UNDERSTANDING AT-RISK TECHNOLOGY USERS: A PHENOMENOLOGICAL APPROACH

by

Kristina Mathews Acosta

A dissertation submitted to
The faculty of the University of North Carolina Charlotte
in partial fulfillment of the requirements
for the degree of Doctor of Philosophy in
Counseling

Charlotte

2013

Approved by:

_____
Dr. Pamela S. Lassiter

_____
Dr. Jae Hoon Lim

_____
Dr. John R. Culbreth

_____
Dr. Laura Veach

_____
Dr. Lori Van Wallendael

ABSTRACT

KRISTINA MATHEWS ACOSTA Understanding at-risk technology users: a phenomenological approach. (Under the direction of Dr. PAMELA S. LASSITER)

The purpose of this study was to provide an in-depth understanding of users' experiences of technology that are at-risk of potential addictive behaviors. The sample consisted of 12 individuals, who self-identified as at-risk technology users. A thorough literature review was conducted prior to data collection to establish a theoretical framework for this phenomenon, identify studies supporting this area of interest, and to help define this research study. Based on existing literature, there was a notable gap in researchers' understanding of at-risk technology users as the foundation of the research was based on one subtype of technology addiction or was not empirically supported.

Data collection included a demographic form and one 45-90 minute, video-recorded interview, during which participants were asked semi-structured questions about their experiences with technology. Data analysis consisted of a phenomenological method adapted from Moustakas (1994). The method revealed that participants experience both positive and negative biological, psychological, and social factors related to their technology use. Participants' experiences of technology were influenced by: a) a cultural need to utilize technology, both externally and internally, b) motivating factors such as the desire for social connections with interpersonal relationships, enmeshment of the functionality of technology, the convenience of technology, and awareness of personal benefit, c) negative consequences, d) continued and advanced use of technology, which influenced the progression of use and feeling, and e) personal benefit attained without technology use.

The findings suggest that individuals who use technological devices may experience risk factors associated with technology use. Counselors are recommended to gain a clearer understanding of the risk factors of technology use in order to accurately assess and treat client symptoms. Counselor educators and supervisors are recommended to incorporate specific process addiction training in their curriculum and supervision to assist in the development of counselors-in-training awareness, knowledge, and skill about this emerging phenomenon. Future research is needed to develop confirmatory research models to gain a better understanding of how to assess, diagnose, and treat at-risk technology use.

ACKNOWLEDGMENTS

It has been said that a life's journey is not traveled alone. This rings true for the path that I have traveled to completing my dissertation. I am truly grateful for the wonderful faculty and staff of the University of North Carolina at Charlotte for their support and guidance along my journey. I would like to individually thank the following people who have been so influential in helping me reach this milestone.

To Dr. Pam Lassiter, the Chair of my dissertation committee and my mentor. Thank you for your guidance and encouragement throughout this process. You have been a spiritual mother to me who has always believed in my abilities and continuously encouraged me to find and believe in myself.

To Dr. John Culbreth, Dr. Laura Veach, Dr. Jae Hoon Lim, and Dr. Lori Wallendael, my dissertation committee members. Thank you for being on my team and sharing your wisdom with me. I would not have been able to accomplish this goal without you.

To Robert Mathews and Beth Mathews-Pruitt, my beloved parents and Robert Mathews, my treasured brother. Thank you for your continuous love and support throughout this adventure as well as throughout my life. Your kind and thoughtful regard has been my most dependable inspiration.

To Shannon, Tina, and Joan, my cherished family. Thank you for being there for me and standing beside me as I walked this path.

To Regina Moro, my life friend and research partner. Thank you for never judging me as you guided me through this challenging time in my life. Your friendship will always warm my heart and I am forever grateful for you.

To all of my wonderful family and friends, including Cohort 10. Thank you for your caring and meaningful relationships as you supported me through this journey. Your friendships have truly brought such fulfillment to my life.

DEDICATION

This research is dedicated to my husband and best friend, Greg Acosta, who inspires me every day to live genuinely and passionately. I am grateful for how you have stood beside me through the challenges as well as the accomplishments. You taught me to be patient, to listen, and to value myself. Thank you for your continuous encouragement of my journey towards self-exploration.

TABLE OF CONTENTS

CHAPTER 1: INTRODUCTION

"Civilization advances by extending the number of important operations which we can perform without thinking of them" (Whitehead, 1911, p. 61).

Technology has become a necessity in today's world. According to Whitney (2010), there are 4.6 billion cell phone subscriptions worldwide. The average person will spend 9 years watching television ("Television watching," 2012). There are 2.2 billion Internet users ("Internet world," 2011). Currently, there are more than 800 million daily users of Facebook ("Statistics," n.d.). An interesting finding regarding Facebook is that 53% of users in the United States check their profile prior to getting out of bed ("People's addiction," 2010).

In recent years, distracted driving, which includes texting and talking on a cell phone while driving, has received national consideration. Research has shown that 20% of all car crash fatalities involve distracted driving (CDC, 2012). These statistics indicate a heavy reliance on the use of technology as well as the negative impact technology use has on individual's daily functioning. Therefore, there is a need to understand the addictive tendencies of this advancing phenomenon.

Nonetheless, technology addiction is misunderstood. The current definitions either have been created based on one particular technology addiction (i.e., Internet) or are not all encompassing and lack empirical support. Technology addiction is broader than the current research that has narrowed the definition. An overarching

conceptualization of technology addiction (e.g., if video game was removed from the equation, then the addict may become addicted to television) is needed in order to gain a better understanding of the effect this phenomenon has on humanity.

The following section provides an understanding of the impact technology addiction poses on at-risk individuals. Later, the chapter will provide the purpose and significance of the proposed study, the research question, research design, delimitations, limitations, assumptions, threats to external and internal validity, operational definitions, general definitions, and a summary.

Overview

Research indicates individuals are developing dependent behaviors on things other than substances (Zamora, 2003). Technology, as a source, affects addiction by the ease of accessibility. People who are vulnerable to process addiction find technology as another source of addictive behavior. Combining increased accessibility of technology, stressors in the environment, and genetic predisposition creates a recipe for higher risk of activating addiction (Widyanto & Griffiths, 2006).

Furthermore, technology elicits euphoria-producing experiences around the use of technology, which increases the risk of psychological dependence (Widyanto & Griffiths, 2006). Similar to a heroin addict experiencing psychological cravings while viewing a video of someone else using the substance, individuals who are vulnerable to technology addiction may experience similar psychological responses towards technology (Shapira et al., 2003).

Currently, technology addiction is being defined by the medium or source of the addiction (i.e., Internet) rather than by the addictive behavior of seeking pleasure despite

negative consequences. Peele (1985) suggests that the object of addiction is not in itself to technology, rather the addiction is to the collective behavior of the individual in question. Therefore, studies investigating the biological, psychological, and sociological components (i.e., biopsychosocial) of technology addiction may help determine if there are truly addictive properties of technology.

Although research creates a separation of the subtypes of technology, findings conclude individuals are increasingly making unhealthy choices while utilizing technology. Examples include job loss (Frazier, 2010; Karaiskos, Tzavellas, Balta, & Paparrigopoulos, 2010), disruption of the psychological well-being (Whang, Lee, & Chang, 2003), psychological/ behavioral symptoms (Akin & Iskender, 2011; McIlwraith, 1990), brain changes (Han, Kim, Lee, Min, & Renshaw, 2010; Regard, Knock, Gutling, & Landis, 2003), neglect of responsibilities (Admin, 2010), and dissatisfied relationships (Chory & Banfield, 2009; Hernandez, 2011; Igarashi, Motoyoshi, Takai, & Yoshisa, 2008; Lo, Wang, & Fang, 2005).

Purpose of the Study

The purpose of the study was to provide an in-depth understanding of the biopsychosocial factors of technology-related experiences of at-risk technology users. It is hoped that this study will add to the body of knowledge of addiction literature by providing insight on an emerging phenomenon in the addiction field. Additionally, the study gave voice to those individuals who have firsthand experience of the phenomenon of interest. Therefore, it is anticipated that this study will be the first in addiction literature to help professionals understand an emerging issue that is affecting the

population they serve through the lens of those who have directly experienced the phenomenon.

Significance of the Study

Technology addiction is a topic that continues to be addressed in popular media (Carbonell, Guardiola, Beranuy, & Bells, 2009). Thus, this identifies the need for empirical research to examine the new phenomenon. An agreement among behavioral health professionals suggests that there are particular addictive behaviors to technology (Griffiths, 1995; Hodis & Bruner, 2009; Turel, Serenko, & Giles, 2011; Widyanto & Griffiths, 2006). Researchers have attempted to direct research efforts towards understanding this emerging phenomenon by identifying types of technology addictions such as Internet addiction or gaming addiction (Griffiths, 2010; Young, 1998). However, by limiting the concept of technology addiction to various subtypes (i.e., Internet and gaming), current research on this topic is already outdated as technology advances at such a rapid rate that in 10 years these functions (i.e., Facebook and texting) may become obsolete.

Nonetheless, a thorough review of existing literature, the results that are explained in Chapter Two of this study, revealed that researchers fail to address technology addiction in its entirety. Models of technology addiction have been created that suggest the correlation between technology addiction and substance addiction (Griffiths, 1995), but are of poor quality as the argument is based on one subtype of technology addiction as well as lacks empirical support. Although definitions and models of technology addiction have been developed, currently, there are no studies that seek to understand the greater picture of technology addiction. Therefore, it would be beneficial to the addiction

field if researchers focused on examining the broader phenomenon of technology addiction to encompass all euphoria-producing technologies, even those not currently developed.

Bowen and Firestone (2011) authenticate this argument by stating that, "a singular emphasis on Internet ignores the broader phenomenon of the current state of abuse of personal technologies" (p. 230). Carbonell et al. (2009), who conducted a literature review on the patterns of Internet, video games, and cell phone addiction publications, support this notion. The authors reported that the lack of clear terminology made their search of technology addiction challenging. The inability to conduct accurate searches due to the lack of cohesive terminology further identifies the need for a more in-depth understanding of technology addiction.

The literature review conducted in Chapter Two also revealed that researchers continue to mislead readers by supporting the evidence of technology addiction, but base the argument of the article on studies which solely focus on one subtype of the phenomenon (e.g., gaming addiction). Moreover, researchers are focusing on a specific technology addictions (i.e., cell phone and Internet), yet are reporting the findings are conclusive to technology addiction when no empirical research has supported the existence of this phenomenon. For example, Turel and Serenko (2011) cites research to support the inclusion of technology addiction in the Diagnostic and Statistical Manual of Mental Disorders (DSM), Fifth Edition (*DSM-V*), when the author of the cited article only suggests that Internet addiction be included in the new edition of DSM. The inaccurate use of terminology can be viewed throughout the literature on technology addiction.

Consequently, the separation of the subtypes of technology addiction and the misuse of terminology prevents researchers from conducting sound studies. Clearly, there is a need to gain a more clear understanding of at-risk technology use. This study served to provide a thorough understanding of the essence of the phenomenon of interest. Lastly, this study helped provide empirical knowledge of at-risk technology use to aid in the resolution of the debate within the addiction field on unified conceptualization of this phenomenon.

Research Question

The research question for this study was as follows:

What are the lived technology-related biopsychosocial experiences of individuals who have self-identified as at-risk technology users?

Research Design

To gain greater insight about those individuals who have firsthand experience of a multifaceted phenomenon, qualitative research is a methodology that is often utilized (Patton, 2002). The observance of the individuals' verbal communication and observed behaviors is often how researchers collect data using this methodology (Taylor & Bogdan, 1998). Qualitative research is also appropriate when there is a need to explore the meaning-making system of the individuals in question (Creswell, 1998). Therefore, it is believed through interpreting and recounting lived experiences, individuals create meaning (Moutakas, 1994).

A phenomenological qualitative methodology was used for this study given that its intent is to understand the essence of the occurrence of technology addiction as described by individuals who self-identify as at-risk. Since phenomenology focuses on

the individual's awareness of the experience without biases and assumptions (Spiegelberg, 1984), this methodology was deemed appropriate for this study.

Participants for this study were recruited through convenience and purposeful sampling from a university in a southeastern state of the United States. Convenience sampling is utilized when the researcher intents to enroll participants who are easily accessible to the researcher (Patton, 2002). Purposeful sampling, in addition to convenience sampling, is to identify those individuals who have firsthand knowledge of the phenomenon (Patton, 2002). The researcher recruited participants by posting flyers (Appendix F) around the campus of the selected university. The purpose of the flyer was to inform participants about the study and to provide contact information of researcher.

Once the initial contact was made, the researcher conducted a screening tool called the TECH, which will further be discussed in Chapter Three, to identify eligible participants. Participants' inclusion criteria was responding "yes" to at least two questions on the TECH questionnaire and individuals who are English speaking. Exclusion criteria were those who are younger than 18 years-old and those who respond "no" to all questions on the TECH questionnaire.

Participation in the study was be voluntary. Once the researcher solicited participation in the study and verified eligibility, a letter of explanation for the study (Appendix B) and an informed consent form (Appendix A) was given to all participants prior to admission. The letter of explanation was provided to participants with detailed information regarding the purpose of the study and the informed consent form was discussed which included eligible criteria, estimated time of interview length as well as

risks and benefits of participation in a human subjects study. Further description of the sampling process is discussed in Chapter Three of this study.

After all forms were obtained from the participants, the researcher began data collection by scheduling the interview. Interviews were conducted in-person and were digitally recorded. Interviews were 45-90 minutes in length. During the interview process, the researcher recorded nonverbal behavior of the participants using a reflexive journal. The utilization of more than one source of data collection strengthens the research (Patton, 2002). Furthermore, the reflexive journal aids the researcher in reducing researcher bias (Wertz, 2005). After completion of the interview process, the researcher assigned de-identifying codes and transcribed the interviews.

Data analysis utilized phenomenological reduction to identify the essence of individuals' experiences (Moustakas, 1994). Horizonalization, imaginative variation, and synthesis of meanings and essences are the methods utilized during phenomenological reduction (Moustakas, 1994). Through these methods, the researcher identified themes, create textual descriptions, identify emerging patterns, and construct major findings from the data.

Measures such as the utilization of an independent coder and member checking are applied to research studies to strengthen the quality and trustworthiness of the study (Moustakas, 1994). This study employed the following verification procedures: independent coder, member checking, and peer review. Chapter Three of this study further explains the details of the research design.

Assumptions

The first assumption about the research study was that there are common themes and critical incidents involved in individuals who self-identify as at-risk technology users that reflect how one experiences the phenomenon of interest. A second assumption was that the participants would be truthful about their experience of technology use and accurately recalled their experiences. Finally, the third assumption was that there was varying degrees of experience of technology use among participants.

Delimitations

The researcher purposefully and conveniently recruited individuals who self-identify as portraying addictive behaviors as a result of using euphoria-producing technological devices. Additionally, the location of the selection of participants was controlled. Lastly, the researcher was the sole collector of the data.

Limitations

A limitation of this study was that the research design method chosen for this study could not control for extraneous variables. A second limitation was that a convenience sample was reliant upon the participants' decision to participate or not to participate in the study. There may also be differences that exist between participants of this study and other individuals who are at-risk technology users. Lastly, achieving culturally diversity within the sample was limited by the small sample size that was attained in the study. Furthermore, the sample size limited transferability of the results of a qualitative study (Wertz, 2005).

Threats to Validity

Threats to transferability, otherwise known as external validity for qualitative studies, was the lack of random sampling, the lack of a control group, and the limited number of participants. Threats to credibility, referred to as internal validity, was social desirability. This refers the individuals' inclination to provide responses for which they believe researchers desire rather than providing accurate responses.

Operational Definitions

Operational definitions for central terms used in this study are as follows:

Technology users. Technology users is operationally defined in this study as a term used to identify those individuals who participate in the current use of euphoria – producing technologies, which include gaming, mobile devices, GPS, Internet, and television (Widyanto & Griffiths, 2006). Technologies excluded from this study are non-euphoria-producing (e.g., microwave, dishwasher, and refrigerator).

Self-identified. In this study, self-identified is operationally defined as individuals who self-report the use of technology. Individuals who contact the researcher, via phone, from solicitation of the posted flyer will be asked if they are technology users. Those who respond "yes" will be deemed as self-identified technology users. Those who respond "no" will be excluded from the present study.

At-risk. In this study, at-risk refers to those individuals who are at a high susceptibility to the phenomenon of interest. Individual must answer "yes" to one of the questions asked of the inclusion screening tool called the "TECH" to meet the criteria for at-risk. Those who answer "no" to all questions on the "TECH" will be excluded from the study.

General Definitions

General definitions for this proposed study are as follows:

Addiction. Addiction, in this study, is a term used to define "pleasure-producing" behaviors despite negative consequences (Goodman, 2008).

Biopsycholosocial. Biopsychosocial is a term used in this study as the combination of factors that contribute to addiction: biological, psychological and social (Donovan & Marlatt, 1988).

Process addiction. In this study, process addiction is a term used to describe an addiction to a mood-altering behavior (Robinson & Berridge, 2000; Schaef, 1986).

Technology. Technology is defined in this study a term referring to altering human existence by the use of scientific knowledge (Pearsall & Trumble, 1996).

Summary

Chapter One provided an introduction regarding the significance of the development of an in-depth understanding of at-risk technology use. Current statistics illustrate the magnitude of this phenomenon, which in turn, identifies the need for empirically-based studies to be conducted. However, the existing literature continues to focus on separate technology-based addictions.

Technology's evolution is immediate. Therefore, it is essential for researchers to provide current studies understanding this phenomenon. Popular media solidifies the notion of the need for research in this area by emphasizes the negative impact technology has on individuals in society by using the terminology, technology addiction. Clearly, a more thorough perceptive of this phenomenon will enable researchers to conduct more sound studies.

Therefore, the purpose of this study was to understand the impact technology has on human life through emerging themes of the experiences of individuals who have self-identified as at-risk technology users.

Organization of Study

The study is separated into five chapters. Chapter One provided an overview and significance of the study, the research question, assumptions, delimitations, limitations, operational definition, and general definitions. Literature regarding the current definitions, terminology, and lack of all-encompassing conceptualizations of technology addiction were addressed to illustrate the significance of this research. Central terms used in the research study were operationally defined. The phenomenological methodology of sampling, data collection, and data analysis used in this study was overviewed in this chapter. Lastly, assumptions, delimitations, limitations, and threats to validity were presented.

A comprehensive review of literature is presented in Chapter Two. An introduction to understanding addiction and process addiction was discussed as well as the current, misunderstood definitions of technology addiction. A thorough examination of past and current literature on each stem of technology addiction was included.

Chapter Three detailed the methodology of this study. An introduction of the research design was included, followed by the research question. Lastly, data analysis methods and a summary were presented.

Chapter Four provided a thorough summary of the research findings. There were three major themes that emerged from the data analysis that were common among all participants and two variant themes that were common among the majority of

participants. Additionally, two participants' stories were presented to portray the predominant tone of all 12 participants.

Lastly, Chapter Five presented a summary and discussion of the findings. Implications of the findings were applied to many roles in the counseling field such as practicing counselors, counselor supervisors, counselor educators, and future researchers. Limitation of the research was also explored.

CHAPTER 2: REVIEW OF LITERATURE

The purpose of this study was to understand the technology-related biospsychosocial experiences of individuals who have self-identified as at-risk technology users. There is a general consensus among professionals that particular addictive behaviors fit in a category called technology addiction (Griffiths, 1995; Hodis & Bruner, 2009; Turel et al., 2011; Widyanto & Griffiths, 2006). Currently, there is a lack of empirical evidence supporting this notion. This study sought to understand the essence of technology addiction. By gaining greater insight of this phenomenon, a main classification may be recognized more clearly, which will aid in the identification of possible co-occurring addictions. Thus, the focus of this chapter was to review the current literature that defines technology addiction as well as review empirical research related to subtypes of technology addiction in order to emphasize the need for this study.

The following literature review is divided into five sections. The first section reviews the theoretical background of addiction. The second section examines the theoretical background of process addiction. The third section presents current definitions of technology addiction. The fourth section provides a review of empirical literature based on the subtypes of technology addiction. The final section concludes the chapter by synthesizing the outcomes of the literature review as it relates to the need for this study.

Addiction

According to the Diagnostic and Statistical Manual of Mental Disorders (DSM), Fourth Edition, Text Revision *(DSM-IV-TR),* substance dependence refers to the inability to cease the use of mood-altering chemicals despite negative consequences (APA, 2000). Since the initial classification of this disorder in the DSM, there has been much controversy among practitioners regarding the definition and terminology used (Goodman, 2008; O'Brien, 2011). First, the medical field finds this topic controversial due to the term "dependence," which is used to normalize a patient's physical experience of treatment to pain medication, also being used to describe compulsive and obsessive use of a substance. Therefore, physicians and medical educators have trouble helping patients and medical students differentiate between dependence versus addiction (O'Brien, 2011). Second, some addiction specialists are advocating for the inclusion of behavioral/ process addictions to the diagnosis in the impending edition of DSM (Griffiths, 1996; Hagedorn, 2009). Therefore, some suggest that established criteria should be extensive to encompass all forms of addiction (Brown, 1993; Griffiths, 1996; Hagedorn & Juhnke, 2005; Hagedorn, 2009).

The DSM-V task force has acknowledged the difference in opinion among practitioners regarding the creation of an accurate definition and terminology for the inability to stop the use of a substance or behavior despite adverse consequences (Grant, Potenza, Weinstein, & Gorelick, 2010). The task force proposed a revision for DSM-V to change the label to "Addiction and Related Disorders" as well as to incorporate pathological gambling in the classification; therefore, supporting an encompassing definition of addiction that includes behavioral/ process addictions (O'Brien, 2011).

Goodman (2008) operationally defined addiction as a need to uncontrollably engage in "pleasure-producing" behaviors despite negative consequences. Furthermore, Karim and Chaudhri (2012) refer to addiction as:

> Any stimuli (drug or behavior) that transforms basic drives required for survival (natural rewards like feeding, thirst, reproduction) into actions of craving/seeking behaviors or repetitive out-of-control behaviors [which] may make it plausible that addiction can occur even in the absence of drug taking. (p. 6)

Genetically, our brains have been programmed to seek resources to meet our basic needs to increase survival (Karim & Chaudhri, 2012). Maslow (1943) believes that humans are provoked to satisfy five sets of basic needs, which include physiological, safety, love, esteem, and self-actualization. Hence, indicating that human beings are "perpetually wanting animal[s]" (Maslow, 1943, p. 395). The underlying belief is that when one basic need is satisfied, then the individual sets forth to satisfy a higher level need, which in turn becomes the central focus of the individual (Maslow, 1943). The individual continues this behavior until the highest level of need (self-actualization) is met. However, psychological distress may occur if the individual perceives a danger toward any of the basic needs, ultimately creating a sense of urgency within the individual (Maslow, 1943).

Although resources have become more and more readily available, due to advancements in civilization, the need to survive has not changed. Nonetheless, the mesolimbic rewards system in our brains, which reinforces our survival behaviors, has had to transform in order to adapt to the abundance of resources (Di Chiara, 1998). Kershner (2008) defines this phenomenon as neuroadaption, which "is the process by

which the brain modifies its sensory input, in response to touch, heat, cold, pain, sight, sounds, or smell. Nervous system adaptation enables us to cope with a constantly changing environment" (p. 1).

These changes in the brain pathways are influenced by dopamine and endogenous opioid neurotransmitters, which are usually associated with the development of addictive behaviors due to the effect on the hippocampus (Brewer & Potenza, 2008; Di Chiara, 1998; Johansson, Grant, Kim, Odlaug, & Gotestam, 2009; Kershner, 2008; Koob & Volkow, 2010; Volkow & Wise, 2005). The hippocampus is the region of the brain that regulates emotion, memory, reward, and stress (Goodman, 2008; Kershner, 2008; Koob & Volkow, 2010; Martin & Petry, 2005). Martin and Petry (2005) suggest that addictions are:

> common disturbance[s] of the transformation of basic drives required for survival (eg, feeding, thirst, reproduction, parenting, fight/ flight, exploration) into actions (ie, drug-seeking and other out-of-control behaviors); these drives are either misdirected or are of excessive frequency, leaving little time or energy for other, more constructive or fulfilling aspects of life. (p. 2)

The definition of addiction, historically used to explain one's physical dependence of a substance, has been rooted in literature on animal behavior (Grusser & Thalemann, 2006). Studies conducted on human brain imaging, however, have also found various areas that are impacted by this restructuring of the brain that leads to addiction, which include reward and motivation (Goodman, 2008; Grace, 2000; Grant, Breuer, & Potenza, 2006; Holden, 2001; Volkow & Swanson, 2003; Zubieta et al., 1996), inhibitory

control and executive functioning (Duncan et al., 2007; Langleben et al., 2008), and memory (Childress & Mozley, 1999; Grant et al., 1996; Kilts et al., 2001).

Findings have revealed that a neutral stimulus such as drugs or a behavior can produce a conditioned response which perpetuates a motivational reaction activating the mesolimbic dopaminergic reward system (Di Chiara, 1998; Goodman, 2008; Holden, 2001). When stimuli react abruptly with this reward system, creating sudden change, altercation of an individual's perception of a behavior or drug may occur resulting in a conditioned response (Grace, 2000; Volkow & Swanson, 2003). Researchers believe that although the initial behavior or use may be motivated by reinforcing effects, such as producing a sense of belonging or other motivators that trigger the reward system, repetitiveness of the behavior along with a subjective response to the reward may develop into addiction (Koob & Volkow, 2010). Other researchers add to this notion by stating addiction is more like a continuum where the initial behavior is motivated by pleasure-seeking which can then lead to a conditioned response resulting in addiction (Peele, 1985).

Additionally, Martin and Petry (2005) believe that addiction involves the occurrence of neuroadaptation as a result of compulsive, repetitive behavior despite negative consequences. Addictive compulsive behavior involves the uncontrollable motivation to partake in a specific action to produce gratification despite negative consequences, which can result in salience and can interfere with daily functioning (Faber, O'Guinn, & Krych, 1987; Goodman, 2008; Marlatt, Baer, Donovan, & Kivlahan, 1988; Martin & Petry, 2005; O'Guinn & Faber, 1989). Some researchers believe that stress, lack of coping skills, or escaping reality perpetuate compulsive behavior (Faber et

al., 1987; O'Guinn & Faber, 1989; Schimmenti & Caretti, 2010). Addictive compulsive behaviors differ from other compulsive behaviors in that physical and/ or psychological dependence may be triggered by immediate gratification as a result of the behavior causing a conditioned response (Faber et al., 1987; Goodman, 2008; Marlatt et al., 1988; Martin & Petry, 2005; O'Guinn & Faber, 1989).

Addiction Criteria

Although existing literature provides evidence of similar factors that contribute to the onset of both substance and behavioral addictions, a set criterion does not exist for identifying addiction because it is not an official diagnosis recognized in the DSM-IV-TR (Albrecht, Kirschner, & Grusser, 2007). However, many researchers have proposed various sets of measures to identify a general classification of addiction based on the established criteria of substance dependence (Brown, 1993; Griffiths, 1996; Hagedorn, 2009) or criteria of pathological gambling (Young, 1998), which is to be listed under Addiction and Related Disorders in the proposed revision of DSM (APA, 2012).

Brown's (1993) and Goodman's (2001) diagnostic criteria for addictions has been widely accepted by many researchers in current literature (Griffiths, 1996; Hagedorn, 2009). Originally, Brown (1993) suggested that addictions meet the following six criteria:

- Salience – the obsession of the behavior that become central to the addicts thought process, also associated with cravings;
- Euphoria – the feeling an addict receives when participating in the behavior, also known as the "high" effect;
- Tolerance – the need to increase the amount of behavior to achieve the desired effect;

- Withdrawal symptoms – negative effects that occur after abstinence from the behavior;
- Conflict – conflict with self or other due to the behavior;
- Relapse and reinstatement – participation in the behavior despite attempts of abstinence.

Based on Brown's (1993) work, Griffiths (1996) proposed a modified set of criteria for addiction. However, after reviewing both writings, the only difference between the two proposed criteria seems to be the terminology used to describe the specific diagnostic criteria. First of all, Griffiths changed the terminology of Brown's euphoria criteria to mood modification. Secondly, Griffith's eliminated the word reinstatement from Brown's relapse and reinstatement criteria. A major critique of Brown's proposed diagnostic criteria is that all criteria need to be met for a positive diagnosis, which contradicts the structure used by DSM where a specific number of criterions from a larger set of criteria are necessary for a positive diagnosis (Yellowlees & Mark, 2007).

Closely following the DSM structure for substance dependence, Goodman (2001) proposed another set of diagnostic criteria for addictive disorders. Compared to the traditional diagnostic criteria in DSM, the term *substance dependence* has been replaced by term *behavior* and minor changes to the understanding of withdrawal have been modified by Goodman to include all addictive behaviors (Hagedorn, 2009).

Major differences between the two sets of diagnostic criteria lie within the criteria themselves as well as within the structure. First of all, Goodman (2001) adapted the traditional criteria of substance dependence whereas Brown (1993) used some established components (i.e., tolerance, withdrawal, and relapse) and proposed additional criteria

(i.e., conflict, euphoria, and salience). Secondly, Brown believes that in order to meet a positive diagnosis, the individual must meet all six criteria while Goodman proposes three (or more) criteria need to be met.

However, any proposed set of criterion must uphold the scrutiny of methodical research. Suler (2004) suggests that a proposed diagnosis must address the following two questions: "Is there a consistent, reliably diagnosed set of symptoms that constitute this disorder?" and "Does the diagnosis category possess external validity in that it significantly correlates with similar histories, personality factors, and prognoses of people who are diagnosed?" (p. 360). Yet, researchers have been inclined to focus solely on the first question (Suler, 2004). Suler (2004) believes that researchers can contribute to the body of knowledge by investigating the "universal" core causes of addictive tendencies. To date, there mixed research findings conducted in this area.

Therefore, there is a need to understand the essence of this phenomenon to gain greater awareness of the underlying issues. However, existing literature continues to segregate the various types of addictions, both substance and process. Thus, it is important to become familiar with the theoretical background of process addiction to gain a comprehensive understanding of technology addiction.

Process Addiction

In the last decade, researchers have been become more aware of dysfunctional behaviors resembling concepts of substance dependence. Behaviors such as gambling, exercising, video gaming, watching television, having sex, and eating food are thought to have addictive tendencies similar to using drugs (Griffiths, 1995; Griffiths, 2005; Hagedorn, 2009). Addictions to such behaviors are called behavioral/ process addictions.

Process addiction refers to the inability to cease mood-altering, euphoric behaviors (Robinson & Berridge, 2000; Schaef, 1987).

There is debate within the addiction field on unified terminology of process addiction (Albrecht et al., 2007; Grant et al., 2010; Kranzler & Li, 2008). The lack of understanding the etiology, rate of occurrence, and rationale of this type of addiction creates a lack of cohesion for a clear term among the multidisciplinary field of addiction. Therefore, researchers in the field of psychiatry are classifying the cluster of addictive behaviors as *behavioral addictions* (Brown, 1993; Griffiths, 1996; Griffiths, 2005; Karim & Chaudhri, 2012) whereas researchers in the field of counseling use the term *process addiction* to label the addiction to a specific process (Hagedorn & Juhnke, 2005; Hagedorn, 2009). Since process addiction is an accepted term used in the addiction counseling field, this study will use this terminology when referring to behavioral/ process addictions.

Consequently, a lack of conformity creates challenges with identifying the prevalence of process addiction (Charlton, 2002; Hagedorn, 2009). Though, in a meta-analysis with a sample size of at least 500 participants concerning the prevalence of process addictions among U.S. adults, Sussman, Lisha, and Griffiths (2011) found that 2% are addicted to the Internet, 10% to work, 2% to gambling, 2% to food, 3% to sex, 3% to exercise, and 6% to spending. Other researchers have varying estimates of U.S. process addicts such as 1% to 2% are gambling addicts (Potenza et al., 2003; Welte, 2001), 2.8% are food addicts (Hudson et al., 2007), 3% to 6% are sex addicts (Short, Black, Smith, Wetterneck, & Wells, 2012), and 5% to 6% are shopping addicts (Black, 2013; Koran, Faber, Aboujaoude, & Serpe, 2006). Furthermore, based on a compilation

of data, Hagedorn (2009) estimates there are 17 to 41 million people suffering from Internet addiction, 14 to 26 million who struggle with eating addiction, 6 to 9 million who meet the criteria for gambling addiction, and 17 to 37 million who suffer from sex addiction. Although there is clear discrepancy within the research regarding the prevalence of process addiction, there is need for further research to focus on the etiology and underpinning of this phenomenon.

In recent years, many researchers have been interested in investigating the commonalities between drug and process addictions (Goodman, 2008; Petry 2006; Volkow & Wise 2005). Some researchers believe that viewing process addiction through a biopsychosocial lens sheds light on the multifaceted components of the disorder (Blaszczynski & Nower, 2002; Griffiths, 2005; Martin & Petry, 2005). By integrating the elements of biology, psychology, and sociology, more effective research efforts and clinical interventions are provided (Griffiths, 2005).

In 1977, the seminal workings of Dr. George Engel led the mental health profession towards an advanced view and understanding of addiction. Engel's proposed biopsychosocial model provides an all-encompassing understanding of how each system affects another (Engel, 1977). Thus, the biological system, which focuses on an individual's biological function as well as how anatomical, structural, genetic, and molecular foundations of diseases contribute to the functioning, affects the psychological system. The psychological system, which emphasizes on the individual's lived experience and response to the disease based on personality, developmental, and motivational factors, affects the social system. The social system, which explores the environmental influences (i.e., cultural and familial) on the understanding of the disease,

affects the biological system (Campbell & Rohrbaugh, 2006). Therefore, the complex human systems influence one another.

Current evidence supports neurobiological similarities between process addiction and drug addiction as well as among the various process addiction subtypes (Goodman, 2008; Helmuth 2001; Holden, 2001; Karim & Chaudhri, 2012). Neurobiological studies have researched brain changes, which impact learning and motivation, among individuals with process and substance addiction and found similarities between the two disorders (Helmuth, 2001; Ko et al., 2009). Likewise, studies conducted on neuroimaging have found parallels in interactions with the brain's reward system between the two types of addictions (Elman et al., 2001; Knutson, Rick, Wimmer, Prelec, & Loewenstein, 2007; Volkow & Fowler, 2000). For example, Knutson et al. (2007) found that when an individual is in the process of making a purchase decision, neural circuits are activated in the brain's reward system, which is similar to drug addicts.

Salient psychosocial components such as neglecting responsibilities, negative consequences, and high-risk behaviors are found across substance and process addictions (Helmuth, 2001). Goodman (2008) further supports this notion by indicating biopsychological commonalities between drug and process addictions among his client population. He suggests that similarities between the two addictions include a) course of the illness, b) behavioral features, c) individuals' subjective experience of the condition, c) progressive development of the condition, d) experience of tolerance, e) experience of withdrawal phenomena, f) tendency to relapse, g) propensity for behavioral substitution, h) relationship between the condition and other aspects of affected individuals' lives, and

i) recurrent themes in the ways individuals with these conditions relate to others and to themselves.

Without contention, process addiction is a complex disorder that creates disruption in daily functioning. Conceptualizing this disorder through a biopsychosocial lens allows addiction professionals to gain insight on the many factors that contribute to the onset of this addiction. Therefore, understanding the essence of this phenomenon is essential for the development of the addiction profession.

Technology Addiction

A recent focus of concern for a subtype of process addiction includes technology addiction. However, technology maybe evolving at a pace that impedes researchers' ability to stay abreast with conducting studies that reflect the advancements of this phenomenon. Technology addiction, therefore, continues to be a misunderstood concept with multiple researchers trying to propose poorly constructed definitions based either on one source of technology addiction (Byun et al., 2009) or lack empirical support as well as a lack of clear terminology to describe the phenomenon (Carbonell et al., 2009).

As a result, researchers seem to struggle to use unifying terminology to define issues associated with the use of technology (Bowen & Firestone, 2011; Carbonell et al., 2009; Turel et al., 2011). Conducting literature reviews and sound research in this specific area is increasingly difficult due these issues. Currently, numerous terms have been utilized to depict this phenomenon such as pathological use of electronic media (Bowen & Firestone, 2011), technology addiction (Griffiths, 1995), Internet addiction (Dowling & Brown, 2010; Whang et al., 2003; Young, 1998), video game addiction (Han et al. (2010; Lo et al., 2005; Peng & Liu, 2010; Regard et al., 2003) or pathological use of

video games (Keepers, 1990), Internet addiction disorder (Yang & Tung, 2007), compulsive Internet use (Meerkerk, van den Eijnden, Franken, & Garretsen, 2010), problematic or pathological Internet use (Bayraktar & Gün, 2007; Hinvest & Brosnan, 2012), television addiction (Anderson, Collins, Schmitt, & Smith Jacobvitz, 1996; Finn, 1992; McIlwraith, 1990; Smith, 1986), mobile phone addiction (Leung, 2008), and computer addiction (Shotton, 1991).

Current research provides a separation among technology-based addictive behaviors (i.e., Internet, video gaming, cell phone, etc.). Hence, this adds to the lack of clarity surrounding an encompassing understanding of technology addiction based on empirical evidence. Turel et al. (2011) discussed the lack of a cohesive definition of technology addiction; however, their study only added to the confusion by focusing on one aspect of technology addiction (i.e., online auction addiction).

There are many unreliable descriptors used for technology addiction. In an earlier writing, Griffiths (1995) once more adopted the work of Brown (1993) to a more specific behavioral addiction he termed "technological addictions." The author operationally defined technological addictions as "non-chemical (behavioural) addictions which involve human-machine interaction. They can be passive (e.g. television) or active (e.g. computer games) and usually contain inducing and reinforcing features which may contribute to the promotion of addictive tendencies" (p. 15). Nevertheless, this definition lacks empirical support. Moreover, the definition is not all encompassing.

Likewise, Hodis and Bruner's (2009) define technology addiction as the "compulsive, unnecessary use of technology that interferes with the individual's life, as well as his/her mental and/or physical well being. It is a psychological addiction to the

cumulative experience one derives from one's involvement with the technology" (p. 840). Thus, indicating the destructiveness of technology addiction on one's daily functioning (Widyanto & Griffiths, 2006). The definition, however, was constructed using existing knowledge from research focusing on one source of technology addiction.

Nonetheless, the concept of technology addiction has been misunderstood. A significant critique of the literature focusing on technology addiction is that some researchers use the term technology addiction arbitrarily which perpetuates the confusion. Researchers continue to mislead readers by supporting the evidence of technology addiction, but base their arguments on studies conducted on only a subtype of the phenomenon (e.g., gaming addiction). For example, Turel et al. (2011) cites that Block (2008) believes in the inclusion of technology addiction in DSM-V. However, when reviewing Block's article, the author only alludes to classification of Internet addiction (a subtype of technology addiction) in DSM-V. This misuse of terminology is identified throughout the literature on this phenomenon, which only adds to the challenge of achieving a clear conceptualization of this addiction. Thus, the separation of the types of technology addiction prevents us from gaining insight concerning the true essence of this phenomenon.

Although there is a general consensus among some professionals that various addictive behaviors fit in a category called technology addiction, empirical evidence supporting this notion (i.e., research of Internet addiction has the same criteria as gaming addiction) does not exist. Therefore, the following study sought to gain awareness of the essence of at-risk technology use by examining its subtypes, so further research can be conducted on the etiology and prevalence of this phenomenon.

Subtypes of Technology Addiction

The lack of a unified definition and term for identifying technology addiction has been established within the literature (Bowen & Firestone, 2011; Carbonell et al., 2009; Turel et al., 2011). For instance, some researchers who have sought a definition either lack empirical support or have attempted to generate a definition which only focuses on one subtype of technology addiction. Therefore, "the lack of agreement on classification presents additional difficulties when trying to construct a comprehensive search strategy" (Carbonell et al., 2009). In order to understand the context of the current study, it is valuable to first explore the literature within the scope of technology addiction subtypes. Therefore, this section presented the need for the study as well as provided a review of the existing literature on the subtypes of technology addiction: a) Internet and social networking sites, b) gaming, c) mobile devices, d) television, and e) global positioning system (GPS).

Internet. Many studies seek to understand Internet addiction (Dowling & Brown, 2010; Whang et al., 2003; Young, 1998). Seminal research conducted by Young (1998) related Internet addiction to diagnostic criteria of pathological gambling. Young (1998) adapted the criteria, which lead to the development of a screening tool for Internet addiction. Utilizing this tool, the researcher conducted a qualitative research study on 496 participants. Findings reported that 396 participants were classified as dependent Internet users; those who had significant disruptions to daily functioning such as sleep deprivation from the amount of time spent online. The following section will examine studies that have been conducted to further understand the findings of this seminal research.

In a quantitative study using Young's scale, Whang et al. (2003) found that there were three categories of Internet users (Internet addicts, possible Internet addicts, and non-addicts). Among 14,111 participants, findings revealed that 3.47% of the sample were classified as Internet addicts and 21.67% were categorized as possible Internet addicts. Findings also showed that Internet addicts reported the higher levels of disruption of the psychological well-being than other groups, which include depressed mood and loneliness. Clearly, this identifies the prevalence and negative psychological impact of Internet addiction, but fails to address the biological and social components of the disorder.

Likewise, Dowling and Brown (2010) utilized Young's Internet Addiction Test (IAT) as one of the assessments to determine common factors related to Internet dependence and problematic gambling among 179 university students in Australia. The researchers hypothesized that problematic gambling and Internet dependence would have a positive relationship. Although the researchers' hypothesis was not supported, findings showed that the sample population consisted of 9.5 % "at-risk" Internet dependent users. Furthermore, this study solidifies the prevalence of this addiction. A major limitation of this study is the methodology. The sample size was small and not representative of the overall population of Internet addicts. Furthermore, the convenience sampling method of Dowling and Brown's study limited the generalizability of its findings.

Conversely, Davis, Flett, and Besser (2002) argue the validity of established problematic Internet use measurements by stating that the measures are one-dimensional, not based on theory, and are conducted with small sample sizes. Thus, the researchers conducted a study to introduce a new theory-driven measure called the Online Cognition

Scale (OCS). The researchers used a convenient sample of 211 undergraduates from a psychology class at a university in Canada and found that problematic Internet use is multidimensional, consisting of four dimensions: a) diminished impulse control, b) loneliness/depression, c) distraction, and d) social comfort.

While Davis et al. (2002) criticized the validity of other measures based on small sample sizes, the researchers' sample consisted of undergraduates from one university; therefore, limiting generalizability to other populations. Although the argument of this study relates to the validity of Internet addiction measures, the findings further support the impact of Internet addiction on individuals' well-being.

Likewise, Akin and Iskender (2011) conducted a study examining the association between psychological measures (depression, anxiety, and stress) and Internet addiction among 300 university students in Turkey. Utilizing Davis et al. (2002) OCS to measure Internet addiction, findings revealed that there is a positive predictive relationship between Internet addiction and depression, anxiety, and stress.

There were several limitations to this study. First, the study was exploratory and could be subject to sampling error. Secondly, the sample was obtained from only university students. Finally, causality cannot be determined due to the use of correlational statistics. Although this study has limitations, the findings concerning the impact on individuals' psychological well-being appear to be in line with previous research in that as the chances of Internet addiction increase, so does the probability of increased depression, anxiety, and stress.

Social Networking. Recent research pertaining to Internet addiction predominantly focus on social networking. Kuss and Griffiths (2011) refer to social

networking sites (SNS) as "virtual communities where users can create individual public profiles, interact with real-life friends, and meet other people based on shared interests" (p. 3529). There are four studies published on this topic: three studies in 2010 (Karaiskos et al., 2010; Pelling & White, 2010; Wilson, Fornasier & White, 2010) and one published in 2011 (Elphinston & Noller, 2011). The following is a review of the literature.

In a quantitative study of 233 teenage students, Pelling and White (2010) found that self-identity and belongingness were predictors of addictive tendencies of SNS. The researchers identified high-level SNS use as by means of at least four times per day. Consequently, those who were at-risk for SNS addiction portrayed higher levels of the need to belong, used more than four times a day, and identified as SNS users.

Similarly, Wilson et al. (2010) studied addictive tendencies of SNS among 201 students. Findings revealed that time spent and addictive tendencies of SNS were predicted by extraversion and conscientiousness. Therefore, those who had high extraversion and low conscientiousness were more likely to portray addictive tendencies and more time spent using SNS. A limitation of the study was the low representation of male participants (24%). Although these studies address the psychological and social features of addiction, the researchers lack focus on biological characteristics that are associated with the disorder.

In a qualitative study of a young adult female, Karaiskos et al. (2010) reported many factors related to addictive tendencies of specific SNSs, called Facebook, which disrupted the participant's daily functioning. The young woman lost her job as a result of checking her SNS excessively while at work. In addition, interference with her daily functioning included sleep disturbances and the development of anxiety symptoms. Due

to the compulsive tendencies of this "urge-driven disorder", Karaiskos et al. (2010) suggest that Facebook addiction can be recognized as a subtype of internet addiction. This assertion further supports the need to understand the essence of technology addiction by acknowledging the prevalence of cross-addictions within the subtypes of this phenomenon.

Elphinston and Noller (2011) focused their research on a specific SNS to identify factors related to Facebook intrusion and relationship satisfaction. The authors state that, "high levels of Facebook intrusion are characterized by an excessive attachment to Facebook, which interferes with day-to-day activities and with relationship functioning" (p.631). Therefore, findings revealed that Facebook intrusion is associated with disruption in relationship satisfaction. However, the convenience sampling method of recruiting only university students at one university limited the generalizability of its findings. Nonetheless, these findings are in line with the previous research studies as it illustrates the interference with individuals' lives.

Gaming. Another extensively researched subtype of technology addiction is gaming addiction with a recent emphasis on online gaming. Peng and Liu (2010) have attempted to define online gaming addiction by stating that "online gaming dependency as a psychological state [is] characterized by psychological discomfort experienced by online gamers when they are unable to play online games as they wish" (p. 313).

Regard et al. (2003) conducted brain research on video game addicts. The researchers examined the similarities between brain health among video game addicts and chemical addicts. They concluded that video game addicts showed signs of brain damage comparable to drug addicts. Furthermore, the researchers found that the video

game addicts experienced "fronto-temporo-limbic neuropsychological dysfunctions and more EEG abnormalities" (Regard et al., 2003, p.47). This study supports the understanding of the biological features of addiction.

Similarly, Han et al. (2010) sampled 21 students from Chung Ang University and Chung Ang University Medical Center. The researchers examined brain activity in the prefrontal cortex, which is associated with drug seeking behavior and cravings, in online game players. The researchers were interested in understanding the similarities among excessive internet game players (EIGP) and chemical dependent patients regarding increased activity in the prefrontal lobe after a stimulus such as a video game was introduced. After 6 weeks of playing an online game, a significant difference between the EIGP and the control group was found. They concluded that brain changes in the online game players brains compared to brain changes of an individual who receive a small dose of a chemical substance such as alcohol, marijuana, or tobacco. Furthermore, the research found that brain changes after prolonged use of online game playing might be comparable to those changes in early stages of addiction, particularly in relation to cravings; therefore, this study further supports the notion of the biological influence of addiction.

Although this study produced significant findings, there are some limitations. First, the extent of game playing may not accurately reflect gaming addictions; therefore, the results of the changes in the brain may not show the precise response of a gaming addict. Secondly, the sample population was a convenient sample. Lastly, this study examined one aspect of addiction, which limited the findings to focus solely on the

biological element of this disorder; therefore, supporting the need to understand this phenomenon through a biopsychsocial lens.

Lo et al. (2005) stated that, "parents, educators, and social scientists are therefore saying that online games are sources of social problems" (p. 15). Therefore, the researchers conducted a quantitative study in an attempt to understand the effects online video game addiction has on interpersonal relationships and social anxiety. As such, structured questionnaires were distributed to 174 students in Taiwan. Results supported the researchers' first hypothesis that heavy online gamers will have less satisfying interpersonal relationships; therefore, as amount of time spent playing games increases, interpersonal relationship satisfaction decreases. Similarly, results found by a quantitative study conducted by Chory and Banfield (2009) revealed that video game and TV addictions were negatively associated with relationship maintenance.

A qualitative study conducted by Griffiths (2010) was an effort to understand how the role of context is used to distinguish between excessive and addictive use of video games. As such, case studies were conducted on two male video game users who claimed to play video games excessively. One of the themes that emerged from the case studies was the notion that gaming addiction is not merely the amount of time a user plays video game; therefore, gaming addiction should be defined by the way it negatively affects daily functioning. Furthermore, if there are no negative consequences of the excessive behavior than it cannot be considered an addiction. A notable limitation of this study is generalizability of the case study results to larger populations.

In a study of 600 middle- and high-school students in South Korea, Jeong and Kim (2011) researched if certain factors, such as social self-efficacy, attitudes towards

gaming, and activities with parents, influenced the extent of video game addiction. The study found that social activities with parents and parental attitude toward gaming were negatively associated with the extent of video game addiction and had a positive relationship with social self-efficacy in the online world. Therefore, the research suggests that those who feel socially more comfortable in online realities, do not participate in social activities with parents, and have parents with positive feeling towards video games have a higher probability of video game addiction.

In a study researching the psychological aspect of gaming addiction, Mehroof and Griffiths (2010) looked at a sample of 123 university students in the United Kingdom to determine the association between personality traits and online gaming addiction,. A linear regression indicated that neuroticism, sensation seeking, trait anxiety, state anxiety, and aggression are related to online gaming addiction. Therefore, the researchers concluded that online gaming addiction is connected with certain personality traits that may play a significant role in the onset of addiction.

There were noteworthy limitations to this study. First, the survey was based on self-report. Secondly, the sample consisted of only college students from one university in the United Kingdom. Finally, the sample size was small. Although this study has limitations, it shows evidence that personality traits are associated with online gaming addiction. As such, the relationship between personality traits and online gaming should continue to be explored to further understand the depths of these relationships.

Mobile devices. Mobile devices are yet another subtype of technology addiction. Mobile devices include, but are not limited to mobile phones, iPads, iPods, Nooks, and Kindles. To date, literature is limited to research in one specific area, mobile phones.

Leung (2008) surveyed 402 teenagers in Hong Kong. The researcher examined symptoms related to mobile phone addiction. The findings suggested that inability to control craving, feeling anxious or lost, withdrawal and escape, and productivity loss significantly correlated to mobile phone addiction. Furthermore, the research found that self-esteem and sensation seeking were significant factors of mobile phone addiction; therefore, the lower one score on self-esteem and the higher one score on sensation seeking results in the higher the probability of mobile phone addiction.

Similarly, in a study of 595 high school students in Korea, Ha, Chin, Park, Ryu, and Yu (2008) researched potential psychological symptoms related to excessive mobile phone use. The study found associations between excessive mobile phone use and challenges of controlling use as well as identification with the mobile phone. This research suggested that lower levels of self-esteem and higher levels of depression and anxiety are related to higher levels of mobile phone use. A major limitation of this study is representativeness of the sample, there was low representation of female participants (7.23%). Furthermore, a critique of both studies is that the researchers only looked at the psychological consequences of addiction and do not address the social and biological factors that contribute to the onset of addiction.

In a more recent survey, Chung (2011) examined predictive relationships with mobile phone and interpersonal solidarity. The researcher reports that interpersonal solidarity is "a feeling of closeness with others through shared sentiments, similarities, and intimate behaviors" (p. 1350). Findings revealed that sustaining interpersonal solidarity correlated with mobile phone addiction. The convenience sampling method of this study limited the generalizability of its findings.

The following two studies also researched the issues associated with mobile phone addiction; however, the researchers focused specifically on texting behavior. As a way to measure text-message dependency, Igarashi, Motoyoshi, Takai, and Yoshida (2005) developed the Self-perception of Text-message Dependency Scale (STDS). The researchers conducted an exploratory factor analysis (EFA) of the STDS items. The results of the analysis produced three-factors of text-message dependency: relationship maintenance, excessive use, and emotional reaction.

Igarashi et al. (2008) use this scale to conduct a quantitative study examining self-perception and text-message addiction in relation to personality factors. This research suggested that psychological/ behavioral symptoms were influenced by one's self-perception of text-messaging dependency. This study only sampled Japanese students; therefore, the generalizability of the results to other cultural populations and age groups is limited.

Likewise, Lu et al. (2011) used the STDS to examine health concerns related to mobile phone and Internet use in Japanese employees. Regarding light text-messaging addiction, findings revealed a prevalence of 3.1% for men and 5.4% for women. Furthermore, the research found that depression and anxiety were related to text-messaging addiction. Results of this study should be interpreted with caution as causality of depression and anxiety as it relates to Internet and text-messaging addiction need to be further explained.

Television. Empirical research on television addiction dates back decades (Smith, 1986). Smith (1986) defines television addiction as difficulty to stop use, to some degree involuntary heavy use of television viewing that replaces healthier activities. Smith

conducted a qualitative study of self-identified television addicts to create the TV Addiction Scale. Of the 491 participants in the researcher's study, only 11 self-identified as television addicted.

Conversely, Anderson et al. (1996) reanalyzed Smith's (1986) original data. The researchers found that for women, television addiction was related to resent life stressors. This research suggests that television use may be used as a coping mechanism for stress; therefore, self-perception of television addiction may increase. Finn (1992) support these finding by stating that television addiction in relation to the disease model lacks the support of empirical research; therefore, there is a need for empirically based research to further understand the extend of television addiction.

Similarly, McIlwraith (1990) noted a discrepancy in the way Smith (1986) asked the TV Addiction Scale questions. The researcher found that when questions were asked independently, a higher sample of participants self-reported as television addicted (12.5%). Furthermore, the researcher found that unhappiness, anxiousness, and withdrawnness were associated with television addiction. However, like other research conducted on a subtype of technology addiction, the study only focuses on one aspect (i.e., psychological) of the complex disorder of addiction.

There are only a few current empirical based studies that exists which focus on television addiction. In an effort to recreate a valid and reliable measure for television addiction, Horvath (2004) conducted two quantitative studies. First, the researcher conducted a pilot study to examine the validity of a TV addiction measure. Second, the researcher conducted a study that simulated components of the pilot study that included a

measure for social desirability. The researcher reported that two reliable TV addiction measures emerged.

There are several limitations to this study. First, although the researcher reported the sample being diverse, there were only a limited number of multicultural differences reported. Second, participant bias may have occurred, which the researcher also noted by stating, "some participants made verbal remarks that suggested they assumed the researcher was against television viewing" (Horvath, 2004, p. 394).

In a quantitative study examining television and video gaming addiction in relation to relationship maintenance strategy among 163 undergraduate students, Chory and Banfield (2009) found that media addictions (television and video game) were negative predictors for relationship maintenance. Therefore, those who had television or video gaming addiction were less likely to maintain interpersonal relationships.

There are several limitations to this study. However, the major limitation was that participants were recruited from one university. As such, due to the lack of diversity of this sample, the generalizability of the results is limited the sample is limited.

GPS. To date, GPS addiction has not been researched. Therefore, an area for research would be to examine psychological/ behavioral symptoms related to addictive tendencies for using GPS. Whichever direction future research takes, more valuable information is needed to develop a working knowledge of GPS addiction.

Summary

An extensive review of literature related to addiction, process addiction, technology addiction, and the subtypes of technology addiction were presented in Chapter Two. Convenience sampling of university students was a major limitation

common in most studies. In addition, the majority of studies were conducted outside of the United States. Comparing studies conducted in the United States (US) to other countries, research on the topic of Internet addiction in US seems to lack scientifically rigorous studies compared to other countries (Block, 2007). Block (2008) believes this is due to the isolated use of internet and the prevalence of comorbidity with other disorders in the US. The author also speculates that therapist in other countries are more inclined than US therapists to initially assess for this disorder.

Nevertheless, the analysis of the subtypes indicated a relatively high prevalence for technology-based addictions as well as the increased possibility of disruptions in daily functioning. Additionally, the review provides awareness that current literature persistently separates related technology addictions.

Conclusion

In general, this review indicates the need to understand the essence of technology addiction to help recognize the magnitude of this phenomenon. First and foremost, the review focused specifically on the continuous debate within the multidisciplinary field of addiction for a clear and cohesive definition of addiction. Consequently, the lack of consistency creates challenges with defining process addiction, which ultimately generate confusion regarding the essence of technology addiction. Although definitions do exist within the literature for technology addiction, these definitions were built upon research conducted on one subtype of the broader technology addiction umbrella or lack empirical support.

In addiction literature, this study was the first to first to explore phenomenological aspects of the biopsychosocial factors of at-risk technology use grounded in empirically

based research. Through this review, the hope was to address the gap in literature by developing and understanding of the essence of at-risk technology use, based on empirical research, which extend across all subtypes through the examination of experiences of self-identified at-risk technology users.

CHAPTER 3: METHODOLOGY

Introduction

The purpose of this study was to increase the understanding of the experiences of people who are at-risk of becoming addicted to technology. Conceptualizing this phenomenon may aid professionals in identifying co-occurring addictions, which may help better serve the addiction population. To address this emerging phenomenon, the research question for this study was: what are the lived technology-related biopsychosocial experiences of individuals who have self-identified as at-risk technology users?

Two sections of the methodology are presented in this chapter. The first section describes the subjective statement. The second section provides an explanation of the methods used. The methods section is divided into eight subsections. The first subsection describes the research design. The second subsection clarifies the research questions. The third subsection specifies the sampling procedures. The fourth subsection describes the measures. The fifth subsection provides a description of data collection procedures. The sixth subsection describes data analysis. The seventh subsection describes the risk, benefits, and ethical considerations. The eighth subsection provides an explanation of the verification procedure. Lastly, a summary concludes the chapter.

Subjective Statement

Various experiences in my life led to my interest in technology addiction. During my childhood, I witnessed the impact of addiction on the family unit. It was not until the age of 12, that I began to fully understand the devastation of addiction, particularly alcohol dependence. At this fundamental point in my development, I began to realize how my family was affected by the behaviors of many significant individuals in my life who were alcoholics. There were many times that I was subject to events involving individuals' being out of control and soon began to feel the suffering from those around me, including myself. These experiences continued throughout my life and into my career as a counselor.

Prior to entering the counseling program, my intention was to work strictly with women and children. I vowed that I would stay as far away from addictions treatment as I possibly could because it was essentially vulnerable for me. However, I had many challenges obtaining my first practicum site as a counselor-in-training. Therefore, my professor had to place me in the only available site at the time, which was a treatment center for chemically dependent men. During this process, I was confronted with my many biases about addicts as well as challenged with reconstructing my counselor identity. Through comprehensive supervision and training, I began the restructuring process.

Nonetheless, I fell in love with the addictions field and was met with respect and compassion by these individuals. Additionally, I am able to see progress my clients made towards individualized goals. After discovering a biopsychosocial lens of addiction, I believe that there are many elements that contribute to the process of addiction. In my

experience working with substance abuse clients, I have found that biological aspects such as progressiveness of the disease, triggers, and cravings are all contributors to the development of addiction. Psychological features such as anxiety and depression are also significant to the progression of addiction. Furthermore, as suggested by the biopsychosocial lens of addiction, I have found that sociological aspects of addiction such as changes in interpersonal relationships and neglecting responsibilities are equal factors contributing to the progression of addiction as biological and psychological elements. Therefore, this impacts my theoretical viewpoint of the proposed study.

Since the onset of becoming a substance abuse counselor, I have tried to venture off to pursue other populations such as therapeutic work with children, but have come to realize that my passion lies within addictions counseling. However, my work with children guided me to technology addiction. Countless times I have observed children who were in my waiting room that were accompanied by their parents, who were constantly looking at their iPhones and never once looked up to communicate with their children. This directed my curiosity for the addictive tendencies of technology use.

From the first observation of this occurrence, I have been mindful of other instances of technology addiction. On one occasion, I was at a restaurant and observed a male and a female at a table near me who were on their phones for the length of their visit, even during their meal. It was not until they paid and left the facility that they put their phones down. I believe the situation that further encouraged my decision to understand technology addiction was when I experienced a police officer directing traffic who was texting while performing his duties.

Needless to say, technology use and misuse is all around us. Reflecting on the effects of technology within my own life, I find that I have used technology more often as it provides easy accessibility and enhances the productivity in the many roles I fill. However, I am still in the exploration stage of the impact this phenomenon has on my own life. Therefore, it was my goal to begin to understand the true essence of the addiction to technologies by examining the lived experiences of individuals who are at-risk.

Methods

Research Design

This qualitative research study used phenomenological methods to understand the essence of the experience of at-risk technology use as described by individuals who self-identify as at-risk, via the screening tool of the TECH, which is to be explained later in this chapter. Elemental underpinnings of phenomenology date back to Edmund H. Husserl (1859-1938) who believed that the essence of meaning-making develops from our conscious experiences within the world (Patton, 2002).

Similarly, Creswell (1998) describes phenomenological studies as seeking to understand a phenomenon through the meaning-making systems or "essence" of individuals lived experiences. Therefore, the core belief is that there is a fundamental nature to individuals' meaning-making processes. Further supporting this notion, Patton (2002) states that such studies "focus on exploring how human beings make sense of experiences and transforms experience into consciousness, both individually and as shared meaning" (p. 104). Being conscious of the experience is the only authentic way to be aware of what one has undergone (Patton, 2002). Embracing the understanding of

phenomenology by these researchers supports the use of this research design for this study by creating an in-depth understanding of the essence of technology addiction through the experiences of those who have first-hand knowledge of the phenomenon.

A researcher is expected to undertake various essential procedures in regards to data collection for phenomenological designs. First, *epoche* is an essential component to the phenomenological procedure as it enables one to process biases and preconceptions of the phenomenon of study to limit saturation of exploring the experience as if for the first time (Moustakas, 1994). During this process, the researcher examines and surrenders his or her own personal judgments or preconceptions of the phenomenon in order to give voice to the experiences of the participants. Therefore, the transformation the researcher experiences through *epoche* aids the researcher to develop transparency toward the phenomenon allowing him or her to fully focus on the participants' accounts of their experiences.

Secondly, *eidetic reduction* is a necessary process subsequent to *epoche*. During this procedure, the researcher uses insightful analysis to expound on the meaning of the area of interest. This allows the researcher to create "a concrete example of the phenomenon of which one wishes to grasp the essence and imaginatively varies it in every possible way in order to distinguish essential features from those that are accidental or incidental" (Wertz, 2005, p. 168). Consequently, through the *eidetic reduction* process, themes start to transpire creating an authentic description and understanding of the phenomenon being studied (Van Manen, 1990).

Interviews and participant observations are also essential to phenomenological studies as they provided rich description of the experiences of the individual who have

first-hand knowledge about the phenomenon. It is vital that the individual has already encountered the phenomenon and recalls the occurrence in order to be fully conscious of the experience (Patton, 2002). The knowledge acquired from the interview process provides meaningful accounts of the phenomenon of interest; therefore, allowing the researcher to interpret the meaning-making system of these individuals in order to create an accurate description and understanding of the subject matter.

Phenomenological studies have been utilized throughout the mental health field to create sound studies contributing to the body of knowledge for the field (Creswell, 1998; Wertz, 2005). This methodological approach is appropriate for the research question for this study as it seeks to understand the essence of individuals' technology-related biopsychosocial experiences. Therefore, the theoretical underpinning of this study is the belief that the reported accounts by individuals who self-identify as at-risk technology users will provide an in-depth understanding of how technology affects these individuals.

Sampling

In phenomenological research, sampling occurs to identify participants who can provide detailed descriptions of the phenomenon of interest. Convenience sampling seeks to find participants that are convenient and easily accessible to the researcher (Patton, 2002). This form of sampling was utilized for this study as it provides the researcher with participants that were in close proximity to the researcher, so that face-to-face interviews could be conducted and anonymity could be assured. The second strategy for sampling included purposeful sampling. The intention of this sampling method was to produce participants that had experienced the phenomenon (Patton, 2002). Patton (2002) notes that participants are intentionally selected in order to meet the purpose of the research.

Initially, eight participants were selected for this study. However, 12 participants were recruited by the end of data collection. The process for this selection is discussed later in the chapter. The purpose of this study was to understand the technology-related biopsychosocial experiences of individuals who have self-identified as at-risk technology users. Therefore, this study purposely recruited participants who met the criteria for at-risk technology users. In order to meet this criterion, participants responded "yes" to at least two questions on the TECH questionnaire (Appendix D). The acronym TECH was adapted from the CAGE questionnaire developed by Ewing (1984). The screening tool represents four symptoms used to alert the researcher of an at-risk technology user: ticked off, eye openers, cutting down, and harm.

Inclusion criteria for participants were: a) responding yes to at least one question on the TECH questionnaire, and b) individuals who are English speaking. Exclusion criteria for participants were: a) younger than 18 years-old and b) responding no to all questions on the TECH questionnaire.

Participation in the study was voluntary. The researcher solicited participation in the study at a university in a southeastern state by handing out and posting flyers (Appendix F). A letter of explanation for the study (Appendix B) and an informed consent form (Appendix A) was given to all participants prior to admission in the study. The letter of explanation provided participants with detailed information regarding the purpose of the study. The informed consent form discussed eligible criteria, estimated time of interview length as well as risks and benefits of participation in a human subjects study.

Participants

Participants in this research are 12 self-identified at-risk technology users. It was necessary to select individuals that met this criterion as the purpose of this study sought to gain an in-depth understanding of their unique experiences with technology. Participants exhibited heterogeneity regarding race/ethnicity (3 African American, 2 Native American, 7 White/Caucasian) and gender (8 female, 4 male). Individuals were between the ages of 22 and 55 years old. Socioeconomic status for individuals was categorized as follows: less than $20,000 ($n$=4), between $20,001 and $30,000 ($n$=5), and greater than $30,001 ($n$=3).

Measures

The TECH questionnaire was used as a screening tool to identify at-risk technology users. The questionnaire was adapted from the CAGE (cut back, annoyed, guilty, and eye opener) questionnaire created by Ewing (1984). The CAGE has been accepted as a standard screening tool in the addiction field with high test-retest reliability (0.80-0.95) (Dhalla & Kopec, 2007). Hays, Merz, and Nicholas (1995) reported an internal consistency estimate of .69.

The acronym TECH represents four questions used to alert the researcher of an at-risk technology user: Ticked off (Have you ever been ticked off by people complaining about the amount of time you use (technology of choice)?; Eye openers (Do you use (technology of choice) to get your day started?); Cutting down (Have you ever felt the need to cut down on the amount of time you use (technology of choice)?; and Harm (Do you often worry that you have caused harm to yourself or others because of your

(technology of choice) use?). Two affirming response indicates at-risk of technology addiction.

After completing the TECH questionnaire, participants completed the demographic questionnaire (Appendix C). The method for conducting interviews was face-to-face and digitally recorded. The interviews were semi-structured with open-ended questions being the primary focus and a few probing questions to elicit more meaning from the interviewee (Appendix E).

Data Collections Procedures

In qualitative research, the primary instrument is the researcher (Creswell, 1988). Therefore, the researcher used personal characteristics, critical thinking skills, and observations throughout data collection and analysis. Data collection included five steps. The first component consisted of the researcher identifying potential participants who were interested in the study by soliciting for potential participants at a university in a southeastern state by posting and handing out flyers on campus to contact the researcher.

During the second component of data collection, the researcher contacted potential participants and provide a brief explanation about the research study. At this time, the TECH questionnaire was used to determine eligibility. During the initial screening survey process, the researcher asked the participants to elaborate their responses of the TECH to gain a better understanding of their experiences with technology.

When the participant was deemed qualified to participate by answering "yes" to at least two questions on the TECH, the third component comprised of the researcher

sending the participant two forms (informed consent and demographic questionnaire) via email. Participants were asked to return the forms via email to the researcher.

Once the researcher received the forms, the fourth component of data collection consisted of identifying a convenient time and day for both the participant and researcher to conduct the interview. The final component included conducting the interviews. Interviews took place in-person at a place convenient to the interviewee and interviewer. The interview were semi-structured with open-ended questions being the primary focus and a few probing questions to elicit more meaning from the interviewee. The questions were utilized to build rapport with the interviewee, understand the description of the technological devices used, and to gain greater awareness of the technological experiences of the interviewee. With the participants consent, the interviews were video recorded. Observations were taken of the participants' nonverbal behavior during the interview process and were noted utilizing a reflective journal. Interviews were 45-90 minutes in length.

Data Analysis

Once data collection was complete, the researcher began data analysis. The first step of data analysis was assigning de-identifying codes to participants and transcribing the interview. The interviews were transcribed and checked for accuracy by the researcher. All transcripts were sent to the independent coder. Subsequently, the data was analyzed using phenomenological reduction to identify the essence of individuals' experiences with technological devices (Moustakas, 1994). Moustakas (1994) identifies three types of methods for analyzing data: horizonalization, imaginative variation, and synthesis of meanings and essences. First, the researcher and independent coder used

horizonalization to list significant statements from the data. During horizonalization, the researcher and independent coder separately examined the first interview line by line to condense the data into broad meaning units (Creswell, 1998; Moustakas, 1994). This process created textual descriptions of the participant's experience, which provided a rich narrative of what happened in regards to the emerging phenomenon (Moustakas, 1994).

Second, imaginative variation was performed to further condense the data. After reviewing the identified codes, the researcher and independent coder co-created a collection of emerging patterns that described the essence of the participant's experience. By utilizing imaginative variation, the researcher synthesized the themes to develop key concepts within the data to describe the occurrence of the phenomenon (Moustakas, 1994). The researcher and independent coder repeated the first two steps of data analysis until no further themes emerged and data saturation was attained.

Lastly, synthesis of meanings and essences were drawn during data analysis. During this final stage of analysis, integration of the essential themes created a "unified statement of the experience of the phenomenon as a whole" (Moustakas, 1994, p. 100). At this time, since a major theme was the impact of technology use on relationship, the sample was homogenous in gender, and research has found that females place greater value on relationships than males (Babin, Griffin, Borges, & Boles, 2013; Kwang, Crockett, Sanchez, & Swann, 2013), the research actively recruited four male participants to create a heterogeneous gender sample. All five steps of data collection and three steps of data analysis were followed for the four remaining participants. At this time, the researcher generated major findings from the identified patterns by analyzing the participants' responses to discover the most significant findings. The produced statement

communicated a fundamental understanding of the phenomenological essence of at-risk technology users (Polkinghorne, 1989).

Verification Procedures

Several measures were taken to enhance the quality of the study as well as to provide verification of the findings. First, an independent coder was used to analysis the data. The researcher and independent coder separately analysed the data and then collaborated on the findings to strengthen the credibility of the study (Patton, 2002). Second, member checking was implemented to enhance internal validity and credibility (Merriam, 2001). During this process, the research provided the participants with the findings of the study to verify the accuracy of the description of their experiences of the phenomenon.

Third, peer review was utilized in order to externally review the data analysis process (Glesne, 2006). Two peer reviewers were asked to assess the methodology of the study. The peers and participants feedback of the findings were incorporated into the results of the study.

Risks, Benefits, and Ethical Considerations

The benefits of participation in this human subject study included contributing to the current knowledge, characteristics, and views regarding current issues in the addictions profession. Technology addiction is a popular topic addressed in media (Carbonell et al., 2009). However, there is a lack of empirical research investigating the essence of this phenomenon. Additionally, I do not agree with the current definition of technology addiction because it is not all-inclusive. Therefore, this study served to benefit humankind by exploring the core components of a potentially destructive behavior.

The risk for participating in this study was potential self- identification with dependency of technology. This occurred with one participant and the researcher provided the participant with resources and referred to counseling.

Summary

This chapter presented a detailed description of phenomenological research design adopted for this study as well as the rational for utilizing phenomenology to explore the essences of technology addition. The theoretical underpinnings of phenomenology maintain the understanding that the meaning-making system of those who have experience the phenomenon can provide a rich description of the area of interest through analysis of the experiences. The chapter was divided into two sections that provided descriptive information regarding the subjective statement and methods. The methods sections was divided into eight sections that explicated the research design, research question, sampling procedures, measures, data collection procedures, data analysis, risks, benefits, and ethical considerations, and verification procedures. Lastly, ethical obligations and compliance with human subjects research were defined.

CHAPTER 4: FINDINGS AND INTERPRETATIONS

The purpose of this study was to examine the essence of at-risk users' experiences of technology. Although all the participants maintained biopsychosocial facets of their technology use, the complete detailed experience of at-risk technology users had not been fully explored in the literature (Bowen & Firestone, 2011; Carbonell et al., 2009). This study was designed to contribute to the gap of current knowledge about the phenomenon. In this chapter, I presented the findings of this phenomenological examination of at-risk technology users.

Phenomenology's focus is to provide a rich and thorough description of those who have firsthand experience of a phenomenon (Creswell, 1998). Therefore, two participants' stories are first presented to portray the overarching tone of the 12 participants of this study: Jamie and Pat. After Jamie and Pat's stories are presented, findings from data analysis of all participants of the study will be explored. To convey the lived experiences of these two individuals, each story, which is a composite of the participant's interview, is told in first person. Various components of oral communication (i.e., hesitations and filler words such as um) as well as gender bias wording were eliminated from the stories in order to craft fluid memoirs. Additionally, since a major theme of this study is the finding that the individuals' lived experience cut across all technologies, the word "technology" is substituted for the specific technological devices.

Jamie's Story

Regarding my experience with my technology, there are too many things to talk about because it had such an impact on me growing up. I've had technology since I was little, like 1986, which has been a constant throughout my entire life. When I first started using technology I thought I was cool because everyone was getting one. It was like this fad. It was cool because with it I could pretend to be this character and make the character move. I played out a fantasy of saving the princess or defeating the enemy. That was cool because it was something I could actually do.

It's another escape for me because I can be somebody else or I can be somewhere else. I can be in another world and immerse myself in that world and be creative, solve puzzles, and experience all new things that I can't do in normal life. I think it also made me playful. I think it's made me more imaginative. I think it's made me more creative and have more ideas, a fun kind of thing. It's hard to tell what it would not have done because I've never not had one. Now it's just become a part of who I am, it's part of my being.

It's also connected me to people. I was the king of social networking. Back in the day, I had 1,000 or 1,500 friends. It was amazing using that, I felt like it opened my eyes up to the world. There were so many people that I met online that I am connected to now. I think it was good for me because I grew up in one city and I stayed there. My family wasn't too rich, so we didn't get to travel tons so I would say I was sort of sheltered in a way to that area.

In the beginning, I didn't use it that much because we had a very limited plan. However, my use got incrementally more over time. As compared to now, it's so much

more because there are just so many different things you can use with so many different functions that everything is like micro-sized into this little device. So now it's everything, so I use it more now, because it plays so many different functions.

It's been such a useful tool to me and beneficial to my life because I can always contact my family. I played with my sister all the time and she still loves it. It's something that me and my sister can connect and talk about. So it's made me closer to my sister. I'm very close to my family, so I need it to talk to them. I need to text my Mom, my sister, or my family to keep in touch to see how their day is going and let them know how my day is going.

Also, I don't have to remember phone numbers with it as well. Before technology, I had to remember all phone numbers. I had to write them on a piece of paper to dial them up on the land line or make a party call. I am more connected to people and to things than I have been before. I feel like I am more efficient with my technology than I have been in the past because I can do everything quicker than later. So, I feel like I am more responsive than other people might be who don't have access to their technology.

If I couldn't use my technology, I think people would be trying to contact me. I think my Mom would contact the police. Seriously, it's happened to me before. One time, I wasn't available and they thought something happened to me and my family contacted the cops. They were so worried. Luckily, I got to my technology in time, but it stressed me out because I was just thinking about them going through that experience and I didn't like that.

If I lost my technology, I would feel naked and helpless. It has become a part of me in a way because of the fact that I don't know how I would keep in contact with

people unless I still had technology. I thought to myself, "How can I keep in touch with anybody?" I would be taking a step back in terms of communication and trying to figure it out. Would I have to send somebody something in the mail or do I have to send a pigeon or something else to contact them? This was silly to me when I think about it because there was a time before technology and so I think to myself, "well, I lived without technology before, so what's the big deal now? What's the difference there?" I think it is because it plays such an important role in my life.

So, if I couldn't use my technology for a period of time, I would feel helpless at first and then I would be forced to adapt. I would try to figure out how to deal with it, try to figure out how to do things that I did before without using those devices. I think that would be a challenge for me. I would feel challenged, even tested. I am kind of stubborn, so I would try to not let it affect me by saying, "I can figure this out." But I would feel helpless at first. I would feel distressed, but I would be forced and challenged to figure out another way to do it; to adapt to it.

If I had to stop using my technology altogether, I don't know if I could stop using it altogether because it's a part of me. I have so many memories associated with it and just everything that I've experienced with it. It wasn't real per say, but to me it was real emotionally and spiritually.

So, I don't know if I could get rid of it altogether, but sometimes I've been forced to get rid of technology because systems die and I'll lose that. But I'm a master of reconnecting with my nostalgia, so I've been able to find another way to get a hold of it. It's hard not to use my technology because there are so many different things that I use it

for. I feel like now it's like an old friend. It's like, "old friend I need you for things. Don't go too far away just in case I need you."

So, technology has been helpful because it's allowed me to do so many different things on one single device, which is very convenient because I have that access with my hand. I don't have to go home or listen to a voicemail or messages on an answering machine to get people, to find out who called me, or I don't have to wait until I get to a computer to find out that I have an important email.

But, I would say that using my technology, also having this access, makes me a little more anxious about things. Because of the fact that it's all there and I feel like I have to constantly check my technology to see if I have an email or if I have a message from somebody. There is always something that needs to be done and part of that is adulthood. But some of that has to do with the technology because it's a constant reminder of things I could be looking at. It would still exist even if the technology wasn't there, but it's a constant reminder and it's very tempting to use because everything is so easily accessed through technology.

In the morning, I usually check my technology. Sometimes I feel like I'm too attached to my technology. My Mother has said before, "you are too connected to your technology." And I was like, "yeah I am," but I kind of like brush it off because it's just a part of me.

But, I think it's opened me up or left me vulnerable in some circumstances like social networking because previously everything was public, so any situation such as if I got in a fight with somebody or broke up with someone, they still had access to my information and would write a post about me.

There has also been various times where I think that I need to cut down on my use of technology. I have shut everything down as it will force me not to think about the technology. I still think about it because I think about, "I need to check my email, I need to check my email." But by the end of the day I will need to check it or the next day I will be like I need to check it. Also, I felt like it has hurt my eyes before. I have to be like, "ok, I just need to step away from this technology." I just need to get away from it for like 15 minutes and then go to my other technology device, just to de-stress.

However, I think that I have been so sucked into technology that I don't know all of the affects that has been happening. I see people on the road texting while they are driving. I worry about the affects it will have. I have been guilty of it before and I think to myself, "well, I can get away with it." I try to text whenever I am at a stop light or read. But if I would only put my phone down and be more present.

But, it's just another thing, another piece of technology that has just kind of dragged me to it. I have to connect to the technology in order to use it and I have to devote a certain amount of time to this technology. I am giving up that bit of time. Times that I am using it, I am not doing something else, and I am not interacting with somebody else or interacting with something else.

I feel like I have been shrunk to a technological device. I feel like I am stuck to technology like I have to be around that technology more than not worrying about it at all and just going out. I just have this image of me sitting at my desk at home and using my technology and just staying online for hours and hours and hours. There had been times that I wished I wasn't like that because I remember not having technology and thinking of something else to do. There are times I felt like it pulled me away from socially

interacting with my family when I was home. If I didn't have technology I would be more out there, in the moment, just experiencing things than if I had one. But then again, if I didn't have technology or those kinds of things, I wouldn't have been expanded so broadly. So there's give and take.

Pat's Story

When I first got technology, I used it for only emergencies; compared to now I am on it constantly. I went from having not such cool technology to having one of the coolest technologies out there. So I am not embarrassed to pull my technology out and use it.

Also, when I first got technology, I felt like a little kid opening up a present on Christmas morning. There were so many new things to play with and set up and I like doing stuff like that. It was fun for me to get it. It was new. Compared to now I still play with my technology and I use it just as much but it is not exciting. But now, I couldn't see myself not having it. I see that as a necessity just like having heat in the house.

I use all of my technology on a daily basis. The first thing I do in the morning is check the weather on my technology. I will get on different websites and social networking sites in the morning. Then I will send a couple text messages out in the morning. I will look at the news in the morning to let me know what is going on. And I will use my technology at work to get my days started to look at my reports and do my tasks.

If I am bored throughout the day, I will get back on my technology, even if I am not looking for anything, I will just like flip around and see if there is any new updates or play on it. I feel like I always have to have it in my hand if I am bored. After I use my technology, I don't feel bored anymore. I feel entertained. I feel pretty happy.

If I am watching technology, I am not bored. I don't have a whole lot of other activities, so it keeps me busy; it keeps me entertained. It not only entertains me, but I think it can bring my family together, social interaction, watching movies together. It is fun to have a date night and watch a movie together so it can make us closer. During dinner, I have to be on my technology as it makes eating more enjoyable. Then at night time when I am getting ready to go to bed, I am on one device and then I get on another technology device. I have to turn the technology on even if I am not using it, if I am folding clothes or washing dishes, just having it on makes me feel like there is someone else in the room and I do not feel as lonely.

Since they have come out with other technologies, certain technologies are not necessarily needed as much. I think having new technologies come out, keeps peoples' interest in buying the new technology. I first bought my technology. They had only been on the market a couple of years and I paid almost $1400 for it and now for $1400 I can get something twice as big. I feel like if I had waited, I could have gotten a lot more for my money, but I don't want to wait, I want to get the new technology.

I use it constantly, taking pictures, everything I do has something to do with it. I send a lot of text messages and make a lot of phone calls. I can keep in contact with my family members when I actually do not have to get on technology and call them. Just sending someone a quick text is a lot easier than talking to them. Also, seeing people's pictures that they put on technology allows me to I get to see them and go into people's lives more. For example, being able to see what famous people that I really admire are doing, what they are eating, places they go, and how they feel about certain subjects. I get to take a look at their lives and see how they live on a daily basis too.

I am able to get the information I need in a quick and timely fashion that has definitely impacted my education. So, my technology has made things a lot easier for me. It also makes me feel safer. When I am on my way to work, if I forget my technology, I have to turn around and go back home. Just the thought, "What if my partner needs to get a hold of me? What if my car breaks down?" So, having it in my pocket makes me feel more comfortable.

There has been a couple times where technology has fell out of my pocket and when I realized it was not there, I definitely had my heart race and the panic feeling of not having my technology.

If I couldn't use my technology for a day, I would feel really sad. Like I said, everything I do, my technology is involved in somehow or some way. If I could not use my technology for a week, I would try to find other means of entertainment. But, I would feel like I was out of the loop with family stuff, personal and business. I would be very bored if I could not use my technology for a week. If I had to stop using my technology all together, there would be no reason for me to exist. It would be very bad. I don't know what I would do.

But, I feel like I need to cut down on the amount of time looking at the stuff that entertains me when I could be doing something else, whether it is family related or I have chores around the house. My partner might say that I am on my technology too much. It is taking time away from doing family things. I may want to look at what is on my technology instead. There are a lot of websites that my partner does not care for that I get on, such as a site that has adult content on it. It is not to the point where it is going to ruin my relationship, but it is definitely made my partner feel not as important sometimes.

Also, I had people that wanted to get a hold of me and talk to me that I really didn't need to talk to. So it forced me to interact with them as maybe in person I might not have. When I am on technology, I feel like that maybe it is not reality, so I think I can get away with more on technology than real life. I felt like in the past I would do things on technology and be more of an extravert than I would in real life.

Lastly, when I was younger, technology negatively impacted my life, instead of being outside playing I would be inside on technology. Not being as socially interactive playing with other kids in the neighborhood, I would have rather been on technology. So in all, there are times that technology can be really entertaining, but then there are times that it can be negative.

Findings

Of the 17 initial themes identified by the researcher and independent coder, three major themes and two variant themes emerged (see Appendix G for Table 1 of all themes). The three major themes that emerged were common among all participants and represented the lived experiences of individuals who self-identified as at-risk technology users. These common themes were:

1. Cultural Necessity to Use Technology
    a. External World
    b. Internal World
2. Motivating Technology Use
    a. Desire for Social Connections
    b. Enmeshment of Functionality: Multiple modalities
    c. Convenience of Technology

d. Awareness of Personal Benefit Using Technology

3. Consequences of Using Technology

    a. Awareness of Time Consuming: Urges to use technology

    b. Erosion of Relationships

    c. Inability to Function without Technology: Wouldn't know what to do

    d. Emotional and Physical Disturbances: It would be earth shattering

Two variant themes also emerged. These themes were not universal among all participants, but were common among the majority of the individuals of this study who self-identified as at-risk for technology use. The variant themes identified were:

1. Influence of Continued and Advanced Technology Use

    a. Progression of Use

    b. Progression of Feeling

2. Devoid of Technology: Awareness of Personal Benefit

The themes will now be discussed individually with inclusion of quotes from the participants. Personal details have been altered to maintain confidentiality.

Major Themes

Cultural Necessity to Use Technology

Cultural needs for technology was the second most coded common theme. All 12 participants in the study indicated that cultural necessity, whether external or internal, was an important factor in their lived experience with technology. Participants gave 75 responses that were coded to this theme. This theme captured participants' illustrations of societal needs as well as individual needs to utilize technology.

Two clusters were significant to this theme: external world and internal world. In participants' descriptions of this theme, the ways that culture played a role in the need to use technology both externally and internally was apparent.

External world. When describing external drives to use technology, participants shared with uniformity that the expectation from employers, family, and friend is high. Participant 1 reported, "It's like people expect you to be available 24/7." Within the expectations of societal wants, participants described emotional response. Regarding using technology for external demands, participant 4 expressed, "Then slowly in a way I almost kind of resented it in some ways. It makes my life much easier, but there are a lot of expectations placed on the fact that you have a smart phone." Participants reported feeling frustrated and resentful towards others and technology due to the demands to utilize their technology. Two participants shared about times in their lives when they have experienced external pressures from their workplace:

> I am now more likely to email someone rather than call such as another staff or faculty member just because I think that's kind of the social expectation on campus now. (Participant 11)

> Companies giving Smartphones to people. To me I think that's where the need to be connected really started because I was required for work and I got so used to it that it just became a way of life. (Participant 4)

Although participants reported feeling frustrated by the demands of their workplace to use technology, technology has made some participants more productive and effective. Participant 4 stated, "It makes me feel more efficient and more, I guess, professional because I'm able to provide a service in a more faster way," and "I'm probably just more confident in the things that I do because I'm able to respond faster and stay organized."

External pressures are also related to the symbolic meaning of owning a device, "I remember like cell phones were a big deal, if you had a cell phone it was like a status symbol," stated participant 9. Owning a technological device provided participants with a sense of belonging to an in-group. "That's just how technology has changed us… it used to be so different," expressed participant 6. The participants in this study have illustrated the demands of societal pressures to use technology in various capacities such as the workplace and society as a status symbol.

Internal world. It was interesting that although participants described an external push to use technology, participants also expressed an internal desire to consume technology. Furthermore, there were more coded responses to internal world need for technology use than external world technology use. Participants expressed feelings of anxiety and worry if they were not able to access their technological devices. These emotional states were brought on by the thought of being "out of the loop" if they did not have their device readily available. Participants expressed that if technology was not available to them, then they would internally experience a need to know what they were missing:

> There are times say when I forgot my phone where I get really anxious because I might be missing an important call or an email or something. (Participant 4)

> For me it's just kind of like feeling like uh you know what if something were to happen and I don't have a way to get in touch with somebody. You know there aren't pay phones anymore. Yeah so just a little bit of uncertainty and also wondering has anyone tried to get in touch with me? Like anyone in my family if something's happened not just necessarily if I'm in a situation but if someone else is trying to get in touch with me how would they do that if I don't have my phone with me. (Participant 6)

> I would feel worried cause I was behind the times I would feel like I was missing out on opportunities to learn about new opportunities or things I could be a part of

> or to do well on my job and feel kind of like I was in the dark on things like I was being left behind by everyone else a little bit isolated or passed over if I wasn't able to keep up. (Participant 11)

> All together I would be a mix of emotions. I would feel like I am being out of the loop of not being about to know what is going on and I would always have to hear the news from, I would always have to get information second hand. And I think that would really bother me. I want to know. I want to be able to read in black and white. (Participant 7)

Participants experienced emotional states such as anxiety and worry when they were not able to access their technology device as they feared they would miss important communication between themselves and entities such as family, friends, and the workplace. These particular emotions were also felt when their safety was at stake and they were not able to locate their technology device. Participant 1 reported, "When I got there, my car would not start again, so just like the panic and the anxiety. You know rummaging throughout my car and my purse, "Where the hell is my phone?"

Internal safety. The feeling of safety appeared to be central to many of the participants' internal world need. Individuals felt a sense of security when they possessed a technology device because it allowed them the opportunity to connect with others, particularly during an emergency situation. For example, participant 1 explained, "When I am driving I like to know that I have it and that I am safe." Participants believed that owning a technology device provided them with the ability to contact an emergency responder if something traumatic occurred while they were working alone or if their vehicle broke down. Participants articulated the need to feel safe:

> Sometimes I'm alone working and I feel like that's my only connection to the outside world. And also it's a big safety concern for me. Especially when I'm alone. (Participant 4)

> It makes me feel safer. If that sounds weird but…when I am on my way to work, if I forget my phone I have to turn around and go back home. Just the thought, "What if my wife needs to get a hold of me. What if my car breaks down?" Um…so just having it in my pocket just makes me feel more comfortable. (Participant 12)

> For me it's not necessarily not being able to like check Facebook or things like that but for me I think you know what if I was stuck somewhere and I don't like feeling like I couldn't call somebody if I needed help or like if my car broke down or something. I would feel… that aspect worries me more if don't have my phone with me then needing to check things. (Participant 6)

> There was a time that I broke down on the side of the road and I did not have my cell phone and I always have my cell phone with me so I sort of freaked about like, "I am on the side of the road." (Participant 7)

Participants linked the feeling of safety to the possession of technology. In some participants lived experiences, having technology created a sense of security as they are able to make contact if there were an emergency situation. Participant in this study believed consuming technology was important for communication purposes, which created a range of emotions from anxiety to comfort.

Internal attachment. Technology has become important to the individuals in this study who have identified as at-risk technology users as it has provided a means of communication, ability to multitask, to produce, etc. Although participants reported a need to use technology as a result of others expectations, participants have reported that their internal desire to use technology does not always correlate with their external world experiences. Participant 5 reported, "I need it more than other people need me to have it." Therefore, individuals described a strong core desire to use technology despite others expectations of their technology use. In turn, this created a sense of emotional and

physical attachment to their technology devices. Two participants described the importance of their technology use:

> Now that I use it for work and everything else I think it's just I've made it way more important in my own mind. (Participant 4)

> I think if I had to stop using my cell phone altogether I think that would be very difficult because it plays such an important role…now it's just become a part of who I am that I just, it's part of my being. (Participant 10)

The individuals in this study who are self-identified as at-risk technology users described the transition from their internal desire to utilize technology to feelings of being psychological attached to their technology devices. Participant 10 stated, "Sometimes I feel like I'm too attached to my phone…I think that I have been so sucked into technology that I don't know all of the affects that has been happening." Furthermore, participant 11 indicated that, "It has come to the point where I almost feel naked without it." Participants described their constant attachment to technology:

> I use that for texting, Facetime, Facebook, games and information on internet. Like I do a lot of searching for restaurants that people recommend. I use my map a lot to see where things are mainly like bakeries and dessert stores. All of my email comes to my phone so I have instant access to email. (Participant 3)

> I use it all the time: calendar, phone, schoolwork and social. I play games, Facebook and I don't know. It's like a mini laptop so when I'm bored and not doing anything I use it. Even when I'm not bored and I'm doing something I use it. (Participant 5)

> My phone is a smart phone, so it kind of has capacities of different levels. So, I would say the most thing that I do is um… call my family and check, I check a lot of email on my phone. I am on the go a lot and it is really nice to be able to pull up email from work or either from school and check it. Um… I do socially use it, so there is like Apps on my phone with a random game, Facebook, um… I would say that I use that the most because I set my alarm on it every night, so literally like every time I wake up I wake up to my phone. (Participant 7)

> I have to watch TV during dinner. And then at night time when I am getting ready to go to bed, I watch TV and then I get back on my phone. (Participant 12)

With some participants, attachment to the phone has been described as a pseudo relationship. For example, participant 10 expressed, "It's like old friend I need you for things don't go too far away just in case I need you." In the following quotation, the participant described the comfort technology brings:

> I have to turn the TV on even if I am not watching it, if I am folding clothes or washing dishes, just having the TV on makes me feel like there is someone else in the room and I do not feel as lonely. (Participant 12)

In that example, the technology alleviated the feeling of aloneness for the participant by creating a sense of being. The experience of internal desires to consume technology were felt among all participants as they needed to stay up-to-date with current events in their relationships, call emergency responders, and decrease the feeling of aloneness.

Motivating Technology Use

Technology has many enhanced attributes that become the motivation for use by individuals. One factor is that technology has expanded the boundaries of individuals' relationships as connecting with others has become simplified and more manageable. The multiple features of one technology devices as well as the communal functions among different devices allow individuals to connect to others such as through text, skype, and email. These functionalities provide a convenience factor, which facilitate an awareness of personal gain for technology users.

Desire for social connections. Connecting with others has become easier and more convenient due to the advancements of technology. Participant 2 described that with

technology, "I think the most important thing is just to be able to be in touch." To further elaborate, participant 3 suggests, "That's been a great enhancement being able to be socializing with everyone that I wouldn't be able to do without it." Therefore, technology has created a sense of boundless opportunity for participants to connect with their meaningful relationships. Participants are able to strengthen their existing relationships by watching television and playing video games with family and friends. One participant explained how technology enhanced family connections:

> Having a TV I think, and it not only entertains me, but I think it can bring my family together, social interaction, watching movies together. It is fun to have a date night and watching a movie together so it can make us closer. (Participant 12)

Additionally, the advancements of technology have provided the capability for individual to connect with remote individuals. These advancements included communicating through text, FaceTime, email, and social networking sites. Participant 6 believes that if technology was taken away, then "maybe some of those relationships wouldn't be as strong." Therefore, participants' use of technology is motivated by the desire to strengthen their current relationships. Participants were able to articulate how technology has permitted a new form of communication with social entities:

> I am able and more likely to stay in touch with people that I wouldn't have before I had smart phone, because it is more likely that I will communicate with them because of the things like Facebook and texting and since I don't like to talk on the phone, I will be more likely to respond to someone instead of just not picking up their call. I can stay up to date on things that are going on in other's people I know lives, or even news I am more likely to find out things quicker. (Participant 9)

> I would say it has allowed me to network more with individuals and to build up that network of friends and contacts that I've met over the years because I can access the internet on my phone and I can do those apps that I can talk to people

> overseas as well as games you can probably get on and play socially on the phone too. (Participant 10)

However, with technology come unexpected limitations, "I value and appreciate that but obviously I would rather be spending the time with them and I think with Facebook and FaceTime and just technology in general, you can feel like you are a part of that person's life without really having that connection," stated participant 1. Although an important aspect of participant technology use was to maintain their existing relationships, technology created a barrier towards the enhancement of the quality of their relationships. Participants felt a sense of incompleteness and dissatisfaction with their technology usage to build meaningful relationships as the limitation of technology created a false sense of closeness. Therefore, participants reported the desire to spend more quality time with individuals (i.e., sitting on a couch and communicating with a friend or playing outside with a child) to support meaningful relationships.

Enmeshment of functionality: multiple modalities. This major theme captured the participants lived experiences of using various technologies for the same multiple functions. All participants of this study reported using multiple devices (i.e., cell phone, video game, and computer) for identical purposes such as searching the internet and playing video games. Thus, an enmeshment of various functions of multiple technology devices was experienced among at-risk technology users, which means that users do not use a different device for each seeking behavior. In brief, participants in this study reported using different technologies for the same seeking behavior such as searching the internet. As stated by participant 9, "If I was not able to use my computer for a day, I would just use my phone." Likewise, participant 1 stated, "We could use the TV if we

did not have the laptop." Participants described multiple ways they use various technologies for the same functions:

> I would read an email on my phone, but then I would get on my laptop and type it out. (Participant 1)
>
> I prefer Microsoft office. So I bought the MAC version, so I use those the most for school work. Um…I love iMovie. I actually make full length movies family documentaries when I have free time um… so I use iMovie and iPhone quite a bit. I use safari instead of Firefox for internet services. And for social media I am only on Facebook. (Participant 2)
>
> My iPad pretty much the same as my phone I use it for iMessaging and checking my email, social media; Facebook, Twitter and I'll also… I guess I play… I play some games every once in a while I sit down and play some games on the iPad too. (Participant 4)
>
> Now my phone literally it does almost everything that my computer does. So back then, I would probably say that I made three phone calls in a day that was a lot. Now it is a cumulatively everyday two hours of my life on my phone. (Participant 7)

Participants are able to use a Smart phone, iPad, and a laptop to search the internet, access social networking sites, and play games. The preceding passages from participants described that the specific technological device is not the focus of use; rather, it is the seeking behavior of using the functions which the device has made accessible.

Convenience of technology. This major theme captured the convenience technology provided participants. When sharing their stories, each participant spoke about the ease of accessibility, quickness, and usefulness of technology. Advancements to technology changed the accessibility of devices by participants as the devices became smaller, lighter, and more cost effective. An example of the quickness of technology is that participants are able to search the internet, download photos, and connect to social networking sites faster than before with the development of high speed internet. These

developments have made technology much more useful to the participants who utilize the devices for work-related and social purposes.

With the advancements of technology, participant 2 reported the ability to "have my computer read my papers back to me. So I can actually proof them and do not have to print it out." Participants articulated how technological advancements have enhanced their lives:

> I was kind of one of those people like, "Oh I don't really need the internet on my phone it's just gonna be a hassle." But now I kind of feel like I don't know what I would do without it in some situations especially when it comes to banking and things like that. I mean it's fun to have the social part of it too but I realize I kind of think now like if I want to check my bank account I would have to go to an ATM or something like that and that's not really as convenient. So I guess it's just come to its convenience. It's really nice. (Participant 6)

> It helps me to be more productive because I don't have to wait until I get to my laptop or somewhere I can connect to the internet to be able to respond to email or take action on… particularly when I was in school or working… being able to take action quicker. (Participant 8)

> It's been helpful because it's allowed me to do so many different things on one single device. Which is very convenient and because I have that access with my hand I don't have to go home or listen to a voice mail or messages on an answering machine to get people, to find out who called me or I don't have to wait until I get a computer to find out that I have an important email. (Participant 10)

> In middle school or high school if I wanted to get in touch with a friend I would have to find a location with a land line phone, which usually meant going home and then having to look up someone's number and then calling and then hoping that they are somewhere near their landline phone. So sometimes it made getting in touch with someone a lot more difficult and labor intensive, so it has added a lot more convenience. (Participant 11)

> I definitely like the ability to record the shows that I want to watch. I think that makes me watch more TV because I am not missing my show. (Participant 12)

In the former passages, participants described the ways technology has created convenience and easier accessibility. This theme was apparent in all participants' lived experiences of technology.

Awareness of personal benefit using technology. Another finding was that the majority of participants ($n = 9$) expressed obtaining personal benefit from utilizing technology. The use of technology allows participants to gain various personal satisfactions such as knowledge, relaxation, security, etc. In their lived experiences, participants articulated how technology has provided a personal benefit:

> For me TV is a place for rest and relaxation. So just, being able to just, comfort, you know where I am just sitting there and being entertained. I watch comedies and sometimes drama, but I really if I am just relaxing, I want to watch something that is funny. (Participant 2)

> Sometimes I venture to my iPhone to get away… get away from everything. And I mean between like living in two separate places and having a relationship plus my parents plus my friends plus school it's just sometimes I don't want to deal with anybody and I just want to take my time and play on my iPhone. (Participant 3)

> I enjoy a mindless activity for me. I don't have to be actively thinking about what I am going to do next or what I am going to type next or what is my next project. It literally is something that does everything for me. It entertains me. I just have to turn the volume up and just have to press a button. That is about as much effort as I have to put into it. (Participant 7)

> I use GPS, like we're looking for a house right now we use apps that tell you what houses are for sale in the area. (Participant 8)

> I have gained a lot of knowledge through using my computer. You know it has helped me socially, definitely make money. I have been able to support myself financial, with the help of some loans, through school. It has allowed

> me to make music that I would not have been able to make otherwise that you need software to make, like electronic music, you have to have the computer. That has definitely enhanced my life. Socially, business, knowledge those are the big enhancements. (Participant 9)

In addition, using technology for a seeking behavior, such as distraction, was indicated by many participants. Participants utilized technology in their "alone time" in order to distract themselves from stressors of the day such as work and relationships. A participant described using technology as a background noise for distraction:

> Honestly I have thousands of shows on my DVR and I might watch one every couple of days, if that. The TV is more or less…sports. I watch sports but in the background I will have sports center on in the background so that way while I am on the computer doing school work I will be listening to sports on TV. (Participant 9)

The former passages illustrated how participants receive personal benefits through the utilization of technology by greater ability to gain knowledge, relax, and become distracted.

Consequences of Using Technology

The participants of this study who self-identified as at-risk technology users reported experiencing negative consequences due to their technology use. These consequences consisted of urges to use technology, inability to function without technology, erosion of relationships, and emotional and physical disturbances. Participants reported cravings to utilize technology such as when they first wake up in the morning. The constant use of technology created dissatisfaction in interpersonal relationships. Another consequence was their inability to think of other ways to complete tasks when technology was not available. The sense of helplessness led participants to

experience emotional disturbance such as feelings of anger and sadness. Physical ailments were also consequences experienced by participants of this study.

Awareness of time consuming: urges to use technology. The fourth most coded major theme was awareness of time consuming: urges to use technology. This theme spanned across all participants with a total of 62 responses. Within this theme, participants described their awareness of the amount of time they consume technology. Additionally, accounts of urges to use technology were recalled.

When analyzing across participants, the repetition of the theme for craving to checking technology prior to getting out of bed became apparent. Eleven out of 12 participants described using a technological device first thing in the morning. The following passages described participants' reported experiences with technology in the morning:

> My alarm wakes me up on my phone. So I need that. Even though we have a regular alarm clock, I don't use it. I use my phone. So my phone wakes me up while I am still lying in bed, I check the weather and then I check to see if I have any emails or Facebook posts while I am still in the bed. (Participant 2)

> I wake up by my iPhone… I mean I have like three alarms that wake me up. And the first thing I do, I don't like roll out of bed, I have to wake up so I check Facebook, I check my email, I check Groupons, I check…um… I play some games I mean I need like a 30 minute waking up process with my iPhone prior to getting out of bed. (Participant 3)

> I actually use the TV to help me wake up. I am very ritualistic in the mornings, I have to set 5 alarms to wake me up, then I cut the TV on real loud and sit up and kind of come to with the TV on. I don't care what they are really saying, but it is noise and it helps me wake up. It depends on if I am in a hurry, but I check Facebook or email or something like that if I am still laying in bed and it just helps me get fully awake at least until I get caffeine. (Participant 9)

Participants were aware that they are constantly using technology. Statements by participant 2, "I am always using it. Even if I have nothing to do, I am going to find something to search on the internet," and participant 3, "I'm constantly using it for something" are indicators that these participants were aware of the amount of time they utilized technology. In their lived experiences, participants articulated the consciousness of using excessive amounts of technology:

> It is very time consuming because not only am I on there for school I'm also on there trying to keep in touch with my friends so I feel like it consumes a lot of my time. (Participant 6)

> What I find is that I watch too much of it because then I feel guilty because like I could have used that time to be doing more productive things. (Participant 2)

> I don't take as many breaks from the internet. For example, if I take it on my lunch break with me, it used to be a time where I would um…just stop shut down for a while and think while I ate or go to the library and grab a book for 30 minutes. (Participant 11)

> I find myself like just starting games like you can choose random opponents just to play when I could be reading a book. I don't just don't get that I don't know what the draw is. Because you play the little games just over and over again. You don't get really any reward for winning or losing like you would from a book. (Participant 5)

A characteristic mark of the awareness of the excessive use of technology was acknowledgement of losing track of the amount of time consuming technology. This characteristic appeared in the experience of many of the participants:

> When I go on youtube it is crazy how I will go on to look at something specific and it will be three hours later and I will be watching the most random irrelevant stuff that you can think of. It is like that…I have heard of other people joke about the youtube wormhole, where I go in and end up watching, I can't just watch one video, I keep clicking on all of the other ones. Um…and I do that sometimes. If I

> don't have a lot going on and I do that at night, I stay up later than intended a lot of times watching videos. (Participant 9)

> In times where I felt like I don't need to be checking this or it's just something I do and then I end up looking at it for ten minutes instead of a minute. (Participant 6)

> An hour a day is normal but if there is a new game I can play up to 4 hours a day on my phone. Which is really ridiculous. (Participant 5)

Similar to losing track of time, another marked characteristic of this theme is the urge to use technology. This finding is closely linked to a previously described theme, the internal desire to use technology. However, this particular finding further explains the negative consequences associated with the desire to consume technology as participants reported times they have felt the craving to use technology despite trying to limit their usage. An example of this need is described by participant 10 when shutting technology down, "I still think about it because I think about, 'I need to check my email, I need to check my email.' But by the end of the day I will need to check it…" In the following quotation, the participant described the urge to use technology after it was no longer available:

> I've thought about it before I've deleted Facebook off my phone before just because I'm like I don't need to… of course I got it back like a week later. (Participant 6)

The preceding passage also provided an example of how the participant thought about cutting down on the amount of time utilizing technology, but was unsuccessful. Participant 11 described, regarding the urge to use technology, "It makes it hard for me to step back and get that time to recharge." Therefore, participants experienced challenges with urges to use technology which brought upon the want to cut down on the amount of

time they consume technology. Participants described their experience with wanting to cut down on the amount of time they use technology:

> I feel like I need to cut down on the amount of time looking at the stuff that entertains me when I could be doing something else whether it is family related or I have chores around the house. (Participant 12)
>
> I have wasted time on things that I have not needed. I need to definitely cut down on things like watching youtube and surfing message boards. (Participant 9)
>
> I guess not getting a break, not taking breaks from using it because I can take it wherever I am. (Participant 8)

In the excerpts above, the participants realized they were using technology excessively and wanted to cut down on their usage. Similar to the finding of enmeshment of functionality, statements in this theme described that the urges were not for a specific device; rather the urge was the seeking behavior. The device itself was used for many functions, which enabled the participants to portray in the seeking behavior, such a searching the internet, playing games, etc.

Erosion of relationships. As stated previously, the use of technology has enhanced the relationships individuals have with one another as it has made communicating more convenient. However, technology use can also have a negative impact on interpersonal relationships. Communication through technology is "not the same [as] just human contact I guess. There is that barrier with the technology," asserted participant 1. The participant further reported that, "it affects that quality of time because when you are sitting there on your phone and like we are not having a meaningful conversation." Likewise, participant 9 suggested that, "it has lessened face-to-face contact with people."

The majority of participants (n = 10) expressed a concern that technology had negatively impacted their connections with others:

> We are not going out for lunch. We are not going to get manicures. So it is just, I don't know. The activities piece of it that you have with your friends and your family that you see, I guess, isn't there. Um…that is really depressing. (Participant 1)

> It is changing the dynamic of the relationship. I probably have not heard her voice, probably I would say since my marriage, wow, I have been married for two years. (Participant 2)

> I think there a probably times where I'm so engrossed in checking my phone and things that aren't important… probably not as engaged in what's going on. You know like I might be sitting at home with my husband at night and we're watching TV and I'm also checking my phone so I'm not fully engaged in what's going on. (Participant 4)

> There have been times that in previous relationships that I have been in where instead of having sex with my girlfriend or giving her attention, I have used craigslist at times for random sex when I know that it takes away my focus from who I am dating. Even though it is just sex to me and there is no. It causes me to withdrawal, or it has to me in the past. Doing stuff like that can cause all kind of problems whether it be hurting someone else's feelings or whatever. It has affected my relationships at times. (Participant 9)

Participant 8 expressed that when individuals use technology "we have a tendency to not be present with people…even though we're interacting one on one there's still like you're not completely present." Therefore, the participants reported that technology has benefited those who utilize it by providing easier accessibility to communicate with others; however, it has also contributed to disruptions with core relationships such as family and friends. These meaningful connections have been eroded due to the interference of technology as participants are more inclined to consume technology than spending time with family members, co-workers, and friends. For example, during a

family gathering, a participant described the entire family unit using technology devices instead of verbally communicating with one another. The lack of quality time ultimately created the family unit to detach from each other.

Inability to function without technology: wouldn't know what to do. This major theme denoted the participants' inability to function without the use of technology. Participants also overwhelmingly described that if they were not able to use technology they would feel lost. Without technology, participant 3 explained, "I would be lost. I wouldn't know what to do." One participant articulated feeling lost:

> I believe lost would be the best, I mean I wouldn't know what to do. I mean all the things that I have to do as a student, as an employee… I mean I know that there are signs and stuff but my direct turn by turn guidance is so comforting and reassuring that I would be lost without it. (Participant 1)

Along with feeling lost, participants were unable to think about ways to function without technology. To live without technology, participant 1 stated, "I would think that would be impossible," and "It is that love hate relationship because I think about all of these things and I like can't even imagine what my life would be like without [it]." Participants expressed their inability to function without technology:

> I check my email from my phone. I just recently started, I probably only had a smart phone for 9 months maybe. I was kind of behind the curve on that, but now that I have one I am kind of like, I could not imagine life without it now. (Participant 9)

> If I didn't have my phone I guess they wouldn't have no way of getting in touch with me and I wouldn't have no way of getting in touch with them. I just don't see people. (Participant 6)

> I couldn't do it, would need something, some way that I could constantly stay in contact with everything. (Participant 3)

> I mean not having just that easy quick access would be difficult. I mean I don't even know how we can even talk to people. Or even GPS, God forbid I had to go somewhere new. I don't even know how people got around before GPS. This is so sad. (Participant 1)

It is notable that one particular participant's statement, regarding the inability to function without having technology, was heavily weighted. Participant 12 expressed, "If I could not use my phone all together, there would be no reason for me to exist. I mean it would be very bad. I don't know what I would do." Therefore, this participant's heavy reliance on a mobile phone produces an internal necessity that hinders his or her ability to think of alternative ways to function in the world without the device.

Emotional and physical disturbances: it would be earth shattering. The emotional and physical disturbances theme was coded with the third most frequency among the participants. Not only did participants experience both physical and emotional disturbances when technology is not available, participants also encountered disturbances while utilizing technology. Participants reported more emotional distress if they were not able to utilize their technology whereas physical disturbances were more prevalent with the use of technological devices. The 12 participants gave 69 responses that were coded to this theme.

Emotional disturbances without technology use. Emotional distress among the participants varied from frustrated to devastation if they were unable to use their technology devices. The most common emotion reported by participants was anxiety. For example, participant 9 stated, "If I had to go a week without my computer I would feel anxious," and participant 11 said, "I'd feel limited; I'd feel a little lost. Um…I would feel a little incompetent." Being without the technology device, participant 1 reported being overwhelmed, while participant 10 stated the feeling of helplessness. Other participants

would feel a higher intensity of emotion, participant 4 described the experience of losing a cell phone as "earth shattering…Which would be awful." Participants described their emotional response when their technological device was not available:

> For a while, I think I would be really like flustered or more anxious about going to do things that I was not really sure of. Um…I would be lost a lot more. (Participant 7)

> If I could not use my cell phone for a day I would feel anxious. I think I would feel out of the loop of what is going on. I would probably even have like some, fear is not the right word. I would feel anxious wondering who is trying to contact me and for what reason. (Participant 9)

> It's hard not to use my phone because there are so many different things that I use it for. So I think not being able to use it for a day would be, um…would make me feel a little stressed. (Participant 10)

> If I couldn't use my phone for a day, I would feel really sad. Like I said, everything I do, my phone is involved in somehow or some way. (Participant 12)

Participants also expressed that they would feel resentment and jealousy if they were not able to use their technology devices as the devices have made tasks easier for them as well as others would have technology while they were left without. Participants described their experiences:

> I would probably feel some resentment over the fact that there is something out there to make everything easier but I'm not using it. (Participant 5)

> I would be very frustrated. Especially if I was in an environment that where other people had theirs. It would almost create a jealousy for me. I would be like, "Oh they have that and I don't." (Participant 7)

Emotional distress was felt among the participants when technology was not available to them. Furthermore, while discussing the thought of not being able to use their technology, participants had begun to feel distressed. Participant 4 stated that, "just

thinking about it making me anxious." Similarly, participant 5 reported, "Even just saying that I feel a little anxious."

Need to Adapt. Another finding that emerged from the participant's stories associated with the experience of emotional disturbances when technology was not available was the need to adapt to their environment. The majority of participants (n=9) reported that if technology was no longer available to consume, they would adapt to their environment by finding alternatives to function as they normally would with the use of technology. However, if technology was no longer available to the participants, then initially they would feel frustrated, angry, and helpless, but would then learn to adapt. Participant 4 reported, "I would probably feel frustrated starting out but I would find ways to work around it and I think that would dissipate over time." For nine participants, adaptation would occur if technology was no longer available. Participants described their need to adapt:

> If I wasn't able to use a computer at all I would be freaking out because I know I have stuff that I have to get done on my computer. I would find a computer. If all the computers shut down in the world I would freaking I would start hand writing stuff. (Participant 3)

> I would feel helpless at first and then I would be forced to adapt and I would be trying to figure out how to deal with it…trying to figure out how to do things that I did before without you know, using those devices, I think that would be a challenge for me. I think I would feel challenge. Tested. I think that I would want to…but I am kind of stubborn so I would try to not let it affect me by say, I can figure this out. But I would feel helpless at first. I would feel distressed, but I would be force and challenged to figure out another way to do it. To adapt to it. (Participant 10)

> I would be able to adjust. I think initially there would be some slight discomfort, or a bit of the, I might feel a little unfamiliar with things, but I think that eventually I would be ok with that. (Participant 11)

> I think it would suck. I mean think that it adds a lot of value to my life. You know. I would have to find different ways to connect with people and to gather information. (Participant 8)

Although technology appeared to be major assets to the individuals of this study who self-identified as at-risk technology users, if technology was no longer available to them, after initial negative emotions emerged, participants would find ways to adapt to their environment and develop a sense of relief.

Physical disturbances without technology use. Participants also reported that physical disturbances would emerge if they were not able to utilize their technology devices. The physiological response, a racing heart, was common among the participants. Four participants expressed their physical response when they were not able to use their technology:

> There has been a couple times where my phone has fell out of my pocket and just realizes that when I pat my pocket and my phone is not there, I definitely had my heart race and the panic feeling of not having my phone. (Participant 12)

> I definitely have like a physical sort of anxiety. Not like I'm going to pass out but I can feel heart speed up and I can feel myself get hot. (Participant 5)

> I would say physically, sort of like a worry or like the minute you realize you forgot it, it was like, "Oh, I forgot my phone!" It is almost like alerting, like you have to sit back in your chair and say, "I forgot that." (Participant 7)

> I thought I lost my phone a couple of months ago and I had bad anxiety until I found out where it was at, I felt panicky. I think it had to do with the financial things on my phone and private information. I did not have a pass code on it at the time. I have that now in case that ever happens again, but I just…it was fear, it was fear when I lost my phone. (Participant 9)

Emotional disturbances with technology use. The preceding quotations depicted the emotional and physical disturbances one may feel if unable to utilize technology.

Similarly, if technology was available, but was not working, the participants of this study expressed becoming emotionally distressed. Participant 1 stated that, "the emotions are most noticeable when it is not working how I want it to," such as feeling "annoyed when I do not have service." When the GPS was not working, participant 2 stated, "I was kind of freaking out like, 'I can't believe I am actually going to have to read and pay attention to where I turn.'" One participant gave a thorough account of a time emotional distress was felt when technology was not working:

> I got a virus that shut my computer down and I panicked because I did not know if I lost everything on there. That is another thing that I use it for is to store things you know, files and pictures and things like that. Music files, that is a big thing too, with my picture, I have thousands of MP3 files on there. And just the thought of losing those things, it was scary, it was fear. It was not even anxiety, it was fear and panic. (Participant 9)

Emotional distress is also present when the participants of this study use technological devices. Stress, anxiety, frustration, and being vulnerable are illustrations of how the participants felt due to their use of technology. For example, participant 3 believed that, "Sometimes it can be a burden," such as, "if I'm anticipating something, it can create anxiety. If I'm constantly waiting for it or checking my email, if I'm waiting for a response, then I guess that will cause anxiety." Likewise, participant 11 explained that, "it may cause stress and anxiety, almost feeling obligated to check it every so often or not fully feeling like I am shut off and disconnected and able to rest and relax." One participant explained the emotional aspect of feeling vulnerable due to technology use:

> I think it's opened me up or left me vulnerable in some circumstances like social networking because previously all was public so any like kind of situation like maybe if I got in a fight with somebody or broke up with a girl or something like that and you know they still had access to my information and would write a post about me. (Participant 10)

The subsequent excerpts illustrated the mixed emotions the participants felt while using technology. These individuals who self-identified as at-risk for technology use expressed various emotions while utilizing technology. Participant 11 stated that using technology was "Overall positive, occasionally it becomes annoying, but definitely something that I rely on quite a bit." Two participants reported having a variety of emotions when operating technology:

> I get happy or sometimes sad if I feel like the phone conversation was cut short. I get mad when the alarm goes off in the morning. (Participant 7)
>
> I'm either satisfied for achieving whatever I wanted to achieve or sometimes irritated or disappointed by hearing news or finding something and it's not what I wanted it to be. (Participant 8)

Physical disturbances with technology use. Participants reported that physical disturbances are also encountered when utilizing technology. Participants reported various physical health problems and disruptions to daily living as a result of their technology use. Participant 5 reported that, "My technology use has sped up my genetic susceptibility to this condition," and that, "I am having eye problems not just from my laptop but from all technology. My eyes don't produce enough liquid and they turn red and get infected." Participants described other physical disturbances:

> The amount of times that I have tripped and fallen while texting. (Participant 1)
>
> I felt like it has hurt my eyes before and my phone too just looking at the screen, the tiny screen. I have to be like, "Ok, I just need to step away from this screen, paper that I have been working on for a while." (Participant 10)
>
> Lately it has messed with my vision. Um I feel like I need to get an eye exam, it's been awhile and I can tell after a day where I've been at my desktop a lot that my eyes are kind of fuzzy and might even burn a little bit and kind of tired. (Participant 11)

> As a distraction and I guess sometimes it can affect sleep. It's like, you know, "Oh I just need to finish this so let me finish this on my computer.". Whether it's like schoolwork or I need to send somebody an email… so sometimes it can affect… if I get on there and I start something typically I want to finish it unless I feel like I'm at a stopping place. So say it's 11:30 at night and I wanted to go to bed then, but I'm still working on it, it can affect my sleep negatively which that pretty much affects everything else in your life so you know the cycle with that... sleep, eat, all that you know, alertness. (Participant 2)

Technology, whether access or the inability to access, creates both emotional and physical disturbances as reported by the participants. The participants of this study felt varying intensities of emotional responses (i.e., sad, anxious, vulnerable). Similarly, varying degrees of physical disturbances (i.e., falling while texting, vision problems) were experienced by participants who self-identified as at-risk technology users.

Variant Themes

There are two variant themes that emerged from the data analysis. These themes include the influence of continued and advanced technology use and devoid of technology. Although these findings were reported by the majority of participants, they were not universal.

Influence of Continued and Advanced Technology Use

Although not all participants experienced the influence of continued and advanced technology use, a cumulative total of 45 responses were coded. This theme summarized the participants' experiences when using technology over a period of time. Two clusters within this theme transpired: progression of use and progression of feeling.

Progression of use. A majority of the participants ($n = 9$) described the progression of their use of technology as transitioning from limited use to routine use. The individuals in this study who self-identified as at-risk for technology use indicated

that when they first began using technology, their use was limited due to the limitations of technology, the limited access to technology, and their limited knowledge of technology. As technology advanced, their access to technology increased, their knowledge about technology increased, and their use of technology increased and evolved into their daily functioning. Participants described their progressive experience with technology:

> I am much more attached to it now than I was then. So I have used it for almost 10 years, so that part, it would have been easier for me to give it up then, than if it were me to give it up now. (Participant 7)

> I only used my flip phone for calls and text. That's all it did. Now I use my phone for everything. Like I cut the grass yesterday and I used it as my iPod. So basically it is in use all the time. It's my alarm clock in the morning. (Participant 5)

> When I first got the touch screen that was something really hard to adapt to. Um…and now that I have learned the characters I guess I can do it without looking. I text while driving more. (Participant 1)

> I remember not wanting internet on my phone and kind of that becoming a big deal and I was like I don't really need it, I don't really need it…And then I was excited getting it but I was like I don't know how much I'll use it. Well now I'm like I don't know what I would do without having my email so it's just kind of funny you know how that changes. (Participant 6)

> When I first got a cell phone, I used it for only emergencies; compared to now I am on it constantly. (Participant 12)

Participants experienced changes in their usage of technology devices. When technology was less advanced and users' ability to access technology was restricted, they experienced less of a desire to seek technology such as to browse the internet, play video games, and watch television. However, as technology became more convenient and

sophisticated, users experienced an increased need to engage in seeking behaviors associated with technology use.

Progression of feeling. Similar to the participants' discussion of their progression of technology use, the majority of participants (n = 10) also expressed a progression of their feelings towards technology. As technology becomes a familiarity to the participants of this study, their feelings towards technology transitioned from excitement to normality. When first obtaining technology, participant 1 reported, "There was probably a sense of like awe or novelty back then um… I remember our first; it was a desktop computer not a laptop. I mean it was like amazing." Whereas now when utilizing technology, participant 3 explained, "I feel content I guess I feel relieved. I guess it's just a part of my everyday life now. I don't really get a feeling; it's just normal." Participants articulated their evolving feelings with their use of technology:

> It's not really exciting anymore it's more so just a part of my routine just feel kind of content about it. (Participant 6)
>
> I was a little more excited by it, it was a little more fun to me and over time it has just became normal. (Participant 9)
>
> I definitely felt really elated when I first got it and used it and I was so excited. I still feel that way now when there are new updates that again make something more convenient than it was before. But, I'm definitely complacent with it in general. Like more I take it for granted. It's not like this "Wow" factor. I think I have just adjusted. (Participant 5)
>
> I felt this sense of like awe, I don't know, status. You know what I mean. Like I don't want to copy the whole A thing but that I have arrived. I have a Smartphone now I have a laptop. So there is like a certain amount of exhilaration in that…now it's just a part of my life so it's not… I don't know I don't really have any feelings associated with the actual object. (Participant 8)
>
> First it was exciting, it was kind of fascinated. That has worn off and now when I am finished using it um…I feel about the same or a little fatigued or

> slightly more stressed because like I said there are a lot of things coming at me and I almost feel like it is my duty when I get on there to check my personal email, my Facebook. (Participant 11)

> When I first got this phone, I felt like a little kid opening up his present on Christmas morning. There were so many new things to play with and set up and I like doing stuff … Compared to now I still play with my phone and I use it just as much but it is not exciting. (Participant 12)

The preceding passages illustrated the progression of feelings from initially feeling a sense of awe to presently feeling a sense of contentment.

Devoid of Technology: Awareness of Personal Benefit

The second variant theme endorsed by a majority of participants ($n = 8$) was receiving personal benefits from not using technology. Being without technology for a period of time was described by participants as "taking a break" as well as having feelings of gratification. Participant 5 stated, "I know I can be without it and be completely content." Participants described their personal benefit when "taking a break" from technology:

> There is no cell services, no internet, I mean they don't even have a TV in the house. Um…so getting away from that sometimes, I feel relief. (Participant 1)

> I notice when I don't have it I feel "Woo Hoo" no technology and you survive and you're like this is great. I can feel my eyes again. (Participant 5)

> I have turned my phone off before like there's been days where like either for personal reasons or whatever it just feels like a distraction and I don't even want to look at it to see if anyone has called me or anything so there has been days where I've just turned it off. And I found that to be helpful. (Participant 6)

As previously reported, participants experience anxiety and worry when their technology devices are not readily available to them. However, when they make a

conscious decision not to use technology, they experience a sense of relief as they no longer feel the stress associated with external and internal pressures to engage in seeking behaviors such as searching the internet, talking on the phone, and playing a video game.

Results Applied to the Research Question

The research question was: What are the lived technology-related biopsychosocial experiences of individuals who have self-identified as at-risk technology users?

According to the data, there are 12 technology-related biopsychosocial experiences of individuals who have self-identified as at-risk technology users. These are the experiences discussed previously:

1. Individuals experienced external world pressures from family, work and friends to consume technology.
2. Internal expectations to use technology were felt by individuals.
3. Individuals were motivated to use technology by their desire to create social connections among family and friends.
4. By acknowledging the multiple modalities of various technological devices that are utilized for the same functions, individuals were motivated to use technology.
5. Technology use is motivated by the convenience technology provides participants.
6. Individuals experienced personal benefits when using technology such as a sense of relaxation and ability to gain more knowledge.
7. Individuals experienced an awareness of the amount of time one is consuming technology as well as urges related to the consumption.

8. Experiencing the inability to function without technology being present in the participants' lives was felt among individuals.
9. Individuals experienced negative consequences as a result of their technology use such as erosion of core relationships with family and friends.
10. Emotional (i.e., anxiety) and physical disturbances (i.e., eyestrain) were experienced by individuals if technology was not readily available as well as from consuming technology.
11. Individuals experienced the affects continued and advanced technology use had on the progression of use and feeling.
12. Personal satisfaction, such as relief, was experienced among individuals who consciously discontinued their use of technology.

While there were other biopsychosocial occurrences that were encountered by the participants, the preceding experiences were common among the majority, if not all, of the participants. Summarizing the findings of the data, the participants indicated several technology-related situations that shaped their lived experiences with technology. Participants talked about the personal benefits gained by using and not using technology. A sense of contentment and "taking a break" were benefits experienced by participants who were able to shut down their technology whereas relaxation and distraction were advantages of consuming technology. Another advantage discussed by participants regarding their use of technology was the enhancement brought to their connections with other individuals by providing an avenue for communication. On the contrary,

technology also negatively impacted their interpersonal relationships by reducing the quality time spent with others.

Participants indicated that external world needs impacted their experience with technology as others expected the participants to be readily available. Similarly, this sense of expectation was felt internally as participants expressed needing to be available to others through technology. The more technology was consumed by the participants, the more likely their use as well as feelings towards the device evolved. Experiencing emotional and physical disturbances appeared consistent among all of the participants who self-identified as at-risk technology users as technology created a convenience factor for the participants as the inability to function was experienced among the participants when technology as unavailable. When participants were without technology, an urge to use the device to seek information produced by the technology occurred. Furthermore, the device itself was not the source of the urge as multiple devices were utilized for the same seeking behavior.

Conclusion

The purpose of this study was to understand the technology-related biopsychosocial experiences of those individuals who have self-identified as at-risk technology users. The face-to-face interview results indicated that while various biopsychosocial experiences were found in participants who self-identified as at-risk technology users, there were several critical experiences that were common among all of the participants. The data revealed that each participant had similar experiences when utilizing technology. The experiences that appeared to be the most consistent among the participants were the impact on relationships, cultural necessity, emotional and physical

disturbances, urges to use technology, the need for instant gratification, convenience of technology, inability to function without technology, and the enmeshment of the functionality of technology. The majority of participants also experienced the influence of continued and advanced technology use, personal benefit, and the need to adapt. While all of these experiences appeared to be significant to the participants' stories, the impact of interpersonal relationships was the experience that encompassed the most references in the coding process. The following chapter will review the research findings and discuss the implications of the results of this study.

CHAPTER FIVE: DISCUSSION

Introduction

Phenomenologists believe that conscious awareness of a phenomenon can be explained through understanding the essence of individuals lived experiences (Creswell, 1998). Research must connect with the participant's world through authentic conversation. Additionally, rich-text descriptions are utilized to create a deep understanding of the phenomenon (Moustakas, 1994). The purpose of this study was to provide an in-depth understanding of the biopsychosocial factors related to experiences of at-risk technology users. The research included interviews with eight individuals who self-identified as at-risk technology users. Interview questions focused on participants' overall experience with technology. Through active engagement with participants during the interviews and becoming immersed in the descriptions, the researcher was able to discover how they experienced the phenomenon.

Summary and Discussion of Findings

Numerous studies have attempted to define an individual's use of technology despite negative consequences (Griffiths, 1995; Hodis & Bruner, 2009; Peele, 1985; Young, 1998). These attempts have either failed to address this phenomenon in its entirety or lack empirical research. However, the research that has explored technology addiction has not been empirically-based. At the time of the present study, the researcher was unable to identify any scholarly research that investigated the lived biopsychosocial

technology-related experiences of at-risk technology users. This gap in literature stimulated this study's research questions: What are the lived technology-related biopsychosocial experiences of individuals who have self-identified as at-risk technology users?

Findings from this study support current research (Griffiths, 1995; Hodis & Bruner, 2009; Peele, 1985; Young, 1998) as well as shed light on ground-breaking insight of at-risk technology users. The findings of this research suggest that participants who self-identified as at-risk technology users experienced multiple biological, psychological, and sociological factors related to their technology use. The data analyzed for this study were transcripts from semi-structured interviews of 12 individuals who identified as at-risk technology users. The participants were interviewed to gain a better understanding of the impact of technology. Participants described their technology use affecting them in many different ways. Their usage affected relationships, created urges to use technology, provided personal benefit, created emotional and physical disturbances, and impacted various other biopsychosocial factors. Three major findings and two variant themes emerged from the data. Regarding the research question "What are the lived technology-related biopsychosocial experiences of individuals who have self-identified as at-risk technology users?" participants experienced the following:

1. The use of technology was influenced by a cultural need to utilize technology, both externally and internally.
2. The use of technology was motivated by factors such as the desire for social connections with interpersonal relationships, enmeshment of the functionality of technology, the convenience of technology, and awareness of personal benefit.

3. Negative consequences were experienced with the use of technology.
4. The continued and advanced use of technology influenced the progression of use and feeling.
5. Personal benefit was experienced without technology use.

Cultural Necessity

All participants felt cultural internal and external pressure to use technology. Participants reported external pressures from jobs, family, and friends to use technology. The participants described their frustration with the expectation of others to be available 24 hours a day to communicate through technology as having no boundaries. Participant 1 stated, "… I get the emails constantly and you know [people] want to reschedule and I'm like emailing them back at one in the morning and it's just there are no boundaries." Participants experienced not having restrictions on when and how often others contacted them as well as the expectation of when and how often they should contact others. Although participants enjoyed utilizing technology, the stress brought on by societal pressures was overwhelming for the participants.

The findings of this study not only indicated that participants felt pressure from external sources, but individuals also experienced internal pressures to utilize technology. Participants experienced a desire to use technology to stay in touch with those individuals in their lives, such as co-workers, family, and friends. Participant 2 reported, "It is only that one way to connect with me, so if I don't pick up the phone then how am I supposed to connect?". This desire to connect with others is similar to the need to belong. The experience of the need to belong is consistent with a prior study conducted by Pelling and

White (2010) on social networking site (SNS) users. The researchers found that belongingness and self-identity were predictors of addictive tendencies of SNS users.

Additionally, participants believed that if they were without technology, then they would be missing something important that was occurring with others in their lives. Anxiety was a common emotion experienced by participants when they were not able to use technology. Participants reported using technology to feel safe. They reported that possessing technology allowed them to feel content, especially while they were driving in case their car broke down and they needed to notify someone to help them. This finding is in line with Maslow's basic need of safety in that individuals experience a basic need to obtain a feeling of safety in order to function within their environment (Maslow, 1943).

Motivating Technology Use

Multiple factors contributed to the participants' motivation to use technology such as the desire for social connections, the multiple uses of a single technology device, the convenience of technology, and awareness of personal benefit. Participants of this study reported using technology as a means to connect with individuals in their lives. All participants expressed how technology has expanded the boundary of their relationships, such as strengthening current interpersonal connections as well as providing a boundless link to distant associations. This finding is contradictory to the findings of existing literature that focus on the disruption of interpersonal relationship of at-risk technology users (Chung, 2011; Elphinston & Noller, 2011).

Another interesting finding is that individuals used multiple modalities of technology (i.e., cell phone, laptop, and video game) instead of only using one device to

elicit the same seeking behaviors such as searching the internet or connecting with others. The findings of this study were contradictory to the existing literature concerning separation of technology addiction subtypes. Currently, some professionals suggest that technology addiction is an emerging phenomenon; however, research has only focused on one subtype of technology addiction (Han et al., 2010; Lo et al., 2005; Whang et al., 2003). Empirical evidence supporting the notion that findings of research conducted on Internet addiction has the same implications as gaming addiction does not exist. Therefore, researchers are studying each subtype of technology addiction separately. However, this study found that one individual can face similar experiences among the use of multiple technology devices. This suggests the possibility of co-occurring addictions (i.e., if an addict stops using T.V., then one may become addicted to video games).

However, this finding is congruent with research conducted on the cross addiction of substances and processes. Weiss (2010) found that student athletes experience cross addiction of alcohol dependence and pathological gambling. Therefore, the student athletes sought pleasure seeking from both alcohol and gambling. Participants of this study reported that they used multiple technologies, such as phone, iPad, and laptop for the same seeking behaviors (i.e., searching the internet or playing games). Participant 7 expressed, "Now my phone literally it does almost everything that my computer does." All participants seem to experience the enmeshment of modalities of available technologies. Therefore, it is not the technological device that the participants seek to use; rather it is the seeking behaviors the medium offers that becomes the motivation for the technology use.

Technology also offers a convenience factor that motivates users to access the devices. Although this was a major finding in this research, no current research efforts have been conducted in this area. For this study, participants described the ease of accessibility, quickness, and usefulness of technology as factors that motivate their use. Technology allows users to access seeking behaviors such as searching the Internet, playing video games, and texting through handheld devices that provide quick accessibility. For example, users are able to email, text, talk to others, search the Internet, play video games, and use GPS by using a single device such as a cell phone.

The finding that individuals receive personal benefit from utilizing technology is congruent with the research conducted by Anderson et al. (1996). The researchers found an association between life stressors and the risk of television addiction. The research suggests that the use of television increases to cope with stressors in an individual's life. Similar to this finding, participants of this study utilized technology to retreat from daily stressors such as school, work, and family. Participant 3 used technology to "get away from everything." It is evident from the findings of this study that many of the participants used technology to cope with life situations, even though it also produces stress.

Consequences of Using Technology

It is clear from the results of this study that at-risk technology users experience consequences due to their technology use. Psychosocial factors such as negative consequences and high risk behaviors can also be found with substance and other process addictions (Helmuth, 2001). Participants of this study experienced consequences such as

urges to use technology, inability to function without technology, erosion of relationships, and emotional and physical disturbances.

The participants' experiences illustrate urges to use technology occurred when they were not accessing the device. Likewise, Leung (2008) explored the relationship between craving and mobile phone addiction and found the higher one scored on sensation craving, the higher the probability of mobile phone addiction. The described experiences of the participants suggest a craving to use their technology devices to engage in seeking behaviors such as an urge to check email or watch television.

The finding of this study that individuals are unable to function without technology is supported by the research of Karaiskos et al. (2010). Researchers examined a case study of a young woman who continued to utilize technology despite losing her job, troubles in interpersonal relationships related to her technology use as well as physiological problems associated with her use. Clearly, this study illustrated the young woman's inability to function without technology in her life. Heavy reliance on technology prevented participants of this study to imagine life without technology.

Findings of this study support current research on at-risk technology use. The finding that there was an erosion of interpersonal relationships was consistent with existing literature on dissatisfied relationships among at-risk technology device users (Chory & Banfield, 2009; Hernandez, 2011; Igarashi, Motoyoshi, Takai, & Yoshisa, 2008; Lo, Wang, & Fang, 2005). All participants experienced erosion of family relationships as a result of the obsessive and compulsive use of technology devices. Although the individuals used the technology devices to create connections with others,

their most important relationships were damaged by their use due to their inability to spend quality time with these individuals.

The finding that the participants experience emotional and physical disturbances if they were not able to use their technology device for an extended period of time supports the findings of Akin and Iskender (2011). The researchers found that there was a positive predictive relationship between Internet addicts and the experience of psychological symptoms. When individuals thought about the occurrence of not having their technology device, all participants stated that they would feel a sense of stress. Therefore, the findings concerning the impact on individuals' psychological well-being appear to align with previous Internet addictions research indicating that psychological symptoms increase as addictive behaviors increase (Akin & Iskender, 2011; Ha et al., 2008; Lu et al., 2011; Whang et al., 2003).

Additionally, the finding that at-risk technology users experience physical disturbances was congruent with the findings from Young (1998). The researcher found that individuals addicted to technology report numerous physical complaints such as sleep deprivation, limited activity, eyestrain, back pain, and carpal tunnel syndrome. Similarly, participants of this study seemed to engage in technology use that produced physical problems, such as eyestrain and physiological responses, such as a racing heart.

Influence of Continued and Advanced Technology Use

Participants of this study experienced a progression of their use of technology and feelings towards their technology use. Prior to this research, these factors have not been studied. Most studies conducted on at-risk technology users focused on the participants' current state of wellbeing rather than the progressiveness of their behaviors and emotions.

For this study, participants described the transition between limited use and routine use of technology as well as feelings changing from excitement to normality. This finding suggests that the more an individual consumes technology, the greater probability that habitual use may occur.

Devoid of Technology

The issue of experiences without technology consumption is distinct from current literature of at-risk technology users. Current research on this phenomenon is primarily quantitative, focusing on the impact of individuals current technology use (Dowling & Brown, 2010; Elphinston & Noller, 2011; Pelling & White, 2010; Whang et al., 2003). However, the qualitative measures of this study provided the opportunity for participants to discuss experiences they have encountered without technology. Participants reported that, at times, stress occurs within their lives created by the urges to use technology. Therefore, these individuals felt a sense of relief when they were able to disconnect from technology.

The findings of the current study provided a more in-depth perspective of at-risk technology use from firsthand knowledge from those who experienced the phenomenon. Previous research has focused on limited views of at-risk technology (i.e., erosion of relationships, emotional disturbances, and urges to use technology). It is evident by this study that at-risk technology use is broader than the current definitions of the phenomenon that include positive and negative consequences of use.

Limitations

Participants

Small sample sizes are common among qualitative studies (Creswell, 1998), which means that generalizability and transferability are limited. Therefore, transferability of the results of this study should be read with caution as only 12 participants were interviewed. Further, a convenient and purposeful sample was collected, which indicates the possibility that the participants' experiences in this study may not be consistent with other at-risk technology users. However, the researcher was able to develop themes through the data analysis process based upon the similarities among the participants' lived experiences.

Additionally, achievement of cultural diversity was also limited by the sample size. The participants were homogeneous with regard to level of education. However, the study included a diverse sample in terms of gender, race, current employment status, socioeconomic status, age, relationship status, and primary technology devices used.

Researcher subjectivity

The researcher's subjectivity should be considered a limitation as well. As stated in the researcher subjectivity statement in Chapter Three, I have several lived experiences that have led me to become interested in understanding the phenomenon of at-risk technology use. Having a professional background in IT (Information Technology) allowed me to gain knowledge of the many advancements technology can offer. Paired with my personal and professional experience of addiction, I realized that the advancements technology offers may lead to a heavy reliance on technology. Therefore, reflecting on how technology has impact my own life, I share many of the same beliefs

and experiences as the participants regarding technology use such as convenience, personal benefit, cultural necessity, enmeshment of functionality, and impact on relationships. Although I experienced many factors similar to those of the participants, I did not disclose any personal information with the participants and was cognizant of how these experiences may have influenced the way I viewed the data. To limit the influence my experiences had on how I interpreted the data, I kept a reflection journal of my involvements with the participants as well as constantly checked my interpretations against the independent coder's analyses. As my internal position on technology use may have benefited the current study, it should also be considered a limitation.

Implications

As stated previously, technology is a modern day phenomenon that may have a worldwide impact (Widyanto & Griffiths, 2006). With rapid advancements of technology and billions of technology users worldwide, the current and future impact on society is still unknown. Therefore, it is essential that researchers begin to examine the impact this innovation may have on the population. Prior to this study, there have been few attempts to understand the biopsychosocial factors of the lived experiences of those who are at-risk for technology use. Attempts have been made to define aspects of at-risk technology use (Griffiths, 1995; Hodis & Bruner, 2009; Peele, 1985; Young, 1998). However, these studies either lack empirical support or do not encompass the many subtypes of technology.

The findings and interpretations of this research apply to many roles in the counseling field: practicing counselors, counselor supervisors, counselor educators, and

future researchers. The following section provides an explanation of the implications of the findings for each group.

Implications for practicing counselors

It is important that practicing counselors gain a clearer understanding of the factors related to at-risk technology use as counselors are responsible for providing well-informed care. As stated previously, technology is evolving at a rapid pace in the 21st century. Given this, the present phenomenon may have a major impact on society.

The use of technology as a tool in educational settings for the advancement of student learning has become a cultural necessity. Technology has transformed the way educators teach, how students learn, and the way teachers and students communicate. For example, educators are able to use multimedia such as videos and PowerPoint to enhance student learning. Students are able to provide more comprehensive reports by using technology to type reports as well as providing the ability for students to search the internet for knowledge about various the topics taught in the classroom. In addition, technology has allowed educators to communicate with their students through email to provide a faster and more accessible way to communicate. Therefore, it is important for school counselors to be aware of the risk factors associated with at-risk technology use to reduce the risk of encouraging possible at-risk technology use. Additionally, school counselors can assist students with other enriched ways of learning by finding student specific approaches such as small group projects, if technology may hinder their ability to learn.

Like other addictions, technology addiction does not discriminate. It impacts a wide range of individuals of diverse backgrounds. It is important to be aware of the

biopsychosocial risk factors in order to better serve clients. By becoming familiar with the biopsychosocial factors associated with at-risk technology use, practicing counselors will be able to discuss the potential for at-risk use with their clients. Counselors should anticipate that some clients may not view their use as at-risk. Therefore, the counselor should be competent in educating the client about the at-risk factors such as urges to use technology, erosion of interpersonal relationships, and emotional and physical disturbances associated with technology use including anxiety and eye strain.

As indicated by the current study, individuals are experiencing significant negative consequences due to their at-risk technology use. However, in current academic and training settings for counselors and counselors-in-training, at-risk technology use is not an issue being discussed. Consequently, clients who are being seen by counselors and counselors-in-training may not be identified as at-risk technology users due to the counselors' lack of knowledge and education.

As a result of counselors' inadequate training, clients may be incorrectly treated for a mood disorder or adjustment disorder when the primary issue is at-risk technology use. An example of this misdiagnosis would include a client being treated by a mental health counselor for depression relating to dissatisfaction with interpersonal relationships, when the primary issue is that the client's technology use (continuously using technology during quality time with partner) is interfering with the client's interpersonal relationship. If the client's symptoms would have been identified accurately, the counselor would have integrated at-risk technology use goals into the client's treatment plan.

Being able to provide clients with appropriate assessment and treatment procedures are critical in the treatment of at-risk technology use, yet gaps in our

knowledge are limitations to fully understanding this emerging phenomenon. Therefore, implementation of specific treatment methods for at-risk technology users has yet to be explored. However, in the meantime, it may behoove counselors to aid these clients in developing a sense of centeredness to find balance within their lives. Since emotional disturbances such as anxiety was a major finding in this study, working with clients to find alternative stress reduction skills such as medication or deep breathing could assist in the development of a sense of inner balance within the client. Working on social skills with client to develop the ability to relate intimately with others face-to-face will also help at-risk technology users create more satisfying interpersonal relationship. Developing a greater awareness of this phenomenon will also provide counselors the ability to assess for at-risk technology use and refer if needed.

Practicing counselors should be able to provide resources to their clients and to refer to an addiction counselor who may be better able to treat the client. Addiction counselors should consider gaining greater knowledge of the complex factors associated with at-risk technology use. As a result of the synthesized literature review discussed in Chapter 2, it is evident that there is a need for addiction professionals to become aware of the risk of technology use becoming an addiction. According to Han et al. (2010), similar brain changes exist among drug addicts and those of excessive internet gamers. Research has also shown that factors such as depression, anxiety, inability to control craving, and isolation exist among chemical dependent individuals as well as those who are at-risk for technology use (Leung, 2008). Therefore, gaining knowledge about these risks would be aid addiction professionals in best practices for their clients.

In 2009, the primary accreditation body for counseling programs, the Council for Accreditation for Counseling and Related Educational Programs (CACREP), published a revision to the national accreditation guidelines to incorporate addiction counseling issues into the core curriculum for all counselors-in-training (CACREP, 2009). Although CACREP standards have been implemented in the counseling field, there continues to be limited training on addiction issues, with process addiction being the least informed. Therefore, there is a noticeable lack of training for counselors and counselors-in-training around specific process addictions such as technology addiction or at-risk technology users.

It is recommended that addiction counselors receive specialized training on how to identify, assess, and treat process addictions. Therefore, it is recommended that addiction counselors stay abreast with the promising research on this specific topic to better assist their clients. By equipping addiction professionals with the appropriate tools, best practices can be implemented for clients they serve. Although this study proposed a screening tool which was adapted from the C.A.G.E by Ewing (1984), further research is needed to test the validity and reliability of this revised instrument.

Addiction professionals should be able to view and assess at-risk technology use as an all-encompassing issue rather than a singular issue for a particular technology. According to the current study, crossover at-risk technology use has the potential to cut across various technology devices. An example of this crossover would include a client being treated by an addiction counselor for negative consequences brought on by playing video games on their gaming system, when the client uses both their gaming system and their computer to play games. In this example, the counselor's view of at-risk technology

use to one particular device limited his or her ability to treat the broader phenomenon. Therefore, the utilization of assessment tools will aid addiction professionals in the ability to see the overarching client issue with technology use.

Moreover, practicing addiction counselors should be able to help create awareness of this emerging phenomenon to people in the community. It is important that society be educated on the risk factors to become aware of the potential for at-risk use and be informed of ways to seek help if they believe they may be at-risk. By gaining more knowledge about the phenomenon, people in the community may be able to reduce the potential progress for at-risk behavior to develop into addictive behaviors. Practicing counselors can assist in the educating people by facilitating public workshops addressing the risk factors found in the present study as well as contributing to the body of knowledge by publishing and writing about this emerging phenomenon.

Implications for counselor educators and supervisors

As previously stated, CACREP standards require academic programs to educate counselors-in-training on addiction issues (CACREP, 2009). Although the standard uses the terminology "addiction counseling," most academic program curriculum focuses primarily on substance addiction (Salyers, Ritchie, Cochrane, & Roseman, 2006). As indicated by the literature review in Chapter 2, the term “addiction” is broader than the limited view of substance dependency and should include process addiction. Therefore, it would be beneficial for those individuals who are responsible for assisting in the development of counselors-in-training competency (i.e., supervisors and counselor educators) to educate students/supervisees about the developing theory of addiction to encompass both substance and process addictions.

Considering the movement to include process addiction in the new edition of DSM, it seems logical to include specialized training for the subtypes of process addictions in graduate level courses for counselors-in-training. Addiction curriculum may include specific courses that focus solely on process addictions similar to the course already developed for substance addictions. Educators can also incorporate process addiction education in the existing addiction courses. An example of this may be to provide counselors-in-training with case examples of how counselors can assess, diagnose, and treat clients who are addicted to a process as well as a substance. Either way, graduate courses should focus on the etiology of process addictions as well as assessment, diagnosis, treatment planning, specific interventions, and relapse prevention skills.

Since education about specific process addictions such as at-risk technology use is limited, counselor educators should be prepared to educate their students about this phenomenon by staying abreast with new research and trainings that emerge on the topic as well as literature on general assessment, diagnosis, treatment planning, interventions, and relapse prevention skills for process addictions. Counselor educators should be able to educate their counseling students on the essential components of this emerging phenomenon.

Additionally, counselor educators should anticipate that counselors-in-training may have clients disclose that they are at-risk for technology use during a session. Therefore, counselor educators should be prepared to address these issues in the practicum and internship courses they instruct. Educators may lecture students on the idea of how to help clients setting boundaries for technology use as well as how to help

the student set boundaries with their clients around technology use to not perpetuate at-risk behaviors, which may include not texting clients, etc.

Similar to counselor educators, supervisors are also associated with assisting in counselors-in-training development of knowledge, awareness, and skill (Loganbill et al., 1982; Stoltenberg et al., 1998). Therefore, it is recommended that counselor supervisors also become familiar with the factors associated with at-risk technology use by remaining abreast with emerging phenomenon such as potential at-risk technology use. By gaining greater knowledge, the supervisor will be better prepared for supervising counselors or counselors-in-training who may counsel at-risk technology using clients. Additionally, when working with at-risk technology users, counselor supervisors should anticipate diversity with supervisees' clientele, based on the diversity within the participants of this study.

According to Bernard's (1979) theory of supervision, supervisors can utilize three roles to help their supervisees develop awareness, knowledge, and skill about the potential risk factors for technologies. Within the teacher role, supervisors can aid in the development of their supervisees' knowledge about the potential risk factors and other essential information about at risk technologies such as who is at risk and how to assess risk factors. Within the counselor role, supervisors are able create awareness by exploring supervisees' thoughts about technology as an overarching addiction. Lastly as a consultant, supervisors are able to discuss this phenomenon with other professionals to develop a greater understanding and skill set as well as consult about at-risk technology use.

Implications for future research

This study has withdrawn from the narrow focused view of the subtypes of technology addiction as well as the conceptual understanding of technology addiction and examined the lived experiences of individuals who self-identified as at-risk technology users. Through the synthesis of literature in Chapter 2, there is a clear gap in researchers understanding of process addiction subtypes, particularly at-risk technology use. Updated research and training on this specific area of process addiction is necessary for the growth of the addiction field. Since this study utilized first generation analysis to advance the knowledge and understanding of at-risk technology users, future researchers are encouraged to develop confirmatory research models by utilizing the findings of this exploratory study.

Other research in this area has focused on technology addiction and been limited in that the current definitions are lacking empirical research or are not all encompassing to include all euphoria producing technologies. For example, Griffiths (1995) operationally defined technology addiction, but lacked empirical research to support the definition. On the other hand, Hodis and Bruner (2009) defined technology addiction using empirical research that focused on only one subtype of technology addiction; therefore, creating a limited definition that did not focus on the broader phenomenon. Consequently, future research should focus on a qualitative aspect of this phenomenon to create a grounded theory based on empirical research. Research should focus on developing a complete definition of technology addiction to be inclusive of all euphoria-producing technologies and should be consistent across age, gender, and educational levels.

Similar to cross addiction of substances and process addictions, it may be important that future research focus on the potential of cross addiction of technological devices as a major theme of this research was that individuals experienced various elements regardless of the technological device. After a sound theory based on empirical research has been established, technology in general should be the unit of analysis rather than the subtypes as it is clear by this study that there is a cross over across technology devices.

Furthermore, based on insights gained from the literature review, future research should utilize larger populations to explore at-risk technology use and technology addiction using systematic sampling techniques that allow for generalization of the research findings. Previous research on technology addiction has used various criteria such as criteria for pathological gambling and substance addiction. Future research should consider using one consistent method for establishing criteria for identifying technology addiction. By creating a unified method for classifying technology addiction, future research can then focus on developing valid and reliable screening tools and assessments for assessing and diagnosing technology addiction. Lastly, researchers should focus research efforts on the development of treatment modalities to treat technology addiction.

Conclusion

The findings of this study suggested that at-risk technology users experience both positive and negative biopsychosocial factors related to technology use. Positive factors include but are not limited to fostering interpersonal relationships and experiencing personal benefit from using technology. Negative factors included experiencing urges,

destruction of interpersonal relationships, and emotional disturbances such as anxiety. Additionally, the findings indicated that at-risk technology use is not limited one particular technological device rather at-risk use is experienced across all euphoria producing technologies.

REFERENCES

Admin. (2010, January 2). Children neglected for parents social networking pleasures, is it fair ? [Forum]. Retrieved from http://www.childrenneedyou.com/

Albrecht, U., Kirschner, N., & Grüsser, S. M. (2007). Diagnostic instruments for behavioural addiction: An overview. *GMS Psycho-Social-Medicine,* 41-11.

Akin, M., & Iskender, M. (2011). Internet addiction and depression, anxiety and stress. *International Online Journal of Educational Sciences, 3*(1), 138-148.

American Psychiatric Association [APA]. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., text revision). Washington, DC: Author.

American Psychiatric Association [APA]. (2012, May 1). R 37 Gambling Disorder. Retrieved from http:// www.dsm5.org

Anderson, D., Collins, P., Schmitt, K., & Smith Jacobvitz, R. (1996).Stressful life events and television viewing. *Communication Research, 23*, 243-260.

Babin, B. J., Griffin, M., Borges, A., & Boles, J. S. (2013). Negative emotions, value and relationships: Differences between women and men. *Journal Of Retailing & Consumer Services*, *20*(5), 471-478. doi:10.1016/j.jretconser.2013.04.007

Bayraktar, F., & Gün, Z. (2007). Incidence and correlates of Internet usage among adolescents in North Cyprus. *Cyberpsychology & Behavior, 10*(2), 191-197. doi:10.1089/cpb.2006.9969

Black, D. W. (2013). Behavioural addictions as a way to classify behaviours. *Canadian Journal Of Psychiatry, 58*(5), 249-251.

Blaszczynski, A., & Nower, L. (2002). Imaginal desensitisation: a relaxation-based technique for impulse control disorders. *Journal Of Clinical Activities, Assignments & Handouts In Psychotherapy Practice, 2*(4), 1-14.

Block, J. (2007). Prevalence underestimated in problematic internet use study. *CNS Spectrums: The International Journal Of Neuropsychiatric Medicine, 12*(1), 14.

Block, J. (2008). Issues for DSM-V: internet addiction. *American Journal Of Psychiatry, 165*(3), 306-307.

Bowen, M.W., & Firestone, M.H. (2011). Pathological use of electronic media: Case studies and commentary. *Psychiatry Quarterly, 82*, 229-238. doi:10.1007/s11126-010-9163-x

Brewer, J. A., & Potenza, M. N. (2008). The neurobiology and genetics of impulse control disorders: Relationships to drug addictions. *Biochemical Pharmacology, 75*(1), 63-75. doi:10.1016/j.bcp.2007.06.043

Brown, R. I. F. (1993) Some contributions of the study of gambling to the study of other addictions. In Eadington, W.R. and Cornelius, J. (Eds) *Gambling behavior and problem gambling* (pp. 341-72). University of Nevada Press: Reno, NV.

Byun, S., Ruffini, C., Mills, J. E., Douglas, A. C., Niang, M., Stepchenkova, S., & ... Blanton, M. (2009). Internet addiction: Metasynthesis of 1996–2006 auantitative research. *Cyberpsychology & Behavior, 12*(2), 203-207. doi:10.1089/cpb.2008.0102

Campbell, W., & Rohrbaugh, R. (2006). *The biopsychosocial formulation manual: A guide for mental health professionals*. New York: Routledge.

Carbonell, X., Guardiola, E., Beranuy, M., & Bells, A. (2009). A bibliometric analysis of the scientific literature on internet, video games, and cell phone addiction. *Journal of the Medical Library Association, 97*(2), 102-107.

Centers for Disease Control and Prevention. (2012). Distracted driving fact sheet. Retrieved from http://www.cdc.gov/Motorvehiclesafety/Distracted_Driving/index.html

Charlton, J. P. (2002). A factor-analytic investigation of computer 'addiction' and engagement. *British Journal Of Psychology, 93*(3), 329.

Childress, A., & Mozley, P. (1999). Limbic activation during cue-induced cocaine craving. *American Journal Of Psychiatry, 156*(1), 11.

Chory, R. M., & Banfield, S. (2009). Media dependence and relational maintenance in interpersonal relationships. *Communication Reports, 22*(1), 41-53. doi:10.1080/08934210902798502

Chung, N. (2011). Korean adolescent girls' addictive use of mobile phones to maintain interpersonal solidarity. *Social Behavior & Personality: An International Journal, 39*(10), 1349-1358.

Creswell, J. W. (1998). *Qualitative inquiry and research design: Choosing among five traditions*. Thousand Oaks, CA: Sage.

Davis, R. A., Flett, G. L., & Besser, A. (2002). Validation of a new scale for measuring problematic Internet use: Implications for pre-employment screening. *CyberPsychology & Behavior, 5*(4), 331-345. doi:10.1089/109493102760275581

Dhalla, S., & Kopec, J. A. (2007). The CAGE questionnaire for alcohol misuse: A review of reliability and validity studies. *Clinical & Investigative Medicine, 30*(1), 33-41.

Di Chiara, G. (1998). A motivational learning hypothesis of the role of mesolimbic dopamine in compulsive drug use. *Journal Of Psychopharmacology, 12*(1), 54-67. doi:10.1177/026988119801200108

Dowling, N. A., & Brown, M. M. (2010). Commonalities in the psychological factors associated with problem gambling and internet dependence. *Cyberpsychology, Behavior, and Social Networking, 13*(4), 437-441. doi:10.1089/cyber.2009.0317

Duncan, E., Boshoven, W., Harenski, K., Fiallos, A., Tracy, H., Jovanovic, T., & ... Kilts, C. (2007). An fMRI study of the interaction of stress and cocaine cues on cocaine craving in cocaine-dependent men. *American Journal On Addictions, 16*(3), 174-182. doi:10.1080/10550490701375285

Elman, I., Krause, S., Karlsgodt, K., Schoenfeld, D. A., Gollub, R. L., Breiter, H. C., & Gastfriend, D. R. (2001). Clinical outcomes following cocaine infusion in non-treatment seeking individuals with cocaine dependence. *Biological Psychiatry, 49*(6), 553-555. doi:10.1016/S0006-3223(00)01096-9

Elphinston, R. A., & Noller, P. (2011). Time to face it! Facebook intrusion and the implications for romantic jealousy and relationship satisfaction. *Cyberpsychology, Behavior, and Social Networking, 14*(11), 631-635. doi:10.1089/cyber.2010.0318

Engel, G. (1977). The need for a new medical model: a challenge for biomedicine. *Science, 196*(4286), 129–139.

Ewing, J. A. (1984). Detecting alcoholism: The CAGE questionnaire. *Journal of the American Medical Association, 252*, 1905-1907.

Faber, R. J., O'Guinn, T. C., & Krych, R. (1987). Compulsive consumption. *Advances In Consumer Research, 14*(1), 132-135.

Finn, S. (1992). Television "addiction"? An evaluation of four competing media-use models. *Journalism Quarterly, 69*(2), 422-435.

Frazier, E. (2010, May 17). Facebook post costs waitress her job. The Charlotte Observer. Retrieved from http://www.charlotteobserver.com/2010/05/17/1440447/facebook-post-costs-waitress-her.html

Glesne, C. (2006). *Becoming Qualitative Researchers: An Introduction (3rd ed.).* Boston: Pearson Education, Inc.

Goodman, A. (2001). What's in a name? Terminology for designating a syndrome of driven sexual behavior. *Sexual Addiction & Compulsivity, 8*,191-213.

Goodman, A. (2008). Neurobiology of addiction: An integrative review. *Biochemical Pharmacology, 75*(1), 266-322. doi:10.1016/j.bcp.2007.07.030

Grace, A.A. (2000). The tonic/phasic model of dopamine system regulation and its implications for understanding alcohol and psychostimulant craving. *Addiction, 95*(Suppl 2): S119–S128.

Grant J., Brewer J., & Potenza M. (2006). The neurobiology of substance and behavioral addictions. *CNS Spectr, 11*, 924–930.

Grant, S., & London, E. D. (1996). Activation of memory circuits during cue-elicited cocaine craving. *Proceedings Of The National Academy Of Sciences Of The United States Of America, 93*(21), 12040.

Grant, J.E., Potenza, M.N., Weinstein, A., & Gorelick, D.A. (2010). Introduction to behavioral addictions. *The American Journal of Drug and Alcohol Abuse, 36*, 233-241. doi:10.3109/00952990.2010.491884

Grüsser, S. M., Thalemann, C. N., Platz, W., Gölz, J., & Partecke, G. (2006). A new approach to preventing relapse in opiate addicts: A psychometric evaluation. *Biological Psychology, 71*(3), 231-235. doi:10.1016/j.biopsycho.2005.06.005

Griffiths, M. D. (1995). Technological addictions. *Clinical Psychology Forum, 76*, 14-19.

Griffiths, M. (2000). Does internet and computer 'addiction' exist? Some case study evidence. *Cyberpsychology& Behavior, 3*(2), 211-218. doi:10.1089/109493100316067

Griffiths, M. (2001). Excessive internet and computer use: Implications for education. *Education & Health, 19*(2), 23-29.

Griffiths, M. (2005). A 'components' model of addiction within a biopsychosocial framework. *Journal Of Substance Use, 10*(4), 191-197.

Griffiths, M. D. (2010). The role of context in online gaming excess and addiction: Some case study evidence. International Journal of Mental Health & Addiction, 8(1), 119-125.Hagedorn, W.B. (2009). The call for a new *Diagnostic and Statistical Manual of Mental Disorders* diagnosis: Addictive disorders. *Journal of Addictions & Offender Counseling, 29*, 110-127.

Ha, J., Chin, B., Park, D., Ryu, S., & Yu, J. (2008). Characteristics of excessive cellular phone use in Korean adolescents. *Cyberpsychology& Behavior, 11*(6), 783-784.

Hagedorn, W. (2009). The Call for a New Diagnostic and Statistical Manual of Mental Disorders Diagnosis: Addictive Disorders. *Journal Of Addictions & Offender Counseling, 29*(2), 110-127.

Hagedorn, W. B., & Juhnke, G. A. (2005). Treating the sexually addicted client: Establishing a need for increased counselor awareness. *Journal of Addictions & Offender Counseling, 25*, 66–86.

Han, D.H., Kim, Y. S., Lee, Y.S., Min, K. J., & Renshaw, F.P. (2010). Changes in cue-induced, prefrontal cortex activity with video-game play. *Cyberpsychology, behavior, and social networking, 13*(6), 655-661.

Hays, R. D., Merz, J. R, & Nicholas, R. (1995). Response burden, reliability, and validity of the CAGE, Short MAST, and AUDIT alcohol screening measures. *Behavior Research Methods, Instruments & Computers, 27*, 277-280.

Helmuth, L. (2001). Beyond the Pleasure Principle. *Science, 294*(5544), 983-984.

Hernandez, B.E. (2011). Facebook causes divorce. Retrieved from http://www.nbcbayarea.com/blogs/press-here/Facebook-Causes-Divorce-121123344.html

Hinvest, N., & Brosnan, M. (2012). Identifying vulnerability markers for pathological Internet use and pathological video-game playing within an educational context. *Journal Of Educational Computing Research, 46*(4), 357-376.

Hodis, M. A., & Bruner II, G. C. (2009). Technology addiction: An exploratory study of the negative impact of technology on consumer welfare. *Advances in Consumer Research - North American Conference Proceedings, 36*, 840-842.

Holden, C. (2001). Drug addiction. Zapping memory center triggers drug craving. *Science (New York, N.Y.), 292*(5519), 1039.

Horvath, C. W. (2004). Measuring television addiction. *Journal of Broadcasting & Electronic Media, 48*(3), 378-398.

Hudson, J. I., Hiripi, E., & Pope, H. G., Jr. (2007). The prevalence and correlates of eating disorders in the National Comorbidity Survey Replication. *Biological Psychiatry, 61*, 348-35.

Hun, D.H., Hwang, J.W., & Renshaw, P.F. (2010). Bupropion sustained release treatment decreases craving for video games and cue-induced brain activity in patients with Internet video game addiction. *Experimental and Clinical Psychopharmacology, 18*(4), 297–304.

Husserl, E. (1954). *The crisis of European sciences and transcendental phenomenology* (D.Carr, Trans.). Evanston, IL: Northwest University Press. (Original work published 1939).

Husserl, E. (1962). *Ideas: General introduction to pure phenomenology* (W. R. B. Gibson, Trans.). New York, NY: Collier Books. (Original work published 1913).

Husserl, E. (1970). *Cartesian meditations: An introduction to phenomenology.* (D. Cairns,Trans.). Netherlands: The Hague. (Original work published 1950).

Igarashi, T., Motoyoshi, T., Takai, J., &Yoshida, T. (2005, April). The text messaging addiction scale: Factor structure, reliability, and validity. Paper presented at the sixth biennial conference of the Asian Association of Social Psychology, Wellington, New Zealand.

Igarashi, T., Motoyoshi, T., Takai, J., &Yoshida, T. (2008). No mobile, no life: Self-perception and text-message dependency among Japanese high school students. *Computers in Human Behavior, 24*(5), 2311-2324. doi:10.1016/j.chb.2007.12.001

Internet world stats. (2011, December 31). Retrieved from http://www.internetworldstats.com/stats.htm

Jeong, E., & Kim, D. (2011).Social activities, self-efficacy, game attitudes, and game addiction. *Cyberpsychology, Behavior, and Social Networking, 14*(4), 213-221. doi:10.1089/cyber.2009.0289

Johansson, A., Grant, J. E., Won Kim, S., Odlaug, B. L., & Götestam, K. (2009). Risk factors for problematic gambling: A critical literature review. *Journal Of Gambling Studies, 25*(1), 67-92. doi:10.1007/s10899-008-9088-6

Karaiskos, D. D., Tzavellas, E. E., Balta, G. G., & Paparrigopoulos, T. T. (2010). P02-232 - Social network addiction : A new clinical disorder?. *European Psychiatry, 25*,855.doi:10.1016/S0924-9338(10)70846-4

Karim, R., & Chaudhri, P. (2012). Behavioral addictions: An overview. *Journal Of Psychoactive Drugs, 44*(1), 5-17. doi:10.1080/02791072.2012.662859

Keepers, G. A. (1990). Case study: pathological preoccupation with video games. *Journal Of The American Academy Of Child And Adolescent Psychiatry, 29*(1), 49-50.

Kershner, R. (2007) Neuroadaptation. *Transitioning to Refractive IOLs-the Art and Science*, 1-9.

Kilts, C., Schweitzer, J., Quinn, C., Gross, R., Faber, T., Muhammad, F., & ... Drexler, K. (2001). Neural activity related to drug craving in cocaine addiction. *Archives Of General Psychiatry, 58*(4), 334-341.

Knutson, B., Rick, S., Wimmer, G., Prelec, D., & Loewenstein, G. (2007). Neural Predictors of Purchases. *Neuron, 53*(1), 147-156. doi:10.1016/j.neuron.2006.11.010

Ko, C., Liu, G., Hsiao, S., Yen, J., Yang, M., Lin, W., & ... Chen, C. (2009). Brain activities associated with gaming urge of online gaming addiction. *Journal Of Psychiatric Research, 43*(7), 739-747. doi:10.1016/j.jpsychires.2008.09.012

Koob, G. F., & Volkow, N. D. (2010). Neurocircuitry of addiction. *Neuropsychopharmacology, 35*(1), 217-238. doi:10.1038/npp.2009.110

Koran, L., Faber, R., Aboujaoude, E., Large, M., & Serpe, R. (2006). Estimated prevalence of compulsive buying behavior in the United States. *American Journal Of Psychiatry, 163*(10), 1806-1812.

Kranzler, H.R., & Li, T-K. (2008). What is addiction? *Alcohol Research & Health, 31*, 93-95.

Kuss, D. J., & Griffiths, M. D. (2011). Excessive online social networking: Can adolescents become addicted to Facebook?. *Education & Health, 29*(4), 68-71.

Kwang, T., Crockett, E. E., Sanchez, D. T., & Swann, W. B. (2013). Men seek social standing, women seek companionship: Sex differences in deriving self-worth from relationships. *Psychological Science (Sage Publications Inc.), 24*(7), 1142-1150. doi:10.1177/0956797612467466

Langleben, D., Ruparel, K., Elman, I., Busch-Winokur, S., Pratiwadi, R., Loughead, J., & ... Childress, A. (2008). Acute effect of methadone maintenance dose on brain FMRI response to heroin-related cues. *American Journal Of Psychiatry, 165*(3), 390-394.

Leung, L. (2008). Linking psychological attributes to addiction and improper use of the mobile phone among adolescents in Hong Kong. *Journal of Children & Media, 2*(2), 93-113. doi:10.1080/17482790802078565

Lo, S., Wang, C., & Fang, W. (2005). Physical interpersonal relationships and social anxiety among online game players. *CyberPsychology & Behavior, 8*(1), 15-20. doi:10.1089/cpb.2005.8.15

Lu, X., Watanabe, J., Liu, Q., Uji, M., Shono, M., & Kitamura,T. (2011). Internet and mobile phone text-messaging dependency: Factor structure and correlation with dysphoric mood among Japanese adults. *Computers in Human Behavior, 27*, 1702-1709. doi: 10.1016/j.chb.2011.02.009

Marlatt, G., Baer, J. S., Donovan, D. M., & Kivlahan, D. R. (1988). Addictive behaviors: Etiology and treatment. *Annual Review Of Psychology, 39*(1), 223.

Martin, P. R., & Petry, N. M. (2005). Are non-substance-related addictions really addictions?. *American Journal On Addictions, 14*(1), 1-3.

Maslow, A. H. (1943). A theory of human motivation. *Psychological Review, 50*(4), 370-396. doi:10.1037/h0054346

McIlwraith, R. (1990). *Theories of television addiction.* In R. McIlwraith (Chair), Television addiction: Theories and data behind the ubiquitous metaphor. Symposium conducted at the annual meeting of the American Psychological Association, Boston, MA.

Mehroof, M., & Griffiths, M.D. (2010). Online gaming addiction: The role of sensation seeking, self-control, neuroticism, aggression, state anxiety, and trait anxiety. *Cyberpsychology, behavior, and social networking, 13*(3), 313-316.

Meerkerk, G. J., van den Eijnden, R. M., Franken, I. A., & Garretsen, H. L. (2010). Is compulsive internet use related to sensitivity to reward and punishment, and impulsivity?. *Computers In Human Behavior, 26*(4), 729-735. doi:10.1016/j.chb.2010.01.009

Merriam, S. B. (2001) *Andragogy and Self-Directed Learning*. San Francisco: Jossey-Bass

Moustakas, C. (1994). *Phenomenological research methods.* Thousand Oaks, CA: SAGE Publications, Inc.

O'Brien, C. (2011). Addiction and dependence in DSM-V. *Addiction, 106*(5), 866-867. doi:10.1111/j.1360-0443.2010.03144.x

O'Guinn, T. C., & Faber, R. J. (1989). Compulsive buying: A Phenomenological exploration. *Journal Of Consumer Research, 16*(2), 147-157.

Patton, M. Q. (2002). *Qualitative research and evaluation methods (3rd ed.).* Thousand Oaks, CA: Sage.

Pearsall, J., &Trumble, B. (1996).*The Oxford encyclopedic English dictionary*. New York, NY: Oxford University Press.

Peele, S. (1985). How can addiction occur with other than drug involvements?. *British Journal Of Addiction, 80*(1), 23-25.

Pelling, E. L., & White, K. M. (2009). The theory of planned behavior applied to young people's use of social networking web sites. *Cyberpsychology& Behavior, 12*(6), 755-759.

Peng, W., & Liu, M. (2010). Online gaming dependency: A preliminary study in China. *Cyberpsychology, Behavior, and Social Networking, 13*(3), 329-333. doi:10.1089/cyber.2009.0082

People's addiction to networking sites on rise: study. (2010, March 25). Retrieved from http://economictimes.indiatimes.com/infotech/Internet/Peoples-addiction-to-networking-sites-on-rise-Study/articleshow/5721998.cms.

Polkinghorne, D. E. (2005). Language and meaning: Data collection in qualitative research. *Journal of Counseling Psychology, 52*(2), 137-145.

Potenza, M. N., O' Malley, S. S., Potenza, M. N., Steinberg, M. A., Skudlarski, P. P., Fulbright, R. K., & ... Wexler, B. E. (2003). Gambling Urge Questionnaire. *Archives Of General Psychiatry, 60*, 828-836.

Regard, M., Knoch, D., Gutling, E., & Landis, T. (2003). Brain damage and addictive behavior: A neuropsychological and Electroencephalogram investigation with pathologic gamblers. *Cognitive and Behavioral Neurology, 16*(1), 47-53.

Robinson, T. E., & Berridge, K. C. (2000). The psychology and neurobiology of addiction: An incentive-sensitization view. *Addiction, 95*(Suppl2), S91-S117. doi:10.1080/09652140050111681

Salyers, K. M., Ritchie, M. H., Cochrane, W. S., & Roseman, C. P. (2006). Inclusion of substance abuse training in CACREP-accredited programs. *Journal Of Addictions & Offender Counseling, 27*(1), 47-58.

Schaef, A.W. (1986). *Co-Dependence: Misunderstood-mistreated.* New York, NY: Harper & Row.

Schimmenti, A., & Caretti, V. (2010). Psychic retreats or psychic pits?: Unbearable states of mind and technological addiction. *Psychoanalytic Psychology, 27*(2), 115-132. doi:10.1037/a0019414

Shapira, N. A., Lessig, M. C., Goldsmith, T. D., Szabo, S. T., Lazoritz, M., Gold, M. S., & Stein, D. J. (2003). Problematic internet use: Proposed classification and diagnostic criteria. *Depression & Anxiety (1091-4269), 17*(4), 207-216. doi:10.1002/da.10094

Short, M. B., Black, L., Smith, A. H., Wetterneck, C. T., & Wells, D. E. (2012). A review of Internet pornography use research: Methodology and content from the past 10 years. *Cyberpsychology, Behavior & Social Networking, 15*(1), 13-23. doi:10.1089/cyber.2010.0477

Shotton, M. (1991). The costs and benefits of 'computer addiction'. *Behaviour & Information Technology, 10*(3), 219-230.

Smith, R. (1986). *Television addiction.* Hillsdale, NJ: Lawrence Erlbaum.

Spiegelberg, H. (1984). *The phenomenological movement: A historical introduction.* The Hague, Netherlands: Martinus Nijhoff Publishers.

Statistics. (n.d.) Retrieved from http://www.facebook.com/press/info.php?statistics

Suler, J. (2004). Computer and Cyberspace 'Addiction'. *International Journal Of Applied Psychoanalytic Studies, 1*(4), 359-362. doi:10.1002/aps.90

Sussman, S., Lisha, N., & Griffiths, M. (2011). Prevalence of the addictions: A problem of the majority or the minority?. *Evaluation &The Health Professions, 34*(1), 3-56.

Taylor, S. J., & Bogdan, R. (1998). *Introduction to qualitative research methods: A guidebook and resource (3rd ed.).* Hoboken, NJ US: John Wiley & Sons Inc.

Television watching statistics. (2012, February 7). Retrieved from http://www.statisticbrain.com/television-watching-statistics/

Turel, O., Serenko, A., & Giles, P. (2011). Integrating technology addiction and use: An empirical investigation of online auction users. *MIS Quarterly, 35*(4), 1043-A18.

Van Manen. M. (1990). *Researching lived experience: Human science for an action sensitive pedagogy.* New York, NY: State University of New York.

Volkow, N., & Fowler, J. (2000). Addiction, a disease of compulsion and drive: involvement of the orbitofrontal cortex. *Cerebral Cortex (New York, N.Y.: 1991), 10*(3), 318-325.

Volkow N. D., & Swanson J. M. (2003). Variables that affect the clinical use and abuse of methylphenidate in the treatment of ADHD. *Am J Psychiatry, 160*,1909–1918.

Volkow, N. D., & Wise, R. A. (2005). How can drug addiction help us understand obesity?. *Nature Neuroscience, 8*(5), 555-560. doi:10.1038/nn1452

Welte, J. (2001). Alcohol and gambling pathology among U.S. adults: Prevalence, demographic patterns and cormorbidity. *Journal Of Studies On Alcohol, 62*(5), 706.

Wertz, F. J. (2005). Phenomenological research methods for counseling psychology. *Journal of Counseling Psychology, 52*, 167-177.

Whang, L., Lee, S., & Chang, G. (2003).Internet over-users' psychological profiles: A behavior sampling analysis on internet addiction. *Cyberpsychology& Behavior, 6*, 143-150. doi:pdf/10.1089/109493103321640338

Whitehead, A. N. (1911). *An introduction to mathematics.* Cambridge, UK: Henry Holt and Company.

Whitney, L. (2010, February 16). Cell phone subscriptions to hit 5 billion globally. Retrieved from http://reviews.cnet.com/8301-13970_7-10454065-78.html

Widyanto, L., & Griffiths, M.D. (2006). 'Internet addiction': A critical review. *International Journal of Mental Health and Addiction, 4*(1), 31-51. doi:10.1007/s11469-006-9009-9

Wilson, K., Fornasier, S., & White, K. M. (2010).Psychological predictors of young adults' use of social networking sites. *Cyberpsychology, Behavior, and Social Networking, 13*(2), 173-177.

Yang, S., & Tung, C. (2007). Comparison of Internet addicts and non-addicts in Taiwanese high school. *Computers In Human Behavior, 23*(1), 79-96. doi:10.1016/j.chb.2004.03.037

Yellowlees, P. M., & Marks, S. (2007). Problematic Internet use or Internet addiction?. *Computers In Human Behavior, 23*(3), 1447-1453. doi:10.1016/j.chb.2005.05.004

Young, K.S. (1998). Internet addiction: The emergence of a new clinical disorder. *CyberPsychology & Behavior, 1*, 237–244.

Zamora, D. (2003). *Internet to sex: Defining addiction.* WebMD. Retrieved from http://my.webmd.com/content/Article/76/90153.htm

Zubieta, J., Lombardi, U., Minoshima, S., Guthrie, S., Ni, L., …Ohl, L.E. (2001). Regional cerebral blood flow effects of nicotine in overnight abstinent smokers. *Biol Psychiatry, 49*, 906–913.

APPENDIX A: INFORMED CONSENT

Dear Participant,

You are invited to participate in a qualitative research study that will the experiences of individuals who have self-identified as at-risk technology users. You are eligible to participate because you have identified at least one positive response on the TECH screening tool.

If you decide to participate, you will be one of approximately eight participants in the study. The interview will take approximately 45 to 90 minutes and will be audio recorded. The data collected by the investigators will not contain any identifying information or any link back to your participation in this study; therefore any information collected will be kept both private and confidential. Your information will be kept confidential by keeping data secure and limiting access to just the researchers and your privacy will be protected by de-identifying transcripts and using pseudonyms on the audio recordings.

The benefits of your participation in this human subject study include contributing to the current knowledge, characteristics, and views regarding current issues in the addictions profession. The risk for participating in this study is potential identification with at-risk technology use, which may create psychological discomfort. You may withdraw or decline without penalty at any time.

You are a volunteer. The decision to participate in this study is completely up to you. If you decide to be in the study, you may change your mind and stop at any time.

UNC Charlotte wants to make sure that you are treated in a fair and respectful manner. Contact the University's Research Compliance Office 704-687-1871, if you have any questions about how you are treated as a study participant. If you have any questions about the project, please contact me, Kristina Acosta, at 704-806-7535 or Dr. Pam Lassiter, at 704-687-8972.

I have read the information and by signing at the bottom of this page I am giving consent to participate in this study.

Thank you for taking the time to participate.

Sincerely,

Kristina M. Acosta, M.A.
Doctoral Candidate
Department of Counseling
University of North Carolina at Charlotte

Dissertation Chair
Dr. Pamela S. Lassiter
Department of Counseling
University of North Carolina at Charlotte

_____ _____

Participant's Signature Date

APPENDIX B: LETTER OF EXPLANATION

Dear Potential Participant,

You have been invited to participant in a research study concerning the use of technology. As a doctoral degree candidate in the Department of Counselor Education and Supervision at the University of North Carolina at Charlotte, I am currently in the process of collecting data for a pilot study for my dissertation.

The purpose of the study is to examine the experiences of individuals who have self-identified as at-risk technology users. The information that is gathered from the study will provide insight on the impact technology has on participants.

Your generous participation in this study will be greatly appreciated. This study will consist of two different data collection methods: an initial screening followed by an interview. The screening should take approximately 2 minutes to complete. If eligible, I will contact you to arrange a time for the interview. The interview will take approximately 45 to 90 minutes and will be audio-taped and then transcribed. If you choose to participate in this study, your information will be kept confidential by keeping data secure and limiting access to just the researchers and your privacy will be protected by de-identifying transcripts and using pseudonyms on the audio recordings. You may withdraw or decline without penalty at any time.

Your participation and time is greatly appreciated.

Sincerely,

Kristina M. Acosta, M.A.

Doctoral Candidate

Department of Counseling

University of North Carolina at Charlotte

APPENDIX C: DEMOGRAPHIC QUESTIONNAIRE

Instructions: Please indicate your answer following demographic questions by putting an "X" or filling out the answer on the appropriate line.

1. What is your sex?
   - ☐ Female
   - ☐ Male

2. Which of the following best identifies your race?
   - ☐ African American
   - ☐ Asian/Pacific Islander
   - ☐ Caucasian
   - ☐ Hispanic/Latino
   - ☐ Native American
   - ☐ Multi-Racial
   - ☐ Other _____

3. Which of the following best identifies your relationship status?
   - ☐ Single
   - ☐ In a relationship
   - ☐ In a relationship and living together
   - ☐ Married
   - ☐ Separated
   - ☐ Divorced
   - ☐ Widowed

4. What is your age? _____

5. Which of the following best identifies your family income?
   - ☐ Under $24,999
   - ☐ $25,000- $39,999
   - ☐ $40,000 - $49,999
   - ☐ $50,000 - $74,999
   - ☐ $75,000 - $99,999
   - ☐ $100,000 - $124,999
   - ☐ $125,000 - $149,999
   - ☐ Over $150,000

6. What is your current level of education?
   - ☐ Less than High School
   - ☐ Diploma or GED
   - ☐ Some College
   - ☐ Associate's Degree
   - ☐ Bachelor's Degree
   - ☐ Master's Degree
   - ☐ Ph.D.

7. List the primary technologies you use on a routine basis and rank order them from most to least used. Also indicate if you use the tech. for social use and/or school/ work or other.
   1. Tech: _____ Use: _____
   2. Tech: _____ Use: _____
   3. Tech: _____ Use: _____

8. How many years has technology been a part of your life? _____

APPENDIX D: TECH SCREENING TOOL

The TECH is a screening tool for identifying at-risk technology users. Please answer either yes or no to the following questions:

1. Have you ever been ticked off by people complaining about the amount of time you use (technology of choice)?
2. Do you use (technology of choice) to get your day started?
3. Have you ever felt the need to cut down on the amount of time you use (technology of choice)?
4. Do you often worry that you have caused harm to yourself or others because of your (technology of choice) use?

Two affirming responses indicate at-risk of technology use.

The TECH is a modified version of Ewing's (1984) original CAGE Questionnaire to address technology use.

APPENDIX E: INTERVIEW PROTOCOL

Research Study Title: Technology Addiction: A Phenomenological Approach

This interview is semi-structured with open-ended questions being the primary focus and a few probing questions to elicit more meaning from the interviewee.

Building Rapport

1. Tell me a little bit about yourself.
2. Please tell me three adjectives that best describe you.
3. Tell me about where you are from.
4. How long have you lived here?
5. What are you studying at UNCC?

Description of Technological Devices

1. Describe types of technological devices do you use?
2. Describe how you use these devices?

Experience of Technological Devices

1. Describe your overall experience with your use of (technology of choice).
2. As a social tool, how has your use of this technological devices enhanced your life? How has your use of this technological devices impacted your life?
3. What physical experiences have you had if you were not able to use your device?
    a. Probes:
        i. How does your use of (technology of choice) impact your life?

ii. Describe how you would feel if you could not use (technology of choice) for a day.

1. For a week.

2. If you stopped all-together.

iii. Describe how you feel after you use (technology of choice).

4. Tell me about the differences of when you first started using (technology of choice) compared to now.

a. Probes:

i. On an average day, how much time do you spend using (technology of choice)?

1. From the time you obtained the (technology of choice), how has your amount of use changed?

ii. What are the differences in what you use (technology of choice) for?

5. Addressing the TECH

a. Please elaborate on being ticked off by people complaining about the amount of time you use (technology of choice)

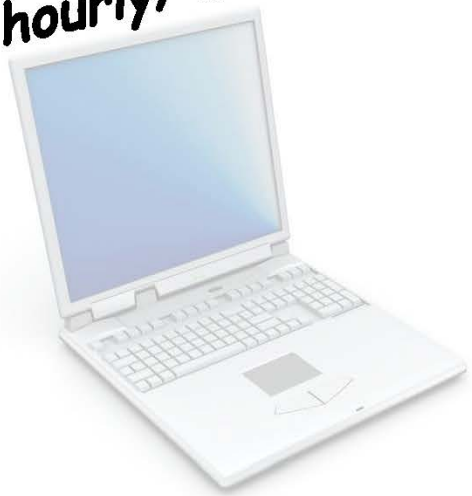
b. Please elaborate more on how you use (technology of choice) to get your day started.

c. Please elaborate on your need to cut down on the amount of time you use (technology of choice).

d. Explain your worry that you have caused harm to yourself or others because of your (technology of choice) use.

APPENDIX F: FLYER

Do you check your Facebook profile hourly/ daily?



Would you lose your mind if you could not use your phone for 24 hrs?

Do you freak out if you're in a car and there's no GPS?

Do you need multiple wall outlets to charge all your stuff at night?

If you answered yes to any of these questions or if there are other tech devices (GPS, T.V., computer, etc.) you couldn't live without, then you are just the person we are looking for. Contact Kristina Acosta at kmathews@uncc.edu or by phone at 704-806-7535 to participate in a study about experiences of tech device users.

APPENDIX G: TABLE 1

Summary of Themes													
	Themes	1	2	3	4	5	6	7	8	9	10	11	12
1	Cultural Necessity												
1a	Cultural Necessity: External World	xx	xx	x	xxxx	x	x	xx	x	x	x	xxxxx	
1b	Cultural Necessity: Internal World	xx	xxxx xx	x	xxxx xxx	xxxx xxx	xx xx x	xx xx xx	x	x	xxxx xxxx xx	xxxxx	xx x
2	Motivating Technology Use												
2a	Relationship: Fostering Connections	xxx	xxx	x	x	xxx	xx xx x	xx xx	X	xxxx xx	xxxx xx	xxx	xx x
2b	Enmeshment of functionality: Multiple modalities	xxxx xx	xx	xx	xxx	xx	xx xx	x	x	xxx	xxxx	x	xx
2c	Convenience:	xxx	xxxx	xx	xxxx xxx	xxxx	xx	xx xx	xx	x	xxxx	xxxxx x	xx
2d	Personal Benefit: Using for benefits	xxx	xx	xx x				xx xx	xx x	xxxx x	xxxx x	xx	xx xx
3	Consequences of Using Technology												
3a	Awareness of Time Consuming: Urges to Use Technology	xxxx x	xxxx xx xxx	xx xx xx	xxx	xxxx xxx	xx xx xx	x	xx x	xxxx xxx	xxxx xxxx	xxx	xx xx
3b	Inability to Function without Technology: Wouldn't know what to do	xxxx xxxx xx	xxx	xx x	xxx	xxx	xx	xx	x	xx	xxxx	x	xx
3c	Relationship: Erosion of Relationships	xxxx xxxx x	xxxx x	xx x	xx			xx x xx	xx xx	xxxx x	xxx	xxxxx	xx xx
3d	Emotional and Physical Disturbances: It would be earth shattering	xxxx xxxx xxxx x	xxxx x	xx	xxxx xx	xxxx xxxx x	xx xx	xx xx x xx x	xx	xxxx xx	xxxx xx	xxxxx xxx	xx
3d i	Need to Adapt	xxx		x	xx		xx x	x	xx		xx	xx	x
4	Influence of Continued and Advanced Technology Use:												
4a	Progression of Use	xxx			x	x	xx x	xx		xxxx x	x	xx	x
4b	Progression of Feeling	xxxx		xx xx	x	xxxx	x	xx	xx x	xx		xxxx	x
5	Devoid of Technology												
5a	Personal Benefit: Being without tech	xxx		x		xxxx	xx	x	xx	xx		x	
Not Significant													
13	Boundaries	xxx	xx		x	xx	x	xx		x			
3	Awareness of Time Consuming: Necessary	xxxx		x			x	x					
1	Experiencing Polarities	xxxx xxxx	x				xx			xx	xx		xx