students; while 2% of the introvert students were in face-to-face classes, 98% of the introvert students were in online classes. See Table 7 for the distribution of Profile 1 by course choice.

Elliott (2006) from his study of psychology students’ MBTI profile differences in online and face-to-face courses suggested that an individual's tendency for either introversion or extroversion has an effect upon which type of courses produce a higher comfort level. Description of extroversion finding energy in things and people, preferring interaction, need for sociability, and potential to grasp the big picture in an environment with a stable reality structure accommodates very well Moore’s (2005) description of face-to-face classes having cognitive presence in which the learner has an interaction with the content, teaching presence in which the learner has an interaction with instructors and social presence in which the learner has an interaction with classmates.
Table 6

Chi-square Results for MBTI Profile Differences Between Online and Face-to-face Courses

<table>
<thead>
<tr>
<th>Profiles</th>
<th>Chi-square Value</th>
<th>p Value</th>
<th>df</th>
<th>Phi Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>123.2714</td>
<td>&lt; .0001</td>
<td>1</td>
<td>0.6178</td>
</tr>
<tr>
<td>P2</td>
<td>16.9078</td>
<td>&lt; .0001</td>
<td>1</td>
<td>0.2288</td>
</tr>
<tr>
<td>P3</td>
<td>25.6611</td>
<td>&lt; .0001</td>
<td>1</td>
<td>0.2819</td>
</tr>
<tr>
<td>P4</td>
<td>78.9396</td>
<td>&lt; .0001</td>
<td>1</td>
<td>0.4944</td>
</tr>
</tbody>
</table>

N = 323

Table 7

MBTI Profile 1 Distribution by Course Choice

<table>
<thead>
<tr>
<th>Profile</th>
<th>Face-to-Face</th>
<th>Online</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extrovert n</td>
<td>124</td>
<td>72</td>
<td>196</td>
</tr>
<tr>
<td>%</td>
<td>63</td>
<td>37</td>
<td>100</td>
</tr>
<tr>
<td>Introvert n</td>
<td>2</td>
<td>125</td>
<td>127</td>
</tr>
<tr>
<td>%</td>
<td>1.59</td>
<td>98.43</td>
<td>100</td>
</tr>
<tr>
<td>Total n</td>
<td>126</td>
<td>197</td>
<td>323</td>
</tr>
</tbody>
</table>

N = 323

In addition, Dille and Mezack's (1991) description of online courses in terms of triggering social isolation and requiring greater reliance on independent learning skills is also supported by the study results since introverted students are more focused on their inner world and experience.

In terms of Profile 2, there were a significant differences between sensing and
intuitive profile types $X^2 (1, N = 323) = 16.9078, p < .05$, (see Table 6 for Chi-square values). Among the intuition students, 19% of them were face-to-face students, while 81% were online students. From the sensing students, 45% were face-to-face students while 55% were online students. See Table 8 for the distribution details. The preference of face-to-face students for sensing profile matches Dille and Mezack’s (1991) definition of face-to-face classes where students need concrete experience, immediate feedback, and tangible information. However, the sensing nature of online students also aligns with the heavy technology use and the course being presented from the beginning of the semester in the learning management systems ahead of time.

Table 8

*MBTI Profile 2 Distribution by Course Choice*

<table>
<thead>
<tr>
<th>Profile</th>
<th>Face-to-Face</th>
<th>Online</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intuition</td>
<td>15</td>
<td>63</td>
<td>78</td>
</tr>
<tr>
<td></td>
<td>19%</td>
<td>81%</td>
<td>100%</td>
</tr>
<tr>
<td>Sensing</td>
<td>111</td>
<td>134</td>
<td>245</td>
</tr>
<tr>
<td></td>
<td>45%</td>
<td>55%</td>
<td>100%</td>
</tr>
<tr>
<td>Total</td>
<td>126</td>
<td>197</td>
<td>323</td>
</tr>
</tbody>
</table>

$N = 323$

For Profile 3, there were a significant differences between thinkers and feelers, $X^2 (1, N = 323) = 25.6611, p < .05$, (Table 6). From the feeling students, 21% were face-to-face students, while 79% were online students. From the thinking students, 49.51%
were face-to-face students while, 50.49% were online students. See Table 9 for the
distribution details by course choice. Dille and Mezack’s (1991) description of online
classes being suitable for students with greater sensitivity to feelings is supported by
this study, since majority of the online students were profiled as feelers. The results of
the study also confirmed Lei and Gupta’s (2010) study of the relationship between
online learning and learner intention, since the learners in this study were also
considering online classes under the feeling profile without requiring logic.

Finally for Profile 4, there were significant differences between judgers and
perceivers in online and face-to-face classes, \(X^2 (1, N = 323) = 78.9396, p < .05\), (Table
6). Among the judging students, 55% of them were face-to-face class students, while
45% of them were online students. For the perceiving students, 3% were face-to-face
students, while 97% of them were online students. See Table 10 for the distribution
details for judging and perceiving.

The profile 4 describes the orientation towards the outer world, so online course
students in this study preferred to manage their outer world through meanings,
relationships, and possibilities beyond the information in the five senses, while face-to-
face course students preferred to manage their outer world by using logic. From the
combination of four profiles, the most common profile for face-to-face Hospitality and
Tourism undergraduate course students in this study was reported as ESTJ that also
represented the most common profile for the students without considering the course
choice. Extroversion refers to finding energy in things and people, preferring
interaction, needing sociability, and having potential for grasping the big picture in an
environment with a stable reality structure.
Table 9

*MBTI Profile 3 Distribution by Course Choice*

<table>
<thead>
<tr>
<th>Profile</th>
<th>Face-to-Face</th>
<th>Online</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feeling n</td>
<td>25</td>
<td>94</td>
<td>119</td>
</tr>
<tr>
<td>%</td>
<td>21</td>
<td>79</td>
<td>100</td>
</tr>
<tr>
<td>Thinking n</td>
<td>101</td>
<td>103</td>
<td>204</td>
</tr>
<tr>
<td>%</td>
<td>49.51</td>
<td>50.49</td>
<td>100</td>
</tr>
<tr>
<td>Total n</td>
<td>126</td>
<td>197</td>
<td>323</td>
</tr>
</tbody>
</table>

*N = 323*

Table 10

*MBTI Profile 4 Distribution by Course Choice*

<table>
<thead>
<tr>
<th>Profile</th>
<th>Face-to-Face</th>
<th>Online</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Judging n</td>
<td>123</td>
<td>97</td>
<td>223</td>
</tr>
<tr>
<td>%</td>
<td>55</td>
<td>45</td>
<td>100</td>
</tr>
<tr>
<td>Perceiving n</td>
<td>3</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>%</td>
<td>3</td>
<td>97</td>
<td>100</td>
</tr>
<tr>
<td>Total n</td>
<td>126</td>
<td>197</td>
<td>323</td>
</tr>
</tbody>
</table>

*N = 323*

Sensing refers to concrete, matter-of-fact information that can be taken directly and exactly by detail-oriented individuals. Thinking refers to analytical, and cause-and-effect
type of processing that values fairness and objectivity in evaluating information. Judging refers to decisiveness and closure as orientation to the outer world (Myers et al., 1998).

On the other hand, the most common profile for online Hospitality and Tourism undergraduate course students in this study was reported as ISTP, being introvert, sensing, feeling, and perceiving. Introversion refers to finding energy in the inner world of ideas. Sensing refers to information taken in by the five senses. As mentioned above, thinking refers to analytical and cause-and-effect type of processing that values fairness and objectivity in evaluating information. Perceiving refers to managing outer world through meanings, relationships, and possibilities (Myers et al., 1998).

**Research question 3:** To what extent, do different MBTI profiles predict Hospitality and Tourism students’ course choice controlling for age; gender; enrollment status; employment status; university; whether they had taken an online course previously in high school; college, or other places; how many online courses they previously took; and who helped them select the delivery mode of their courses? To answer research question three, a hierarchical logistic regression analysis was performed in which the MBTI profiles of Hospitality and Tourism undergraduate students were examined for its unique contribution to student course choice after combination of age; gender; enrollment status; employment status; university; whether they have taken an online course previously in high school; college, or other places; how many online courses they previously took; and who helped them select the delivery mode of their courses.

When the model first ran, the model did not converge with the existing data coding
method. The model was run repeatedly by introducing a single variable at a time starting with profile one, profile two, profile three, profile four, and course choice -- using university as a hierarchical level. The model converged with six iterations. Then, age, gender, enrollment, employment, advisor were introduced one by one to the model, it converged each time with six iterations. When help of advisor (HA), instructor (HI), friends (HF), parents (HP) and others (HO) were introduced, the model did not converge, but went all the way to 18th iteration and stopped. Then, help of advisor, instructor, friends, parents, and others were removed from the model and prior online experience in college (POEC), high school (POEH), and other (POEO) were added; the model again did not converge and stopped in the eighth iteration.

With the existing data coding, the model did not converge when all the variables were included in the model. The response variable of course choice was coded as online course = 1 and face-to-face course = 0. The regressors were coded as learning styles; four different overall profiles from MBTI in scale format: Profile 1 (Extrovert = 1 or Introvert = 0), Profile 2 (Sensing = 1 or Intuitive = 0), Profile 3 (Thinking = 1 or Feeling = 0), Profile 4 (Judging = 1 or Perceiving = 0), age (scaled), gender (dichotomy: female = 1, male = 0), enrollment status (dichotomy: part-time = 1, full-time = 0), employment status (Full-time = 1; Part-time = 2; Not working = 3; and Retired = 4), university (University A = 1, University B = 2, University C = 3, University D = 4, online course taken previously taken (dichotomy: yes = 1 or no = 0), online course taken before in high school (POEH) nominal, in college (POEC) nominal, in other places POEO nominal, and who helped in selecting the mode of courses (dichotomy: yes Advisor = 1, no Advisor = 0), (dichotomy: yes Parent(s) = 1, no Parent(s) = 0), (dichotomy: yes
Instructor(s) = 1, no Instructor(s) = 0), (dichotomy: yes Friend(s) = 1, no Friend(s) = 0),
and (dichotomy: yes Other(s) = 1, no Other(s) = 0).

For an attempt to get convergence, the coding for the continuous variables (POEC, POEH, POEO) were transformed into a categorical variable by creating a new variable, total online courses, that included total number of the high school, college, and other places, TOC (POEC + POEH + POEO). Then, this new variable was classified as a categorical variable by defining two categories: if the number of online courses that were taken by the students was less than five, they were in the “little” category; if it was more than four they were in the “many” category. In addition, because there were only four different schools that were included in the study, university variable was dummy coded; three dummy variables were used in order to run the model.

In this study, $y$ was the binary outcome variable (course choice) and follows the Bernoulli distribution $y \sim \text{Bin}(1, \pi)$ and $x$ is a student level predictor. Then, the ordinary logistic regression model is shown below.

$$y_{ij} = \pi_{ij} + \epsilon_{ij}$$

$$\text{logit}(\pi_{ij}) = \log \left( \frac{\pi_{ij}}{1 - \pi_{ij}} \right) = \alpha + \beta \chi_{ij}$$

where $i = 1, \ldots, I$, $i$ is the student level indicator, $j = 1, \ldots, J$ is the university level indicator, and $\pi_{ij}$ is the probability of face-to-face for a student $i$ in university $j$, conditional on the variable $x$ (P1, P2, P3, P4) and 14 control variables. These control variables are age; gender; enrollment status; employment status; university; whether they have taken an online course previously in high school, college, or other places;
how many online courses they previously took; and who helped them select the delivery mode of their courses for this study. The logit model assumes that student-level random errors are independent with moments $e_{ij}$ are independent with moments $E(e_{ij}) = 0$ and $\text{Var}(e_{ij}) = \sigma^2_e = \pi_{ij}(1 - \pi_{ij})$. The logit model has a linear function at the logit (log odds) scale. The probability of this function is expressed by the following equation.

$$\pi_{ij} = \frac{\exp(\alpha + \beta x_{ij})}{1 + \exp(\alpha + \beta x_{ij})}$$

The logistic regression estimated separately by maximum likelihood for all schools (4 Hospitality and Tourism colleges) with the response variable of course choice as a dichotomy distinguishing between online courses and face-to-face courses. The regressors are learning styles 4 different overall profiles from MBTI in scale format: Profile 1 (Extrovert or Introvert); Profile 2 (Sensing or Intuitive); Profile 3 (Thinking or Feeling); Profile 4 (Judging or Perceiving); age; gender; enrollment status; employment status; university; online courses taken before in high school (POEH), in college (POEC) and, in other places POEO; and who helped in select the delivery mode of course: Advisor, Parent(s), Instructor(s), Friend(s), and Other(s). Using the SAS code below, the model was run.

```
Proc logistic data = two;
    Class university P1 P2 P3 P4 gender enrollment employment HA HF HI HP HO
toc1;  
Model CC = p1 p2 p3 p4 age gender enrollment employment HA HF HI HP HO
toc1 u1 u2 u3;  
run;
```

Data presented in Table 11 show the class-level coding information that was used in the SAS model. Extrovert from profile one; intuition from profile two; feeling from profile
three; judging from profile four; female from gender; full-time from enrollment; and employment; help of advisor friend, instructor, parents and others; last, little from total online course one (toc1) were used as a class variable and probability was modeled for course choice of face-to-face class. The overall model fit was tested with likelihood ratio, score test, and Wald test in Table 12, which provided all significant results indicating a model fit with the variables. The model fit was tested by three different tests and, as the results, are displayed in the table, they were all significant supporting a good fit for the model.

The results for the logistic regression using all variables are shown in Table 13. The data presented below include the intercepts and slope coefficients of each variable in the regression model along with the odds ratio. From the overall model, only P1, P4, and toc1 were significant in predicting face-to-face course choice in the model. This means that, students’ level of being extrovert, being a judger, and their prior online course number (up to five courses) can predict their probability of choosing face-to-face courses.

Profile four describes the orientation towards the outer world, so online course students in this study prefer to manage their outer world through meanings, relationships, and possibilities beyond the information in the five senses, while face-to-face course students prefer to manage their outer world by using logic. Similarly, one unit increase in the judging profile increases the log (odds) of the probability of students choosing face-to-face courses by 2.7773, the corresponding change in the odds ratio (OR = 258.428, 95% CI: 39.947 - >999.999).
Table 11

*Class Level Information for the Variables*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Value</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>Extrovert</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Introvert</td>
<td>-1</td>
</tr>
<tr>
<td>P2</td>
<td>Intuition</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Sensing</td>
<td>-1</td>
</tr>
<tr>
<td>P3</td>
<td>Feeling</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Thinking</td>
<td>-1</td>
</tr>
<tr>
<td>P4</td>
<td>Judging</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Perceiving</td>
<td>-1</td>
</tr>
<tr>
<td>Gender</td>
<td>Female</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>-1</td>
</tr>
<tr>
<td>Enrollment</td>
<td>Full-time</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Part-time</td>
<td>-1</td>
</tr>
<tr>
<td>Employment</td>
<td>Full-time</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Part-time</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Not working</td>
<td>-1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-1</td>
</tr>
<tr>
<td>HA/HF/HI/HP/HO</td>
<td>Help</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>No help</td>
<td>-1</td>
</tr>
<tr>
<td>TOC1</td>
<td>Little</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Many</td>
<td>-1</td>
</tr>
</tbody>
</table>

59
Finally, one unit increase in the total online course corresponds to a 1.8234 increase in the log (odds) of the probability of students choosing face-to-face courses and the corresponding change in the odds ratio (\(OR = 38.353, 95\% CI: 4.596 – 320.075\)).

Predicted logit of (face-to-face course) = -3.9734 + (3.1722) * P1 + (2.7773) * P4 + (1.8234) * toc1

Table 12
The Logistic Model Fit Statistics
<table>
<thead>
<tr>
<th>Test</th>
<th>Chi-square</th>
<th>df</th>
<th>Pr&gt;Chi-square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Likelihood Ratio</td>
<td>332.7591</td>
<td>18</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Score</td>
<td>226.5720</td>
<td>18</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Wald</td>
<td>79.8184</td>
<td>18</td>
<td>&lt;0.0001</td>
</tr>
</tbody>
</table>

* \(p = .05\)

The model fit statistics shown in Table 14 explains the probability of students choosing a face-to-face course or an online course from the entire population, 98% of the time, students who are selected from the population will be a face-to-face course students. These results suggested that in the study population, the probability of choosing a face-to-face class is much higher than the probability of choosing an online class. C statistics for the model is 0.981, this statistics is a number between 0-1 and the closer this number gets to 1, the stronger the model fit is. The value of c statistics for the model suggests the strength of the model, which makes a strong case for the study results.
Table 13

Logistic Regression Test for the Course Choice

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Class Level</th>
<th>Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr&gt;Chi-Square</th>
<th>OR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-- --</td>
<td>-3.9734</td>
<td>1.5109</td>
<td>6.9159</td>
<td>0.0085</td>
<td>-- --</td>
</tr>
<tr>
<td>P1</td>
<td>Extrovert</td>
<td>3.1722</td>
<td>0.4894</td>
<td>42.0167</td>
<td>&lt;0.0001*</td>
<td>569.332</td>
</tr>
<tr>
<td>P2</td>
<td>Intuition</td>
<td>0.3173</td>
<td>0.4430</td>
<td>0.5129</td>
<td>0.4739</td>
<td>1.886</td>
</tr>
<tr>
<td>P3</td>
<td>Feeling</td>
<td>-0.1318</td>
<td>0.3559</td>
<td>0.1371</td>
<td>0.7112</td>
<td>0.768</td>
</tr>
<tr>
<td>P4</td>
<td>Judging</td>
<td>2.7773</td>
<td>0.4763</td>
<td>34.0004</td>
<td>&lt;0.0001*</td>
<td>258.438</td>
</tr>
<tr>
<td>Age</td>
<td>-- --</td>
<td>-0.0484</td>
<td>0.0418</td>
<td>1.3429</td>
<td>0.2465</td>
<td>0.953</td>
</tr>
<tr>
<td>Gender</td>
<td>Female</td>
<td>0.2919</td>
<td>0.3542</td>
<td>0.6794</td>
<td>0.4098</td>
<td>1.793</td>
</tr>
<tr>
<td>Enrollment</td>
<td>Full-time</td>
<td>0.1450</td>
<td>0.4455</td>
<td>0.1059</td>
<td>0.7448</td>
<td>1.336</td>
</tr>
<tr>
<td>Employment</td>
<td>Full-time</td>
<td>0.5035</td>
<td>0.6134</td>
<td>0.9364</td>
<td>0.3332</td>
<td>5.580</td>
</tr>
<tr>
<td></td>
<td>Not-working</td>
<td>0.5320</td>
<td>0.4504</td>
<td>1.3951</td>
<td>0.2375</td>
<td>5.247</td>
</tr>
<tr>
<td>HA</td>
<td>Help</td>
<td>0.3166</td>
<td>0.3713</td>
<td>0.7268</td>
<td>0.3939</td>
<td>1.883</td>
</tr>
<tr>
<td>HF</td>
<td>Help</td>
<td>0.2061</td>
<td>0.3076</td>
<td>0.4488</td>
<td>0.5029</td>
<td>1.510</td>
</tr>
<tr>
<td>HI</td>
<td>Help</td>
<td>0.3127</td>
<td>0.3733</td>
<td>0.7017</td>
<td>0.4022</td>
<td>0.535</td>
</tr>
<tr>
<td>HP</td>
<td>Help</td>
<td>-0.0840</td>
<td>0.5537</td>
<td>0.0230</td>
<td>0.8794</td>
<td>0.845</td>
</tr>
<tr>
<td>HO</td>
<td>Help</td>
<td>0.2679</td>
<td>0.4651</td>
<td>0.3318</td>
<td>0.5646</td>
<td>1.709</td>
</tr>
<tr>
<td>Toc1</td>
<td>Little</td>
<td>1.8234</td>
<td>0.5413</td>
<td>11.3486</td>
<td>0.0008*</td>
<td>38.353</td>
</tr>
<tr>
<td>U1</td>
<td>School1</td>
<td>-1.1431</td>
<td>0.9504</td>
<td>1.4467</td>
<td>0.2291</td>
<td>0.319</td>
</tr>
<tr>
<td>U2</td>
<td>School2</td>
<td>-0.0392</td>
<td>0.7517</td>
<td>0.0027</td>
<td>0.9584</td>
<td>0.962</td>
</tr>
<tr>
<td>U3</td>
<td>School3</td>
<td>0.0405</td>
<td>0.9534</td>
<td>0.0018</td>
<td>0.9661</td>
<td>1.041</td>
</tr>
</tbody>
</table>

Note. The dependent variable in this analysis was Course Choice (CC), model was designed to predict face-to-face course choice.

OR = Odds ratio
HA = advisor help, HF = friend help, HI = instructor help, HP = parent help, HO = other help
Toc1 = total online course one
U = university.
* p < .05. df = 1
Table 14

*Association of Predicted Probabilities and Observed Responses*

<table>
<thead>
<tr>
<th>Concordance %</th>
<th>Discordant %</th>
<th>Sommers’ D</th>
<th>c</th>
</tr>
</thead>
<tbody>
<tr>
<td>98.0</td>
<td>1.7</td>
<td>0.962</td>
<td>0.981</td>
</tr>
</tbody>
</table>

*N = 323*

**Observations**

There were 450 responses for the demographic survey, but there were only 323 responses for the MBTI. The process of merging the data from the two instruments was very tedious. The participants were asked to start the first survey with a Personal ID consisting their initials, birth month, and day of birth (e.g., GMR-1107). Students who did not have a middle name entered their initials with an “X” in between (e.g., GXM-1107). Some participants entered their birth year instead; some participants did not add an “X” between their initials even though they did not have a middle name. Some of these complications were resolved through the consistency of the problem because students repeated the same mistake for both surveys; some of these issues were not resolved and resulted in the loss of the data for these participants.

The Consulting Psychologists Press (CPP) gathered all the participant data from the MBTI Form M and provided the data files to the researcher in both Excel and SPSS format. The cleaning of the provided data and merging the data with the first survey that had demographic data was iterative. Finding the same Personal ID in both surveys and merging these data was a process that had to be repeated 323 times.

The information provided by CPP was different than what was expected. Initially, four profiles were expected to be scored out of a set numerical value for each pair;
however, CPP transformed participants’ score into a standard scale and reported the strength of each type out of 30. For this study, this change created a slight change in terms of the statistical approach in determining the confidence intervals. Knowing the exact reporting measures might help the researcher plan the statistical procedures accordingly.
Chapter 5

Summary, Conclusions, Implications, and Recommendations

The purpose of this study was to explore the relationship between learning styles and the choice of learning environment for Hospitality and Tourism undergraduate students. The parts of this chapter are the summary of the study, conclusions, implications, and recommendations for further research.

Summary of the Study

The learning style theory suggested that it is the preference of one style over others in a given circumstance. Even though external factors play a key role in learner preferences, learners’ overall choice is a combination of all factors affecting that decision-making process.

In order to determine the relationship between learning styles and the choice of learning environment for Hospitality and Tourism undergraduate students, an anonymous two-part survey was sent to the instructors of the Introduction to Hospitality and Tourism courses where both online and face-to-face courses were offered in four schools in the state of Florida. One school’s instructors were emailed the survey link on January 6th and the other three on January 11th. To obtain a maximum response, the instructors of the four programs in Florida that offered both online or face-to-face Introduction to Hospitality and Tourism courses for spring semester 2016 were contacted two weeks before the courses start with a pre-notice email that is requesting
their help (see Appendix C). The second contact was sent the day before the semester started along with the participation email (see Appendix D). Of the surveys distributed, there were total of 450 responses; however, due to incomplete information or duplication, 127 of them were discarded leaving 323 surveys that were used in the data analysis.

**Conclusions**

Based on the results of this study, the conclusions are discussed below. There were more extroverts than introverts. The Hospitality and Tourism education program requires internship and hands-on experience; this finding also supports the requirements of the industry. For profile two, there were more sensing types than intuitive, this finding also supports the fact that Hospitality and Tourism industry is a people business, using tangible information and perceiving this information through five senses, including human error is necessary. For profile three, there were more thinking types then feeling. For profile four, there were more judging types then perceiving, indicating that decisions were made based on the support of logic.

The most common profile for face-to-face students was ESTJ, which indicated students, who focus their energies on the world around them (Extrovert), are realistic and are quick to grasp the details (Sensing), make impersonal and practical judgments, and like to settle and finish up the projects (Thinking-Judging). This type also more closely aligns with the nature of face-to-face classes in terms of requiring weekly meetings where interaction among peers and with the instructor occurs on a regular basis (Extrovert), with immediate feedback opportunity to be able to settle and finish up (Judging). Myers (1998) defined this group as organizers and commandants who are
traditionalists and stabilizers.

On the other hand, the most common profile for online students was ISTP. This indicated students, who focus their energies on the world inside themselves (Introverts), are realistic and are quick to grasp the details (Sensing), make personal and practical judgments, like to work alone, and do not mind leaving things open for alterations (Thinking-Feeling). This type also aligns more with the nature of online classes in terms of requiring less interaction with peers and only needing contact with the instructor (Introverts) with no face-to-face feedback opportunity, but with opportunity for students to gather their thoughts and analyze (Perceiving). Myers (1998) described this group as testers and theory builders who are advanced in technology, troubleshooting, and negotiating. Even though there were differences between each profile for online and face-to-face students, when the combined profiles were created, both online and face-to-face class students shared Sensing and Thinking for profiles two and three, which provided a clear indication of student interest regardless of the class structure.

Previous studies on course choice with different populations also found that being extrovert and introvert did make a difference in terms of course choice, indicating online course choice for introverts and face-to-face course choice for extroverts. This study also supported that finding. In addition, for the Hospitality and Tourism undergraduate student sample, being in a judging profile or being in a perceiving profile also made a difference, indicating an online course choice for the perceiving profile and a face-to-face course choice for the judging profile.

The results of the study indicated that only profile one and profile four were predictors among the four profiles along with the total online course one variable. The
model indicated that by looking at profile one, profile four, and total online course one, the probability of students choosing face-to-face classes can be predicted, if the students are extroverts and judgers and previously took less than five online courses. Even though there was a difference for each profile pair, in terms of online and face-to-face student groups, only profile one (extroverts) and profile four (judging) were significant. This finding is also supported by the most common profiles of online and face-to-face class students, since both group shared sensing (Sensing) and thinking (Thinking) as common profiles, it can be concluded that only Profile one and Profile four were separating these two group within this sample for this particular course choice.

Implications

This study contributes to the knowledge of adult learning styles in Hospitality and Tourism schools in the state of Florida. It can stimulate more research on the influence of learning style for Hospitality and Tourism students’ learning environment choice. Beder (1990) described the four purposes of adult education as: to facilitate change in a dynamic society due to information and necessary life skills; to support and maintain good social order to gain skills and knowledge necessary to function in a democracy; to promote productivity due to the changes in technical and scientific knowledge; and, to enhance personal growth due to the primary goal of adulthood, which is self-actualization.

Understanding the preferred learning styles may help instructors develop teaching strategies that will match students’ desirable learning styles and then may improve student performance through effective learning environment. Previous research suggested that an instructor’s personality may influence his/her teaching strategies and
instructors’ personality may also affect the students’ attitudes towards the class. Acknowledging the differences among learners in the class can help educators encourage student participation to enhance critical thinking. The most common profile in this study was ESTJ, which has sensing as one of the dimensions. Myers (1998) stated that since the communication of the instructors starts with the spoken word in the classroom, it has to be translated by the listeners’ intuition and this process is naturally easier for intuitives than sensing types. Since the majority of the undergraduate Hospitality and Tourism students are sensing types, it is important for instructors to use other communications methods such as slide shows, statistics, videos, etc., to support verbal commutation that is more abstract.

Sensing and intuition profile also differs in terms of interests for these two groups. While, intuitives enjoy more of the why (the principle and the theory), sensing types enjoy more the practical application (the what and the how). That is to say, it is important for the instructors to use this information while they are preparing their lectures in order to capture students’ attention and interest.

If the profiles of undergraduate Hospitality and Tourism students can be determined ahead of time, the number of face-to-face and online courses can be adjusted in each program by the administration to offer the appropriate number of courses each semester. In addition, advisors can make a more suitable suggestion for each student knowing his/her learning styles and personalizing the path for the student.

The conclusions suggest that understanding individual learning styles are vital to provide the best education possible for the students in terms of delivery and testing of knowledge. If the students know ahead of time what their particular learning style, they
can choose appropriate courses and have a better chance of success. MBTI describes the preferences of individuals in certain behaviors, but also recognizes that individuals are both extroverts and introverts, use both sensing and intuition, make thinking and feeling judgments, and have judging and perceiving needs. However, within this particular sample and for the undergraduate Introduction to Hospitality and Tourism course, with 95% confidence, it can be concluded that the difference between the audience of face-to-face and online courses depended on whether they are more extroverts or more judgers also their prior experience of online classes.

**Recommendations for Further Research**

Based on the results of this study, the recommendations for this study are as follows.

1. This study focused on only introductory-level courses that were offered online and face-to-face during the same semester in Hospitality and Tourism programs that were 4-year degree programs. Future research may concentrate on other courses within the same degree programs.

2. The data collection was purposely focused on the time period before the add/drop time expired; future research may consider a combination of the students who add the class during add/drop period and before or maybe only students who add the class during add/drop period.

3. This study used MBTI as the instrument for the learning profile of the students; future research might compare the results with a different instrument for the same population.

4. Previous research has shown that factors like race/ethnicity and culture have
an impact on learning styles with a different population. Future research with a larger sample size can test the influence of race/ethnicity and culture on learning styles within the Hospitality and Tourism school context.

5. For this study, a quantitative survey approach was used to gather data, future research may include an interview or utilize a mixed method to observe more details about the course selection method of the students especially follow-up interview after the course.

6. Previous research suggested that an instructor’s personality may very well influence his/her teaching strategies so future research may also include instructor’s personality type.

7. This study only focused on four programs in the state of Florida teaching Introduction to Hospitality and Tourism Management courses online and face-to-face for Spring 2016, future research may utilize students of another course and compare the results.

8. This study could not find any difference between schools; future study may look at instructor differences within the same school for the same class, two of the schools in the study offered more than five sections of the same class with multiple instructors.

9. This study did not consider instructor differences, among the four schools, three of them had the same instructor teaching both the online and face-to-face versions of the Introduction to Hospitality and Tourism management course, future research may look at the instructor differences for the same course within the same school.
10. Further research can consider adding the final grades for each student to identify the success rates of the students from their course choice and determine the correlation.

11. Further research can also consider adding analysis of syllabi into the research to investigate whether it may impact student course choice.
References


Lawrence, G. D. (2009). *People types and tiger stripes*. Gainesville, FL: Center for Applications of Psychological Type.


Appendices
Appendix A: Demographic Survey

1. Personal ID: ________ (Your initials-Birth Month and Day of birth)
   (with middle name: e.g., GMR-1107; if you do not have a middle name: e.g., GXM-1107)

2. Which of the following categories best describes your enrollment status?
   a) Part-time           b) Full-time

3. Have you taken any online courses before?
   a) Yes               b) No

4. I have taken online course in:
   High school __________
   College ______________
   Other (please specify) ___________

5. Who was involved in selecting the mode of your course for this semester?
   Please check all that apply.
   ___Advisor             ___Friend(s)
   ___No one              ___Parent(s)
   ___Instructor(s)       ___Other (please specify) ___________

6. What school are you attending? _______________

To take MBTI please click on: https://online.cpp.com/en/index.aspx
Appendix B: IRB Letter

November 10, 2015

Gunce Malan-Rush
L-CACHE - Leadership, Counseling, Adult, Career & Higher Education
Tampa, FL  33619

RE:  Exempt Certification
IRB#: Pro00024293
Title: THE RELATIONSHIP BETWEEN LEARNING STYLES AND THE CHOICE OF LEARNING ENVIRONMENT FOR HOSPITALITY AND TOURISM UNDERGRADUATE STUDENTS

Dear Gunce Malan-Rush:

On 11/10/2015, the Institutional Review Board (IRB) determined that your research meets criteria for exemption from the federal regulations as outlined by 45CFR46.101(b):

(2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless:
(i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

Approved Items:

THE RELATIONSHIP BETWEEN LEARNING STYLES AND THE CHOICE OF LEARNING ENVIRONMENT FOR HOSPITALITY AND TOURISM UNDERGRADUATE STUDENTS

Consent Form
Appendix B continued

As the principal investigator for this study, it is your responsibility to ensure that this research is conducted as outlined in your application and consistent with the ethical principles outlined in the Belmont Report and with USF HRPP policies and procedures.

Please note, as per USF HRPP Policy, once the Exempt determination is made, the application is closed in ARC. Any proposed or anticipated changes to the study design that was previously declared exempt from IRB review must be submitted to the IRB as a new study prior to initiation of the change. However, administrative changes, including changes in research personnel, do not warrant an amendment or new application.

Given the determination of exemption, this application is being closed in ARC. This does not limit your ability to conduct your research project.

We appreciate your dedication to the ethical conduct of human subject research at the University of South Florida and your continued commitment to human research protections. If you have any questions regarding this matter, please call 813-974-5638.

Sincerely,

John Schinka, Ph.D., Chairperson
USF Institutional Review Board
Appendix C: First Contact Email for Instructors

Dear Professor ________,

I am a PhD Candidate at University of South Florida, and I am writing to ask you to share my dissertation research study with your students in the first week of the semester.

Students who would like to participate in my dissertation research survey on the impact of learning styles on hospitality and tourism students’ course choice (online versus face-to-face) can access it through link (IRB 24293). The study will ask students to start with a demographic survey that followed by a link to take the Myers-Briggs Type Indicator (MBTI).

I will be sending another email two days before the semester starts with the survey link. This study aims to improve the course offerings in Hospitality and tourism schools and your input is very important for the success of the study.

Thank you for considering my request.

If you have any additional questions, feel free to contact me at gunce@gmalan.com

Gunce Malan-Rush  
PhD Candidate  
College of Education  
University of South Florida
Appendix D: Participation Email for Instructors

Dear Professor ________,

As I said in my previous email, I am a PhD Candidate at University of South Florida, and I am writing to ask you to share this email with your students.

Students who would like to participate in my dissertation research survey on the impact of learning styles on hospitality and tourism students’ course choice (online versus face-to-face) can access it through link (IRB 24293). The study will ask students to start with a demographic survey that followed by a link to take the Myers-Briggs Type Indicator (MBTI). Please note that this is the anonymous collection of data thru an online site and there is no way to link your responses to your identity.

Please forward the following link to your students.

Thank you for considering my request.

If you have any additional questions, feel free to contact me at gunce@gmalan.com

Gunce Malan-Rush
PhD Candidate
College of Education
University of South Florida

Please forward the following message to your students.

Dear Students,

My name is Gunce Malan-Rush, I am a PhD Candidate from University of South Florida currently working on data collection for my Dissertation research named "The Relationship Between Learning Styles and the Choice of Learning Environment for Undergraduate Hospitality and Tourism Students". This study aims to look at the decision making process of students' course choice behavior through 2-part online survey. Students who would like to participate in my dissertation research can access the survey through the link below. Participation is 100% voluntary.
Appendix D continued

My data collection is only the first week of the school (January 6-17th). It is very important that you took the survey during the first week of the semester as I am only focusing on the state of Florida. It will take 15-20 minutes to complete the survey.

Study has 2 parts: it will start with a demographic survey and at the end they will be provided with another link to direct them to the second survey. If you would like to participate in the study, please read the following Informed Consent to Participate in Research.

Informed Consent to Participate in Research
Information to Consider Before Taking Part in this Research Study

Pro # 24293

Researchers at the University of South Florida (USF) study many topics. To do this, we need the help of people who agree to take part in a research study. This form tells you about this research study. We are asking you to take part in a research study that is called: The Relationship Between Learning Styles And The Choice Of Learning Environment For Hospitality And Tourism Undergraduate Students. The person who is in charge of this research study is Gunce Malan-Rush. This person is called the Principal Investigator.

Purpose of the Study
The purpose of this study is to explore the relationship between learning styles and the choice of learning environment for hospitality and tourism undergraduate students.

Why are you being asked to take part?
We are asking you to take part in this research study because you are enrolled in an online or face-to-face version of Undergraduate Introduction to Hospitality and Tourism Management course in a school that offers both for Spring 2016.

Study Procedures
If you take part in this study, you will be asked to complete a demographic survey that will ask some information your enrollment status, university, whether you have taken an online course previously in high school, college or other, how many online course you took before, who helped you selecting the delivery mode of your courses and what school do you attend currently. At the end of the demographics survey, you will have the link to take Myers-Briggs Type Indicator (MBTI). You will be provided with a generic login name “Learningstyles” and password “Spring2016” and then you will begin to take the instrument by entering your first name, last name, the same Personal ID you enter for the beginning demographics survey (your initials, birth month and birth date),
Appendix D continued

gender, age, and employment status then you will be directed to the MBTI instrument. MBTI has 93 item forced selection that will ask you to pick.

Alternatives / Voluntary Participation / Withdrawal
You have the alternative to choose not to participate in this research study. You should only take part in this study if you want to volunteer; you are free to participate in this research or withdraw at any time. There will be no penalty or loss of benefits you are entitled to receive if you stop taking part in this study.

Benefits and Risks
Your participation is very important for the success of the study and by participating you will help in investigation the relationship between learning styles and the choice of learning environment for Hospitality and Tourism Students. This research is considered to be minimal risk.

Compensation
We will not pay you for the time you volunteer while being in this study.

Privacy and Confidentiality
We must keep your study records as confidential as possible. It is possible, although unlikely, that unauthorized individuals could gain access to your responses because you are responding online.

Certain people may need to see your study records. By law, anyone who looks at your records must keep them completely confidential. The only people who will be allowed to see these records are: Principal Investigator, Advising professor, The Consulting Psychologists Press (CPP) and The University of South Florida Institutional Review Board (IRB).

It is possible, although unlikely, that unauthorized individuals could gain access to your responses. Confidentiality will be maintained to the degree permitted by the technology used. No guarantees can be made regarding the interception of data sent via the Internet. However, your participation in this online survey involves risks similar to a person’s everyday use of the Internet. If you complete and submit an anonymous survey and later request your data be withdrawn, this may or may not be possible as the researcher may be unable to extract anonymous data from the database.

Contact Information
If you have any questions about your rights as a research participant, please contact the USF IRB at 974-5638. If you have questions regarding the research, please contact the Principal Investigator at gunce@gmalan.com.
Appendix D continued

We may publish what we learn from this study. If we do, we will not let anyone know your name. We will not publish anything else that would let people know who you are. You can print a copy of this consent form for your records.

I freely give my consent to take part in this study. I understand that by proceeding with this survey that I am agreeing to take part in research and I am 18 years of age or older.

Please click to link below to start:
http://usf.az1.qualtrics.com/SE/?SID=SV_b1Vul17nqUzlJxH
Appendix E: Student Link, Instructions, and Demographic Form

Dear Participant,

The following study is looking at the relationship between learning styles and course choice. By participating in the study you will be helping in Improving the course offerings in Hospitality and Tourism Schools and you will be provided by your individual Myers-Briggs Type Indicator (MBTI).

There are two important instructions. First, you will be using a Personal ID that will consist of your initials, birth month, and date (e.g., GMR-1107) if you do not have a middle name please put an "X" (e.g., GXM-1107) for this survey and MBTI Form M. It is critical that you use the same personal id for both surveys. Second, at the end of this survey, you will be directed to a page that has a link to MBTI website along with the login ("Learningstyles") and password ("Spring2016") that you will need to login.

It will take 15 minutes or less to complete the survey. Your participation is completely voluntary. However, your inputs are very important for the success of this study. Note that your responses will be confidential. By clicking on this link, you agree to participate to the study.

Q1. Please enter your "Personal ID" that will consist of the initials of your name, middle name, last name-birth month and date.
   e.g.: GMR-1107

Q2. Which of the following categories best describes your enrollment status?
   - Part-time
   - Full-time

Q3. Have you taken any online course before?
   - Yes
   - No
Appendix E continued

Q4. I have taken online courses in _______________.

<table>
<thead>
<tr>
<th>Category</th>
<th>How many online courses you have taken in each category?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highschool</td>
<td></td>
</tr>
<tr>
<td>College</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
</tbody>
</table>

Q5. Who was involved in selecting the mode of your courses this semester? Please select all that apply.

- [ ] Advisor
- [ ] Friend(s)
- [ ] Instructor(s)
- [ ] Parent(s)
- [ ] Other

Q6. What school are you currently attending?

Please continue to MBTI by clicking the link below. You will need the following information in order to take MBTI.

Login name: Learningstyles
Password: Spring2016

Appendix F: Support Letter from CPP

July 16, 2015

Gunce Malan-Rush
guncemalan@mail.usf.edu

Dear Ms. Malan-Rush,

I am writing to inform you that we are pleased to offer our support your project entitled, “The Impact of Learning Styles on the Choice of Learning Environment (Online Versus Face-to-face) for Hospitality and Tourism Undergraduate Students”. Our support offer includes:

- Free SkillsOne® account setup.
- $1 per assessment for up to 3,000 MBTI® Form M Profile Administrations on SkillsOne®, CPP’s commercial website, billed upon administrations used. Taxes may apply.
- Free data file (including demographics, item responses, and MBTI scores) upon completion of data collection.

To accept our offer of support, please print and sign this letter and email to me at nas@cpp.com or fax to 650-240-1303. By accepting this support you agree to: (a) provide regular progress reports, (b) present or publish your findings in a scholarly venue, (c) not share the data without further permission from CPP, and (d) not use support from CPP to develop competing instruments. I will send the requested materials following receipt of your letter of acceptance.

This offer of support may be accepted through September 16, 2015.

Administrations under this discount are valid until July 16, 2017.

I appreciate your interest in the MBTI® assessment and look forward to hearing about the results of your work. Please feel free to contact me if I can be of further assistance. I can be reached at nas@cpp.com. Best of luck in your work!

Sincerely,

Nancy Schaubhut, M.S.

Gunce Malan-Rush
07/16/15
About the Author

Gunce Malan-Rush is a Hospitality and Tourism professional who also works as an instructor at University of South Florida. She became interested in Hospitality and Tourism industry when she was 15 years of age as a high school student and attended Tourism Vocational High school where she fell in love with the industry.

She continued Tourism Administration as her college major from Bogazici University, Istanbul, Turkey and she realized the potential of the Hospitality Industry through her summer work and travel programs in USA. She worked for an amusement park and a casino hotel. When she discovered the industry was much more than hotels and restaurants, she moved to Florida to pursue her Hospitality Management Master degree.

During her masters degree, she worked on many different projects, however, creating a curriculum for accounting software was the reason she decided to pursue her doctoral degree in Curriculum and Instruction with emphasis in Adult Education. Because of the relevance of her current degree and her background in hospitality and tourism industry, she decided to focus her research on the relationship between learning styles and course choice of hospitality and tourism undergraduate students.