Examining the factors of the Technology Acceptance Model for Counselor Education graduate students in CACREP-accredited programs

by

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B.S., Universidad Autonoma de CentroAmerica, 1998
M.A., University of Missouri Kansas City, 2002

AN ABSTRACT OF A DISSERTATION

submitted in partial fulfillment of the requirements for the degree

DOCTOR OF PHILOSOPHY

Department of Special Education, Counseling and Special Affairs
College of Education

KANSAS STATE UNIVERSITY
Manhattan, Kansas

2019

Abstract

As higher education continues to integrate technology, the counselor education field has evolved and recognized the importance of graduate students' attitudes towards technology acceptance of a wide array of technology in their training programs (Burt, Gonzalez, Swank, Ascher, & Cunningham, 2011; Kennedy, 2011; Orr, 2011; Sabella, Poynton, & Isaacs, 2010; Tyler & Sabella, 2004). This study examined the attitudes of counselor education graduate students in CACREP-accredited program towards technology acceptance using the Technology Acceptance Model (TAM) as the theoretical framework for the study. In particular, the purpose of this study was to better understand counselor education graduate students' attitudes towards technology acceptance as it relates to perceived ease of use, perceived usefulness, technology self-efficacy, and technology anxiety.

Participants in the study were 107 graduate students who were enrolled in Fall 2018 at 10 Midwest CACREP-accredited counselor education programs. Data were gathered by an online survey consisting of a demographic questionnaire and four instruments (Technology Acceptance Model Scales, Media and Technology Usage and Attitudes Scale, Technology Self-efficacy Scale, and Technology Anxiety Scale).

The results of the hierarchical regression analysis for each of the research questions revealed several significant findings regarding graduate students' attitudes towards use of technology. For the first research question, perceived ease of use was predicted by technology self-efficacy and technology anxiety. The results indicated perceived ease of use was influenced positively by technology self-efficacy and negatively by technology anxiety. For the second research question, perceived usefulness was predicted by technology self-efficacy and technology anxiety. The results indicated perceived usefulness was influenced positively by

technology self-efficacy and negatively by technology anxiety.   For the third research question, counselor education graduate students' attitudes towards the use of technology was predicted by perceived usefulness. In addition, this study found a strong positive relationship between perceived ease of use and perceived usefulness likely due to multicollinearity.

Technology plays an increasing role in counselor education programs. Findings from this study provide important information for counselor education programs to consider regarding graduate students' attitudes towards the use of technology.

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Approved by:

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Table of Contents

List of Figures

List of Tables

Acknowledgements

The completion of this dissertation would not be possible without the technical and personal support of many people. I extend my greatest appreciation to my committee chair, Dr. Kenneth Hughey, for his patience, guidance, and many hours of help with this dissertation. I also thank my committee members, Drs. Yang Yang, Haijun Kang, and Doris Carroll for guidance and direction throughout this process. Also, thank you to Dr. Tim Steffensmeier for serving as the outside chairperson for my defense. In addition, I appreciate Dr. Peg Waterman whose statistical support and personal encouragement made my work easier and enjoyable. A special note of appreciation goes to Dr. Mary Fry, who listened to me, encouraged me each step of the way, and celebrated each milestone.

Dedication

This dissertation is dedicated to my family. I thank my daughter, Sophia, and son, David, for their unconditional love, support, encouragement, and patience. I would also like thank my best friend and husband, Sai, for believing in me and his commitment to our family. I am especially grateful to my mom, Isabel, who loves me unconditionally, never doubted my abilities even when I did, and taught me nothing is impossible.

Chapter 1 - Introduction

As higher education continues to integrate technology, the counselor education field has begun to evolve and recognize the importance of graduate students' attitudes towards technology acceptance of a wide array of technology in their training programs (Burt, Gonzalez, Swank, Ascher, & Cunningham, 2011; Kennedy, 2011; Orr, 2011; Sabella, Poynton, & Isaacs, 2010; Tyler & Sabella, 2004). Research suggests that counselor education graduate students utilize a variety of applications as part of their learning experience (Bachus, 2006; Burt et al., 2011; Orr, 2011). E-learning platforms (Capuzzi & Gross, 2013), e-portfolios (Carlson & Yohon, 2008; Kennedy, 2011; Walker, Rehfuss, & Parks-Savage, 2008), online supervision (Chapman, 2008; Chapman, Baker, Nassar-Mcmillan, & Gerler, 2011; Hayes, 2008; McAdams & Wyatt, 2010; Vaccaro & Lambie, 2007), web-based instruction (Benshoff & Gibbons, 2011; Duran, 2014; Hayes, 2008; Meder, 2013; Watson, 2012), networking (Bachus, 2006; Lin, Featherman, & Sarker, 2017, online counseling (Capuzzi, & Gross, 2013), continuing education (Carey & Stretch, 2016; Kenedy, 2011), and user-generated content platforms, such as Pinterest and Twitter (Carrinton, 2016; East, 2015), are examples of the variety of technology applications that require counselor education graduate students' acceptance and utilization.

In 2007, as a response to technological advancements in the counseling field, the Association for Counselor Education and Supervision (ACES) created 12 technological competencies to be infused throughout counselor education curricula at the graduate level. According to ACES (2007), proficiency of these competencies leads to the development of technical literacy that will "enable students to participate fully in the 21st century practice and provide a foundation upon which emerging technologies can be evaluated and integrated into practice where appropriate" (p. 1). Research suggests there is a need to understand the variables

that influence the adoption of emerging technologies necessary for counselor educators to develop technical literacy (East, 2015; Kennedy, 2011; Orr, 2011; Tyler & Sabella, 2004).

Understanding technology in counselor education has been one of the most challenging issues when studying new and emerging technologies (Sabella, Poynton, & Isaacs, 2010; Tyler & Sabella, 2004). Among various theories used to understand the attitudes towards technology acceptance in higher education, the Technology Acceptance Model (TAM) proposed by Davis (1989) is one of the most cited theoretical frameworks in this area of research (e.g., Agudo-Peregrina, Hernandez-Garcia, & Pacual-Miguel, 2014; Edmunds, Thorpe, & Conole, 2012; Pynoo et al., 2011). TAM is intended to provide a conceptual model to explain and predict individuals' attitudes and behavioral intentions towards utilizing technology (Mikusa, 2015). According to this model, two specific beliefs, perceived ease of use and perceived usefulness, determine one's attitudes towards the use of technology (Chen, Lin, Yeh, & Lou, 2013; Venkatesh, 2000).

Perceived ease of use refers to "the degree to which a person believes that using a system would be free of effort" (Davis, 1989, p. 321). Perceived usefulness is explained as "the degree to which a person believes that using a system would enhance his or her job performance" (Davis, 1989, p. 321). Although there seems to be support and movement within the field of counselor education to enhance graduate students' technology capabilities (ACES, 2007; Orr, 2011; Myers & Gibson, 1999; Sabella, Poynton, & Isaacs, 2010; Tyler & Sabella, 2004), research suggests there is still a need to understand external factors that influence students' attitudes towards technology acceptance (Carrinton, 2016; East, 2015; Kennedy, 2011).

In the context of technology acceptance, the most commonly used external factor is self-efficacy (Cheung & Vogel, 2013; Compeau & Higgins, 1995; Schwartz, 2011; Venkatesh &

Davis, 1996). According to Bandura (1986), self-efficacy refers to the confidence people have in their abilities to successfully perform a particular task. In the context of technology acceptance, self-efficacy is defined as "the belief that one has sufficient abilities and skills to be successful when dealing with technology related tasks" (McDonald & Siegall, 2001, p. 470). Technology self-efficacy for counselor education graduate students refers to belief in their abilities and skills to use technology in their academic and clinical work. For example, counselor education graduate students' technology self-efficacy will impact their utilization of web-based learning systems, research databases, email, discussion boards, assessment and testing software, online supervision, and user-generated content resources required in academic settings (Burt et al., 2011; Carlson, Portman, & Bartlett, 2006). Even though there is limited research on counselor education graduate students' technology self-efficacy (Benshoff & Gibbons, 2011 Burt et al., 2011; Orr, 2011; Watson, 2012; Wilkinson & Reinhardt, 2015), some research suggests that addressing graduate students' technology self-efficacy ensures future counselors will be open to utilize new technologies, and not fall behind other mental health workers (e.g., psychiatrists, social workers, psychologists) who are using technology (Capuzzi & Gross, 2013; Kennedy, 2011; Rauch & Gallo, 2013).

In regard to adoption of new technology in higher education, research found that technology anxiety influences perceived usefulness and ease of use (Venkatesh, Morris, Davis, & Davis, 2003). Technology anxiety is defined as "the individual's state of mind regarding their ability and willingness to use general technology-related tools" (Meuter, Ostorm., Bitner, & Roundtree, 2003, p. 900). According to Saade and Kira (2009), technology anxiety may manifest itself in the program as the graduate students begin to access the course material, which in part will affect their productivity, learning, and the social bonds in the classroom. For instance, many

counsel education programs do not place high priority for graduate students' technological skills during the interview process; however, once students start the program many in-class activities incorporate some knowledge of technology to enhance learning (Hayden, Poynton, & Sabella, 2008). Thus, some students may not know how to deal effectively with the anxiety produced by the integration of technology in their counselor education program, and this might affect their academic functioning (Martin, 2004). Researchers agreed that there is a need for more studies on technology anxiety in counselor education, since the topic of technology anxiety has only been addressed as it relates to loneliness and online sense of community in social media (Chapman et al., 2011; Ertner, 2012; Sum, Mathews, Hughes, & Campbell, 2008; Sum, Mathews, Pourghasem, & Hughes, 2009).

Need for the Study

The increasing use of technology in counselor education programs has raised the importance of technology acceptance issues regarding graduate students' academic and clinical work (Capuzzi & Gross, 2013; Pelling, 2005). As a result, counselor education programs, professional associations, and government agencies have guidelines, competencies, and standards to inform the use of technology in the counseling profession and counselor education (Baggerly, 2002; Burt et al., 2011; Sabella et al., 2010; Shallcross, 2010; Tyler & Sabella, 2004). For instance, according to ACES (2007), master's graduate students are expected to possess and demonstrate basic knowledge of technology as it applies to report writing, spreadsheets for recoding data, statistical analysis, software for assessment and testing, email, listservs, research databases, software, web-based learning management systems, supervision, treatment planning, and user-generated content resources in order to fulfill their academic and clinical work (Sabella et al., 2010). Additional research regarding technology acceptance will benefit counselor

education programs to address perceptions and attitudes towards the use of technology which will assist students' professional development to remain competitive in the field (Ertmer, Ottenbreit-Leftwich, Sadik, Sendurur, & Sendurur, 2012; Gorder, 2008; Liou & Kuo, 2014).

Although the integration of technology in counseling programs has been expanding in higher education, many counselor education programs still seem challenged to integrate technology into their courses and meet the technological needs of their graduate students (Borgadus-Cortez, 2017; Burt et al., 2011). In counselor education, TAM offers opportunities to identify graduate students' beliefs of perceived ease of use and perceived usefulness as they relate to other external factors (e.g., technology self-efficacy and technology anxiety). This relationship can provide researchers, educators, and administrators with information regarding attitudes towards technology acceptance. In addition, further research regarding these external factors could benefit programs by providing information to use in making decisions regarding supervision, mentoring, and counseling support for graduate students who might be experiencing difficulties to stay current with the programs in terms of attitudinal and technological demands (Borgadus-Cortez, 2017).

Purpose of the Study

Research suggests there is increased use of technology in counselor education programs that creates a gap among graduate students with different technological skills and program requirements (Borgadus-Cortez, 2017; Burt et al., 2011; Capuzzi & Gross, 2013; Renfro-Michel, O'Halloran, & DeLaney, 2010). The purpose of this study is to better understand counselor education graduate students' attitudes towards technology acceptance as it relates to perceived ease of use, perceived usefulness, technology self-efficacy, and technology anxiety.

Research Questions

The research questions addressed by this study are:

1. For counselor education graduate students in CACREP-accredited programs, can perceived ease of use be predicted by technology self-efficacy, technology anxiety, and their interaction?

2. For counselor education graduate students in CACREP-accredited programs, can perceived usefulness be predicted by technology self-efficacy, technology anxiety, and their interaction?

3. For counselor education graduate students in CACREP-accredited programs, can attitudes towards the use of technology be predicted by perceived ease of use, perceived usefulness, and their interaction?

Definitions of Terms

Attitudes Towards Technology Acceptance refers to an "individual's positive or negative feeling about performing the target behavior" (Davis, 1989, p. 325). The attitudes subscale of the Media and Technology Usage and Attitudes Scale (MTUAS, Rosen et al., 2013) will be used to assess this variable.

Counselor Education Graduate Students refers to master's-level graduate students enrolled in a CACREP-accredited counseling program with emphasis in school, mental health, and/or couples and family counseling.

Perceived Ease of Use refers to "the degree to which a person believes that using a particular system would be free of effort" (Davis, 1989, p. 321). The Technology Acceptance Model perceived ease of use subscale will be used to assess this variable (Davis, 1989).

Perceived Usefulness is explained as "the degree to which a person believes that using a particular system would enhance his or her job performance" (Davis, 1989, p. 321). The Technology Acceptance Model perceived usefulness subscale will will be used to assess this variable (Davis, 1989).

Technology Anxiety refers to "the individual's state of mind regarding their ability and willingness to use general technology-related tools" (Meuter et al., 2003, p. 900). The Technology Anxiety Scale (TA, Meuter et al., 2003) will be used to measure participants' level of anxiety towards the use of technology. The TA is based on students' perceptions of anxiety associated with utilizing technology during their program (Williamson, 2014).

Technology Self-Efficacy refers to "the belief that one has sufficient abilities and skills to be successful when dealing with technology related tasks" (McDonald & Siegall, 2001, p. 470). The Technology Self-Efficacy Scale (TSES, McDonald & Siegall, 1992) will be used in this study to assess students' technology self-efficacy.

Chapter 2 - Review of Literature

The infusion of technology into counselor education has increased substantially over the last 10 years due to the graduate students' use of technology to seek information, communicate with friends, understand world events, and socialize (Burt et al., 2011; Kennedy, 2011; Orr, 2011; Sabella, Poynton, & Isaacs, 2010; Tyler & Sabella, 2004). According to the Pew Research Center (2017), the growing trend in higher education is to understand attitudes towards technology acceptance since it is expected that by the year 2020 distance learning that combines less-frequent on-campus, in-person class meetings will become the norm across many fields. This projected increase of technology integration seems to support the growing popularity of technology use in counselor education programs across the United States (Burt et al., 2011; East, 2015; Orr, 2011; Sabella et al., 2010; Tyler & Sabella, 2004); however, there is a lack of published literature that specifically addresses graduate students' attitudes towards technology acceptance.

This chapter will include a review of the literature, divided into three sections. The first section provides an overview of counselor education utilization of technology. The second section presents the Technology Acceptance Model (TAM, Davis, 1989), the theoretical framework on which the study is based. The third section focuses on research related to the application of TAM in higher education technology adoption.

Counselor Education Utilization of Technology

The need for counselor educators to embrace technological advances has received attention in the literature due to the advances in technology integration (Burt et al., 2011; Chandras, 2000; Sabella et al., 2010; Tyler & Sabella, 2004). Increasingly, counselor education programs have experienced demands from accrediting bodies (e.g., CACREP) and professional

organizations (e.g., American Counseling Association (ACA) and American Psychological Association (APA)) to integrate technology as one external measure of program quality and ethical teaching practices for counselor education graduate students (Meder, 2013). According to Kennedy (2011), technology tools used in or out of the classroom can significantly enhance students' learning experience by enhancing their productivity, capturing their attention, and assessing their progress towards subject outcomes.

Historically, technology acceptance has been encouraged by the use of machines and computers in counselor education programs (Niemiec & Walberg, 1989). For instance, Pressey (1926), an educational psychology instructor from Ohio State University, developed a machine to help administer weekly quizzes and later developed a computer device used for instructional purposes. Skinner (1961) furthered the integration of machines in higher education settings by allowing students to construct their own responses within a sequencing of frames, which helped launch the programmed instruction movement in American education (Niemiec & Walberg, 1989). Similarly, with the introduction of computers as educational tools, Weizenbaum (1976) and Colby (1972) created computer applications that were integrated into educational programs. Weizenbaum (1976) developed a language processing program, called Eliza, that simulated a therapist response from a Rogerian conversational style. The purpose of this program was to encourage individuals who were struggling with a life event to communicate more effectively (Cavanagh, Zack, Shapiro, & Wright, 2003). Cobly (1972) took Eliza's program further by creating Parry, a computer program that simulated the thinking of a paranoid individual. Parry was a teaching system created for graduate students to practice therapeutic interventions before they interacted with clients (Colby, 1972). Eventually, utilization of technology changed direction and focused on using computers to deliver content in higher education (Granello,

2000). In 1973, the Programmed Logic for Automatic Teaching Operations (PLATO) courseware became the first computer-assisted instruction program for dissemination of course materials, data collection, and online communication systems (Granello, 2000). According to Wilkins (2012), the 70's was an important period in higher education because technology acceptance among graduate students became a necessity in order to fulfill program requirements.

Computers in the United States began to be used in the primary, secondary, and postsecondary schools and institutions in the early 1980s. This adoption and migration of computer technology into educational classrooms caused individuals to perceive its impact very differently. People's perception of computer technology was based upon their personal beliefs and experiences with computers, which were seen as either – competitor, cooperator, or a powerful friend (Bauer & Kenton, 2005). Depending upon individual perceptions and beliefs, some of the teachers, faculty, and students saw the computer as a friend (a machine that could assist them in work or school), while others saw the computer as a foe (a machine that could replace them in the workplace and/or be very hard to operate) when it arrived in the classroom (Gilbert, Lee- Kelley, & Barton, 2003). In the 1990's, the rapid growth of the Internet and more accessible computer technologies led to wider integration and use of various technologies within counselor education (Granello, 2000). For example, many programs started to incorporate computer applications to give students an opportunity to role play, simulate, and model counseling interventions throughout their practicum and internship experiences (Wilkins, 2012). In addition, counseling professional organizations started to utilize online communication services and collaboration (e.g., use of email, listservs, bulletin boards, chat rooms, and online platforms), virtual libraries (e.g., International Career Development Library), and databases (e.g., ERIC, PsycINFO, PsychLIT) to support and facilitate learning among the community (Orr,

2011). Integrating technology in counselor education programs in a meaningful way is essential when preparing the next generation of counselors (Burt et al., 2011), especially if graduate students' attitudes towards technology acceptance is a crucial factor in determining the success or failure of technology integration into the curriculum (Davis, 1989, 1993).

As technology integration continued to grow in counselor education programs, the Association for Counselor Education and Supervision (ACES, 1999) Technology Interest Network published recommended competencies for masters' and doctoral-level students. These competencies included knowledge and integration of various forms of technology (e.g., ability to use office productivity applications, knowledge of various types of digital media, and statistical software programs, and understand how to access online resources) that were to be demonstrated during their academic and internship experiences. Technology competence in counselor education refers to "the counselor's ability to create, repair or operate specific technologies as they relate to clinical and educational work" (Sabella et al., 2010, p. 610).

As an effort to understand technology competence in counselor education, Myers and Gibson (1999) conducted a study in which they surveyed counselor educators and graduate students to determine their perceived level of technology competence. Respondents included 62 counselor educators, 22 students, 13 professional counselors, and 7 supervisors, all of which were ACES members. Myers and Gibson (1999) found significant differences between counselor educators' and students' technological competence. Counselor educators rated themselves higher than students rated themselves in terms of technology competence and knowledge of ethical codes relating to online counseling. Students rated themselves higher on their ability to use audiovisual equipment. Myers and Gibson (1999) concluded that counselor educators and counseling students lacked technology competence. They also recommended continued research

and dialogue concerning technology competencies and technology acceptance as it related to the infusion of technology in counselor education.

Similarly, Waterman (2004) conducted a survey that investigated doctoral-level graduate students' supervisors' perceived ease of use and perceived usefulness of the ACES (1999) technology competencies. Twenty-five CACREP-accredited counseling programs were randomly selected for participation. Waterman's (2004) findings indicated that doctoral-level graduate students supervisors were using the ACES (1999) competencies to a moderate degree, but they were reluctant to utilize new technologies (e.g., cybercounseling) because of ethical concerns and perceived usefulness. Both of these studies highlighted the importance of future research on technology acceptance as it relates to the counselor education.

In 2007, the ACES Technology Interest Network provided further explanation and refinement of the 1999 technology competencies. The focus in the 2007 ACES competencies was infusion of technology into counselor education curricula to foster the development of technological literacy and to enhance counseling practice through application of technology. According to ACES (2007), the proficiency of technology competencies would "enable students to participate fully in the 21st century counseling practice and provide a foundation upon which emerging technologies can be evaluated and integrated into practice when appropriate" (p. 1).

In 2011, Orr conducted a study to measure master's-level counselor education graduate students' perceived ease of use and perceived usefulness of the ACES (2007) technology competencies. Orr's (2011) findings indicated graduate students' perceived usefulness positively impacted graduate students' technology acceptance and increased their use of technology throughout the program. In addition, research showed that a majority of the counselor education students were highly likely or somewhat likely to accept and learn new technology related to the

counseling profession (Orr, 2011). Despite the advances made to integrate technology in counselor education curricula, it is crucial that attitudes towards technology acceptance be researched to better understand how to assist graduate students develop technological competence (Kennedy, 2011).

In 2016, Council for Accreditation of Counseling and Related Educational Programs (CACREP), recognized the ever-increasing need for counselor education programs to integrate technology into their curricula. CACREP (2016) required programs to use technology in the development of graduate students' counseling identity and professional practice. For instance, counselor education programs are required to provide practicum and internship experiences in which graduate students have the opportunity to become familiar with a variety of professional activities and resources, including technological resources. In addition, CACREP-accredited programs are required to inform students on ethical practices as it relates to technology's impact on the counseling profession. Research in this area has been limited to technology integration among counselor education programs (Quinn, Hohenshall, & Fortune, 2001). Quinn et al. (2001) found that CACREP-accredited counselor education programs were inconsistent in the types and uses of technology they were integrating in their counseling professional identity and professional practice courses; some programs were more advanced in their use of technology while others were just beginning. These findings are particularly important since previous research suggests consistency in technology integration among CACREP-accredited programs would enhance student technology competencies and learning (Orr, 2011).

Even though CACREP increased demands to integrate technology in graduate programs, the research in this area has been focused on faculty's technology competence rather than

graduate students' technology acceptance issues as they emerge within educational settings.

Flores (2012) examined CACREP-accredited program faculty and graduate students' values and level of discomfort regarding online counseling, and the relationship with their acceptance of online counseling as a clinical service modality. Flores (2012) found students' technology acceptance and perceived value of online counseling was impacted by the counselor education faculty's value of this modality. Similarly, Vaccaro and Lambie (2007) found a positive relationship between counselor education supervisors' technology competence and students' technology acceptance of online supervision. Their findings stressed the need to prepare both supervisors and supervisees in online-based supervision methods, as both groups need to be technically proficient and accepting of new technologies in order to ensure success of this supervision method.

Tillman, Dinsmore, Chasek, and Hof (2013) noted that even though professional associations like ACA and APA were utilizing Twitter, blogs, podcasts, online library, and online learning websites to support counselors' professional development, there were inconsistencies on level of comfort among counselor education faculty and graduate students. According to Gawande (2016), faculty's attitudes towards technology acceptance have been shown to be a direct predictor of graduate students' technology acceptance in traditional and online learning environments.

According to Venkatesh (2008), understanding individuals' attitudes towards accepting technology is a direct predictor of technology acceptance rather than focusing on the actual types of technologies being implemented. Yet, the focus of attention in counselor education research have been on technology integration of a particular technology or on faculty's attitudes towards technology acceptance, failing to address attitudes towards technology acceptance. Accepting

new technology may fail in the counselor education setting because the focus of attention is on the type of technology introduced, rather than graduate students' preexisting beliefs and experiences with new technology (Becker, 2010). Hence, the need for further research on graduate students' attitudes towards technology acceptance.

Technology Acceptance Model

The importance of technology acceptance as the precursor to the use of technology has attracted much attention in higher education (e.g., Gibson, Harris, & Colaric, 2008; Hsu & Chang, 2013; Hussein, 2017). The Technology Acceptance Model (TAM) was developed by Davis (1989) to explain user acceptance of information technologies in order to enhance attitudes and intentions to utilize technologies. Davis' (1989) model has been widely studied and accepted as a valid model in predicting individual attitudes towards technology acceptance and intention to use various forms of technology (e.g., Hsu & Chang, 2013; Hussein, 2017; Pires, 2015; Venkatesh et al., 2003). Lee, Kozar, and Larsen (2003) conducted a meta-analysis of TAM studies and found TAM to be the most widely used theoretical model with over 400 citations in the Social Science Citation Index. According to Holden and Rada (2011), TAM was the "most researched theoretical model" (p. 345) to describe psychological characteristics and technological characteristics in the decision-making process of accepting technology.

The TAM is based on the Theory of Reason Action or Theory of Planned Behavior (TRA or TPB, Ajzen & Fishbein, 1980). TAM expanded the basic concepts of attitudes and behavioral patterns in the TRA/TPB by suggesting that two specific beliefs, perceived ease of use and perceived usefulness, influence an individual's attitudes towards technology acceptance (Davis, 1989). In addition, consistent with TRA, TAM explains attitudes towards technology acceptance as being influenced by external variables (e.g., self-efficacy, anxiety) predicted by the

individuals' perceived ease of use and perceived usefulness. Mathieson (1991) compared the two models in a study predicting one's intention to use an information system. The purpose of her study was to determine which model best predicted intention to use, had the most beneficial information, and was the easiest to apply. Mathieson (1991) found the TAM to be more generalizable, whereas the TRA/TPB "does not assume that beliefs that apply in one context also apply in other contexts" (p. 178).

Originally TAM was used for situations where users could choose to use or not to use the technology. However, in the educational setting, users do not have a choice; they simply have to use the technology (e.g., graduate students' use of technology in counselor education programs). In this case attitudes towards the use of technology becomes a good predictor of technology acceptance in mandatory and voluntary settings (Pynoo et al., 2007; Teo, Lee, & Chai, 2008). Attitudes towards technology acceptance is described as an individual's positive or negative feeling about performing a target behavior" (Davis, 1989), and is believed to be a direct determinant of his or her intention to use such technology in the future (Lee, Cheung, & Chen, 2005).

According to TAM, perceived ease of use and perceived usefulness predict one's attitudes towards the use of technology (Davis, 1989). Perceived ease of use refers to "the degree to which a person believes that using a system would be free of effort" (Davis, 1989, p. 321). Perceived usefulness is explained as "the degree to which a person believes that using a system would enhance his or her job performance" (Davis, 1989, p. 321). This theory suggests that if individuals believe that technology is useful (perceived usefulness), but at the same time believe that it is too difficult to use (perceived ease of use), the effort outweighs the benefits and thereby undermines use (Davis et al., 1989). In this sense, a person who believes utilizing

technology will lead to positive outcomes will hold positive attitudes towards accepting

technology for completing a task (Davis, 1989). TAM is shown in Figure 1.
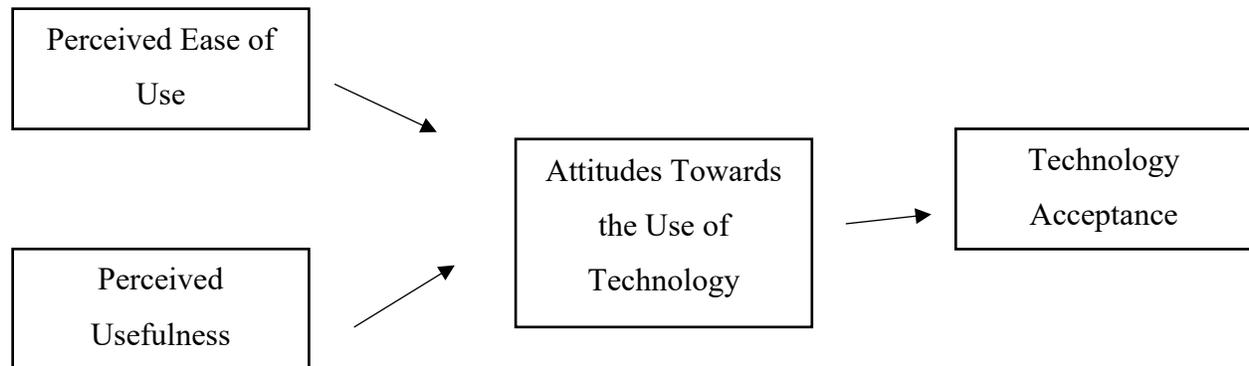
Figure 1. Technology Acceptance Model (Adapted from Davis et al., 1989)

In the original TAM studies, Davis (1989) concluded that perceived usefulness was more

strongly associated with the decision to adopt a given technology than perceived ease of use, but

perceived ease of use influenced the decision to adopt a technology and had a moderating effect

on perceived usefulness as well. Later studies by other researchers verified this conclusion across

diverse populations (Holden & Karsh, 2010; Park, 2009; Polites & Karahanna, 2012; Venkatesh

et al., 2003; Wang & Wang, 2009). Davis (1989) concluded perceived ease of use and perceived

usefulness contribute to overall attitudes toward technology usage that directly leads to an intent

to use technology and ultimately to adoption and usage (Yousafzai, Foxall, & Pallister, 2010;

Zhang & Xu, 2011).

In the initial stage of accepting a new technology, students rely on the belief that

technology will provide a solution and aid their learning experience (Venkatesh et al., 2003). In

this stage, technology can be viewed as having a high level of perceived usefulness by simply

enhancing the performance of an educational task without providing a complete or total solution

(Wu & Gao, 2011). In other words, a student will begin the process of developing a perception of

usefulness about a technology armed solely with the belief of perceived ease of use of any technology that will solve a problem or benefit the student in their educational experience (Yousafzai et al., 2010).

According to Davis et al. (1992), other variables such as individual differences or external variables (e.g., self-efficacy, anxiety) influence individuals' behavioral intention to accept technology (Davis et al., 1989). In later research, technology anxiety alongside self-efficacy were shown to be important factors of an individual's decision to adopt a new technology (Venkatesh & Bala, 2008; Venkatesh et al., 2003). Even though technology can enhance counselor education graduate students' learning experience, students might experience varying levels of technology self-efficacy and anxiety in classes incorporating a high degree of technology (Burt et al., 2011). Research surrounding issues related graduate students' technology acceptance has been limited, however, there have been successful studies completed using the TAM to assess technology acceptance in higher education (e.g., Cheung & Vogel, 2013; Edmunds et al., 2012; Park, Nam, & Cha, 2012; Zhalimar & Fernandez, 2017). TAM external variables are shown in Figure 2.
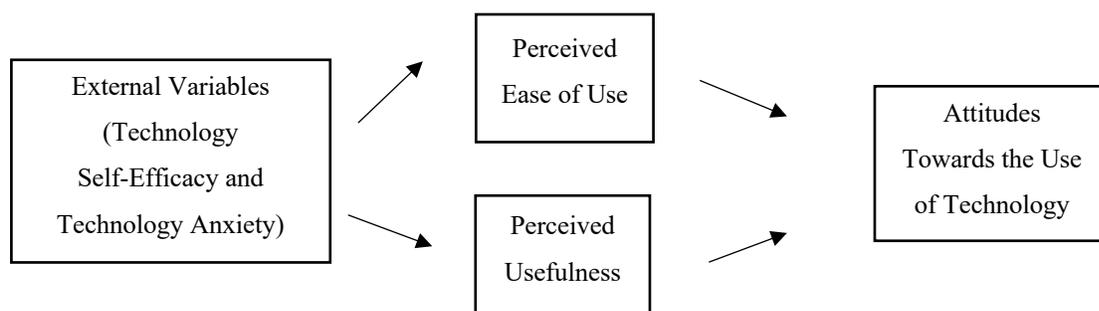

Figure 2. Technology Acceptance Model including External Variables (Adapted from Davis et al., 1989)

Application of TAM in Higher Education Technology Adoption

TAM has been used in studies to assess technology acceptance in higher education. Empirical research has demonstrated that perceived usefulness and perceived ease of use account for significant variance in behavioral intention (King & He, 2006; Lee et al., 2003; Venkatesh & Davis, 2000). For example, Schepers and Wetzels (2007) analyzed the relationships between behavioral intention and these two beliefs, concluding that these constructs accounted for 48% of the variance in behavioral intention. Lee et al. (2003), in their review of 101 TAM studies, found significant relationships between perceived ease of use and behavioral intention in 58 studies (out of 82 applicable studies) and perceived usefulness and behavioral intention in 74 studies (out of 84 applicable studies), concluding that these two constructs explain between 30% to 40% of the variance in intention.

Edmunds, Thorpe, and Grainne (2012) addressed attitudes towards technology acceptance in higher education. The main problem identified in their study was students' acceptance of technology beyond the university setting. They chose to use the TAM to explore the influence of students' attitudes towards technology acceptance in school, work, and social settings. In their study, students' perceived technology as both more useful and easier to use during work and school-related activities, compared to social use. Elements of enhanced control, personal ownership, and consistent functionality in the technology use at work were positively related to technology acceptance (Edmunds et al., 2012). The results not only confirmed the original TAM constructs for students' use of technology in school, work, and social contexts, they also showed students were motivated positively towards technologies that are relevant to their future employment intentions. Edmunds et al. (2012) suggested universities need to provide training to faculty and students on all of the technologies integrated in course work, and future

research should focus on understanding user attitudes towards technology to improve performance and acceptance of current and developing technologies.

Cheung and Vogel (2013) addressed students' use of collaborative e-learning technology (e.g., Google applications). Using the TAM, the purpose of their study was to identify underlying factors that influenced students' intention to use learning technologies with collaborative features (Cheung et al., 2013). They analyzed the relationship of perceived ease of use and perceived usefulness with compatibility, perceived resources, peer groups, external media, lecturer, self-efficacy, and sharing, as external variables. Many hypotheses were tested to determine the relationship between the factors; the main conclusion was that while the teacher is responsible for teaching and providing material, the students' attitudes towards technology were the most useful predicting factor of acceptance (Cheung & Vogel, 2013). These results were consistent with the research by Davis (1989); attitudes are the determinants of behavioral intention, which in turn, predicts system usage. A significant implication of this study was that attitudes towards the use of technology were the most significant determinant of behavioral intention to use online-based collaborative technology.

For many years, Learning Management Systems (LMS) have been utilized in higher education to develop and assign course content, track student progress, and measure and report student outcomes (Fathema, Shannon, & Ross, 2015). According to the Pew Research Center (2018), 87% of institutions and 91% of student enrollments in higher education rely upon LMS (e.g., Blackboard, Canvas, or Moodle). In 2006, Yeou investigated students' attitudes towards technology acceptance of LMS in a blended learning setting. In this study, perceived usefulness was the strongest determinant of attitudes towards technology acceptance and actual use of blended learning technology. In addition, Yeou (2016) found a positive relationship between

attitudes towards technology use and self-efficacy. The findings of this study highlighted that if the students perceived the system to be too difficult to access or utilize, they were resistant to utilizing, thus undermining the integration of technology in higher education. Also, Yeou (2016) emphasized the importance of developing targeted changes (e.g., up-to-date and user-friendly course content) in which the instructors demonstrate how the system would benefit students and facilitate learning course content. In recent years, LMS have incorporated a mobile application to their system.

Chen, Sivo, Seilhamer, Sugar, and Mao (2013) used the TAM as the framework to analyze students' and faculty's acceptance of Blackboard Mobile Learn. Chen et al. (2013) concluded that perceived ease of use, perceived usefulness, and the system's technical support were good predictors of students' and faculty's acceptance of Blackboard Mobile Learn. In practical terms the results showed that perceived usefulness and perceived ease of use have significant influence on students' attitudes towards the acceptance of Blackboard Mobile Learn. A significant implication of this study was the importance of having technical support to assist students' and faculty' acceptance of mobile technology (Chen et al., 2013).

Park, Nam, and Cha (2012) used TAM to study students' acceptance of mobile learning or m-learning as it related to students' self-efficacy, major, system accessibility, and subjective norm. Park et al. (2012) concluded students' perceived ease of use and perceived usefulness were positively related to faculty's positive attitudes towards m-learning acceptance. In practical terms, they suggested faculty and campus leaders needed to promote the products to increase students' positive attitude toward the use of technology. They also concluded that attending to students' attitudes towards technology and intention to use can benefit universities in making decisions that could successfully aid students' learning (Park et al., 2012).

Similarly, TAM has been used to explain students' use of social media in m-learning (e.g., Youtube, Facebook) as a resource for improving learning experiences through active interaction and collaboration (Balakrishnan & Gan, 2016; Zhalimar & Fernandez, 2017). Zhalimar and Fernandez (2017) used the TAM as a framework for a study that focused on students' use of social media in public and private settings. Their study focused on determining the factors involved in social media adoption and acceptance. Zhalimar and Fernandez (2017) concluded that perceived ease of use was a major predictor of intention to use and perceived usefulness was a primary factor that determined successful use of social media sites in learning experiences. In addition, they recommended future research should focus on understanding external factors the contribute to students' attitudes towards technology acceptance, since it can provide opportunities for better planning of university resources to improve the welfare and learning of students.

Over the years, external factors affecting the TAM constructs have been the focus of research to avoid or minimize resistance or rejection when users interact with technology (Venkatesh et al., 2003). Venkatesh and Davis (2000) argued that individuals will form early perceptions of perceived ease of use based on different external factors related to their general beliefs regarding technology use. In studies related to technology acceptance in higher education, self-efficacy and anxiety have been researched in relation with perceived ease of use and perceived usefulness (Ahmad, Madarsha, Zainuddin, Ismail, & Nordin, 2010; Holden & Rada, 2011; Meuter et al., 2003).

According to Davis (1989, 1993), one of the external factors that has been research in relationship to perceived ease of use is self-efficacy. Bandura (1986) defined self-efficacy as "a person's judgment of his or her capability to organize and execute a course of action to attain a

desired outcome" (p. 71). Self-efficacy is less concerned with the actual skills one has and more concerned with the judgment of one's ability to perform a task with whatever skills they have (Bandura, 1986). In this sense technology self-efficacy refers to the belief that one has sufficient abilities and skills to be successful when dealing with technology-related tasks (McDonald & Siegall, 2001). According to Venkatesh (1996), technology self-efficacy provides an anchor for judging the usability of a new and unfamiliar technology based on the fact that even if individuals possessed little or no knowledge about the ease of use of a new technology, the user may certainly have a well-formed sense of his or her ability to use technology in other settings. For instance, Holden and Rada (2011) used the TAM basic constructs of perceived ease of use, perceived usefulness, and self-efficacy to study student teachers' technology acceptance (Bandura, 1986). According to Holden and Rada (2011), student teachers' technology self-efficacy can influence their technology acceptance and utilization once they graduate from their program. Also, they acknowledged that Venkatesh and Davis (1996) conducted research directed at the examination of the associations between computer self-efficacy on the TAM; however, they identified the need to study self-efficacy as it related to technology in general. Holden and Rada (2011) concluded that student teachers' perceived technology usability aid their frustration with new technologies and technology self-efficacy directly influenced perceived ease of use and usability.

Similarly, Kulviwat, Bruner , and Neelankavil (2014) used the TAM framework to study students' attitudes towards technology acceptance. Findings indicated that self-efficacy significantly influenced emotional reactions and ease of use perceptions. Self-efficacy was shown to play a substantive role in shaping students' attitudes based on their perceived ease of use. In addition, Jeong and Kim (2016) examined kindergarten teachers' acceptance of

computer-related technology. The study focused on predicting technology acceptance based on teachers' perceived ease of use, perceived usefulness, self-efficacy, and personal innovativeness. Data were collected from 160 teachers from public school in Darjeon, South Korea. The findings showed a positive relationship between teachers' perceived usefulness, self-efficacy, and technology acceptance.

Several researchers identified self-efficacy as a significant determinant of attitudes towards technology acceptance and adoption of e-learning (e.g., Alenezi, Karim, Malek & Veloo, 2010; Al-Harbi, 2011; Jeong & Kim, 2016; Kulviwat et al., 2014; Sung, Jeong, & Shin, 2015). Al-Harbi (2011) examined perceived ease of use, perceived usefulness, and self-efficacy in relation to students' acceptance of e-learning tools in higher education. The results showed that students' technology acceptance was positively related to self-efficacy, and e-learning acceptance strongly correlated with perceived e-learning usefulness. Similarly, using a quantitative research design, Alenezi et al. (2010) surveyed 402 students enrolled in an e-learning university regarding their intention to continue using e-learning technology. Based on the results of the study, technology self-efficacy has a significant influence on college students' intention to engage in e-learning. The study concluded that e-learning self-efficacy significantly influenced students' perceived usefulness of e-learning tools.

Researchers have identified anxiety and self-efficacy as external factors that affect individuals' attitudes towards technology acceptance (Venkatesh et al., 2003). According to Davis (1993), technology anxiety results from a user's perception of the given technology and how it may or may not benefit. For instance, an individual's perceptions of technology as being useful can result in adoption of technology, regardless the efforts involved in learning how to utilize technology (Venkatesh et al., 2003). Technology anxiety refers to "the individual's state

of mind regarding their ability and willingness to use general technology-related tools" (Meuter et al., 2003, p. 900). Craig (1993) suggested that even though users have much experience using technology, they can still experience anxiety that would negatively affect their performance.

Venkatesh (2000) conducted a study to determine the relationship between the perceived ease of use, perceived usefulness, self-efficacy, intrinsic motivation, and anxiety. Venkatesh (2000) supported TAM's fundamental assumptions that perceived ease of use and perceived usefulness were determined by external variables (i.e., self-efficacy and anxiety). He concluded anxiety to be a determinant of perceived ease of use in individuals' acceptance of technology and suggested that general technology training programs should be put in place to increase technology awareness, enhance self-efficacy, and reduce anxiety among individuals.

Even though there is a large amount of research on technology anxiety, most of it is specifically centered upon computer anxiety or techno-stress in faculty members or consumers; there seems to be a lack of literature that examines students' technology anxiety in terms of adopting and integrating technology in their learning experience. Meuter et al.'s (2003) research was the first to suggest technology anxiety was the most influential individual predictor of attitudes towards technology acceptance. Their study concluded that as individuals' technology anxiety levels decreased, technology use increased. A key contribution of this study was that technology anxiety was found to be a better predictor of technology usage and acceptance than other demographic characteristics (e.g., age and gender).

In higher education, studies suggest that faculty and students' technology anxiety is positively correlated to technology acceptance (Gilbert et al., 2003; Salanova, Llorens, & Cifre, 2013). Salanova et al. (2013) conducted a cross-sectional design study of perceived ease of use and perceived usefulness as they related to anxiety. In their study of 1,072 ICT students,

perceived ease of use and perceived usefulness was negatively affected by anxiety. In addition, non-intensive technology users had significantly more anxiety than intensive users of technology (Slanova et al., 2013). The researchers concluded that students who experience technology anxiety had a difficult time accepting technology required in their programs of study (Slanova et al., 2013).

Gilbert et al. (2003) utilized TAM to assess faculty's computer acceptance as it related to computer anxiety in higher education. They discovered that faculty who had prior computer experience, either in their own education or place of employment, were twice as likely not to exhibit signs of computer anxiety when required to perform their duties with a computer. Furthermore, perceived usefulness and prior experience with computers also increased the likelihood of those individuals who would be willing to use other types of technologies (Gilbert et al., 2003). Similarly, in nursing, Tacy, Northam, and Lynn (2016) studied the effect of technostress on nursing faculty's attitudes towards technology acceptance. They concluded that attitudes towards technology acceptance and behavioral intention to use were positively related to lower levels of technostress. Inspection of the structure coefficients show that behavioral intent, perceived usefulness, perceived ease of use, and attitudes were strong predictors of system use, and technostress explained 80% of the variance in system use. Each of these studies concluded that the TAM provided a strong framework for studying attitudes towards technology acceptance and further research is needed as it relates to graduate students.

Chapter 3 - Method

This chapter describes the participants, instruments, procedures, research design, statistical analysis, and data collection. The research questions addressed by this study are:

1. For counselor education graduate students in CACREP-accredited programs, can perceived ease of use be predicted by technology self-efficacy, technology anxiety, and their interaction?

2. For counselor education graduate students in CACREP-accredited programs, can perceived usefulness be predicted by technology self-efficacy, technology anxiety, and their interaction?

3. For counselor education graduate students in CACREP-accredited programs, can attitudes towards the use of technology be predicted by perceived ease of use, perceived usefulness, and their interaction?

Participants

A sample of convenience (Gliner, Morgan, & Leech, 2017), consisting of counselor education graduate students enrolled in CACREP-accredited programs, were solicited to participate in this study. Master's degree students from 10 Midwest CACREP-accredited counselor education programs with emphases in school, mental health, and/or couples and families counseling were included in this research. An adequate minimum sample size, which should be representative of the target population, has been suggested to be five to 10 times greater than the number of variables used (Gravetter & Wallnau, 2014). In this study the number of variables used is five (e.g., perceived ease of use, perceived usefulness, technology anxiety, technology self-efficacy, and attitudes towards technology); therefore, the goal was to recruit 100 master's level counselor education students to participate in the study.

Instruments

Demographic Questionnaire

Burns and Grove (2011) described demographic variables as the specific attributes of the participants that are gathered during a research study and are used to describe the sample. The demographic questionnaire was used to collect participants' demographic information, including age, gender, ethnicity, counseling track, number of credits completed in the program, and number of years enrolled in the program.

Technology Acceptance Model Scales

The Technology Acceptance Model Scales (TAMS) was used to assess the two variables in Davis' (1989) model, perceived ease of use (PEOU) and perceived usefulness (PU) of technology. Examining PEOU and PU as determinants of graduate students' behavioral intention to use a technology has been empirically strong across many studies (e.g., DeLone & McLean, 2003; Guinea & Markus, 2009; Venkatesh, Morris, & Davis, 2003; Wu & Gao, 2011). The instrument includes a total of 8 items that measure PEOU and PU; there are 4 items for each variable. All items use a 7-point Likert-type scale: 1 = "Strongly disagree," 2 = "Disagree," 3 = "Somewhat disagree," 4 = "Neutral," 5 = "Somewhat agree," 6 = "Agree," and 7 = "Strongly agree" (Davis, 1989). The total score for each of the subscales, PEOU and PU, ranges from 4 to 28 with higher scores representing higher levels of PEOU and PU (Davis, 1989).

Davis' (1989) subscales have been widely utilized across many fields in measuring and predicting individuals' acceptance of various information technologies (e.g., DeLone & McLean, 2003; Guinea & Markus, 2009; Venkatesh et al., 2003; Wu & Gao, 2011). The PEOU subscale (Davis, 1989) had a reliability of 0.94. In subsequent studies, the reliability of this instrument ranged from 0.79 to 0.94 (Abdullah, Ward, & Ahmed, 2016; Cheung & Vogel, 2013; Segars &

Grover, 1993; Tacy, Northam, & Wieck, 2016; Venkatesh & Davis, 1996). The PU subscale had a reliability of 0.98 (Davis, 1989). Subsequent studies showed the scale's reliability ranging from 0.82 to 0.96 across the various technology systems, including computer technology, voicemail, and electronic mail (Adams et al., 1992; Hendrickson et al., 1993; Segars & Grover, 1993).

Convergent and discriminant validity have also been found for both scales at the .05 level (Adams et al., 1992; Venkatesh & Davis, 1996). Factorial validity was supported when Davis (1989) used a factor analysis based on a varimax rotation to show that PEU and PU divided into two distinct factors. Additional technologies in which the TAMS validity has been supported included mobile learning (Akour, 2010), word processing (Agarwal & Parsad, 1998), e-Health (An, 2005), e-portfolio (Shroff, Deneen, & Ng, 2011), and learning management systems (Asiri, Mahmud, Bakar, & Moyd Ayub, 2012).

Media and Technology Usage and Attitudes Scale

The Media and Technology Usage and Attitudes Scale (MTUAS) was developed by Rosen et al. (2013). The MTUAS scale is a self-report instrument that measures frequency of use and attitudes towards the use of various technologies. It includes two subscales; the usage subscale consists of 44 items focusing on frequency of use with specific technologies while the 16 items on the attitudes' subscale address attitudes toward technology (Rosen et al., 2013). For the purpose of this study, the six items related to positive attitudes and the three items reflecting negative attitudes will be used to measure graduate students' attitudes towards the use of technology. The three items assessing negative attitudes towards the use of technology will be reverse scored so that higher scores indicate more positive attitudes toward technology (Ozgur, 2016). As Rosen et al. (2013) noted, "the subscales and factors can be used together or separately as they are internally reliable and externally valid" (p. 2507). The attitudes subscale responses

are a 5-point Likert scale: 1 = "Strongly disagree," 2 = "Disagree," 3 = "Neither agree or disagree," 4 = "Agree," and 5 = "Strongly agree." The MTUAS offers the inclusion of both positive and negative attitudes toward technology in general rather than toward any specific technologies. The total score of this subscale is the average of the individual responses to the items, ranging from 1 to 5 (Rosen et al., 2013).

According to Rosen et al. (2013), the attitudes subscale had strong reliability with Cronbach's alpha ranging between .80 and .85. Additional studies have supported MTUAS reliability in measuring technology usage of teachers, with an internal reliability ranging from .71 to .89 (Mikusa, 2015; Ozgur, 2016) and Portuguese students, with an internal reliability of .61 (Costa et al., 2016). In addition, MTUAS validity has been explored by exploratory factor analysis with a total variance of 66.13% among attitudes related to the media and technology usage (Rosen et al., 2013), and structural validity with a confirmatory factor analysis of .42 to .45 (Costa et al., 2016).

Technology Self-Efficacy Scale

The Technology Self-Efficacy Scale (TSES) is designed to measure an individual's level of technology self-efficacy (McDonald & Siegall, 1992). The TSES is based on the social learning theory concept that the measurement of self-efficacy is most predictive when the instrument is specific to the domain (Bandura, 2009). According to McDonald and Siegall (1992), "technology self-efficacy is the belief that one has sufficient abilities and skills to be successful when dealing with technology related tasks" (p. 240).

The instrument includes a total of five items that measure technology self-efficacy. All the items use a 5-point Likert scale: 1 = "Strongly disagree," 2 = "Disagree," 3 = "Neutral," 4 = "Agree," and 5 = "Strongly agree" (McDonald & Siegall, 1992). The total score of this

instrument ranges from 5 to 25 with higher scores representing higher levels of technology self-efficacy.

Reliability for the TSES was established with a Cronbach's alpha of .62 (McDonald & Siegall, 1992). This instrument was developed to assess levels of technology self-efficacy among telecommunications technicians; however, it has been utilized in other studies that focused on measuring technology self-efficacy among undergraduate students and faculty members with consistent reliability scores of .62 across the different populations (Cheung & Vogel, 2013; McCoy, 2001; Mikusa, 2015; Roney, 2015).

Technology Anxiety Scale

The Technology Anxiety Scale (TA) was developed to measure an individual's level of anxiety towards technology (Meuter et al., 2003). Technology anxiety is defined as "the individual's state of mind regarding their ability and willingness to use general technology-related tools" (Meuter et al., 2003, p. 900).

The instrument includes a total of 9 items that were originally adapted from the Computer Anxiety Scale, focusing on personal computers (Raub, 1981). The TA Scale items were modified to reflect more general anxiety with all forms of technology (Meuter et al., 2003). All items use a 7-point Likert scale: 1 = "Strongly disagree," 2 = "Disagree," 3 = "Somewhat disagree," 4 = "Neutral," 5 = "Somewhat agree," 6 = "Agree," 7 = "Strongly agree." The total score ranges from 9 to 63 with higher scores indicating higher levels of technology anxiety (Meuter et al., 2003).

The reliability estimated for the original computer anxiety measure was .81 (Raub, 1981). The internal reliability for the TA Scale was established with a Cronbach's alpha of .92,

and test-retest reliability of .92; these indicate the modification of the items did not inhibit the effectiveness of the measure (Meuter et al., 2003).

Procedures

Permission to conduct this study was obtained from the Kansas State University Institutional Review Board (IRB).   After approval of the study by the IRB, the 10 Midwest CACREP-accredited counselor education program coordinators were identified by accessing the CACREP website. An email communication was sent to program coordinators at the potential Midwestern universities offering CACREP-accredited master's degrees in counselor education with emphases in school, mental health, and/or couples and families counseling (Appendix A). Once the CACREP-accredited counselor education program coordinators agreed to disseminate the study to their graduate students, an invitation email was sent with a link that included signed institutional approval, the informed consent form, and the online survey (including the demographic questionnaire and instruments) (Appendix B). The program coordinators sent the invitation email to a total of 250 students. In addition to the recruitment email and invitation email, the researcher followed up with a phone call to counselor education program coordinators to address any questions regarding the study. A follow-up email was sent to all of the program coordinators one week later.

The survey was administered online and remained open for a two-week period during the Fall semester of 2018. The online survey is expected to take less than 10 to 15 minutes to complete, and upon submission, the participants received a thank you message. At the end of the first week, a reminder email was sent to the counselor education program coordinators, requesting them to disseminate the survey or to thank them if they have already disseminated the survey.

Research Design

This study was quantitative in nature and sought to provide descriptive and predictability data (Gliner, Morgan, & Leech, 2017). A correlational design was used to gather information on counselor education graduate students' attitudes towards technology acceptance as it relates to perceived ease of use, perceived usefulness, technology self-efficacy and technology anxiety. The data analyses for this study consisted of three multiple regression models. Multiple regression is a frequently used statistical method for analyzing data when there are several independent variables and one dependent variable (Gliner, Morgan, & Leech, 2017). For model 1, the independent variables of technology self-efficacy, technology anxiety, and their interaction were used to predict the dependent variable of perceived ease of use. This model was used to address research question 1. For model 2, the independent variables of technology self-efficacy, technology anxiety, and their interaction were used to predict the dependent variable of perceived usefulness. This model was used to address research question 2. For model 3, the independent variables of perceived ease of use, perceived usefulness, and their interaction were used to predict the dependent variable of attitudes towards the use of technology. This model was used to address research question 3.

Chapter 4 - Results and Discussion

The purpose of this correlational study was to investigate the attitudes of counselor education graduate students in CACREP-accredited program towards technology acceptance. Among various theories used to understand the attitudes towards technology acceptance in higher education, the Technology Acceptance Model (TAM) proposed by Davis (1989) is one of the most cited theoretical frameworks in this area of research (e.g., Agudo-Peregrina et al., 2014; Edmunds et al., 2012; Pynoo et al., 2011). TAM is intended to provide a conceptual model to explain and predict individuals' attitudes and behavioral intentions towards utilizing technology (Mikusa, 2015). According to this model, specific beliefs (perceived ease of use and perceived usefulness) and external variables (self-efficacy and anxiety) determine one's attitudes towards the use of technology (Chen et al., 2013; Venkatesh, 2000). Specifically, this study investigated the following research questions:

1. For counselor education graduate students in CACREP-accredited programs, can perceived ease of use be predicted by technology self-efficacy, technology anxiety, and their interaction?

2. For counselor education graduate students in CACREP-accredited programs, can perceived usefulness be predicted by technology self-efficacy, technology anxiety, and their interaction?

3. For counselor education graduate students in CACREP-accredited programs, can attitudes towards the use of technology be predicted by perceived ease of use, perceived usefulness, and their interaction?

This chapter presents demographic data, the results of the study, and a discussion of the results.

Demographic Data

The researcher distributed the survey online, and 113 students completed the instruments. Among the 113 responses, six were incomplete and were not included in the data analysis. The participants of this study were 85 female and 22 male counselor education graduate students from 10 Midwest CACREP-accredited universities. Of the 107 respondents, 56 were ages 21 to 30, 24 respondents were ages 31 to 40, 18 were 41 to 50, and nine were 51 and older (see Table 1).

Table 1

Frequency and Percent of Participants by Age

	Age				
	21-30	31-40	41-50	51 and older	Total
Frequency	56	24	18	9	107
Percentage	53.3%	22.4%	15.9%	8.4%	100%

The distribution of respondents by race was as follows: 84 identified themselves as Caucasian, 10 as African American, six as Latino/Hispanic, two as Asian/ Pacific Islander, two as Mixed Race, one as Native American, and two as Other (see Table 2). With respect to ethnicity, 98 of the respondents identified themselves as Non-Hispanic/Latino, and nine identified as Hispanic/Latino (see Table 3).

Table 2

Frequency and Percent of Participants by Race

	Race							
	Caucasian	African American	Latino /Hispanic	Asian/ Pacific Islander	Mixed Race	Native American	Other	Total
Frequency	84	10	6	2	2	1	2	107
Percentage	78.5%	9.3%	5.6%	1.9%	1.9%	0.9%	1.9%	100%

Table 3

Frequency and Percent of Participants by Ethnicity

	Ethnicity		
	Non-Hispanic/Latino	Hispanic/Latino	Total
Frequency	98	9	107
Percentage	91.5%	8.5%	100%

Of the 107 respondents, 42 participants had a couples and family counseling emphasis in their graduate program, 38 had a mental health counseling emphasis, and 27 had a school counseling emphasis (see Table 4). Of the 107 respondents, 16 were enrolled in a hybrid-format program, eight were enrolled in an online/distance education program, and 83 were enrolled in a residential program (see Table 5). Sixty-two respondents reported to be first-year students, 29 reported to be second-year students, and 16 reported to be third-year students.

Table 4

Frequency and Percent of Participants by Counseling Emphasis

	Counseling Emphasis			
	Couples and Family	Mental Health	School	Total
Frequency	42	38	27	107
Percentage	39.3%	35.5%	25.2%	100%

Table 5

Frequency and Percent of Participants by Program Format

	Format			
	Hybrid	Online/Distance Education	Residential	Total
Frequency	16	8	83	107
Percentage	15%	7.5%	77.5%	100%

Reliability of the Scales

Data collected from the survey were downloaded from Qualtrics into Microsoft Excel. Incomplete surveys were removed, and the data were imported in to IBM SPSS 25 for further evaluation. Table 6 displays descriptive statistics for perceived ease of use, perceived usefulness, technology self-efficacy, technology anxiety, and attitudes towards the use of technology.

Table 6

Descriptive Statistics for Variables (N = 107)

Scale	*M*	*SD*	Minimum	Maximum
Perceived Ease of Use	21.42	4.79	6.00	28.00
Perceived Usefulness	22.53	5.65	4.00	28.00
Technology Self-efficacy	18.44	4.14	6.00	25.00
Technology Anxiety	24.21	9.45	9.00	48.00
Attitudes towards the Use of Technology	3.37	0.59	1.44	4.44

According to Fields (2016), reliability is defined as "the consistency of measurement; the degree to which an instrument measures the same way each time it is used under the same conditions with the same subjects" (p. 74). According to Gravetter and Wallnau (2014), a Cronbach's alpha of over 0.70 indicates high reliability. It was confirmed there were no missing values and internal consistency was evaluated for each of the five scales. The reliability analysis showed Cronbach's alpha that ranged from .786, moderately high reliability, to .943, high reliability (See Table 7). The correlation matrix for the variables of this study is presented in Table 8.

Table 7

Reliability of the Scales (N = 107)

Scale	Cronbach's Alpha	Number of Items
Perceived Ease of Use	.873	4
Perceived Usefulness	.943	4
Technology Self-efficacy Scale	.859	5
Technology Anxiety Scale	.876	9
Attitudes Towards Technology Scale	.786	9

Table 8

Correlations for Study Variables (N = 107)

Variable	1	2	3	4	5
1. Perceived Ease of Use	_				
2. Perceived Usefulness	.627	_			
3. Technology Self-efficacy Scale	.714	.527	_		
4. Technology Anxiety Scale	-.732	-.517	-.775	_	
5. Attitudes Towards Technology Scale	.364	.531	.452	-.424	_

Note. All coefficients are significant at *p* < .01.

Results

According to Fields (2016), multiple regression determines the relationship between a single dependent variable and multiple independent variables. In other words, multiple regression analysis provides the ability to statistically predict the value of the dependent

variable from the independent variables, both separately and combined (Creswell, 2011).

Multiple regression analysis was performed in SPSS 25 to determine the best linear interaction among the variables.

Research Question 1

For counselor education graduate students in CACREP-accredited programs, can perceived ease of use be predicted by technology self-efficacy, technology anxiety, and their interaction?

To address this question, hierarchical regression was conducted to predict perceived ease of use from technology self-efficacy, technology anxiety, and their interaction. In the first step of the hierarchical regression self-efficacy and technology anxiety were included as predictors of perceived ease of use. There is a significant relationship between the dependent variable perceived ease of use and the independent variables technology self-efficacy and technology anxiety, $F(2, 104) = 74.622$, $p < .05$. The coefficient of determination for the overall model was $R^2 = .589$, which means that 58.9% of the variability in perceived ease of use was explained by the multiple regression model.

In the second step of the hierarchical regression the interaction between technology self-efficacy and technology anxiety was added to the model. There is a significant relationship between the dependent variable perceived ease of use and the independent variables technology self-efficacy, technology anxiety, and their interaction, $F(3, 103) = 49.991$, $p < .05$. The coefficient of determination for the overall model was $R^2 = .593$, which means that 59.3% of the variance of perceived ease of use was explained by the multiple regression model. The increment in R^2 (.004) was not statistically significant, $F(1, 103) = 0.889$, $p = .348$. Adding the interaction term did not improve the model (see Table 9). One potential explanation for the lack of

improvement is multicollinearity. According to Fields (2016), "multicollinearity exists when there is a strong correlation between two or more predictors" (p. 298). The Pearson correlation (r = .754) indicated there is a significantly strong positive relationship between technology anxiety and the interaction between technology self-efficacy and technology anxiety. Therefore, multicollinearity might have caused technology self-efficacy and the interaction term to be excluded from the model. Based on the results, the model that best predicted perceived ease of use is the first model in which technology self-efficacy and technology anxiety are the independent variables.

Table 9

Regression Predicting Perceived Ease of Use from Technology Self-Efficacy, Technology Anxiety, and their Interaction

Predictor	ΔR^2	β	F
Step 1	.589***		$F(2, 104) = 74.622$
Self-efficacy		.367***	
Anxiety		-.448***	
Step 2	.004		$F(1, 103) = 0.889$
Self-efficacy		.238	
Anxiety		-.663**	
Interaction		.153	

Note. $N = 107$. Self-efficacy = Technology Self-efficacy; Anxiety = Technology Anxiety; Interaction = Self-efficacy x Anxiety. For the full model $F(3, 103) = 49.991$, $R^2 = .593$, $p < .001$.

*$p < .05$. **$p < .01$. ***$p < .001$.

Research Question 2

For counselor education graduate students in CACREP-accredited programs, can perceived usefulness be predicted by technology self-efficacy, technology anxiety, and their interaction?

To address this question, hierarchical regression was conducted to predict perceived usefulness from technology self-efficacy, technology anxiety, and their interaction. In the first step of the hierarchical regression technology self-efficacy and technology anxiety were included as predictors of perceived usefulness. There is a significant relationship between the dependent variable perceived usefulness and the independent variables technology self-efficacy and technology anxiety, $F(2, 104) = 23.040$, $p < .05$. The coefficient of determination for the overall model was $R^2=.307$, which means that 30.7% of the variability in perceived usefulness was explained by the multiple regression model.

In the second step of the hierarchical regression the interaction between technology self-efficacy and technology anxiety was added to the model. There is a significant relationship between the dependent variable perceived ease of use, and the independent variables technology self-efficacy, technology anxiety, and their interaction, $F(3, 103) = 15.827$, $p < .05$. The coefficient of determination for the overall model was $R^2=.316$, which means that 31.6% of the variance of perceived ease of use was explained by the multiple regression model. The increment in R^2 (.008) was not statistically significant, $F(1, 103) = 1.278$, $p = .261$. Adding the interaction term did not improve the model (see Table 10). One potential explanation for the lack of improvement is multicollinearity, due to the strong correlation between two predictor variables (Fields, 2016). The Pearson correlation ($r = .754$) indicated there is a significantly strong positive relationship between technology anxiety and the interaction between technology self-efficacy

42

and technology anxiety. Therefore, multicollinearity exists in this model due to the strong correlation between two predictor variables. Multicollinearity might have caused technology self-efficacy, technology anxiety, and the interaction term to be excluded from the model. Based on the results, the model that best predicted perceived usefulness is the first model in which technology self-efficacy and technology anxiety are the independent variables.

Table 10

Regression Predicting Perceived Usefulness from Technology Self-Efficacy, Technology Anxiety, and their Interaction

Predictor	ΔR^2	β	F
Step 1	.307***		$F(2, 104) = 23.040$
Self-efficacy		.315*	
Anxiety		-.273*	
Step 2	.008		$F(1, 103) = 1.278$
Self-efficacy		.116	
Anxiety		-.607	
Interaction		.238	

Note. $N = 107$. Self-efficacy = Technology Self-efficacy; Anxiety = Technology Anxiety; Interaction = Self-efficacy x Anxiety. For the full model $F(3, 103) = 15.827$, $R^2 = .316$, $p < .001$.

*$p < .05$. **$p < .01$. ***$p < .001$.

Research Question 3

For counselor education graduate students in CACREP-accredited programs, can attitudes towards the use of technology be predicted by perceived ease of use, perceived usefulness, and their interaction?

To address this question, hierarchical regression was conducted to predict attitudes towards the use of technology from perceived ease of use, perceived usefulness, and their

interaction. In the first step of the hierarchical regression perceived ease of use and perceived usefulness were included as predictors of attitudes towards the use of technology. There is a significant relationship between the dependent variable attitudes towards the use of technology, and the independent variables perceived ease of use and perceived usefulness, $F(2, 104) = 20.623$, $p < .05$. The coefficient of determination for the overall model was $R^2 = .284$, which means that 28.4% of the variability in attitudes towards the use of technology was explained by the multiple regression model. Although the model was statistically significant, the strong positive relationship between perceived ease of use and perceived usefulness ($r = .627$) was an indication of multicollinearity, which caused the perceived ease of use variable to be excluded from the model.

In the second step of the hierarchical regression the interaction between perceived ease of use and perceived usefulness was added to the model. There is a significant relationship between the dependent variable, attitudes towards the use of technology, and the independent variables, perceived ease of use, perceived usefulness, and their interaction, $F(3, 103) = 14.894$, $p < .05$. The coefficient of determination for the overall model was $R^2 = .303$, which means that 30.3% of the variability in perceived ease of use was explained by the multiple regression model. The increment in R^2 (.019) was not statistically significant, $F(1, 103) = 2.746$, $p = .101$. Adding the interaction term did not improve the model, potentially due to multicollinearity. Multicollinearity exists due to the strong correlation between two predictor variables in this model. The correlation between perceived ease of use and the interaction ($r = .881$) and the correlation between the perceived usefulness and the interaction ($r = .891$) indicated strong positive relationships between the interaction and each of the other two terms (see Table 11). Therefore, multicollinearity might have caused perceived ease of use, perceived usefulness, and the

interaction term to be excluded from the model. Based on the results, the model that best predicted attitudes towards the use of technology is the first model with perceived usefulness as the independent variable.

Table 11

Regression Predicting Attitudes Towards the Use of Technology from Perceived Ease of Use, Perceived Usefulness, and their Interaction

Predictor	ΔR^2	β	F
Step 1	.284***		$F(2, 104) = 20.623$
Ease of Use		.050	
Usefulness		.500***	
Step 2	.019		$F(1, 103) = 2.746$
Ease of Use		-.369	
Usefulness		-.048	
Interaction		.797	

Note. $N = 107$. Perceived Ease of Use = Ease of Use; Perceived Usefulness = Usefulness; Interaction = Ease of Use x Usefulness. For the full model $F(3, 103) = 14.894$, $R^2 = .303$, $p < .001$.

*$p < .05$. **$p < .01$. ***$p < .001$.

Discussion

Attempts to measure counselor education graduate students' attitudes towards technology acceptance have been limited. The overall purpose of this study was to advance the understanding of factors that contribute to counselor education graduate students' technology acceptance. Grounded in previous research on the Technology Acceptance Model (Davis, 1989), this study examined counselor education graduate students' attitudes towards the use of technology. Adopting technology in counselor education is a call to action from past researchers (East, 2015; Kennedy, 2011; Orr, 2011; Tyler & Sabella, 2004) to move the counseling

profession into the future. When counselor education graduate students adopt and integrate technology into their practices, they can assist their professional development and remain competitive in the field (East, 2015).

The first research question concerned perceived ease of use, technology self-efficacy, technology anxiety, and their interaction. Findings were consistent with previous research, in other related fields, that high levels of technology self-efficacy positively influence counselor education graduate students' perceived ease of use (Al-Harbi, 2011; Holden & Rada, 2011; Kulviwat et al., 2014). This finding is also consistent with previous research that technology self-efficacy provides an anchor for technology usability. In other words, the user's sense of his or her ability to use technology impacts his or her belief on how easy technology can be to use for academic work (Al-Harbi, 2011; Jeong & Kim, 2016; Kulviwat et al., 2014; Sung et al., 2015).

Technology anxiety was a significant individual contributor to perceived ease of use as well. In other words, higher levels of technology anxiety negatively influenced counselor education graduate students' perceived ease of use. This finding was similar to previous studies (Gilbert et al., 2003; Salanova, Llorens, & Cifre, 2013) that suggested that if individuals anticipate apprehension or fear when utilizing technology, this will impact their attitudes towards the use of technology or intention to accept or adopt different types of technologies (Meuter et al., 2003; Tacy et al., 2016).

According to Davis (1989, 1993), it appears that counselor education graduate students' technology self-efficacy and technology anxiety significantly influence graduate students' perceived ease of use. This finding supports previous studies that suggest providing individuals with the opportunity to become familiar with technology related tasks might result in decreasing

technology anxiety (Aziz & Hasan, 2012; Hauser, Paul, & Bradley, 2012). For instance, providing resources for gaining technology knowledge and managing technology anxiety can positively impact graduate students' perceived ease of use, and increase their ability to accept new technologies (Gilber et al., 2003).

The second research question sought to examine if counselor education graduate students' perceived usefulness could be predicted by technology self-efficacy and technology anxiety. Findings were consistent with previous research that concluded individuals who believe they have the ability to successfully utilize technology perceive technology as useful for completing a task (Davis et al., 1989; Holden & Rada, 2011; Venkatesh, 1996). Similarly, the results of this study are in line with previous research regarding the significant effect technology self-efficacy has on the individuals' perceived usefulness of technology for academic work (Holden & Karsh, 2010; Park, 2009; Polites & Karahanna, 2012; Venkatesh et al., 2003; Wang & Wang, 2009). A more recent study conducted by Hutcheson (2015) showed a positive relationship between technology self-efficacy and perceived usefulness. These findings are consistent with the current study, suggesting that counselor education graduate students who believe in their ability to use technology have an effect on their perception of technology as useful for academic work.

The results of the current study were consistent with findings of previous studies that there is negative correlation between technology anxiety and perceived usefulness, with higher levels of anxiety associated with lower levels of perceived usefulness (Gibert et al, 2003; Tacy et al., 2016). Slanova et al. (2013) conducted a cross-sectional design study of perceived usefulness as it related to anxiety. The researchers hypothesized that students who experience technology

47

anxiety had a difficult time perceiving the usefulness of technology for academic work, which is consistent with current research.

The results of this study have important practical implications for counselor education programs, since in the initial stage of accepting a new technology, students rely on the belief that technology will provide a solution and aid their learning experience (Venkatesh et al., 2003). Assessing counselor education graduate students' technological self-efficacy and technology anxiety may provide opportunity to support their technological development during the program, regardless of whether they voice their technological concerns and/or needs.

The third research question examined if counselor education graduate students' attitudes towards the use of technology could be predicted by perceived ease of use and perceived usefulness. Similar to previous research (Davis, 1989; Venkatesh, 2008; Yousafzai et al., 2010), this study found there was a relationship between counselor education graduate students' attitudes towards the use of technology and perceived usefulness. This finding suggests that counselor education graduate students who perceive technology as useful will have positive attitudes towards utilizing such technology to fulfill academic requirements. In addition, this study was consistent with previous findings that due to the strong positive relationship between perceived ease of use and perceived usefulness was an indication of multicollinearity, which cause the perceived ease of use variable to be excluded from the model (Cheung et al., 2013; Edmunds et al., 2012).

The results of the current study provide counselor education administrators with specific areas of focus to consider for supporting graduate students' positive attitudes towards technology acceptance. Counselor education programs can provide graduate students with technology support services designed to increase technology confidence and relieve apprehensive feelings,

especially for students who are struggling to keep up with the programs' technological demands (Borgaus-Cortez, 2017). For instance, counselor education courses could include technological resources that focus on relevant technology skills needed to complete a course.

In addition, students need to feel that technology enhances their learning and technological productivity and performance (Capuzzi & Gross, 2013). To achieve this goal, students with low sense of technology self-efficacy and high levels of anxiety can benefit from professional development opportunities with a focus on how to use technology in an educational setting (Renfro-Michel et al., 2010). These professional development opportunities can include a technology support basic skills course, such as using Powerpoint, pdf's, mobile applications, and learning management systems. According to Burt et al. (2011), counselor education programs can facilitate a professional development course that can help students create positive and successful experiences with technology. Students who feel empowered to successfully utilize technology may develop positive attitudes towards technology acceptance. For instance, students may express greater confidence in their capabilities, as well as demonstrate a willingness to learn about innovation utilized within the classroom (Cheung et al., 2013).

Chapter 5 - Summary, Recommendations, and Conclusions

This chapter presents a summary of the current study, and recommendations and conclusions based on the findings.   This study aimed to better understand counselor education graduate students' attitudes towards the use of technology. The purpose of this study was to better understand counselor education graduate students' attitudes towards technology acceptance as it relates to perceived ease of use, perceived usefulness, technology self-efficacy, and technology anxiety.

Summary

Today's counselor education graduate students are required to possess specific and current technological skill sets in order to complete their degree requirements and remain competitive in the 21st century (Orr, 2011). The increasing use of technology in counselor education programs has raised the importance of technology acceptance issues regarding graduate students' academic and clinical work. While there was much to learn from existing literature regarding technology acceptance, there was limited research in the area of counselor education. In his seminal work on technology acceptance Davis (1989) described the TAM, and subsequently designated self-efficacy and anxiety as external factors that influence individuals' attitudes towards technology acceptance (Carrinton, 2016; East, 2015). This research sought to apply TAM to counselor education graduate students' attitudes towards the use of technology.

One hundred and seven counselor education graduate students voluntarily participated in the online survey. The online survey consisted of a demographic questionnaire and four instruments (Technology Acceptance Model Scales, Media and Technology Usage and Attitudes Scale, Technology Self-efficacy Scale, and Technology Anxiety Scale). All participants were graduate students in Fall 2018 at 10 Midwest CACREP-accredited counselor education

programs.   The results of the hierarchical regression analysis for each of the research questions revealed several significant findings regarding graduate students' attitudes towards use of technology.

The first research question sought to predict perceived ease of use from technology self-efficacy, technology anxiety, and their interaction. The current findings were consistent with findings of research regarding technology acceptance (East, 2015; Kennedy 2011). The study concluded counselor education graduate students' technology self-efficacy and technology anxiety significantly affected the degree to which they believe that using technology will assist them to complete academic and clinical work.

The second research question sought to predict perceived usefulness from technology self-efficacy, technology anxiety, and their interaction. The current findings were consistent with findings of previous research findings regarding technology acceptance (Holden & Karsh, 2010; Park, 2009; Polites & Karahanna, 2012). The current study identified counselor education graduate students' belief that using technology will enhance their academic experience could be predicted by their levels of technology self-efficacy and technology anxiety.

The third research question sought to predict attitudes towards technology acceptance from perceived ease of use and perceived usefulness. The results of the current study showed there is a significant relationship between the dependent variable attitudes towards the use of technology and the independent variable perceived usefulness. Similar to previous studies (Davis, 1989; Yousafzai et al., 2010: Zhan & Xu, 2011), the strong positive relationship between perceived ease of use and perceived usefulness was an indication of multicollinearity, which caused the perceived ease of use variable to be excluded from the model. Overall, the study

supports previous conclusions that perceived usefulness contributed to attitudes towards

technology acceptance (Chen & Voguel, 2013; Edmunds et al., 2012).

Recommendations for Practice

Previous studies concluded that counselor education students are not currently receiving

the training they need to utilize technology in ways that could result in making educational tasks

easier to perform and more efficient to accomplished (Kennedy, 2011; Orr, 2011).   These ideas

address the main goal of this study, which was to provide evidence regarding the TAM

constructs in counselor education graduate students.

The findings of this study indicated counselor education graduate students' perceived

ease of use was positively correlated with technology self-efficacy and negatively correlated with

technology anxiety. The relationship between perceived ease of use and technology self-efficacy

implied that higher levels of technology self-efficacy predicted students' perception that

technology-related tools are easy to use. Counselor education programs can facilitate technology

self-efficacy through technical support, peer support groups, incentives to learn new

technologies, and training on technology systems (Asiri et al., 2013; Hall, 2013).

Similar to previous studies (East, 2015; Kennedy, 2011), the current study indicated that

technology anxiety was a significant predictor of perceived ease of use, which meant that

graduate students' perception of how easy technology made their academic work was predicted

by their emotional state. Counselor education programs can focus on providing technology

resources for graduate students who may not be utilizing technology because they are not

familiar with it; this can help them manage their technology anxiety. Graduate students'

participation in peer support groups and technology training can empower them to make

informed decisions about the use of technology tools to improve their productivity. This

emphasis can create a learning environment in which the utility of technology can be explored, and development of technological skills can be encouraged and supported.

Another finding indicated counselor education graduate students' perceived usefulness was negatively related with technology anxiety. The relationship between perceived usefulness and technology anxiety implied that higher levels of technology anxiety were related to low levels of perceived usefulness in counselor education graduate students. Counselor education programs can facilitate opportunities for students to manage technology anxiety through counseling services and remedial technology skills programs that highlight the usefulness of technological tools (Burt et al., 2011).

The findings of the current study were highly consistent with previous literature regarding the high correlational relationship between perceived usefulness and attitudes towards the use of technology in higher education (Yousafzai et al., 2010; Zhan & Xu, 2011). This finding suggests counselor education programs can provide opportunities for students to become familiar with different technologies at the beginning of the program. Counselor education programs can integrate technology by providing an opportunity for students to experience technology as useful in an introductory course where students can practice how to access online resources, use learning management systems, and utilize various types of digital media. Integrating technology in counselor education programs in a meaningful way is essential when preparing the next generation of counselors.

Information about graduate students' technology acceptance could serve as guidelines for the development of teaching strategies and approaches in counselor education programs. For example, counselor education programs could recognize the need for graduate students' technological needs in their course work. Counselor education programs could include

technological instruction in areas such as web-based applications, online courses, online library resources, and software applications to promote graduate students' technology acceptance.

As noted by Orr (2011), "the potential for incorporating technology in counselor education will provide a foundation upon which emerging technologies can be evaluated and integrated into academic and clinical practice" (p. 117). There is no question that technology acceptance among counselor education graduate students will assist their professional development to remain competitive in the field. As Burt et al. (2011) stated, "to increase the acceptance of technology in counseling education, administrators and faculty will have to understand technology acceptance from the student's perspective and develop strategies for encouraging students' technology self-efficacy and manage their technology anxiety" (p. 20). In order to develop appropriate strategies to encourage technology acceptance, it is imperative that administrators and faculty members understand the factors that affect graduate student's technology acceptance.

Recommendations for Future Research

The results of this study suggest the need for further research in the area of how technology is being used in counselor education programs. There is a growing need for counselor education graduate students to become proficient in various technologies. East (2015) suggested there is a need for counselor education programs to provide resources for students to succeed using technological tools such as bulletin boards, listservs, email, and online learning management systems in order to meet the programs' technological demands. Further research could address technology acceptance of a larger sample size of graduate students enrolled in CACREP-accredited online and hybrid counselor education programs. An understanding of the graduate students' attitudes towards technology acceptance of online and hybrid formats can

provide useful information on the structuring of future CACREP-accredited online counselor education programs. In addition, future studies tailored to specifically addressed technology acceptance as it relates to legal (Family Educational Rights and Privacy Act and the Health Insurance Portability and Accountability Act) and ethical (ACA Code of Ethics) considerations of the use of technology in academic and clinical settings would be beneficial in broadening the overall knowledge base.

Additional research could build on this study to continue to use TAM constructs in counselor education to predict graduate students' technology acceptance. Researchers could add other variables such as behavioral intention, social influence, students' level of technology exposure (i.e., digital natives and non-digital natives), age, and gender (e.g., Gibson et al., 2008; Hsu & Chang, 2013; Hussein, 2017) to determine if they are predictors of graduate students' adoption of technology.

Fields (2016) noted that multicollinearity "exists when there is a strong correlation between two or more predictor variables" (p. 298). A key contribution of this study is the finding regarding multicollinearity as a possible explanation for exclusion of independent variables from multiple regression models. As a result, it is recommended that consideration be given to updating the TAM. Also, it is recommended that future research focus on reconstructing and validating the scales used in the study.

Given this study was a descriptive quantitative study investigating the relationship between perceived ease of use, perceived usefulness, technology self-efficacy, technology anxiety, and attitudes towards technology acceptance, a qualitative or mixed-methods research approach could provide further depth to the study. A mixed methods approach can "provide a better understanding of the research problem" (Gliner, Morgan, & Leech, 2017, p. 67).

Qualitative methods would allow the research to interview participants using open-ended questions (Creswell, 2014). For example, a qualitative study could consist of an interview of graduate students regarding their preparation to use technology, how competent they perceived themselves to be for future technological advances in counselor education and counselor profession, and strategies that would be useful for future counselor educators.

Limitations

A limitation of this study was the participants were enrolled in master's-level CACREP-accredited counseling programs only in the Midwest. There are over 635 CACREP-accredited counseling education master programs offered in the United States. Because this study involved only 10 Midwest CACREP-accredited universities with homogenous demographics, there is a lack of ability to generalize the results to the entire population of CACREP graduate students. It is a common concern that studies using a small sample from the population have the potential to "provide little basis for the scientific generalizability" (Gravetter & Wallnau, 2014, p. 74).

Another potential limitation of results was posed by self-administered questionnaires, which may have been limited the reliance on human subject perceptions in response to the online survey. The four instruments (Technology Acceptance Model Scales, Media and Technology Usage and Attitudes Scale, Technology Self-Efficacy Scale, and Technology Anxiety Scale) were based on previous studies (Davis, 1989; McDonald & Siegall, 1992; Meuter et al., 2003; Rosent et al., 2013) where the validity and reliability had been confirmed for each survey. However, surveys suffer from the limitation of relying on participants' perceptions and their own knowledge and experiences with technology, thereby limiting the range of responses. In addition, participants who were more interested in technology may have been more likely to complete the survey, further biasing the results.

Another limitation of this study is the variety of technologies utilized in CACREP-accredited counselor education programs. There is a variety of technology applications available for counselor education graduate students, which may differ significantly among the programs.

Finally, the results of this research were unable to identify the presence of causal relationships among the studied variables. The theoretical foundation of the study was based on individual perceptions and attitudes towards the use of technology. Consequently, while the study was able to successfully identify relationships between variables, it was not intended to define causal relationships.

Conclusions

This study was quantitative in nature and sought to provide descriptive and predictability data (Gliner et al., 2017). A correlational design was used to gather information on counselor education graduate students' attitudes towards technology acceptance as predicted by perceived ease of use, perceived usefulness, technology self-efficacy and technology anxiety. The results of the current study revealed several significant findings regarding graduate students' attitudes towards use of technology. First, a positive relationship was found between perceived ease of use and technology self-efficacy. The results also indicated that counselor education graduate students' technology anxiety negatively influenced their perceived ease of use. Second, a positive relationship was found between technology self-efficacy and perceived usefulness, and higher levels of anxiety were associated with lower levels of perceived usefulness. Third, it was found that counselor education graduate students' attitudes toward the use of technology could be predicted by perceived usefulness.

The results of this study provide descriptive and predictive data that supports the TAM constructs of perceived ease of use, perceived usefulness, self-efficacy, anxiety, and attitudes

towards the use of technology for counselor education graduate students. The results support

previous studies utilizing TAM in other fields, and thus adds to the body of knowledge related to

TAM research. This research shows TAM can be used to determine factors that predict

counselor education graduate students' technology acceptance in the higher education setting.

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Appendix A - Recruitment Email

I would like to invite the master's level graduate students enrolled in your Counselor Education program to participate in a study I am conducting as part of my dissertation research at Kansas State University. This study is designed to assess counselor education graduate students' attitudes towards technology acceptance, based on the Technology Acceptance Model (Davis, 1989). The information under consideration has important implications for understanding counselor education graduate students' attitudes towards technology acceptance as it relates to perceived ease of use, perceived usefulness, technology self-efficacy, and technology anxiety. You are receiving this email because of your role as the coordinator of a Midwest CACREP-accredited counselor education program. There are no financial incentives and/or any foreseeable risk for participating in this research study. The study is supervised by Dr. Ken Hughey in the Department of Special Education, Counseling and Special Affairs at Kansas State University (KSU) and has been approved by the KSU Institutional Review Board.

The research study will consist of a demographic questionnaire and four instruments (Technology Acceptance Model Scales, Media and Technology Usage and Attitudes Scale, Technology Self Efficacy Scale, and Technology Anxiety Scale). The online survey is expected to take less than 10-15 minutes to complete. If you are willing to share this study with your graduate students, please email me at richow@ksu.edu to notify me of your willingness to participate. Please feel free to contact me with any questions or concerns regarding this study. Thank you for considering participating in this research opportunity. Sincerely,

Rebeca Chow

Appendix B - Informed Consent

Testing the Use of the Technology Acceptance Model in Counselor Education Graduate Students

Principal Investigator: Rebeca Chow

Contact Information: richow@ksu.edu

Faculty Advisor: Kenneth Hughey, Ph.D.

Contact Information: khughey@ksu.edu

Dear Midwest CACREP-accredited counselor education graduate students,

My name is Rebeca Chow, I am a doctoral student in the Counselor Education and Supervision doctoral program at Kansas State University.   The purpose of this study is to better understand counselor education graduate students' attitudes towards technology acceptance as it relates to perceived ease of use, perceived usefulness, technology self-efficacy, and technology anxiety. Your experience as a counselor education graduate student has much to contribute to this research, and I hope you will consider participating. This study has been approved by the Kansas State University Institutional Review Board.

You are eligible to participate in this study if you are 18 years of age or older and are currently enrolled in a Midwest CACREP-accredited counselor education masters' program in school, mental health, and/or couples and families counseling.

Participation involves responding to a brief online demographic questionnaire and 4 instruments (Technology Acceptance Model Scales, Media and Technology Usage and Attitudes Scale, Technology Self-Efficacy Scale, and Technology Anxiety Scale). The instruments can be completed online, and it is expected to take 10-15 minutes.

Informed Consent Form

In order to participate in this study, please read through the following information and type your name in the space provided if you agree: I agree to participate in this research study, which concerns counselor education graduate students' attitudes towards technology acceptance as it relates to perceived ease of use, perceived usefulness, technology self-efficacy, and technology anxiety.   I understand there are no foreseeable risks associated with my participation, and my participation is voluntary with no consequence if I choose not to participate. Additionally, all information collected during this study will be kept strictly confidential.

If I have questions about this research study, I can contact Rebeca Chow through email at richow@ksu.edu or call her at (913) 209-2293. If I have any questions about the rights of subjects in this study or about the manner in which the study is conducted, I may contact Dr. Rick Scheidt, Chair, Committee on Research Involving Human Subjects, 203 Fairchild Hall, Kansas State University, Manhattan, KS 66502 at rscheidt@ksu.edu or call at (785) 532-1483.

By typing your name in the space provided, I acknowledge that I have read this form, and I choose to participate.

_____   _____

Participant's Name   Date