ATHABASCA UNIVERSITY

THEN AND NOW: TECHNOLOGY USE OVER TIME

BY

JODY JANETTE SPRECKLEY (NÉE REMPEL)

A THESIS
SUBMITTED TO THE FACULTY OF GRADUATE STUDIES
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF COUNSELLING

GRADUATE CENTRE FOR APPLIED PSYCHOLOGY

ATHABASCA UNIVERSITY
MARCH, 2018

Athabasca University
FACULTY OF GRADUATE STUDIES

The future of learning.

Approval of Thesis

The undersigned certify that they have read the thesis entitled

THEN AND NOW: TECHNOLOGY USE OVER TIME

Submitted by

Jody Spreckley

In partial fulfillment of the requirements for the degree of

Master of Counselling

The thesis examination committee certifies that the thesis
and the oral examination is approved

Supervisor:
Dr. Paul Jerry
Athabasca University

Committee Member:
Dr. Simon Nuttgens
Athabasca University

External Examiner:
Dr. Shawn Fraser
Athabasca University

March 8, 2018

1 University Drive, Athabasca, AB, T9S 3A3 Canada
P: 780.675-6821 | Toll-free (CAN/U.S.) 1.800.788.9041 6821)
fgs@athabascau.ca | fgs.athabascau.ca | athabascau.ca

Dedication

For my family,

My constant support and the loves of my life,

Thank you for your patience and encouragement,

Without your help, this giant project would not have happened.

For my daughter,

My heart, my inspiration – I am so proud to be your mother!

Acknowledgements

Thank you, Dr. Paul Jerry, for your visionary approach to my nebulous idea of attachment patterns and technology use. Your gentle guidance was the solid foundation that allowed me to explore ideas, falter, and finally, after many, many words of encouragement, supported me while I wrote this seemingly unending thesis. Thanks for not giving up on me.

Thank you to my family. You travelled this arduous path of *almost* being done writing for a great many days. I appreciate your love and support more than anything.

Thank you to the amazing women who took part in this study. Your openness, insights, and willingness to be vulnerable brought a wealth of information to this project. I have learned so much from you!

Abstract

In this transcendental phenomenological study, the research question explored was: What is the essence of how counselling students related to technology over time? For participants, becoming increasingly familiar with technology involved receiving support, feeling uncomfortable, exploring possibilities, viewing technology as a tool, and examining the social dynamics involved with technology use. A new, developmental theory of using technology, the stages of technology use by Rempel and Jerry (2013), was described. Using the data from this study, Rempel and Jerry's theory was refined and a conceptual model for understanding beneficial and problematic technology use was developed, based on attachment theory and Erikson's (1950/1993) psychosocial developmental model.

Keywords: transcendental phenomenology, technology use over time, developmental technology use theory, stages of technology use

A Poem

The Internet is My Home

The Internet is my home.
It's full of funny cats.
You'll probably come across a hipster poem,
Or some galaxy print hats.
Sometimes I wonder why
Instagram, Facebook, and Twitter are blue.
Is it because us Internet lurkers don't see the sky
and turn our brains to goo?
Some of us Internet hobos could be great
philosophers, writers, and such,
but that isn't fate.
The distractions of the Web are just too much.
So, if you're ever feeling lonely,
you're just a MacBook away.
There's one condition only:
Once you come, you must stay.

Rempel, M. (2013). *The Internet is my home* [poem]. Unpublished manuscript.

Table of Contents

List of Tables

List of Figures

Chapter I: Introduction

Then and Now: Technology Use Over Time

Overview

In this research study, I explored the research question: What is the essence of how counselling students related to technology over time? I began by reviewing literature using attachment theory to organize and synthesize research about people's patterns of relating to technology. I provided the rationale for conducting this qualitative study based on Moustakas' (1994) extensions of Husserl's (1931/2012) transcendental phenomenology. I also described my data collection and analysis strategies, credibility factors included in this study design, and the limitations of this research project. I concluded by discussing the research findings, presenting a new eight stage theory of using technology (Rempel & Jerry, 2013), describing how the outcomes related to theory, and noting the potential applications of this study.

Introduction

Technology infuses today's society and many people are negotiating a complex landscape of demands on their time. People are balancing work responsibilities, caring for family members, social relationships, and leisure activities, in addition to learning and using technology. In the past decade, the advances in online capabilities, or Web 2.0 technologies, introduced myriad opportunities for people to engage in the "architecture of participation" (O'Reilly, 2007, Akamai vs. BitTorrent section, para. 3). Researchers found that people used technology to satisfy various psychological and social needs (Colas, Gonzalez, & de Pablos, 2013; Walsh, White, & Young, 2010). For example, researchers reported that people experienced rates of problematic technology use (PTU)

ranging from 0.7% to 20.6% (Goel, Subramanyam, & Kamath, 2013; Ko et al., 2006). Researchers noted that the variations reported in rates of PTU were possibly due to the measures used (Kuss, van Rooij, Shorter, Griffiths, & van de Mheen, 2013) and the populations sampled (Bakken, Wenzel, Gotestam, Johansson, & Oren, 2009). Researchers also explored the positive implications of technology use.

Researchers found that some people benefitted from spending time online and identified several factors related to engaging positively with technology (Kraut et al., 2002). More recently, Baker and Moore (2011) reported agreement among most bloggers that "blogging has psychosocial benefits for them, especially via the harnessing of social support" (p. 390). People engage with technology in an array of problematic and beneficial ways, and there is a need for greater breadth in how researchers and counselling professionals conceptualize people's technology use.

Statement of the Problem

Based on the diverse factors associated with how people used technology, Kuss and colleagues (2013) highlighted the need for qualitative research exploring "the effects of interacting variables on the development of Internet addiction" (p. 1993). There is also a need to explore how factors relate in the development of beneficial relationships with technology. For example, Notley (2009) engaged in an ethnographic study and explored how adolescents developed and used their online networks over time. Notley also identified 10 benefits these adolescents experienced because they were able to go online while at school. There is a need for qualitative exploration of the complex range of factors related to technology use over time.

Purpose of the Study

To address this missing component in current research, I engaged in a transcendental phenomenological study (Moustakas, 1994). The purpose of this research project was to describe the essence of how counselling students used technology over time. I collected the data by conducting interviews with students and graduates of an online master of counselling program. This study outlined the essence of how counselling students interacted with technology over time; however, data was not abstracted to the level of a group composite in order to preserve each student's description of her relationship with technology.

Research Question

I explored the key research question: What is the essence of how counselling students related to technology over time? There are two assumptions that were made in the development of this research question. First, that most counselling students and graduates of an online master of counselling program are familiar with using various types of technology, meaning that their technological skill levels have increased over time. The second assumption was that most counselling students and graduates will report using technology beneficially, meaning that they used technology to support their personal growth and development, and that their technology use is congruent with their values, beliefs, and life-goals.

Theoretical Approach to the Research

In this study, I used Moustakas' (1994) extensions of Husserl's (1931/2012) transcendental phenomenology as I sought to identify the essence of how counselling students related to technology. Moustakas (1994) explained that "Husserl's approach is

called ‘phenomenology’ because it utilizes *only* the data available to consciousness—the *appearance* of objects” (p. 45). Moustakas (1994) continued by writing that Husserl’s approach is “considered ‘transcendental’ because it adheres to what can be discovered through reflection on subjective acts and their objective correlates” (p. 45). A transcendental phenomenology study involves gathering detail rich information based on people’s descriptions of their personal experiences with a phenomenon (Moustakas, 1994). I used Moustakas’ (1994) adaptations of van Kaam’s method of data analysis to describe the essence of relating to technology over time, or as Creswell explained “what all participants have in common as they experience a phenomenon” (Creswell, 2013, p. 76).

Goals of this Study

The primary goal of this study was to describe the essence of how people related to technology over time. A second goal of this study was to use the data collected to refine Rempel and Jerry’s (2013) theory of technology use. Rempel and Jerry’s theory is described in detail in chapter five (V) of this proposal (see also Table 1 p.157 for a summary of this model).

Significance of this Study

The significance of this research was the descriptions of how people progressed in their relationships with technology over time. Another contribution of this study was the development of a conceptual model that describes how people progress in the beneficial and problematic use of technology (see Figure 2 p. 168).

Defining Key Terms

Technology. The term technology in this study included information and communication technologies (ICTs) and electronic devices, for example, computers, tablets, cell phones, and gaming consoles. Specifically, the concept of *technology use* was explained to participants as including the activities of texting, using the Internet, gaming (either online or offline), instant messaging, blogging, information seeking, shopping, banking, accessing entertainment (i.e., downloading, or viewing videos, movies, television shows, and music), and participating in virtual worlds, chatrooms, wikis, social networks, and discussion forums. Throughout this research, the term technology was used interchangeably with *digital media*.

Problematic technology use. The term, problematic technology use (PTU), described when people experienced negative intrapersonal and/or interpersonal consequences resulting from their technology use (Young, 1998; see also Caplan, 2005; Kim, LaRose, & Peng, 2009; Ko, Yen, Yen, Lin, & Yang, 2007; Lee, Lee, & Kwon, 2011; Yao & Zhong, 2014). In the counselling context, people would generally be considered as experiencing PTU when they reported difficulties in their lives because of their technology use and/or when they believed that their technology use was incongruent with their values and was undermining their ability to achieve their life goals. For example, PTU would be conceived as occurring when a university student receives poor marks because of spending time on social networking sites (SNS) instead of completing assignments, but claimed that s/he wanted to become a lawyer. Throughout the literature, various terms have been used for describing people's PTU including Internet addiction (Young, 1998), pathological Internet use (Davis, 2001), problematic Internet use (Caplan,

2005), and pathological technology use (Sim, Gentile, Bricolo, Serpelloni, & Gulamoydeen, 2012).

Integrated technology use. The term integrated was defined in the *Oxford Canadian Dictionary* as "designating or characterized by a personality in which the component elements combine harmoniously" (Fitzgerald, Howell, & Pontisso, 2006, p. 509). In this study, people are conceived as having an integrated approach to technology use when their values and goals for their lives were aligned with how they engaged with technology. Essentially, people with an integrated relationship with technology primarily used technology in a positive/beneficial and harmonious way to support and enhance their online and offline lives and/or the lives of others. Also, it is important to note that people who related to technology in an integrated manner were conceived as having a range of technological skills, from basic to advanced.

New media literacy. Chen, Wu, and Wang (2011) wrote that new media literacy involved two types of skills: (a) computer literacy skills, defined as the technical skills needed to use computers and software programs, and (b) information literacy skills which "requires the users to be familiar with the Internet, have a good understanding of information types and formats, and exercise critical analysis and evaluation of online information" (p. 86). In this study, new media literacy was defined according to Chen et al.'s definition and is conceptualized as occurring along a continuum, from having few technical digital media skills and limited information literacy skills to possessing well-developed technical skills and engaging critically with media. In this study, critical media literacy meant being aware of "the textual and social meaning of the media

content, the social values, purpose of the media producers as well as the power position of the media producers and audience" (Chen et al., 2011, p. 86).

Phenomenon. Husserl (1931/2012) conceptualized phenomena as including people's thoughts, sensory experiences, and imagined representations of objects and events.

Essence. Husserl (1931/2012) developed the concept of essence as "that which the intimate self-being of an individual discloses to us *'what'* it is" (ss 3, para. 1). Husserl (1931/2012) further explained that the pure essence of an object "has *its own proper mode of being*, its own supply of *essential* predicables which must qualify it" (ss 2, para. 2).

Noema. Husserl (1931/2012) conceptualized noema as the perception of a phenomenon.

Noesis. Moustakas (1994) explained that noesis was "the act of perceiving feeling, thinking, remembering, or judging—all of which are embedded with meanings that are concealed and hidden from consciousness" (p. 69).

Intuition. Husserl (1931/2012) wrote that the word experience can be substituted with "the more general [word] 'intuition'" (ss 20, para. 1). Husserl also explained that intuition involved perceiving something, or becoming aware of a *noema* (a phenomenon).

Intentionality. For Husserl (1931/2012), intentionality was comprised of both noema and noesis. Moustakas (1994) explained that intentionality involved "the working out of the noema-noesis relationship…[and] the derivation of meanings is an essential function of intentionality" (p. 31).

Epoché. The Greek word epoché is interchangeable with Husserl's (1931/2012) notion of bracketing and engaging in epoché facilitates researchers' intentionality. Husserl (1931/2012) explained that bracketing involved the need to engage in doubting about the experience of a phenomenon, meaning to acknowledge pre-judgments about a phenomenon, because:

> it is likewise clear that the *attempt* to doubt any object of awareness in respect of its *being actually there necessarily conditions a certain suspension…of the thesis*; and it is precisely this that interests us…. *We do not abandon the thesis we have adopted, we make no change in our conviction*, which remains in itself what it is so long as we do not introduce new motives of judgment, which we precisely refrain from doing. And yet the thesis undergoes a modification—whilst remaining in itself what it is, *we set it as it were 'out of action'*, we '*disconnect it', 'bracket it'*. It still remains there like the bracketed in the bracket….We can also say: The thesis is experience as lived…, *but we make 'no use' of it*. (ss 31, para. 5)

Phenomenological Reduction. Researchers using transcendental phenomenology engage in the process of phenomenological reduction, after they have bracketed their beliefs about the phenomenon and bracketed their research question (Moustakas, 1994). Phenomenological reduction involves a "return to the self; we experience things that exist in the world from the vantage point of self-awareness, self-reflection, and self-knowledge" (Moustakas, 1994, p. 95).

Horizons. Husserl (1931/2012) advocated that a phenomenon could be experienced in infinite possible ways. Moustakas (1994) wrote that the horizons of a

phenomenon are unlimited and explained, “each horizon as it comes into our conscious experience is the grounding or condition of the phenomenon that gives it a distinctive character” (p. 95).

Horizonalization. Researchers engage in the process of horizonalization by gathering detailed descriptions about people’s experiences with a phenomenon and treating each statement as equal in value (Moustakas, 1994).

Imaginative Variation. Is another part of the research process “in which many possibilities are examined and explicated reflectively” (Moustakas, 1994, p. 99). In imaginative variation “the structures of the experience are revealed; these are the conditions that must exist for something to appear” (Moustakas, 1994, p. 98).

Chapter II: Reviewing Relevant Literature

This literature review is comprised of two main sections with research findings grouped according to factors associated with beneficial patterns of engaging with technology and factors related problematic patterns of using technology. Literature included in this review frequently involved research with adolescents as the participants; however, several studies were included with participants who were either attending university or older adults, who were defined as being at least 55 years old. Articles in this review were limited to peer-reviewed journals and were located on the Discover for Scholarly Articles search engine, Google Scholar, Academic Search Complete database, Science Direct database, or by reading reference lists. Keywords used in searches included: counselling and Internet addiction, Internet use and psychology, literature reviews and Internet addiction, incidence and remission of Internet addiction, identity development and loneliness, Internet use and developmental stages, attachment styles and identity development, adults and Internet addiction, using digital media, and learning digital media.

Conceptualizing Patterns of Engaging with Technology

Researchers have reported that people used technology based on a variety of personal and interpersonal experiences that included family factors (Ko et al., 2007; Park, Kim, & Cho, 2008; Siomos et al., 2012), perceptions about social skills (Caplan, 2005; Kim et al., 2009), feelings of loneliness (Kim et al., 2009; Yao & Zhong, 2014), and variations in self-esteem (Kim & Davis, 2009; Ko et al., 2007). In this literature review, attachment theory (Ainsworth, Bell, & Stayton, 1971; Bowlby, 1988) facilitates organizing and explaining people's experiences and intrapersonal factors related to using

technology primarily in either beneficial or problematic ways. Specifically, Bowlby's (1988) working models of the self and of other people can be used to differentiate patterns of relating to technology.

Attachment Theory

Bowlby (1988) posited that people developed either positive models or negative models about themselves and about other people. Bartholomew and Horowitz (1991) used Bowlby's concept of working models in their research with adults and identified four combinations of working models, or attachment styles. Bartholomew and Horowitz referred to these attachment styles as: *secure* (positive self-model, positive other-model), *preoccupied* (negative self-model, positive other-model), *fearful-avoidant* (negative self-model, negative other-model), and *dismissive-avoidant* (positive self-model, negative other-model).

Bartholomew and Horowitz (1991) found that people with a secure attachment style were considered warm by people who were close to them, retained their sense of self when involved romantically, had interpersonal relationships characterized by high degrees of intimacy, and sought to balance control in their friendships. In a literature review about attachment styles and factors associated with healthy, effective adults, Lopez and Brennan (2000) noted that people with secure attachments and optimal functioning had "a remarkable capacity to develop, maintain, and enlarge their networks of supportive, intimate relationships" (p. 283). In contrast to people with a secure attachment style, Bartholomew and Horowitz reported that people with insecure attachment styles tended to: (a) have less self-confidence and engage in more self-disclosure (pre-occupied style), (b) engage in less self-disclosure, be less warm in

relationships, and have notably high levels of self-confidence (dismissive style), or (c) have less self-confidence, engage in less self-disclosure, and report fewer intimate relationships (fearful style). Similarly, Collins and Read (1990) found that adults who were comfortable with developing intimate relationships and depending on other people also had higher levels of self-worth, social confidence, and expressiveness, when compared to feelings of self-worth and social confidence reported by people with anxious attachment patterns. These characteristic patterns of relating to other people and beliefs about one's self according to secure attachment and insecure attachment styles will now be used to conceptualize patterns of engaging with technology.

Relating to Technology in a Beneficial Way

Researchers have investigated how people used technology to meet their psychological and social needs. For example, Lee, Lee, and Kwon (2011) explored factors that included the interactions between people's subjective well-being (SWB), satisfaction with life, and amount of self-disclosure on SNS among a group of 217 university students in South Korea. Lee and colleagues (2011) concluded, "the results suggest that the amount of self-disclosure through SNS is positively related with subjective well-being [SWB]" (p. 154). Quevedo and Abella (2011) also explored the relationships between SWB, various personality factors, and several personality traits among a group of 554 adults. Quevedo and Abella (2011) reported, "optimism, social support and self-esteem made a greater contribution to the majority of SWB indicators than personality factors" (p. 210). Quevedo and Abella's research about the relationship between social support and SWB aligns with Lee and colleagues' findings about self-disclosing on SNS and indicates that social support likely results from self-disclosing on

SNS. In another study, Valenzuela, Park, and Kee (2009) explored the relationship between college students' social capital and engagement on a SNS, and found that "intensity of Facebook use was positively associated with life satisfaction and social trust" (p. 889). Valenzuela et al. and Lee et al.'s research points to the benefits that people can derive from accessing social support online. Looking to other people for support and believing that others are trustworthy are characteristics of securely attached individuals (Collins & Read, 1990).

Researchers have also explored the relationship between family dynamics and adolescents' patterns of using technology. Park, Kim, and Cho (2008) included 903 adolescents in their study and reported that higher quality family communication patterns and better parenting attitudes acted as protective factors against adolescents' PTU. Siomos and colleagues (2012) explored the role of parental bonding on adolescents' patterns of using the Internet, in a study that involved 2,017 adolescents. Siomos et al. concluded that adolescents were less likely to experience PTU when they had parents who were warm and affectionate with them and whose parents allowed them to express their individuality. People with secure attachments also reported having parents who were "warm and not rejecting" (Collins & Read, 1990, p. 654).

Relating to technology in a beneficial manner is not limited solely to people with secure attachments. In a research study among two groups of college students, Morey, Gentzler, Creasy, Oberhauser, and Westerman (2013) investigated the interaction between attachment styles and using technology to communicate with romantic partners. Morey and colleagues (2013) reported that "more frequent SNS use was associated with greater intimacy/support for individuals higher in attachment anxiety" (p. 1776). Morey

et al.'s findings were similarly reported in research by Boute, Wood, and Pratt (2009). Boute and colleagues found that people with fearful attachments reported engaging in significantly more self-disclosures with their online friends when compared to the amount of online self-disclosures that participants with secure attachments engaged in. In their study, Morey and colleagues (2013) also reported that people with avoidant attachments were less likely to send their partners text messages, when compared to the frequency that participants with other attachment styles texted their romantic partners. However, participants with avoidant attachments also indicated that they felt greater intimacy and support from their partners when they engaged in more frequent text exchanges with their partners (Morey et al., 2013). Morey and colleagues (2013) concluded that "more detailed research on SNS use and attachment may provide more insight into these findings" (p. 1777). Morey and colleagues' research supports the beneficial use of technology for people with insecure attachment styles.

Interactions between social acceptance, mental well-being, and technology use have also been investigated. Szwedo, Mikami, and Allen (2012) explored the relationships between young adults' (Mean age = 20.57) use of SNS and their psychological adjustment over a one-year period. Szwedo and colleagues (2012) surmised that participants who reported lower levels of social acceptance benefitted from "having a larger network of online friends [because it] may serve a buffering function against anxious-depressive symptoms" (p. 463). In contrast, Szwedo et al. (2012) reported "for young adults who received posts from a greater number of friends, higher self-perceived social acceptance predicted a residualized *increase* in anxious-depressive symptoms and social withdrawal symptoms over time" (p. 463). Szwedo and colleagues

(2012) noted "these results are consistent with the displacement hypothesis posited by some online communication researchers, and suggest that online relationships may have different implications for individuals depending on their initial levels of social functioning" (p. 463). People can benefit from socializing using technology-mediated communications, but care needs to be taken with how much time using technology is detracting from time spent engaging in offline relationships (Szwedo et al., 2012).

Szwedo and colleagues' (2012) research presented a more nuanced interaction between mental well-being and time spent using SNS, when compared to Valenzuela and colleagues' (2009) research, where higher intensity of Facebook use was related to greater social trust and increased life satisfaction. Szwedo et al.'s research also presented a more intricate picture of SNS use, when compared to Lee and colleagues' (2011) findings, where higher levels of self-disclosure on SNS was related to greater feelings of SWB. Szwedo and colleagues' findings indicated that regulating how much time is spent online may be especially important for people who believe they are socially accepted. Taken as a whole, Lee and colleagues' findings, Valenzuela et al.'s research, and Szwedo and colleagues' results indicates a diverse range of factors are involved in using technology beneficially.

Researchers Yao and Zhong (2014) explored the interactions between participants' offline and online relationships and their feeling of loneliness. In this study, 361 university students participated and the researchers collected data twice over a period of four months (Yao & Zhong, 2014). Yao and Zhong (2014) reported that "offline social contacts reduced participants' feelings of loneliness and symptoms of Internet addiction, but online social contacts increased Internet addiction" (p. 168). Spending

time using technology can help people connect socially and access interpersonal support (Buote et al., 2009; Lee et al., 2011; Morey et al., 2013; Szwedo et al., 2012; Valenzuela et al., 2009), but research also supports the importance of maintaining offline relationships (Szwedo et al., 2012; Yao & Zhong, 2014).

Research by Khang, Kim, and Kim (2013) explored the role of regulating the amount of time spent using technology amongst a group of 290 university students. Khang and colleagues investigated the interactions of self-control, motives for using technology, and engagement with technology. Khang et al. (2013) found that "self-control most significantly affected both users' flow and addiction in relation to their use of the Internet, video games, and mobile phones" (p. 2422). This research supports the importance of self-control in being able to use technology beneficially.

Li, Zhang, Li, Zhen, and Wang (2010) investigated the relationship between technology use, self-control, and experiencing a stressful life event amongst a group of 660 adolescents. Li and colleagues reported that female participants, who had higher levels of effortful control and experienced a stressful life event, were less likely to report PTU, when compared to reports of experiencing PTU amongst female participants who had lower levels of effortful control and experienced a stressful event. In this study, male participants who experienced a stressful life event were not protected from experiencing PTU, based on their levels of effortful control (Li et al., 2010). However, higher levels of effortful control did protect males from maladaptive cognitions about their PTU (Li et al., 2010). Li and colleagues (2010) explained that having higher levels of effortful control meant that adolescents "can better focus and shift their attention (attentional focusing), suppress inappropriate responses (inhibitory control), and perform an action when there is

a strong tendency to avoid it (activational control)" (p. 1200). These research findings support the value of being able to self-regulate when engaging with technology. From an attachment perspective, Bartholomew and Horowitz (1991) noted that maintaining a balance of control in interpersonal relationships was a characteristic of securely attached individuals. Being able to self-regulate is of benefit in interpersonal relationships and in how one relates to using technology. Researchers have also explored the role of interpersonal relationships, social connection, and technology use among older adults.

In a qualitative study among a group of 48 older adults, Chattaraman, Kwon, and Gilbert (2012) conducted focus-group discussions to explore the role of the Internet on participants' perceived quality of life. Chattaraman and colleagues found that social connectedness was the most frequently mentioned positive impact of going online. Specifically, Chattaraman et al. (2012) noted, "the Internet improved their [participants'] quality of life and happiness through communication with family and friends, which served to sustain and strengthen their social connectedness and friendships" (p. 6). Chattaraman and colleagues (2012) also reported that "Internet interactions reduced an individual's inclination to interact in real life, and often served as a poor replacement for 'real life' social engagement, connectedness, and sense of community" (p. 8). The mixed findings about spending time online reported by Chattaraman et al. coincide with the results of other research studies where the value of being able to interact online was noted (Buote et al., 2009; Lee et al., 2011; Morey et al., 2013; Szwedo et al., 2012; Valenzuela et al., 2009) and the importance of keeping up offline connections (Szwedo et al., 2012; Yao & Zhong, 2014).

In another study that also involved exploring older adults' use of technology, Cotten, Anderson, and McCullough (2013) investigated how 60 older adults residing in assisted and independent living communities perceived socializing online. Cotten and colleagues found that participants' Internet use related to lower levels of loneliness, but noted that going online did not influence participants' feelings of social isolation. Cotten et al. (2013) surmised, "the Internet is comparatively worse at affecting either the quantity or quality of communications or helping to establish new relationships" (p. 9). Reports of technology use among older adults in many ways paralleled research about college students and adolescents' experiences; primarily, that using technology to access social support and maintain relationships can be beneficial, with the caveat that time spent using technology does not detract from real-life social connections (Chattaraman et al., 2012; Szwedo et al., 2012; Yao & Zhong, 2014).

Various psychological factors and social motivations for engaging with technology related to people using technology in beneficial, secure ways. For example, technology use was beneficial when people used technology-mediated communications to receive social support and maintain their existing relationships (Buote et al., 2009; Chattaraman et al., 2012; Lee et al., 2011; Morey et al., 2013; Valenzuela et al., 2009). Researchers found that people who connected socially using technology reported higher levels of SWB (Lee et al., 2011), life satisfaction (Valenzuela et al., 2009), and quality of life (Chattaraman et al., 2012). Going online also decreased feelings of loneliness (Cotten et al., 2013) and protected less socially accepted people from experiencing anxious-depressive symptoms (Szwedo et al., 2012), when time spent using technology was not detracting from offline relationships (Chattaraman et al., 2012; Szwedo et al.,

2012; Yao & Zhong, 2014). People who used technology beneficially were more likely to have supportive family environments (Park et al., 2008; Siomos et al., 2012) and have greater self-regulation (Khang et al., 2013; Li et al., 2010), when compared to people who reported experiencing PTU. Researchers have also explored various psychological and social factors related to using technology in ways that resulted in people experiencing negative life consequences and outcomes.

Relating to Technology Problematically

Researchers found various intrapersonal and interpersonal factors associated with experiencing PTU. In a one-year prospective study, Ko, Yen, Yen, Lin, and Yang (2007) investigated the interactions between personality traits, self-esteem, PTU, and family factors. A total of 517 adolescents completed the first wave of this study and 468 adolescents participated in both waves (Ko et al., 2007). Ko and colleagues found that low self-esteem and low family function predicted adolescents' experiences of PTU. Ko et al. also reported that two personality traits predicted PTU. The personality traits that predicted PTU (Ko et al., 2007) were being high in novelty seeking (NS), explained as high exploratory excitability, and low scores in reward dependence (RD), meaning when people are not very responsive to either verbal approval or social reinforcement, and have low levels of persistence (Cloninger, 1987). Adolescents were also found to be more likely to experience PTU when their families have poor communication and problem solving skills, and lower levels of affection (Smilkstein, 1978), they have lower self-esteem, higher exploratory excitability, and when they are not very responsive to social signals and verbal approval (Ko et al., 2007), when compared to adolescents whose families had better communication and problem solving skills, and higher levels of

affection (Smilkstein, 1978), had higher self-esteem, lower exploratory excitability, and were more responsive to social signals and verbal approval (Ko et al., 2007).

Researchers have also explored the interactions between self-esteem, anxiety, and experiencing PTU. In a study that involved 315 university students, Kim and Davis (2009) explored the relationships between self-esteem, anxiety, and PTU. Kim and Davis found that lower levels of self-esteem predicted PTU. Kim and Davis also reported that participants with higher levels of anxiety and lower levels of self-esteem were at greater risk for PTU, when compared to the levels of anxiety and self-esteem reported by people who were not experiencing PTU. Kim and Davis' research supported Ko et al.'s (2007) results about the relationship between having lower self-esteem and PTU.

Ko and colleagues' (2007) research and Kim and Davis' (2009) findings converge with Collins and Read's (1990) study about adults' attachment styles. Specifically, Collins and Read (1990) found that adults who related to other people in an anxious, distrustful manner "had a lower sense of self-worth and social self-confidence, and were much lower in instrumentality" (p. 652). Low levels of self-worth and feelings of anxiety are factors associated with having problematic patterns of relating to other people and to one's technology use.

Researchers also investigated the interactions between self-esteem and cell phone use. Walsh, White, and Young (2010) explored how various psychological needs related to patterns of mobile phone use among a group of 946 youth, who ranged in age from 15 to 24 years old. Walsh et al. (2010) found that participants who engaged extensively with their cell phones obtained "feelings of validation from others (such as feeling valued, loved) indicating that mobile phone use may enhance one's self-esteem" (p. 200). These

researchers also noted that participants who relied on other people to enhance their self-esteem could be a greater risk for developing a behavioural addiction to their cell phones, due to the reinforcing effect of using technology to attenuate lower feelings of self-confidence (Walsh et al., 2010). Bartholomew and Horowitz (1991) also reported a pattern of seeking affirmation from other people, due to lower perceptions of self-worth, in their study with people who had insecure attachments. Bartholomew and Horowitz noted that seeking approval from other people was a characteristic found primarily among people with a pre-occupied attachment style (negative self-model, positive other-model). Looking to external sources for validation and self-worth contributes to insecure, problematic patterns of relating to other people and to using technology.

Caplan (2005) explored the interactions between social self-confidence and PTU. In a study that involved 251 university students, Caplan found that people who preferred socializing online and who lacked confidence in their abilities to engage effectively in face-to-face conversations experienced greater difficulty regulating their time online, when compared to people who believed they were effective at communicating in social situations and who preferred face-to-face communications. Researchers Kim, LaRose, and Peng (2009) built on Caplan's findings and investigated the causal pathways between loneliness, self-perceived deficient social skills, preferences for socializing online, PTU, and negative life outcomes. Kim and colleagues found that participants, who reported feeling lonely, believed they had deficient social skills, and who preferred socializing online experienced greater difficulties regulating their time online and had more negative life outcomes. Furthermore, Kim et al. noted a cycle where experiencing negative life outcomes led to increased loneliness. Collins and Read (1990) found that people with

insecure attachments had lower levels of social self-confidence, when compared to securely attached participants' levels of social self-confidence. Lower levels of social confidence, feeling lonely, and negative life experiences support a self-perpetuating cycle of relating problematically to technology (Kim et al., 2009).

Researchers have also explored the relationship between attachment styles and risk-taking behaviours. In a study that involved 218 university students, Morsunbul (2009) found that people with negative self-models were more likely to engage in risk-taking behaviours "related to social position…traffic, and risk taking related to substance using" (p. 234), when compared to participants who had positive self-models. People with negative self-models are more willing to engage in risky behaviours and seeking new, or exciting experiences may be an aspect of willingness to take risks. Ko and colleagues (2006) explored the interactions of PTU with the personality constructs of NS, RD, and harm avoidance (HA) among a group of 3,662 adolescents. Ko et al. (2006) reported that high NS was "the most significant predictor of Internet addiction and substance use" (p. 890). Ko et al. (2006) also found that participants who scored high on NS and high on HA were more likely to report experiencing PTU, but these participants were not as likely to report using substances, when compared to levels of PTU and substance use reported by participants who only scored high on NS. Adolescents are more likely to engage in behaviours that could result in serious consequences when they have a negative self-model, or have high levels of exploratory excitability.

In another study, Odaci (2013) explored the interactions between risk-taking, self-efficacy feelings, and PTU amongst a group of 556 university students. Odaci found a significant relationship between PTU and engaging in risk-taking behaviours. Odaci also

noted that participants who reported having higher levels of academic self-efficacy were significantly less likely to report engaging in PTU, when compared to the likelihood of experiencing PTU reported by participants with lower levels of academic self-efficacy. Feelings of self-efficacy, a factor associated with having a secure attachment style (Bartholomew & Horowitz, 1991; Collins & Read, 1990), acted protectively against experiencing PTU (Odaci, 2013). People with negative views of themselves, or of their abilities, are more likely to engage in problematic behaviours that involved risk-taking (Morsunbul, 2009; Odaci, 2013) and engaging in PTU (Odaci, 2013).

Dumas, Ellis, and Wolfe (2012) explored the relationships between identity development factors and risk-taking behaviours. Dumas and colleagues investigated interactions between identity development, risk-taking, and peer-group pressure, among a group of 1,070 adolescents. Dumas et al. (2012) found, "teens high in both identity commitment and exploration experiencing the lowest amount of risk behavior [substance use and general deviancy]" (p. 923). Having a well-developed sense of self and exploring one's identity are not only protective factors against risk-taking behaviours, these factors are also characteristics described in Koepke and Denissen's (2012) prototype of optimal development from adolescence to early adulthood.

Koepke and Denissen (2012) created an optimal developmental prototype by integrating identity development theory with theories about separation-individuation, meaning theories about children and adolescents' growing awareness about the "distinction between self and other" (p. 76). Koepke and Denissen (2012) explained that optimal development involved a fluctuating "balance between autonomy [exploration] and attachment [comfort with closeness]" (p. 81) between adolescents and their parents

that, ultimately, led to a relationship characterized by mutuality and power sharing. Koepke and Denissen's second prototype, referred to as disruptive development, involved adolescents' separation from parents that "indicates persistent detachment" (p. 81) leading to inhibited autonomy and identity development. Koepke and Denissen's research on optimal development has elements, for example, distinction of the self, mutuality and power sharing, of a secure attachment style (Bartholomew & Horowitz, 1991), while their prototype of disruptive development and the persistent detachment observed (Koepke & Denissen, 2012) has components of insecure attachment styles (Bartholomew & Horowitz, 1991).

Israelashvili, Kim, and Bukobza (2012) explored the interactions between identity development factors and PTU. Israelashvili and colleagues found that lower self-concept clarity and lower levels of ego development predicted greater likelihood of experiencing PTU, among a group of 278 adolescents. Bartholomew and Horowitz (1991) described people who were unsure of themselves and of the dependability of others as having insecure attachment styles. People with problematic patterns of relating, conceptualized either as having insecure attachments (Bartholomew & Horowitz, 1991) or as disruptive development (Koepke & Denissen, 2012), were more likely to engage in risk-taking behaviours (Dumas et al., 2012; Morsunbul, 2009) and to engage in PTU (Israelashvili et al., 2012; Odaci, 2013).

Using technology in a primarily beneficial way can be determined by assessing whether a person feels s/he can control the amount of time spent online and whether s/he does not allow time spent using technology to detract from offline relationships. People with a secure attachment style are more likely to develop a clear sense of self, view

themselves positively, and have balance in their relationships (Bartholomew & Horowitz, 1991). People with a secure relational style are less likely to engage in risk-taking activities and PTU (Dumas et al., 2012; Israelashvili et al., 2012; Kim & Davis, 2009; Ko et al., 2007; Morsunbul, 2009; Odaci, 2013), when the time they spend using technology does not detract from their offline relationships (Szwedo et al., 2012; Yao & Zhong, 2014). Having a secure attachment style can be an indication of being better able to benefit from using technology.

People with characteristics of insecure attachment styles also used technology beneficially. People who reported experiencing factors related to having insecure attachment styles, for example, less social acceptance, less social confidence, and/or lower self-worth (Bartholomew & Horowitz, 1991; Buote et al., 2009), also benefitted from the less socially pressured environment of technology-mediated communications (Caplan, 2005; Kim & Davis, 2009). However, these participants lost the benefits of using technology when they reported a reduced sense of control over the time they spent using technology (Khang et al., 2013; Kim & Davis, 2009; Li et al., 2010) and when technology use detracted from their offline relationships (Yao & Zhong, 2014). Based on this literature review, factors related to using technology problematically were more frequently found to be associated with aspects of having insecure attachment styles, when compared to elements in the research reviewed that related to using technology beneficially. Elements of using technology beneficially were more frequently associated with a secure attachment style. Although attachment style is not a simple means of determining whether a person is likely to experience PTU. Attachment style appears to

be another variable warranting further investigation into how attachment patterns relate to technology use.

Limitations of this Literature Review

Every research study in this review was cross-sectional and many were correlational. Only two research studies had qualitative designs and this indicates a need for additional qualitative research about how people use digital media. Yao and Zhong (2014) noted a need for research that explores technology use and the role of factors "such as personality, gender, family environment, and education" (p. 169). Qualitative research is based on the ontological philosophy that multiple realities exist and qualitative researchers can explore multiple and diverse factors because they conduct a study "with the intent of reporting these multiple realities" (Creswell, 2013, p. 20). Another limitation of this literature review was that a large proportion of the research focused on adolescents and university students' technology use. There is a need for research exploring adults and younger children's technology use patterns. Research with adults and children could provide additional insights about the relationships between developmental factors and technology use patterns.

Conclusions

In this literature review, people's technology use patterns were evaluated using attachment theory (Bowlby, 1988). The pan-theoretical nature of attachment theory (Lopez, 1995) provided a means of organizing the range of people's experiences with using technology. Attachment theory had explanatory value due to the coherence between self-images and other-images and patterns of interacting with others through digital media and of explaining technology use patterns. It is important to note, that

people who had characteristics associated with insecure attachment styles did use technology in ways that were beneficial (see Morey et al., 2013; Szwedo et al., 2012). However, having characteristics of insecure attachment patterns does appear to relate to a greater likelihood of experiencing PTU, while having characteristics associated with a secure attachment style supports a greater likelihood of using technology beneficially.

In this literature review, attachment theory was also used in a broad sense to differentiate technology use patterns where individuals were either primarily benefitting or encountering problems, due to their technology use. People who related to technology in a secure and balanced manner used technology to meet their psychological needs, support their personal growth, and/or to maintain social relationships (see Baker & Moore, 2011; Buote et al., 2009; Chattaraman et al., 2012; Cotten et al., 2013; Lee et al., 2011; Morey et al., 2013; Notley, 2009; Szwedo et al., 2012). People who related to technology in a problematic way reported using digital media in a poorly controlled manner that resulted in increased experiences of loneliness (see Caplan, 2005; Kim et al., 2009; Yao & Zhong, 2014). People with problematic technology use were also more likely to engage in risk-taking behaviours (Ko et al., 2006; Odaci, 2013), to have lower levels of academic self-efficacy (Odaci, 2013), and to report having low self-esteem (Kim & Davis, 2009; Ko et al., 2007). Attachment theory facilitated organizing how people used technology in terms of either beneficial or problematic patterns and according to patterns of relating to one's self and others. Attachment style could also be an important area of intervention when working with counselling clients, as being able to find balance in relationships either with others or with technology is an indication of using technology beneficially.

Chapter III: Methodology and Data Analysis

Qualitative inquiry involves adopting a flexible, emergent approach for an in-depth exploration of a research problem (Creswell, 2013). Researchers engage in qualitative studies when there is "a need to study a group or population, identify variables that cannot be easily measured, or hear silenced voices" (Creswell, 2013, p. 48). Based on the range of factors associated with how people use technology (see Buote et al., 2009; Caplan, 2005; Ko et al., 2006; Park et al., 2008; Szwedo et al., 2012; Yao & Zhong, 2014), there is a need in literature for qualitative research exploring people's development of technology use patterns over time. Qualitative research exploring technology use patterns is also needed from an interpretivist theoretical stance because the ontological nature of interpretivism "portrays a world in which reality is socially constructed, complex, and ever changing" (Glesne, 2011, p. 8). An interpretivist approach aligns with exploring the complex, variable nature of how people use technology, according to the range of internal and external, prohibitive and facilitative factors (see Douglas et al., 2008).

Overview

In this chapter, I discussed the theoretical and philosophical factors that informed the development of this study and described the research design. This chapter begins with a rationale for conducting a transcendental phenomenological study (Husserl, 1931/2012; Moustakas, 1994) about how counselling students related to technology over time. Next, I provided a brief description of the philosophical tenets of transcendental phenomenology (Husserl, 1931/2012; Moustakas, 1994; see also Converse, 2012; Dowling & Cooney, 2012; Tuohy, Cooney, Dowling, Murphy, & Sixsmith, 2013).

Dispersed throughout this chapter are descriptions of several fundamental concepts informing a transcendental phenomenological approach to knowledge (Husserl, 1931/2012; Moustakas, 1994). Throughout this chapter are factors and methods for supporting the credibility and trustworthiness of this research project. I then discussed the central role of the phenomenological researcher for maintaining methodological congruence, by engaging in several core transcendental phenomenological research processes (Husserl, 1931/2012; Moustakas, 1994). In the remainder of this chapter, I described data collection and analysis, and the limitations of this research project.

Qualitative Approaches to Research

Selecting a qualitative methodology for a research project involves developing an understanding about the research aims these frameworks support (Creswell, 2013; see also Dowling & Cooney, 2012). Researchers need to ensure that their research question and the selected methodological framework will facilitate achieving the purpose of their study (Creswell, 2013; Glesne, 2011). Alignment between the research question and methodology are also important because methodological congruence throughout a research project adds credibility to the findings (Creswell, 2013; Glesne, 2011; see also Bevan, 2014; Chan, Fung, & Chien, 2013; Smythe, 2012). Research methodologies guide the entire research project from deciding on the wording of the research question, how data will be collected, who the participants will be, how data will be analyzed, to the form of the final study write-up (Creswell, 2013).

Qualitative researchers have numerous methodological frameworks to choose from and these approaches support a range of research aims. The purpose of phenomenological research is to collect descriptions about “the common meaning for

several individuals of their lived experiences of a concept or a phenomenon" (Creswell, 2013, p. 76). Qualitative methodologies allow researchers to closely examine research problems and provide structure to a variety of research aims (Creswell, 2013; Dowling & Cooney, 2012; Glesne, 2011).

Rationale for a Phenomenological Approach

Based on identified gaps in the literature (see Israelashvili et al., 2012; Kuss et al., 2013; Yao & Zhong, 2014), the primary aim of this study was to identify the key factors of how people related to technology over time. A phenomenological approach, where the focus is on exploring the essential components of people's experiences with a phenomenon (Husserl, 1931/2012; Moustakas, 1994), facilitated answering my research question: What is the essence of how counselling students related to technology over time? The main purpose of this study also enabled me to achieve the secondary research objective of using the data collected to inform and refine the stages of technology use theory (Rempel & Jerry, 2013). While this study was suited to phenomenological inquiry, it is also important for researchers to distinguish which phenomenological approach they used in their research projects, as a number of phenomenological approaches exist (Dowling & Cooney, 2012).

Distinguishing Between Descriptive and Interpretive Phenomenology.

Edmund Husserl is credited with developing the phenomenological approach to scientific inquiry (Moustakas, 1994). Following Husserl's (1931/0212) introduction to phenomenological philosophy, several epistemic and methodological variations developed within the phenomenological framework (Converse, 2012; Dowling & Cooney, 2012; Tuohy et al., 2013). Tuohy and colleagues (2013) wrote "essentially,

there are two schools of phenomenology: descriptive and interpretive" (p. 17). Dowling and Cooney (2012) noted that all approaches to phenomenological inquiry originated either from Husserl's or Heidegger's philosophical views. Converse (2012) explained that Husserlian phenomenology is commonly referred to as descriptive, or transcendental, and Heideggerian phenomenology is generally labelled as interpretive phenomenology. Husserl (1931/2012) developed phenomenology by drawing from the earlier works of Plato, Descartes, Kant, Hegel, and Brentano (see also Converse, 2012; Moustakas, 1994); whereas, Heidegger presented variations to Husserl's initial phenomenological conceptualizations and "built on that philosophy to investigate the meaning of 'being'" (Converse, 2012, p. 30).

One key area of discrepancy between Husserl's and Heidegger's phenomenological approaches involved Husserl's notion of epoché, or bracketing (Dowling & Cooney, 2012). According to Husserl (1931/2012), epoché involved a "*certain refraining from judgment*…. [whereby] The thesis is 'put out of action', bracketed" (ss 31, para. 6). Converse (2012) wrote that Heidegger did not advocate for engaging in epoché to understand phenomena, rather, Heidegger "argued for an awareness of how the world of the observer can influence his or her understanding of the true nature of the object of study" (Converse, 2012, pp. 29-30).

Another primary difference between Husserl's and Heidegger's phenomenological orientations was their purposes for gathering knowledge. Husserl (1931/2012) developed transcendental phenomenology as a "descriptive science of Essential Being" (ss 75, para. 8), meaning the focus was on describing the core elements that made up an experience, or object (Husserl, 1931/2012; Moustakas, 1994). Instead,

Converse (2012) explained that Heidegger "was concerned with being, and with the meaning of being" (p. 30). Converse (2012) further noted that Heidegger's extensions of Husserlian phenomenology shifted "the focus of the researcher from revealing the essence of phenomenon to understanding the phenomenon in relation to the researcher" (p. 30).

The aim of interpretive phenomenology is to "describe, understand and interpret participants' experiences" (Tuohy et al., 2013, p. 18). Alternatively, researchers conducting a transcendental phenomenological study aim to develop understanding about the essence, or core components, of the selected phenomenon (Husserl, 1931/2012; Moustakas, 1994). The primary research goal of this project aligned with Husserl's (1931/2012) purpose of transcendental phenomenological inquiry—that detailed descriptions of the many *horizons*, or variations, in people's experiences of engaging with technology over time were gathered and the invariant constituents, or essential features, of these experiences were identified and described. Based on the congruence between my research purpose and descriptive phenomenology, I used Moustakas' (1994) adaptions of Husserl's (1931/2012) transcendental phenomenological theory, to structure and inform my research perspective and decisions. However, before moving to a discussion about the methodological application of transcendental phenomenological principles, I described the theoretical assumptions in Husserl's theory. Researchers have noted the importance of understanding the theoretical underpinnings of a research methodology (Converse, 2012; Dowling & Cooney, 2012), as this knowledge supports developing philosophically congruent research designs (Converse, 2012) and provides support for the validity of research findings (Creswell, 2013).

Theoretical Underpinnings of Transcendental Phenomenology

A number of philosophical suppositions comprised Husserl's (1931/2013) theory of transcendental phenomenology. Creswell (2013) delineated four philosophical assumptions for researchers to be aware of and to articulate. Creswell wrote that ontological philosophical assumptions involved explaining the nature of reality. Husserl believed that fact and reality were two separate concepts linked through experiences with a phenomenon. Husserl (1931/2012) wrote that "to think a fact or to express it needs the grounding of experience" (ss 4, para. 3). Husserl (1931/2012) also explained that pure essence involved essential laws:

> That the *real* in space corresponds to truths of such a kind is not a mere fact (*Faktum*), but as a special development of essential laws an *essential necessity*. The element of fact in this connexion is only the reality itself which serves as basis for the application. (ss 6, para. 4)

This definition highlights Husserl's belief that "what appears in consciousness is an absolute reality while what appears in the world is a product of learning" (Moustakas, 1994, p. 27). My personal beliefs, that people perceive reality largely based on their experiences, relate to attachment theory (Bowlby, 1988) and are congruent with the ontological stance of Husserl's transcendental phenomenology.

Epistemological beliefs are the second philosophical assumption Creswell (2013) identified and these concern "what counts as knowledge and how knowledge claims are justified" (p. 20). Husserl (1931/2012) posited that "natural knowledge begins with experience…and remains *within* experience" (ss 1, para. 1). Husserl (1931/2012) also further distinguished that the "theoretical position which we call the 'natural' standpoint,

the total field of possible research is indicated by a *single* word: that is, the *World*" (ss 1, para. 1). Moustakas (1994) noted that the phenomenological approach to knowledge was, "the first method of knowledge because it begins with 'things themselves'" (p. 41). Husserl and Moustakas articulated the epistemic beliefs in transcendental phenomenology, that the world comprises the entire realm for seeking knowledge, and they delineated how knowledge is acquired using this theoretical framework.

In transcendental phenomenological theory, knowledge is gathered according to Husserl's (1931/2012) notion of using one's intuition, meaning one's conscious experiences with a phenomenon, to delineate the characteristics of that experience. Moustakas (1994) noted, "phenomena are the building blocks of human science and the basis for all knowledge" (p. 26). Moustakas also explained that consciousness means attention is intentionally directed at experiencing a phenomenon. Husserl (1931/2012) further distinguished between the cognitive, perceptual experience of a phenomenon referred to as *cogitatio*, meaning a conscious experience, and "*cogitatum*, not a perceptual experience, but something [as it is] perceived" (ss 35, para. 1). Husserl (1931/2012) explained that essential insight into an "object of such insight [experience] is then the corresponding *pure* essence or eidos, whether it be the highest category or one of its specializations, right down to the fully 'concrete'" (ss. 3, para. 1). Husserl's concept of discovering the pure essences of phenomena, meant that objects are themselves comprised of various unique characteristics and, by consciously using essential insight, one is able to identify the pure essence of a phenomenon (Husserl, 1931/2012). Husserl's epistemological belief, that people can only know the world through consciously

attending to their experiences, aligned with my research purpose—to collect detailed accounts about people's first-hand experiences of relating to technology over time.

Axiological assumptions call for researchers to attend to and articulate how their values and beliefs related to their research (Creswell, 2013). This third philosophical assumption involved the need for researchers take into account and include discussions about "the value-laden nature of information gathered from the field" (Creswell, 2013, p. 20). Husserl (1931/2012) extensively developed the concept of epoché, where biases and beliefs are set aside, in an effort to ensure they did not affect one's experiences of a phenomenon. Husserl (1931/2012) based his theory of transcendental phenomenology around the central tenet of the need for experience to be taken "completely 'free from all theory', just as it is in reality experienced" (ss 32, para. 5). Moustakas (1994) explained that researchers engaging in the phenomenological epoché were involved in a "way of perceiving life [that] calls for looking, noticing, becoming aware, without imposing our prejudgment on what we see, think, imagine, or feel….a way of genuine looking that precedes reflectiveness, the making of judgments, or reaching conclusions" (p. 86). In transcendental phenomenological philosophy, both Husserl and Moustakas emphasized the role of biases, or theories, as influential in the development of knowledge about experiences and, as such, they advocated for the examination of these beliefs to reduce the impact on knowledge acquisition.

Husserl (1931/2012) and Moustakas (1994) emphasized their philosophical stance that phenomena are experienced in myriad ways. Moustakas (1994) noted the need to "describe its [the phenomenon's] general features, excluding everything that is not immediately within our conscious experience" (p. 92). As researchers identify and set

aside their beliefs and focus on describing only the features of how a phenomenon was experienced, they are conveying an attitude of reflexivity and adding transparency to their study (Creswell, 2013; Glesne, 2011).

Methodology is the fourth philosophical assumption undergirding qualitative approaches to research because methodological assumptions influence the process of research (Creswell, 2013). In Moustakas's (1994) extensions of Husserl's (1931/2012) transcendental phenomenological theory, Moustakas's primary focus was on articulating a comprehensive and philosophically congruent methodological guide for conducting research. In his work, Moustakas delineated how phenomenological concepts informed the research process. Moustakas also provided a detailed guide for researchers and included descriptions about engaging in the processes of epoché, phenomenological reduction, and imaginative variation to prepare for gathering data, and how these processes informed data collection, data analysis, and reporting the research findings.

This study was based on Moustakas's methodological framework for conducting transcendental phenomenological research. I selected Moustakas's methodological approach based on his detailed accounts about conducting the research process. I elected to use Moustakas's methods for conducting this transcendental phenomenological exploration of how people related to technology over time as I sought to develop a theoretically congruent research project (Creswell, 2013). My decision to employ Moustakas's methodology was based in part on my status as a novice researcher and my inclination towards following a clearly articulated framework. Researchers begin a transcendental phenomenological study by cultivating a phenomenological mindset (Moustakas, 1994).

The Role of the Researcher

Researchers using Husserl's (1931/2012) transcendental phenomenological framework develop a theoretically informed cognitive orientation to gathering knowledge, by engaging in the processes of epoché, phenomenological reduction, and imaginative variation (Moustakas, 1994). Chan, Fung, and Chien (2013) wrote that transcendental phenomenology is based on the researcher developing an approach, or way of being, to the world throughout the research process. The phenomenological way of being is a foundational component of conducting research (Moustakas, 1994). As data is collected and described, according to people's first-hand experiences with the phenomenon, the validity of the investigation is supported "when the knowledge sought is arrived at through descriptions that make possible an understanding of the meanings and essences of experience" (Moustakas, 1994, p.84). Moustakas (1994) wrote that epoché is the first step in cultivating a phenomenological way of being.

The Epoché Process. The purpose of engaging in epoché, or bracketing one's assumptions, is to facilitate intentionality (Moustakas, 1994). Researchers engaged in the process of epoché adopt "a new way of looking at things, a way that requires that we learn to see what stands before our eyes, what we can distinguish and describe" (Moustakas, 1994, p. 33). Moustakas (1994) also noted that the "challenge of Epoché is to be transparent to ourselves, to allow whatever is before us in consciousness to disclose itself so that we may see with new eyes in a naïve and completely open manner" (p. 86). Chan and colleagues (2013) developed strategies for researchers that facilitate engaging in the epoché process. Chan et al. noted that epoché involved thinking reflexively, writing in a reflexive journal, and exploring one's willingness to adopt the stances of

humbleness and ignorance about the phenomenon being researched. As researchers use the epoché process to raise their awareness about the world, they can then begin the process of phenomenological reduction (Moustakas, 1994).

Process of Phenomenological Reduction. While the epoché process initiates and prepares the researcher for transcendental phenomenological research, the process of phenomenological reduction guides data collection and analysis (Moustakas, 1994). The focus of phenomenological reduction is on developing understanding about the observed qualities of an experience (phenomenon) and about the perception of that experience, meaning how the experience arrived in one's consciousness (Moustakas, 1994). Moustakas (1994) outlined several components that support the process of phenomenological reduction, including the need for researchers to alternate between the acts of perceiving a phenomenon and observing the phenomenon's qualities, and then describing those qualities. Husserl (1931/2012) noted the difference between "*heeding the object and mentally scrutinizing it*, [and the need to] *separate out the one from the other*" (ss 37, para. 4). Moustakas (1994) further explained that this process of moving between observing the qualities of a phenomenon and describing them occurred "always with reference to textual qualities—rough and smooth; small and large; quiet and noisy; colorful and bland; hot and cold; stationary and moving; …fearful and courageous; angry and calm—descriptions that present varying intensities" (pp. 90-91).

A second component of engaging in the phenomenological reduction process occurs as the "experiencing person turns inward in reflection" (Moustakas, 1994, p. 92). The purpose of reflecting on one's experiences with a phenomenon is that "to some extent each reflection modifies conscious experience and offers a different perspective of

that object" (Moustakas, 1994, p. 93). For researchers, reflection about a phenomenon relates to engaging in the epoché process throughout the research project.

Reflection in the phenomenological reduction process supports the third step Moustakas (1994) discussed, that of correcting one's perceptions of an experience. Moustakas (1994) noted the importance of using one's reflection to refine how an experience was perceived because "illusion is undone through correction, through approaching something from a different vantage point, or with a different sense or meaning" (Moustakas, 1994, p. 93). The epistemic stance in transcendental phenomenology, that phenomena are the genesis of all scientific research (Husserl, 1931/2012; Moustakas, 1994), informed the process of horizonalizing perceptions. Moustakas (1994) explained, "in the horizonalizing of perceptions every perception counts; every perception adds something important to the experience" (p. 53). Researchers engage in reflecting and correcting their understandings about people's experiences with a phenomenon by avoiding pre-judgments about the phenomenon and by treating every perception as a valid encounter with the phenomenon (Moustakas, 1994). Researchers' engagement in the process of phenomenological reduction culminates in a complete, written textual description about the phenomenon (Moustakas, 1994). The third factor that supports the role of the researcher in phenomenological inquiry is based on Husserl's (1931/2012) concept of imaginative variation.

Process of Imaginative Variation. Researchers use the process of imaginative variation as they seek to explore "possible meanings through the utilization of imagination, varying the frames of reference, employing polarities and reversals, and approaching the phenomenon from divergent perspectives, different positions, roles, or

functions" (Moustakas, 1994, pp. 97-98). In phenomenological reduction, the researcher focused on gathering descriptions about the various qualities of an experience; while, in imaginative variation, the researcher pursues "the uncovering of the essences,… [by] focusing on pure possibilities" (Moustakas, 1994, p. 98). The process of imaginative variation is grounded in researchers' imaginative exploration of the question, "how did the experience of the phenomenon come to be what it is?" (Moustakas, 1994, p. 98). The purpose of seeking knowledge through imaginative variation is to "arrive at structural descriptions of an experience, the underlying and precipitating factors that account for what is being experienced" (Moustakas, 1994, p. 98).

In this research project, my role was to develop the phenomenological way of being (Chan et al., 2013; Husserl, 1931/2012; Moustakas, 1994) as I engaged in interviewing counselling students about their experiences with relating to technology over time. I engaged in the processes of epoché, phenomenological reduction, and imaginative variation (Husserl, 1931/2012; Moustakas, 1994), as I transcribed the interviews and analyzed the data. By engaging in the transcendental phenomenological processes outlined by Moustakas (1994), I sought to support the methodological congruence of this study.

Part of developing my phenomenological way of being in this research project involved engaging in reflexivity, which Creswell (2013) noted was hallmark for assessing the quality of a study. Creswell (2013) continued by explaining that reflexivity involved the need for researchers to position themselves in a study by conveying, "their background (e.g., work experiences, cultural experiences, history), how it informs their interpretation of the information in a study, and what they have to gain from the study"

(p. 47). Moustakas (1994) noted, "in a phenomenological investigation the researcher has a personal interest in whatever she or he seeks to know; the researcher is intimately connected with the phenomenon" (p. 59). In the following sections, I provided a brief background about my interest in this study and my beliefs about technology use. I also described the conceptual framework that informed my desire to engage in this research project.

Positioning Myself in the Research. As the parent of a fifteen-year-old, I watched as my daughter devoted more and more of her free time to using technology over the previous two years. My feelings about how she was spending her time oscillated between concern about her diminishing interest in making crafts, drawing, and painting, and enjoying hearing about what she was learning online. I noted my daughter's interest in watching YouTube videos and participating on various social media accounts. I relished learning from my daughter about the YouTube culture, where people routinely posted content on their YouTube channels about their experiences, interests, thoughts, opinions, and/or their creative projects (i.e., original music, "covers" of other artists' music, original short films). My daughter explained why Twitter could be beneficial, shared about her growing social justice awareness from watching various YouTube vloggers and reading Tumblr blogs, and discussed her views about what was appropriate content to post on Instagram and with what frequency.

Prior to my daughter's budding interest in spending time using technology, I engaged with technology because it fulfilled practical purposes in my life. I did not believe that I would find enjoyment, increase my personal fulfillment, or be entertained by digital media. I got my first cellphone less than 10 years ago because I drove an older

car and I wanted the security of knowing I could call for help. I resisted getting a smartphone for several more years. I finally bought a smartphone because texting was easier with a QWERTY keyboard.

Two years ago, when my sister moved several hours away she set up a Skype account for me. She answered my questions about the usefulness of video chatting by rationalizing that we would feel more like we were having one of our sisterly hang-out nights, if we could see each other's faces when we talked. In the first few years of having a Skype account, I probably used it fewer than 10 times. In the past, I used computers at work and I had an older computer that I used for writing papers for my undergraduate degree, but only in the last five years have I found value in having an Internet account set-up in my home. I elected to pursue an online master's degree and this decision prompted the need for being able to go online while at home. I appreciated the convenience of technology, but my natural tendency was to avoid learning new technologies, if possible.

Prior to doing this research project, I typically engaged with new technologies when I assessed the challenges of learning the new technology were outweighed by the advantages (i.e., when I switched from a flip cellphone to a smartphone). I also generally used new technologies cautiously and primarily either because people close to me encouraged me to start using the technology or I needed to learn the technology for work. My approach to technology in the past was influenced by having limited time and energy to put towards learning. I was a single parent, worked a full-time job and/or was in university courses. My focus was simply on convenience and minimizing demands on my time. I also felt unsure about whether the investment in learning a new technology

negated the potential negative consequences, for example, feeling concerned about my accounts being hacked and needing to devote a lot of time to figuring out how to use the technology safely. I also preferred a higher level of privacy and rarely posted content on social media. However, my attitudes about sharing parts of my life with others has shifted in the past few years, as has my knowledge and comfort with using social media.

About nine years ago, I opened a Facebook account because many of my friends were already on Facebook and they told me about the pictures they were posting. I knew that I wanted to know what was happening in their lives. I also began to understand the convenience of being Facebook friends with people who I knew quite well in my offline life. In the first six years of having a Facebook account, I generally logged into my Facebook account about five, or six times a year. However, in the past three years, I have used social media with greater frequency and added more of my own content. My changing engagement with social media was due to alterations in my offline social contacts and my increasing familiarity and confidence about being able to use social media in ways that I found meaningful and useful.

How Theory Influenced My Interest in this Study. My perceptions about what technology is and how technology can be used broadened noticeably about three years ago. Two experiences led me to become curious about how people engaged with technology. First, in my coursework for a master's degree in counselling psychology, I read an article by Levenson (2003) about time-limited dynamic psychotherapy (TLDP) and the psychodynamic concept of object relations. Levenson (2003) explained that object relations theory is based on the position that "images of the self and others evolve out of human interactions" (p. 302). Therapists using a TLDP approach seek to provide

clients with "a *new experience* [of relating to another person in a more functional manner] and a *new understanding* [exploring how clients' previous relational patterns contributed to their current ways of interacting]" (Levenson, 2003, p. 306). I also read an article by Lopez and Brennan (2000) who discussed adult relational patterns and how attachment theory provides a framework for a healthy and effective sense of self. My introduction to literature about relational patterns influenced how I conceptualized people's interactions with one another.

The second experience that prompted my curiosity about the role of technology in people's lives occurred as I considered a discussion I had with my daughter. She had shared with me how her beliefs about herself changed after viewing several YouTube videos about feeling social awkward and struggling to engage with other people. My daughter explained that watching these videos helped her feel better about her introverted nature. As I applied my new learning about relational patterns to our conversation, I began to understand that my daughter had described an experience where her feelings were normalized, by a one-sided encounter, or a new relational experience, in TLDP terms, with another person through digital media. I began to wonder about technology as providing a means of corrective emotional experiences, despite the limitations of relating to other people through technology.

I discussed this topic with Paul Jerry, and he introduced the possibility of adapting Erikson's (1950/1993) psycho-social stage model to explain the developmental process of engaging with technology. Jerry and I then outlined our stages of technology use theory (Rempel & Jerry, 2013; see also Table 1 pg. 157). It is important to note that we made several assumptions in this theory (Rempel & Jerry, 2013). One assumption was that a

general pattern of increased technology use occurred over time. The second assumption was that relational patterns explained how people engaged with technology.

I prepared for conducting this transcendental phenomenological study and supported the methodological congruence of my findings, by bracketing my beliefs, values, and experiences with technology (Husserl, 1931/2012; Moustakas, 1994). As Husserl (1931/2012) wrote, "w*e put out of action the general thesis which belongs to the essence of the natural standpoint,* we place in brackets whatever it includes respecting the nature of Being: *this entire natural world therefore* which is continually 'there for us', 'present to our hand', and will ever remain there, is a 'fact-world' of which we continue to be conscious, even though it pleases us to put it in brackets" (ss 32, para. 2). I engaged in the phenomenological processes of epoché, phenomenological reduction, and imaginative variation (Husserl, 1931/2012; Moustakas, 1994).

I also heeded Moustakas's (1994) assertion that Husserl's transcendental phenomenological philosophy "is logical in its assertion that the only thing we know for certain is that which appears before us in consciousness, and that very fact is a guarantee of its objectivity" (p. 45). I facilitated a transcendental orientation to data collection by attending to my own and my participants' perceptions about relating to technology. I achieved this by focusing on the descriptive qualities of participants' experiences.

Data Collection

In a transcendental phenomenological study, Moustakas (1994) advised that "every method relates back to the [research] question, is developed solely to illuminate the question, and provides a portrayal of the phenomenon that is vital, rich, and layered in its textures and meanings" (p. 59). Accordingly, data was collected with a focus on the

research question: What is the essence of how counselling students related to technology over time? I explored this research question with adult learners who were either enrolled in an online masters of counselling degree program or who had completed this program. Hall, Nix, and Baker (2013) investigated students' experiences of developing digital literacy skills amongst a group of adults enrolled in online university programs. Hall et al. found that these students related to technology according to various personal attributes, socio-demographic factors, and beliefs about the utility of increasing their technological skills.

Delimitations. A vital component of transcendental phenomenological research is that participants have personal experience with the phenomenon (Husserl, 1931/2012; Moustakas, 1994). Also, participants must be willing to participate in audio recorded interviews (Moustakas, 1994). Another factor that I confirmed with participants was their consent to having the results of this study published (Moustakas, 1994). I made sure that participants knew they could stop the interview and/or withdraw from the study, at any time, in the informed consent (IC) process and on the IC form.

Sampling. I invited student counsellors in the Graduate Centre for Applied Psychology (GCAP) program to participate in my qualitative research project titled, *Developing Comfort with Using Technology*. See Appendix B for the complete email script. The email invitation explained that data collection would involve primarily person-to-person interviews conducted via Skype, telephone, or in person (when possible). I then had five people volunteer to participate in this study. Two participants were recruited using snowball sampling, meaning a colleague referred them to me. I aimed to have five participants because the purpose of this study was to explore how

people related to technology over time—not theoretical saturation, as in grounded theory (Creswell, 2013).

Prior to conducting interviews, I spoke by phone, or in person with participants and briefly screened them to assess their suitability for participation in this research project (Moustakas, 1994; see also Englander, 2012). Specifically, I determined how well these potential participants could articulate their experiences with using technology (Husserl, 1931/2012; Moustakas, 1994; see also Englander, 2012). I also explained to participants that the interviews were expected to take between 60 and 90 minutes to complete. I emailed the participants the informed consent forms and interview questions (see Appendix C). I emailed this information to participants prior to our scheduled interviews because this allowed them time to reflect on the interview questions and to consider and discuss any informed consent questions.

Interviews. I collected data primarily by conducting audio recorded interviews with participants. A transcendental phenomenological study involves collecting detail-rich descriptions about how people perceived a selected phenomenon (Husserl, 1931/2012; Moustakas, 1994). Moustakas (1994) wrote that, "typically in the phenomenological investigation the long interview is the method through which data is collected on the topic and question" (p. 114). Bevan (2014) noted, "a phenomenological researcher is interested in describing a person's experience in the way he or she experiences it, and not from some theoretical standpoint" (p. 137). During the semi-structured interviews, I used open-ended probes and questions, according to Moustakas's instructions. Using open-ended questions facilitated collecting detailed descriptions from

participants and aided in bracketing my experiences with technology. Each interview lasted between 40 minutes and 64 minutes in length.

In the interviews, I sought information about how participants had experienced using technology and "the internal act of consciousness, the experience as such, the rhythm and relationship between phenomenon and self" (Moustakas, 1994, p. 90). Bevan (2014) wrote about inviting participants to explain the contextual details of their experiences with the phenomenon, for example, by asking participants to describe their experiences of the phenomenon in the past. I also asked participants for descriptions about how they currently use technology, for example, how they typically use technology in their day to day lives (Bevan, 2014). As I conducted the interviews, I was aware of Bevan's (2014) caution that:

> It is not unusual for people to describe experience in terms of a narrative account, to use analogy, chronology, or significant events. These expressions are interpretations of experience that assume immediate understanding on the part of the listener. In this descriptive approach the researcher should not accept these interpretations as already understood, although this is not to negate their existence. The researcher needs to investigate these interpretations to elicit clarity. (p. 140)

Throughout the interview process, I worked to bracket my beliefs and assumptions about technology use and focused on eliciting descriptions of participants' experiences of using technology (Husserl, 1931/2012; Moustakas, 1994; see also Bevan, 2014; Englander, 2012).

I also collected data from all participants in the form of either one or two follow-up questions. After the initial data analysis of participants' interviews, I found that one or two statements from them would add richness to my understanding of their experiences. I contacted participants either by email or text message and let them know that responding was to their discretion. All participants responded to my follow-up questions.

Data Analysis Procedures

I transcribed each interview and this aided in immersing myself in participants' experiences with technology. Englander (2012) advised that a researcher transcribe interviews "by him- or herself, since it will aid the researcher to reach a depth of understanding of the experience and also help in the transition to the first step in the data analysis" (p. 34). As I transcribed the interviews, I wrote memos, to capture the horizons of my experience as I experienced and reflected on participants' experiences. Glesne (2011) noted the value of writing research memos, as thoughts occurred, because memo writing "frees your mind for new thoughts and perspectives" (p. 189).

When I had finished transcribing each interview, I moved the data from detailed descriptions to more general themes using Moustakas's (1994) adaptations of van Kaam's data analysis method (see Appendix D). This data analysis strategy aligns with the interpretivist/social constructivism paradigm where "the researcher works with particulars (details) before generalizations, describes in detail the context of the study, and continually revises questions from experiences in the field" (Creswell, 2013, p. 21). Following Moustakas's data analysis strategy allowed me to focus on the primary aim of this study, to describe the essence of counselling students' experiences of relating to technology over time.

Process of Data Analysis. I followed the steps outlined by Moustakas's (1994) modifications of van Kaam's data analysis methods, see Appendix D for a list of these steps. I also engaged in Husserl's (1931/2012) notion of bracketing before beginning data analysis to assist me in setting "aside…[my] prejudgments, biases, and preconceived ideas about things" (Moustakas, 1994, p. 85). After I transcribed a transcript, I then analyzed it by horizonalizing the data. Moustakas (1994) explained that horizonalizing involves listing "every expression relevant to the experience" (p. 120). To horizonalize the data, I read through each transcript and used a highlighter to identify participants' descriptions of using technology.

My next step was to determine whether each highlighted expression was "a necessary and sufficient constituent for understanding [the experience]" (Moustakas, 1994, p. 121). I made these determinations by reading through the entire transcript and then re-reading the highlighted portions of the transcript. Moustakas (1994) explained, "in the widest sense, evidence is viewed as something that shows itself—something that is there before one. The very act of seeing, just what is there, just as it is, points to further seeing, again and yet again, and to the possibility of confirmation" (p. 47). Moustakas (1994) continued by writing, "confirmation is achieved by repeated looking and viewing while the phenomenon as a whole remains the same" (p. 47). As I engaged in repeatedly looking at the data, I eliminated any expressions that were not essential to understanding the process of relating to technology over time, including vague and repetitive expressions (Moustakas, 1994). The expressions that remained were what Moustakas (1994) referred to as "the invariant constituents of the experience" (p. 121). I then copied

and pasted the invariant constituents for each participant's experiences with technology into a word document.

After identifying the invariant constituents of a participant's experience, I began labelling them. I adjusted and merged labels as I progressed in transcribing, horizonalizing, and identifying the invariant constituents of each participant's experience with using technology over time. Initially, I identified 46 invariant constituents. However, as I immersed myself in the data, I combined similar experiences and finished with a total of 37 invariant constituents. For example, I merged the invariant constituent *hesitant to try new technology* with the invariant constituent *preferring to use familiar technology*. I also merged the invariant constituent of *friends but not friends* with the invariant constituent *superficial nature of online environments*. I combined the invariant constituents of *afraid to ask for help* and *insecurities about ability to learn technology* into the invariant constituent *doubting technological abilities*. When I finished this process, each participant had a range of 16 to 20 invariant constituents, or horizons that pertained to her experience of relating to technology over time. See Appendix E for the invariant constituent labels.

My next step was to sort the invariant constituents according to themes that emerged during the data analysis process (Moustakas, 1994). I grouped the invariant constituents into themes according to three categories of participants' experiences: their initial experiences with a form of technology, their technology use over time, and their current technology use. I distinguished between participants' past and current technology use according to the prompts that I asked participants in the interview and their responses. When I sent an email to participants with their composites for accuracy

checking, I noted that present technology use would include the two years leading up to the interview, while past technology use would have occurred two, or more years ago. My rationale for dividing the themes into the three categories of technology use was to facilitate answering the research question: What is the essence of how counselling students related to technology over time?

For participants' initial experiences with technology, I identified five themes: *out of comfort zone*, *exploring possibilities with technology*, *technology as a tool*, *supported technology use*, and *not wanting to engage with technology*. Participants discussed sixteen invariant constituents in these five themes (see Appendix F). Analysis of participants' past and current experiences with technology resulted in the addition of three themes. These themes were: *technology as a distraction*, *social dynamics and technology*, and *sharing technological knowledge*. The eight themes that portrayed participants' technology use over time (i.e., in the past) involved 27 invariant constituents (see Appendix G). Lastly, I found that the eight themes that conveyed participants' technology use over time also portrayed the gamut of their current technology use experiences. Participants mentioned 32 invariant constituents while describing their current technology use (see Appendix H).

I then compared the invariant constituents and themes to each participant's interview transcript (Moustakas, 1994). This step provided a validation check for the data analysis process, by determining whether the invariant constituents and themes were compatible with participants' descriptions of the experience, or were explicitly described by participants (Moustakas, 1994). I continued to refine the themes and invariant constituents during this process. Some examples of changes that I made included

changing the theme, out of comfort zone, from its original label: feeling out of comfort zone. I also decided that calling the theme, exploring possibilities with technology, more accurately reflected the invariant constituents grouped under it, when compared to my original label: excited about possibilities with technology.

Upon the completion of analyzing and grouping the data into themes, I moved to writing participants' composites. I wrote one composite for each participant. I did not move to writing another composite until I had completed the entire writing process for a participant. This strategy allowed me to stay immersed in each participant's experience.

The writing process first involved composing a detailed textual description of a participant's experience with technology "using the relevant, validated invariant constituents and themes" (Moustakas, 1994, p. 121). Next, I went through the composite and added structural descriptions "based on the Individual Textural Description and Imaginative Variation" (Moustakas, 1994, p. 121). This process resulted in a textural-structural description of the meanings and essences of the participant's experience (Moustakas, 1994). I contacted participants individually and offered to email a copy of their personal composite (see Appendix I). The purpose of sending participants their composites was to add a validity check to the data analysis and to determine whether I correctly portrayed their experiences (Glesne, 2011). Four of the five participants replied that they wanted to review their composites and three confirmed the accuracy of their composites. The fourth participant did not respond after being sent her composite.

I did not to write a group composite, as suggested by Moustakas (1994). Rather, in keeping with a humanistic approach, I presented participants' individual composites as the final step of data analysis to avoid losing the relational aspect that each participant

brought to this research study. The primary goal of this study, to describe the essence of how counselling students related to technology over time, was achieved without a group composite. I also finished the writing process at the individual composite level to preserve the attachment relationship story which is discussed further in Chapter VI.

Authenticity and Validity in this Study

Numerous authors have noted that researchers support the validity of their findings when they are transparent about their beliefs, biases, and decision-making processes in a research project (see Chan et al., 2013; Creswell, 2013; Glesne, 2011; Moustakas, 1994). To support the validity and credibility of this study, I developed my research question and selected the methodology according to my research purpose and in an effort to maintain methodological congruity throughout this project (Bevan, 2014; Bradbury-Jones, Sambrook, & Irvine, 2009; Chan et al., 2013; Moustakas, 1994; Smythe, 2012). I discussed my beliefs, values, and biases to facilitate transparency and to situate myself in this study (Creswell, 2013). I also reflected on this project, my experiences, and my decisions in a reflexive journal, as recommended by Chan and colleagues (2013). Finally, I developed the interview questions following Moustakas's (1994) guidance that, "in accordance with phenomenological principles, scientific investigation is valid when the knowledge sought is arrived at through descriptions that make possible an understanding of the meanings and essences of experience" (p. 84).

Limitations

There are several limitations in this research project including me as the researcher, because phenomenological inquiry rests heavily on the researcher being able to engage in the epoché process (Husserl, 1931/2012; Moustakas, 1994; see also

Creswell, 2013). Epoché is based on being aware of one's beliefs and values, and I attended to my beliefs and values throughout the research process to facilitate bracketing them (Moustakas, 1994). As Moustakas (1994) noted, engaging in phenomenological epoché is an ideal to aim for because "my own rooted ways of perceiving and knowing still enter in" (p. 61).

Another limitation of phenomenological research, and, specifically, of using Moustakas' (1994) adaptations of van Kaam's data analysis method, is that analysis typically involves an extensive time requirement—due to writing the detailed composites about the phenomenon for each participant (Creswell, 2013). Another challenge for researchers conducting phenomenological studies is the need to guide participants in providing detailed descriptions of their experiences with a phenomenon, without leading participants into providing descriptions they believe the researchers are seeking (Moustakas, 1994). This study is also limited in scope because I conducted interviews solely with students and graduates of a master's of counselling psychology program. However, participants in this study described varied experiences in their technology use over time.

Conclusion

A transcendental phenomenological approach to this study allowed me to develop five composites about the essence of relating to technology over time (Moustakas, 1994). Moustakas's (1994) transcendental phenomenological research method also facilitated achieving the purpose of this study, to describe the essence of how people engaged with technology. Using a transcendental phenomenological approach (Husserl, 1931/2012; Moustakas, 1994) as the basis for inquiry, I explored the nuanced and often complex

interactions of factors associated with technology use patterns (see Israelashvili et al., 2012; Kim & Davis, 2009; Ko et al., 2007; Ko, Yen, Yen, Chen, & Chen, 2012; Szwedo et al., 2012; Yao & Zhong, 2014). Additionally, the transcendental phenomenological stance articulated by Moustakas (1994), that one can only speak for one's personal experiences and judgments of those experiences, aligned with my beliefs about the value in constructing knowledge based on people's first-hand accounts of an experience and avoiding imposing my values and beliefs on others.

Chapter IV: Findings

Using a long interview format (Moustakas, 1994), five participants shared about how they used technology over time. After analyzing the data, I wrote a textural-structural composite for each participant divided into three sections: initial experience with a form of technology, technology use in the past, and current technology use. These composites illustrate how adult learners related to technology over time.

Themes and Invariant Constituents

In sharing about how they used technology, participants described 37 invariant constituents that I grouped into eight themes. Five themes emerged during participants' descriptions of their initial encounters with a form of technology. Three additional themes were added to participants' experiences with using technology in the past and to how they currently use technology. I selected descriptive names, or titles, for the invariant constituents and the themes either from participants' own words or based on how they described their experiences with technology.

Out of comfort zone. The theme, out of comfort zone, denotes horizons of participants' experiences with using technology when they described: feeling uncomfortable within themselves when engaged with technology (invariant constituents included doubting technological abilities, *isolated*, and *noticing incongruence between thoughts, feelings, or behaviours*), lacking technological knowledge or having difficulty understanding technology (invariant constituents labelled *struggling to understand technology* and *feeling behind the times*), were interacting with others who were more adept at using technology (invariant constituent *embarrassed about lack of technological knowledge*), their personal comfort with technology did not align with work expectations

of technology use (invariant constituent labelled *dissonance between expectations of technology use at work and personal comfort with technology*), or when participants' use of technology was not impeded due to their lack of knowledge because people in their lives took on the task , or provided assistance for navigating technology (invariant constituent titled *other people in life who understand technology*). The invariant constituent, other people in life who understand technology, was not included in the theme, supported technology use, because when participants described having people in their lives who understood technology, they were also sharing about times of frustration with technology and/or their lack of technological knowledge – delineating times when they were out of their comfort zone.

Exploring possibilities with technology. The theme, exploring possibilities with technology, is about participants' experiences of actively and purposefully engaging with technology. Participants also generally described having a positive mind-set during these experiences. Exploring possibilities with technology involved times where participants sought out technology (invariant constituents labelled *eager to try new technology or expand possible uses of technology* and *trying technology to determine whether addresses needs*), expressed feeling excited about technology (invariant constituent titled *fascinated with technology*), or shared about trying to better understand technology (invariant constituents labelled *figuring out technology on one's own* and *developing a better understanding of technology*). This theme involved elements of excitement and an openness to investigate technology and its possible uses.

Technology as a tool. This theme involved participants' descriptions of making technology work for them. Under this theme, participants shared about how they used

technology to improve their lives (invariant constituent titled *using technology to achieve goals, meet needs, or make life easier*), to maintain important connections with others (invariant constituent labelled *using technology to keep in touch with friends and loved ones*), in a controlled manner (invariant constituent titled *setting limits on the role of technology in life)*, for recreation (invariant constituent labelled *using technology for entertainment*), or with a sense of self-efficacy where participants felt confident about their abilities to make informed choices about technology, or find resolutions to issues (invariant constituent titled *technological confidence*). Technology as a tool involved participants' experiences of using technology to their advantage, to meet their needs, or in a controlled manner.

Supported technology use. The theme, supported technology use, encompassed times when participants used their social support network to help them develop a better understanding of technology, or when participants shared about people in their lives encouraging them to use technology. Within this theme, participants described using technology with a sense of curiosity because people close to them either commonly used technology or supported them in using technology (invariant constituents *parent(s) modelling comfort with technology* and *encouraged by others to engage with technology*). Participants' experiences under this theme also involved times when they shared about seeking help from others to use technology, or came to a better understanding of technology because someone helped them figure out a form of technology (invariant constituents *asking for help to understand technology* and *figuring out technology with others*). The theme of supported technology use emerged from participants experiences

of feeling comfortable enough to ask for help to understand technology, or of using technology in environments that fostered and nurtured technology use.

Not wanting to engage with technology. This theme involved participants' negative feelings about using technology, or their desires to avoid learning about technology. In particular, participants described how they sought to either only use technology they already knew how to use or eschewed using technology all together (invariant constituents *preferring to use familiar technology* and *avoiding technology*). This theme also encompassed participants' experiences of having a great dislike for technology (invariant constituent *aversion to technology*). Not wanting to engage with technology as a theme involved participants' descriptions of wishing to avoid either using technology or learning new technology, and their experiences of having negative feelings about technology.

Technology as a distraction. This theme emerged from participants' experiences of having a distorted sense of time while using technology, or of using technology as a diversion from daily life. Participants shared about losing track of time while using technology (invariant constituent *absorbed by technology*) and of using technology to avoid other aspects of their lives (invariant constituent *escaping into technology*). Technology as a distraction occurred when participants were searching for information, gaming, and spending time on social media sites.

Social dynamics and technology. The theme, social dynamics and technology, applied to participants' use of social media sites and their experiences as social beings who use technology. Participants described several social factors and social benefits of going online (invariant constituents *technology increasing social status*, *different*

interactions online versus face-to-face, taking into account online persona(s) and professional identity, friends and loved ones' use of technology influencing technology use, using technology to have meaningful interactions, and *using technology as a social barometer*). Participants also explained negative aspects amongst their experiences of going online (invariant constituents *less meaningful interactions, dislike of content posted on social media,* and *superficial nature of online environments*).

Sharing technological knowledge. This theme was comprised solely of an invariant constituent by the same name and involved times where participants supported others in learning how to either use or better understand a form of technology.

Study Findings

In the following composites, I used participants' statements to provide direct examples of the invariant constituents, or horizons, of engaging with technology. The themes that emerged from data analysis facilitate understanding participants' experiences with using technology. I also wrote a brief biography for each participant as an introduction. All participants' names have been changed to protect their identities.

Lisa

Lisa is a self-described moderate technology user who is in her fifties and is the mother of two adult children (March 12, 2016). Lisa's experiences with technology have involved feelings of inadequacy, curiosity, dislike, avoidance, and absorption. Lisa shared that the greatest influence on her technology use has been her goal of connecting with younger people (September 17, 2015). Lisa's description of an initial experience with a form of technology involved feelings of discomfort and a desire to avoid technology.

Initial experience with a form of technology. Lisa described two of the five themes identified among participants' initial experiences with a type of technology: out of comfort zone and not wanting to engage with technology.

Out of comfort zone. Under this theme, Lisa described the invariant constituent, struggling to understand technology, when she shared about her first time playing the Pac Man game. Lisa recalled that this experience occurred:

> Probably in my early twenties and we were in a pub and they had a Pac Man game. And
>
> everybody would play it. And I guess that I would try, but I didn't understand the concept. I didn't understand how you worked the buttons. (September 17, 2015)

Lisa's lack of knowledge about how the game worked caused her to experience feeling left out. Lisa described the invariant constituent, isolated, when she explained that she felt left out because "everybody was so good at it [Pac Man]. They would get to level, you know, 30 and I'm struggling at level one" (September 17, 2015). Lisa's struggle to understand how Pac Man worked and her desire to quickly gain the skills to play the game contributed to her experience of feeling isolated.

Lisa's Pac Man game experience also included the invariant constituent, embarrassed about lack of technological knowledge. Lisa said that her skill-level "was just, sort of, embarrassing" (September 17, 2015). Lisa shared that the Pac Man experience brought up insecurities about not fitting in and reminded her of feeling alone as a child when her peers were playing sports that she was unfamiliar with (September 17, 2015). Lisa's description of feeling insecure about playing Pac Man was labelled with the invariant constituent, doubting technological abilities. Lisa said that her

insecurities caused her to feel "always afraid to ask, you know, the questions [about how to play Pac Man]" (September 17, 2015). Lisa coped with feelings of embarrassment and doubts about her ability to learn the Pac Man game by engaging in avoidance strategies.

Not wanting to engage with technology. This theme was another component of Lisa's experience with the Pac Man game. Lisa described the invariant constituent, avoiding technology, when she explained that:

> I think I just wouldn't even engage in it [playing Pac Man] because I didn't get it…. I think I just drank more. Like, I, they would go and play the game and I just sat at the table and drank…. There would probably be more people sitting and drinking, so I would just be with them. (September 17, 2015)

Lisa avoided playing Pac Man because of the uncomfortable feelings this game brought up for her. Also, by sitting and drinking with other people, Lisa got some of her social needs met.

Technology use over time. As technology advanced and became more integrated into everyday life, Lisa began using it more frequently. Lisa continued experiencing feelings of inadequacy at times when she used technology and as a result of her technology use. Lisa also began using technology to meet her needs and to cope with life circumstances. As Lisa became more comfortable with technology, she began experiencing technology as a distraction and of being absorbed by technology. Lisa identified six of the eight themes among participants' experiences with using technology over time: out of comfort zone, supported technology use, technology as a distraction, exploring possibilities with technology, technology as a tool, and sharing technological knowledge.

Out of comfort zone. Lisa described experiencing feeling out of her comfort zone and the invariant constituent, struggling to understand technology, when she shared "people would talk, they would talk the talk. They would use technology words around and I'm like, I didn't even know what those words were" (September 17, 2015). Lisa shared about another experience of feeling out of her comfort zone when she tried to teach her children how to play a video game. Lisa explained "there are so many different tricks on Mario Kart and I felt like I was the one that had to, sort of, show the kids this. And I didn't know how to do it" (September 17, 2015). Lisa wanted to support her children in learning to play this video game, but she did not have the knowledge and experience needed to do this.

Lisa also described the invariant constituent, isolated, when she explained "there was no, sort of, safe place for me. I would say that there was no place for me to find out, what does this mean [in Mario Kart]? And, if you ask young people, they would get frustrated with me" (September 17, 2015). Lisa wanted to understand and engage with technology. She also believed that it was important to teach her children to use technology. However, Lisa struggled to achieve this goal because she did not have a means to obtain the necessary knowledge.

Supported technology use. Lisa described experiencing this theme when she eventually began to find people who she could ask about using technology. Lisa shared that:

> I got to a place where we would ask for help, but it was lingo that I never really understood…. When I was married, we had to buy our first computer and we asked my husband's sister who had more knowledge. And it was the RAM

> [random access memory] and what is RAM?... And asking the questions [to try and understand], but still not really getting it. (September 17, 2015)

Although Lisa had found someone who had more technological knowledge and who she felt comfortable asking for help, she did not quickly develop the understanding she was hoping to gain. Lisa also asked for help when she wanted to learn how to use instant messaging (IM). Lisa shared that "but, again, I didn't know how to use it [IM] and I was asking my older cousin. And she tried to explain it to me, but I felt really inept and really insecure as we went worldwide [online]" (September 17, 2015). Lisa pushed past her early experience of not asking for help, but her insecurities about understanding and using technology persisted.

Technology as a distraction. Lisa explained how she began using technology as a distraction from other life stresses. When Lisa and her ex-husband got their first computer, she described the factors that contributed to her experiencing the invariant constituent, escaping into technology:

> I got totally immersed in these simple games, so, like Tetris, and, like, that was then my escape…. I would just sit at the computer then for hours…. I was in my own home and I was in a situation, like, I had, umm, probably one small child. Having a very difficult, like, in hindsight, it was a very, very difficult time of my life and, and I wasn't coping with being a new mom very well. And my husband had started a business, so my, my thing was to do the books, which I also didn't know how to do. I didn't know how to parent, I wasn't doing very well at marriaging (*sic*), and I had to do the books. And, so my escape was to play Solitaire, to play Tetris. (September 17, 2015)

Lisa felt pressure from her various roles and from her struggle to try and meet the requirements of those roles. Lisa immersed herself in technology to avoid other areas of her life that she felt less capable of managing.

Another invariant constituent that Lisa experienced was labelled as absorbed by technology. Lisa explained that her coping with life stressors by escaping into technology "increased [over time]. Then, eventually, you know, I separated [from ex-husband]…. So, as I was home alone with my, now, two children and I think that [technology use] became more" (September 17, 2015). Eventually, Lisa found that her time, energy, and focus were absorbed by technology to the extent that she was not engaging in some basic life tasks and responsibilities. Lisa shared about being absorbed by technology:

> I should be…, you know, feeding my children when they were little, right? Like, make a
>
> nice meal, Lisa! But it was like, like there was a depression and it took energy to do that…. because my kids never liked my cooking. Umm, so it's just like, fuck! I don't even want to cook then. I'm just going to sit here and play games. (September 17, 2015)

Lisa coped with depression and with the challenges of being a parent by spending time online and playing games. Lisa also used technology during this time to connect with other people. Being absorbed by technology allowed Lisa to get some of her needs met, but she also experienced feeling dissatisfied with her actions. Lisa explained that talking about her experiences of being absorbed by technology during the interview resulted in her:

> Fighting playing this game and now I've just picked up my phone again and I'm just like, I'm just going to play the game, right? So, what I'm saying is that this has brought something up that's making me feel uncomfortable and I'm saying, I'd rather play a game. I've got to escape. (September 17, 2015)

Using technology as a distraction from unpleasant feelings and experiences is a coping strategy that Lisa described as continuing into her current technology use experiences.

Technology as a tool. Lisa described this theme when she shared about using technology to keep in touch with friends and loved ones, an invariant constituent of using technology. Lisa found that as a single parent of two young children she could maintain connections with other people from her home through the internet. Lisa remembered being curious about instant messaging because "you could meet people worldwide" (September 17, 2015). Lisa found the prospect of being able to interact with other people around the world exciting (September 17, 2015).

Exploring possibilities with technology. Lisa described feeling fascinated with technology when she shared about going online and interacting with other people. Lisa explained that "it was kind of cool to be able to just talk on the computer by typing with your friends" (September 17, 2015). Lisa's fascination with technology also influenced her desire to try and figure out different aspects of technology on her own. Lisa explained that "I think I probably tried it [technology] out on my own and then I became a little bit of an expert" (September 17, 2015). As Lisa became more confident about interacting with technology and figuring out technology on her own, she developed a better understanding of technology.

Sharing technological knowledge. Lisa experienced this theme when she shared that "my neighbor, who I was close to, would come over and I would teach her [about going online]" (September 17, 2015). When asked how she felt about being able to share technological knowledge with another person, Lisa said that:

> Umm, I guess it felt…cause I'm still a little bit in that role now, which is kind of ironic. And it's something I deal with now, is that I'm at a level of knowledge, umm, but I don't believe that I'm there. So, I always rate myself as lower. (September 17, 2015)

Lisa explained that her accomplishments in learning to use technology and being able to pass along that knowledge were diluted by her feelings of not measuring up. Lisa experienced disparity between her abilities and her beliefs about herself.

Current technology use. Lisa's present technology use included the same six themes as her technology use over time. Although, Lisa's current technology use also included the theme of social dynamics and technology. Lisa shared about seven of the eight themes identified among participants' present experiences with using technology: sharing technological knowledge, out of comfort zone, exploring possibilities with technology, supported technology use, technology as a tool, technology as a distraction, and social dynamics and technology.

Sharing technological knowledge. Lisa moved from feeling embarrassed, isolated, and de-moralized when using technology to being able to figure out technology on her own and help others use technology. She explained that:

> So, people will ask me questions and I generally know the answers. But I think I'm lower than that. I think, oh, I don't know anything about technology, but yet,

> they're asking me, right?... And I'm giving them answers…. I don't know. My, my perception of self is really mixed up. (September 17, 2015)

Lisa recognized that she has reached a certain level of technological aptitude. However, her beliefs about her technological abilities have neither caught up with her objective knowledge nor do her beliefs match up with how other people perceive her technological skills.

Out of comfort zone. Lisa described experiencing this theme when she shared about her use of social media and the invariant constituent, noticing incongruence between thoughts, feelings, or behaviours. Lisa explained "I go on Facebook quite often during the day and even yesterday, I voiced how much I hate Facebook now. And, and yet, I'm, I'm on it saying how much I hate it" (September 17, 2015). Lisa further explained that she notices disparity between her thoughts, feelings, and behaviours when online:

> I'm just like… [to herself], you're wasting so much time and giving so much energy [to hating content posted on social media and feeling jealous about other people's posts]…. So, part of you [Lisa] wants to go, I just want people's updates, but then, when I get people's updates, I'm like, shut the fuck up! I don't want to hear about your life because I hate you…. And I've tried so many times to deactivate my own Facebook and, like, in such a short time, I'm back at it…. It [Facebook] makes me feel bad when I use it. And, even if I'm not using it, even if, somehow, I limit myself to once a day, I still don't feel good when I'm using it. So, why am I doing something that I don't feel good about, right? (September 17, 2015)

Lisa described an emotionally wrought struggle between her desire to engage in this online social environment and experiencing negative feelings when she spent time on the website.

Lisa also shared about experiencing the invariant constituent, isolated, in her current technology use. She explained that "it doesn't feel like anybody else has problems like me, right?... I'll say, oh my god, I'm so addicted to Facebook! And I don't think people will get it" (September 17, 2015). Lisa uses technology for social engagement, but she also experiences feelings of isolation and frustration as a result. For Lisa, technology is a beneficial tool allowing her to connect with others, but it is also an impediment to her quality of life.

Technology as a tool. Lisa shared about using technology to achieve her goals, meet her needs, or make her life easier, an invariant constituent of using technology. Lisa described how technology facilitates her connections with others:

> Maybe, I have to show pictures to somebody. [For example, she would say to someone] oh my god, you should see this picture. And it's like dammit, you know, and then I have to [reactivate Facebook], cause I'm too embarrassed to go, oh, wait a second, I deactivated my account…. You see that's my big thing, right? I want to instant message. I want to communicate. I want to read Facebook. I want to be social. (September 17, 2015)

Lisa also explained how she uses technology to keep up in her profession by following various therapeutic associations on social media. Lisa described feeling stuck when she shared "so I don't know how, where else to follow them [therapeutic associations], right? And so, it seems like the thing to do [keep her social media accounts activated]"

(September 17, 2015). Lisa would like to get away from social media, due to the consequences she experiences when she is online, but she also finds technology useful for maintaining personal and professional connectedness.

Lisa shared about the invariant constituent, using technology to keep in touch with friends and loved ones, when she explained "my daughter, who is in another country right now,…it's [Facebook] sort of, like, our only connection, then I can see pictures of her, or see what her life is like right now" (September 17, 2015). Lisa also shared about setting limits on the role of technology in her life, another invariant constituent. Lisa explained "so, I was going to hot yoga, umm, you know, as much as I could…. I tried to do other self-care versus, you know, escaping into the game, or into Facebook" (September 17, 2015). Lisa explained how setting limits on her technology use impacted her:

> Even now, the first thing that I do when I wake up is look at my phone. And I've taken Facebook off my phone because I'll spend an hour in the morning, while I'm still in bed, looking at Facebook. And so, I've taken it off my phone and now I look at my phone and I'm like, dammit! There's nothing to do. (September 17, 2015)

Lisa also described trying to "limit myself with the new game [on her phone]" (September 17, 2015). Interwoven throughout Lisa's experiences with technology is her struggle to relate to technology with fewer uncomfortable emotions and to moderate her online time. Lisa's experiences indicate that she wants to engage with technology on her own terms and is working on strategies to do this.

Technology as a distraction. Lisa described experiencing two invariant constituents of this aspect of technology use: absorbed by technology and escaping into

technology. Lisa shared about being absorbed by technology when she described having "problems with the [technology] obsession, spending too much time on it" (September 17, 2015). She further explained that "I was totally obsessed with one game and now I've got a new game on my phone" (September 17, 2015). Lisa also shared about the facilitative factors that contributed to her immersion in technology.

Lisa described the invariant constituent, escaping into technology, as a coping mechanism she uses. Lisa explained that "it's difficult [limiting time spent on technology]… still, like, I don't want to get up. I don't want to face the day. I don't want to have to do what I have to do" (September 17, 2015). Lisa uses technology to distract herself from her daily life tasks. She described in greater detail the extent of her struggle with escaping into technology:

> Even as we are talking this whole time [during the interview], I'm in bed and I've opened up my computer and I sent an email, while we're talking…. And I've got my phone and I've probably picked it up a dozen times and I've scrolled through it. And I've looked at Instagram and I've wrestled with opening up a game. I've looked at weather all over the world. (September 17, 2015)

Lisa described an almost constant engagement with technology, even while answering the interview questions.

For Lisa, escaping into technology is not only about distracting herself, it is also a means of pulling away from uncomfortable emotions. Lisa elucidated the factors involved in her process of using technology as an escape:

> It's just, almost to touch it [technology] and then there's…so, I'm not connecting with the people, or [not] connecting with myself is another big thing, too. Okay…

> [talking to herself], go to your room and meditate. Oh, but let me send this email and let me check Facebook and let me do this and this and this, and now I'll play the game. Oh, I should also check Moodle, if there's any posts. And, before you know it, you're too tired to meditate. So, not even connecting with myself. (September 17, 2015)

Lisa described finding comfort on social media and detaching from the present moment and her uncomfortable emotions. Lisa found that technology provided an immediate distraction that was more habitual and comfortable for her than spending time meditating, praying, or connecting with herself.

Lisa explained how she experienced the desire to escape as it occurred for her in the present moment of the interview:

> You're brining up stuff for me because one of my key escapes, that has been an escape for years, is tiredness. And it's like, okay, I'm tired. I'm going to bed, but I can't do things for myself like meditating, or praying or anything like that…. And even as we're, I just told you that I've been fighting playing this game, and now I've just picked up my phone again and I'm just like, I'm just going to play the game, right? So, what I'm saying is that this has brought something up that's making me feel uncomfortable and I'm saying, I'd rather play a game. I'm going to escape. (September 17, 2015)

Lisa further explained that she tells herself "do good, healthy things for yourself [but] it's not something that, even after 24 years, it's not set in stone, yet. Like, it's not a habit. What are habits that I still struggle against is [*sic*] the escaping" (September 17, 2015). For some time, Lisa has been aware of her coping mechanism of immersing herself in

distractions to avoid uncomfortable feelings and she continues to challenge this habitual response, by holding onto her self-care goals and activities.

Social dynamics and technology. Lisa shared about three invariant constituents under this theme: dislike of content posted on social media, superficial nature of online environments, and using technology as a social barometer. Lisa described her experiences of reading posted content on social media:

> With Facebook, it's not just, really, people just checking in. It's people putting all their political stuff on it and memes and it's just like, this is driving me crazy! And, on the other side, when people do put their updates on it, it makes me jealous. (September 17, 2015)

Lisa described a general unhappiness and dislike of social media. Lisa wished for posts about more personally relevant content, but then she felt envious when she came across posts that were about other people's lives.

Lisa also shared about the invariant constituent, superficial nature of online environments. She described her experience by saying "and, if I wanted to be friends with those people, I would've kept in touch with them, but for some reason we're Facebook friends and I don't want to be Facebook friends with them" (September 17, 2015). Lisa dealt with this situation by being "friends with them, but I just don't follow [them]" (September 17, 2015). However, with this strategy Lisa feels disingenuous because her online social connections do not reflect her real life social relationships.

Lisa described using technology as a social barometer, another invariant constituent of the experience of using technology. Lisa explained that she uses Facebook:

> To find out if people like me. And so, if I post something, like, maybe something about myself like, yeah, I finished my practicum! And I'll measure it by how many likes I get. Right, and I'm like, ahh, it's all good until I look at somebody else who got a 164 likes and I only got 40 [likes]. Like, obviously they're a better person than me [in a sarcastic tone of voice]…. Well nooooo [doesn't believe that the other person is better than her] because it's such a stupid measurement…. So then, I'm jealous of them. Yah, but it's so ridiculous, eh? That I'm saying this out loud. (September 17, 2015)

Lisa experienced uncomfortable thoughts and feelings when she spent time online. Lisa further described her thoughts when another person got more likes on his/her post when compared to the number of likes she got on her post, "I'm a failure. I think, it's just, I'm a failure, right? That nobody likes me" (September 17, 2015). Lisa further explained:

> Then I hate the person more and, meanwhile, they probably have, like, 1,200 friends. Obviously, they are more popular, but maybe I could have 1,200 friends, if I didn't keep taking them off my friends' list…. It's like, I don't even like you anyway. It's just a stupid game. (September 17, 2015)

Lisa described experiencing frustration and conflicting thoughts and feelings about herself as a result of being on social media. Lisa viewed social media as a competitive environment where one's likeability can be measured, while she also pointed out that using social media to gauge one's social connections is very limited in scope.

Supported technology use. Lisa described using the invariant constituent, asking for help to understand technology, in her current experiences with technology. Lisa explained that when she wants to learn something about technology she will go to "the

people I feel most comfortable with…. I work with a lot of young people and so, I'll ask them" (September 17, 2015). Lisa found ways of getting the information that she needs to better use technology.

Exploring possibilities with technology. Under this theme, Lisa shared about two invariant constituents: developing a better understanding of technology and figuring out technology on one's own. Lisa described developing a better understanding of technology when she explained she has learned "that you can just Google things" (September 17, 2015). Lisa shared about figuring out technology on her own when she said, "I find the answers [on Google]. So, I'm getting a little bit more, I'm getting a little bit better at finding my own answers" (September 17, 2015). Lisa's desire to engage with technology has brought her to the point where she directs her own learning by finding ways of obtaining the information she needs.

Conclusion. Throughout most of Lisa's technology use, she sought to connect with others and experienced a mix of feelings in the process. Lisa shared that she has a "real passion, let's say, for younger people…. I'm hoping it's going to come in really handy as a counsellor, umm, that they'll connect with me" (September 17, 2015). Lisa continued to explain that she talks about technology with younger people and:

> They explain it to me…. Like, I try to be, I try to be cool in a really uncool kind of way. It's like something that I play on…. I try to connect with them that way, so they can see that I'm approachable. (September 17, 2015)

Lisa has moved from feeling embarrassed and isolated because of her lack of technological knowledge to being able to joke about those gaps and use them to build connections with others. Lisa's relationship with technology has provided mixed

outcomes that included a disparity of emotions toward interactions on social media, her habitual use of technology, and her positive connections with youth and professional online environments.

Sara

Sara is a self-described moderate technology user (October 1, 2015). Sara is in her thirties, is married, and, prior to completing her master's degree, she worked in an industry that required the frequent use of diverse technological applications (October 1, 2015). Sara shared that the greatest influence on her technology use has been "my value in personal connections, staying as close to that as possible and using technology wherever I can to approximate in-person connections with the people that I really care about" (October 1, 2015). Sara described her first experience with a form of technology where she was encouraged to use technology to keep in touch with a friend.

Initial experience with a form of technology. Sara described three of the five themes identified among participants' first experiences with a type of technology: supported technology use, technology as a tool, and exploring possibilities with technology.

Supported technology use. Sara recounted a time in grade twelve when she was hanging out at a friend's house (October 1, 2015). Sara's friend had an email account and was encouraging Sara to set one up (October 1, 2015). Encouraged by others to engage with technology is an invariant constituent of using technology. Another invariant constituent that Sara described was figuring out technology with others. Sara explained that her friend:

> Ended up, kind of, helping me through the process, I guess, of setting it up [first email account]. I was quite surprised, like, it was a lot easier to register and a lot easier to use than I was anticipating that it would be. (October 1, 2015)

Sara engaged with this technology at the prompting of her friend. However, Sara required more than her friend's encouragement to persuade her to set-up an email account (October 1, 2015).

Technology as a tool. Sara explained that her decision to set up an email account was motivated in part by a desire to keep in touch with her friend (October 1, 2015). Using technology to keep in touch with friends and loved ones is an invariant constituent under the theme, technology as a tool. Sara remembered her friend describing the benefits of having an email account because "soon we're going to be graduated and we'll be off at different universities and we can use this to talk with each other and it's free" (October 1, 2015). These factors helped Sara make the decision to set up her own email account.

Exploring possibilities with technology. Sara experienced this theme and an associated invariant constituent, trying technology to determine whether addresses needs, as she continued to describe her experience of getting her first email account. Sara shared that:

> I remember thinking why, why do I need this? Like, what is this email? Like, how is this going to make my life better? I was a little bit un… [inaudible], or uncertain about why I needed it, or what the purpose of email was…. So, I sort of adopted this, like, nothing to lose mentality. I figured I'll just sign up with this

> email and then, if it's not of value to me, or if I find that I'm not using it, then I'll just figure out how to shut down my account. (October 1, 2015)

Although Sara was interested in how email could help her keep in touch with her friend, she was also cognizant that, if the email account did not suit her purposes, she would find a way to close it. Sara's approach to engaging with this new form of technology involved an attitude of openness to trying something new, awareness that she only partially understood the technology, and willingness to find out whether the technology would support her in meeting her needs and goals. Sara's attitudes to engaging with technology continued throughout her experiences of using technology.

Technology use over time. After completing university, Sara worked in an industry where extensive use of technology was expected (October 1, 2015). Sara's experiences with technology at work influenced how she used technology over time. Sara described four of the eight themes identified among participants' experiences of past technology use: out of comfort zone, exploring possibilities with technology, technology as a tool, and technology as a distraction.

Out of comfort zone. Sara described the invariant constituent, dissonance between expectations of technology use at work and personal comfort with technology, when she shared about her career. Sara explained:

> I ended up working in an industry that really relied on a lot of different technology platforms and being really, umm, knowledgeable about them and quite cutting edge and being an early adopter and a lot of things that I am not. So, but then, I was kind of thrust into this industry and that was my job. (October 1, 2015)

Sara experienced a gap between her preferred level of engagement with technology and the level of technology use needed to fulfill her job duties. Sara described this experience and the feelings associated with it as "lack of control, lack of ownership, pressure, feeling forced a little bit into interactions with technology that weren't aligned with my personal preferences" (October 1, 2015). Sara experienced pressure from her job to use technology extensively and frequently.

Sara further described the dissonance she experienced between the expectations of her work environment and her personal comfort with technology when she shared about feeling uneasy when using technology for work on her personal time and these "blurred boundaries" (October 1, 2015). Sara also explained how she coped with the "spill over [of work technology] into the evenings and so, I had to sort of re-frame some of those activities not as work, but as, like, just communication" (October 1, 2015). While Sara tried to adapt her thinking to match up with the demands of her work, she also found herself wondering "how did I get recruited into this? I'm not really sure how I feel about, umm, spending my, or just having these types of messages intrude on my personal time" (October 1, 2015). Sara's extensive use of technology in her career also prompted her to experience the theme, technology as a distraction.

Technology as a distraction. Sara described the invariant constituent, absorbed by technology, when she shared about how her technology use for work impacted her (October 1, 2015). Sara explained her experience of being absorbed by technology as:

> I don't know if I was just saturated at work. Like, whoa, that's a lot to keep up with. I remember feeling that, like, that my days felt really busier…. I felt like I really needed to keep up with and check-up and maintain all of these different

> platforms, umm, but that was also, in large part, what I got paid to do. Umm, but I do remember thinking and, kind of, questioning what is the value of this. And, while I'm doing all of these actions [on social media], that wouldn't lead to a sense of connection – I don't really feel a sense of connection. I just feel overwhelmed by needing, you know, to keep up with all of this stuff. (October 1, 2015)

Sara experienced feelings of busyness as a result of trying to maintain the technological platforms for her job. Sara's experience of feeling busy led her to experiencing feelings of disconnection. Sara found some strategies that aided her in dealing with the extent her job required her to engage with technology.

Exploring possibilities with technology. The invariant constituent, figuring out technology on one's own, captured a facet of Sara's experience of becoming familiar with technology. Sara explained that "I did get more efficient with them [social media platforms] over time. I think that helped as well, you know, that I wasn't kind of searching around for how to post something, or how to connect with someone" (October 1, 2015). Sara also described the invariant constituent, developing a better understanding of technology, when she shared "I got a lot faster and more effective, I guess, at using them [social media platforms] for their intended purpose…. I think that helped, too, in terms of perceptions about the amount of time that I was spending" (October 1, 2015). As Sara explored the new technology and gained familiarity with using it, her perspective about being able to manage social media accounts for work began to shift.

Sara also used the technological knowledge she gained at work to decide what technologies best fit in her personal life. Sara described the invariant constituent, trying technology to determine whether addresses needs, when she explained:

> What I found was that I had professional accounts and then I had personal accounts. So, I was using, you know, email, Facebook, LinkedIn, Twitter, [and] Snapchat in connecting, texting, like, audio conferencing, web conferencing, [and] Skype, like, that type of stuff. I was using all that and Vimeo and Instagram and just tons of different platforms, umm, for my work. Then, I could, kind of, use that [technological knowledge] to inform which ones really, like, were of value to me in my personal life and I used far fewer platforms. (October 1, 2015)

Sara parlayed her experiences with technology at work to determine which technologies best met and aligned with her personal values and goals. Sara also continued to view technology as an instrument for her to use.

Technology as a tool. Sara described four invariant constituents under the theme, technology as a tool. She shared about the invariant constituent, setting limits on the role of technology in life, when she explained that:

> Ultimately, I felt that I had the most control in terms of managing my technology in my personal life. So, I really did that…. I really, kind of, pared down and actually left very different kinds of technology, sort of, behind. (October 1, 2015)

Sara had a sense of control of technology in one area of her life. Sara managed her feelings of being saturated by technology at work by selectively using technology in her personal life.

Sara also used her values to guide her decisions about which technologies to engage with in her personal life. Sara explained that going to university in a different province influenced her technology use. Sara described the invariant constituent, using technology to keep in touch with friends and loved ones, when she decided that "these [platforms] are the ones that really work for me, personally, in terms of staying connected with the people that I wanted to stay connected with" (October 1, 2015). Sara limited her technology use to those applications that helped her maintain her value of connecting with the people she cared about. Sara described the invariant constituent, technological confidence, when she explained "I also, kind of, got to have the confidence of feeling that those decisions [about which technologies to use personally] were well informed because I had used so much technology, umm, for my work" (October 1, 2015). Sara drew from her experiences with technology at work to enhance her personal life.

Sara shared about how her experiences with technology at work were useful for working on a graduate degree through distance learning (October 1, 2015). Sara described the invariant constituent, using technology to achieve goals, meet needs, or make life easier, when she explained that "I think it [technology use at work] really helped me transition into the GCAP program and into a distance learning environment. I don't remember feeling, umm, overwhelmed, or confused with respect to the platforms in the GCAP program" (October 1, 2015). Sara made use of her technological knowledge in reaching her goal of obtaining a master's degree.

Early in her career, Sara was inundated with technology. However, over time, she found strategies for negotiating a relationship with technology that was more manageable. The strategies that Sara used included: exerting control over technology use

in her personal life, changing how she perceived technology use for work, developing a better understanding of technology, and using her technological knowledge to support her values, have her needs met, and achieve her goals. Sara's present use of technology is again being shaped by her career.

Current technology use. Sara described six of the eight themes found amongst participants' present use of technology: technology as a tool, social dynamics and technology, exploring possibilities with technology, supported technology use, not wanting to engage with technology, and sharing technological knowledge. Throughout her experiences with using technology, Sara shared about the themes exploring possibilities with technology and viewing technology as a tool.

Technology as a tool. Sara described the invariant constituent, using technology to achieve goals, meet needs, or make life easier, when she explained that "I really do feel that I've learned how to make technology work for me" (October 1, 2015). Sara shared that:

> Technology is a tool to help meet your goals…. There's sort of, I guess, an art to using it that way and certainly an understanding that is needed in order to use technology to serve, or be more effective, or more efficient. Yah, but to me technology is not the end all. Technology is a means to an end. (October 1, 2015)

Sara explained that her beliefs about technology as a tool developed due to the shift "in making technology less central in my work life [and] that's probably a large driver of that, too, in terms of establishing a professional identity" (October 1, 2015). Sara's

experiences and beliefs contributed to her preference for engaging with technology in a moderated and deliberate manner to achieve her goals.

Sara identified another factor of making technology work for her when she shared about the invariant constituent, setting limits on the role of technology in life. Sara explained that:

> I have much better boundaries around it [using technology] and, also, because I'm not required to engage with certain technologies as a part of my work anymore. I really feel like I'm driving my own bus a little bit more, in terms of technology. So, that's been very empowering. (October 1, 2015)

Sara's career change has allowed her more freedom in determining how she uses technology and which technologies she uses. Due to having a greater sense of control over her technology use, Sara experienced feelings of confidence and self-determination. Sara expressed feeling confident about her ability to make informed choices about technology, another invariant constituent titled technological confidence. Sara explained that "now I use way less platforms, but, of the ones that I do use, I get far more engaged with them. I interact with them much more frequently and I use them to have meaningful interactions" (October 1, 2015). Sara has focused her technology use to better align with her values and lifestyle.

Sara described using technology as a tool to uphold her value of maintaining personal connections when she shared about the invariant constituent, using technology to keep in touch with friends and loved ones. Sara explained that her core value when evaluating whether to use a form of technology "is how can this [technology] help me connect with people, or be more efficient" (October 1, 2015). Sara used her goals and

values to determine the extent that she interacts with technology and the types of technologies she uses.

Social dynamics and technology. Sara further explained how her technology use is guided by her values when she shared about the invariant constituent, friends and loved ones' use of technology influencing technology use. Sara said that "I also decide [which technologies to use] based on what people I want to stay connected with are using, too, because that's one of my core values in terms of using technology" (October 1, 2015). Sara described the invariant constituent, using technology to have meaningful interactions, when she explained that:

> I really do have a strong preference for technology that is the closest, or feels the closest to in-person interactions. So, for example, I prefer to use Facetime where I can see someone's face and hear their voice versus, say, a text message. So, things like that, when I look at the technologies that I use and that are a meaningful part of staying connected with people. (October 1, 2015)

For Sara, how she connects with the people she cares about was influenced by her desire to have meaningful interactions.

Sara described another factor that impacted how she used technology when she shared about the invariant constituent, taking into account online persona(s) and professional identity. Sara explained:

> Since leaving that job that was really focused on technology and transitioning into more counselling type work…. I've chosen to reflect on the idea of a public profile versus a private profile. And, so, you know, I did do some reflection on how would I feel if a client called me, or adds me as a friend on Facebook, or

> viewed my… profile, or things like that. Yah, and so that has certainly influenced, I guess, my use of technology. (October 1, 2015)

Sara contextualized her presence on social media by evaluating how she may be perceived by clients and the potential need to navigate interactions with clients outside the therapy room. Sara's current technology use involved considerations of boundaries about the role that technology will play in her life, boundaries related to her professional goals, and boundaries that she may have to put into effect with clients.

Not wanting to engage with technology. Sara discussed this theme when she shared about the invariant constituent, preferring to use familiar technology. Sara explained her view of engaging with new technologies as:

> I tend to be… more hesitant and a little bit more resistant, I guess, to newer technologies. I'm not the first person to jump in. I sort of, I prefer to wait and see how it goes for other people and what their thoughts are and their evaluations [of the technology], and then I forge the courage to form my own actions. (October 1, 2015)

Although Sara has amassed a breadth of technological knowledge, she does not on her own accord seek out new technologies.

Sharing technological knowledge. Sara described her approach to helping other people use technology. Sara explained that:

> I have found that sharing knowledge about technology has been very collaborative for me. The platforms are constantly changing, and how each person uses technology is different. So I find the sharing of tech knowledge more of an exchange. More of a "let's figure this out together" approach. (March 15, 2016)

Sara uses the intuitive understanding that she has developed about technology to help other people engage with technology. The dynamic nature of technology and diverse applications of using technology impacted how Sara disseminates her technological knowledge.

Exploring possibilities with technology. Sara shared about exploring technology when she described the invariant constituent, developing a better understanding of technology. Sara explained how she currently uses technology when compared to her past technology use:

> I have a better understanding of how to use them [technological platforms] to meet the needs that I need to meet. So, certainly, as an example when I first began interacting with the internet, it wasn't very focused… cause I didn't really know what I was doing. Now, I use the internet as an information gathering tool and so, when I need information, I go to the internet, I am very focused about it, I can find it, and then I'm done. (October 1, 2015)

Sara developed her knowledge about technology and, as a result, she is more deliberate and efficient in her technology use.

Sara shared about the invariant constituent, trying technology to determine whether addresses needs, when she explained how she engages with new technologies. Sara said she views new technologies with:

> That, kind of, nothing-to-lose mentality that I had around signing up for an email account for the first time… assuming that there's no major cost associated with just trying it out. I'll just try it out and see and learn from it informally, as I use it. And then, if I don't find myself using it, then that's also information for me in

> terms of, like, maybe this isn't for me. But, I do, like, I will test things [technology] out that other people have, like, my friends, my family, my husband, kind of thing. So, if they have something, I will tinker away at it and see if it's something that I might be more interested in. (October 1, 2015)

Sara is curious about technology and she takes the opportunity to explore new applications when people she knows are using them. However, Sara clarified that "I'm not the type of person that's, like, watching first out videos, or reading user manuals, or expensive instructions, or anything like that" (October 1, 2015). Sara engages with new technologies when she comes across them in her daily life, but she does not seek out new technologies.

Sara explained that she prefers technology that is "fairly intuitive and I like things that I can learn and layer your understanding" (October 1, 2015). When Sara comes across a piece of technology that is:

> Not really intuitive enough for me to figure it out…. I do attribute that to the technology and not to myself. I don't say, hmm, maybe I need to get more savvy about this. For the most part, I'm just like, meh, well there will be some other new technology down the road. Like, I don't need to jump on this one if it's not grabbing me. (October 1, 2015)

Sara's confidence about her ability to engage with technology is not impacted when she comes across a technology that is cumbersome to use. Sara draws from her experiences with using diverse technological applications and her core values when assessing whether to incorporate a new technology into her life.

Conclusion. Overtime, Sara sought to use technology to meet her needs. She engaged with technology to stay connected with the people she cares about and to be more efficient. Sara is curious about new technologies, but she will not typically seek them out. Sara's experiences with using technology have included times of feeling: inundated by technology, disconnected, uncomfortable, focused, open-minded, confident, in control, reflective, supported, and supportive. Sara's technology use consistently included two themes: exploring possibilities with technology and technology as a tool. These themes reflected Sara's openness to exploring technologies and her beliefs that technology can help her get her needs met and help her attain her goals.

Carrie

Carrie is a self-described reluctant and unsavvy technology user (March 9, 2016). Carrie is in her 30's, is working on a master's degree, and is a married mother of three children. When asked about the greatest influence on her technology use, Carrie said that feelings of aversion were the most impactful (October 3, 2015). Throughout her experiences with using technology, Carrie found technology to be scary, frustrating, and useful for accomplishing her goals.

Initial experience with a form of technology. Out of the five themes identified among participants' initial experiences with a new form of technology, three applied to Carrie's experience: out of comfort zone, not wanting to engage with technology, and supported technology use.

Out of comfort zone. Carrie described this theme when, in her early adult years, she worked as a police officer and had her first encounter with the Computer Aided Dispatch (CAD) system. Carrie explained the importance of the CAD, "this was how we

got a vast majority of our information for calls and just people's files" (October 3, 2015). Carrie felt thrust into using this "whole, entirely new system [CAD] that I had to learn and I had to do it fairly quickly…. There was not, I don't know if there was any, or very little specific training for it" (October 3, 2015). Carrie experienced the invariant constituent, struggling to understand technology, because the CAD system was new to her and she did not receive training on using the system before going into the field.

Carrie explained that figuring out how to use the CAD in time sensitive situations resulted in her experiencing feelings of "panic…. Pressure, yes, frustration, it was mostly negative feelings at first" (October 3, 2015). Carrie experienced the invariant constituent, dissonance between expectations of technology use at work and personal comfort with technology, because of the need to use the CAD to quickly obtain information. Carrie also experienced the invariant constituent, doubting technological abilities, when she recalled thinking "I will never get the hang of this" (October 3, 2015). A number of factors related to Carrie's discomfort with using the CAD including: being in time sensitive, high pressure situations, using a new form of technology, and the need to use this technology to access important information with very little, or no training.

Not wanting to engage with technology. Carrie also experienced the invariant constituent, aversion to technology, during her initial encounter with the CAD. Carrie remembered thinking "I hate this [using the CAD system]. Again, mostly negative [thoughts and feelings]" (October 3, 2015). Carrie felt an intense dislike of the CAD.

Supported technology use. Carrie shared about this theme when she described the invariant constituent, figuring out technology with others. For the first three months that Carrie worked as a police officer, she had an officer-coach with her. Carrie

explained “during that time I learned a lot and, at the end of those three months, I was fairly comfortable with using the [CAD] system” (October 3, 2015). Having the opportunity to use new technology with another person’s support helped Carrie to develop a better understanding of this technology and contributed to a shift in her feelings about using the CAD.

Technology use over time. Of the eight themes identified among participants’ technology use over time, Carrie described five themes: exploring possibilities with technology, out of comfort zone, not wanting to engage with technology, supported technology use, and technology as a tool.

Exploring possibilities with technology. Carrie shared that her increased familiarity with the CAD system and with figuring out other means of accessing information on the job, resulted in her developing “more confidence. Also, in terms of other tools I had available to me, so I wasn’t, perhaps, as dependent on the CAD because I was more confident…. Cause I had a better toolbox to get what I needed” (October 3, 2015). Carrie’s increased comfort and confidence supported her sense of agency as a police officer. Also, Carrie’s improved understanding of the technology and her greater comfort with using it allowed her to problem solve more dynamically.

Out of comfort zone. Under this theme, Carrie described three invariant constituents: struggling to understand technology, doubting technological abilities, and having other people in one’s life who understand technology (i.e., people who set-up, explained, or helped navigate technology). Carrie shared that her experiences of struggling to use technology supported her feelings of discomfort about using it when she said “I don’t take to technology as easily as I do most things, so I’m uncomfortable”

(October 3, 2015). Carrie also described the invariant constituent, doubting technological abilities, when she explained "I used to be scared that if I made a mistake, I would crash the internet [make a dire, irreparable mistake]" (October 3, 2015). The theme, out of comfort zone, was also associated with some participants reporting that they had a person(s) in their lives who helped them use technology. Carrie explained "when I got married, I kind of deferred to my husband to figure out the technology stuff, so it's largely not been my responsibility in my personal life" (October 3, 2015). Carrie's struggle to understand technology undergirded her aversion to using it. Her engagement with technology was also circumvented, to an extent, because her husband took on that responsibility.

Not wanting to engage with technology. Carrie described the invariant constituent, aversion to technology, when she explained that her feelings of aversion to technology stemmed from "well, time constraints, sure, but I think it's more fear… fear of not being able to figure it out. My mind works quickly for most things and in this domain it doesn't and I find that frustrating and scary" (October 3, 2015). Carrie shared about the invariant constituent, preferring to use familiar technology, when she said that "I'm not comfortable with technology, like, at all…. Once, I'm comfortable with technology I'm really averse to changing anything about it" (October 3, 2015). Carrie also described the invariant constituent, avoiding technology, when she chose not to have a home computer prior to meeting her husband (October 3, 2015). Carrie's feelings of fear and frustration with technology influenced the extent that she engaged with technology. Carrie managed her uncomfortable feelings by seeking to avoid technology as much as possible, or by using familiar technologies.

Supported technology use. Carrie described this theme and the invariant constituent, encouraged by other to engage with technology, when she shared about getting a Nintendo gaming console as a child for Christmas (October 3, 2015). Carrie also described the invariant constituent, figuring out technology with others, when she noted that "when I would play games with my friends, I would learn stuff from them" (October 3, 2015). Carrie explained that she found learning to use technology with others "not as pressured" (October 3, 2015). Carrie found that using technology in a relaxed, self-selected environment supported engaging with her Nintendo.

Technology as a tool. Carrie also described the invariant constituent, using technology for entertainment, when she shared about playing on her Nintendo. Carrie shared that she enjoyed playing Nintendo and she learned by "deferring to other people to teach me, or learning as I go, too, right. Cause that's how you play those games…. I liked it [playing Nintendo], but…it wasn't all consuming in any way" (October 3, 2015). Supporting Carrie's enjoyment of this experience were the qualities of playfulness and the ability to layer learning as one played the games, for example, when one's character fails to complete a level, or "dies", one simply starts the game/level again (October 3, 2015). Carrie described the invariant constituent, setting limits on technology use, when she said that she did not play Nintendo to the point of missing out on other aspects of her life. Throughout Carrie's past engagement with technology she shared about feeling uncomfortable with technology, wishing to avoid using technology as much as possible, getting help from other people to use technology, trying to figure out technology, and viewing technology as a resource. The themes Carrie emphasized in her descriptions were feeling out of her comfort zone when using technology and not wanting to engage

with technology. Carrie also experienced these themes in her recent experiences with technology.

Current technology use. Carrie described six of the eight themes identified among participants' current experiences of using technology: out of comfort zone, not wanting to engage with technology, supported technology use, exploring possibilities with technology, technology as a tool, and social dynamics and technology.

Out of comfort zone. Carrie described feeling uncomfortable with technology when she shared about the invariant constituent, struggling to understand technology. Carrie explained:

> For me, technology is not something that I grasp very easily, so to hear someone talk about "this is what you do" – not very effective for me…. But much more helpful for me is to get my hands in there and actually do it myself. (October 3, 2015)

Carrie learns how to use technology the most easily when she has tactile, experiential engagement with it. For Carrie, using technology on her own with guidance is helpful for learning new technology.

Carrie also described the invariant constituent, doubting technological abilities, when she shared about the possibility of needing a new laptop for school. Carrie explained that "I'm used to PC's and my husband's like why don't we get a MacBook? And I know there's a different operating system with it…. That worries me" (October 3, 2015). Carrie worried about the possibility of learning a new computer system and she explained that she felt "dread, irritation" (October 3, 2015). Carrie's sense of dread and her feelings of irritation were tied together with her struggle to understand technology.

Not wanting to engage with technology. Carrie expressed this theme when she shared about her wish to avoid the prospect of getting a laptop with a different operating system. Carrie explained thinking that "I don't have time for this and I don't want to do this" (October 3, 2015). The invariant constituent, aversion to technology, applied to Carrie's feelings about this situation. Carrie felt disconcerted about the challenges of learning a new operating system during a busy and critical part of her schooling.

Carrie described another invariant constituent, preferring to use familiar technology, when she shared about learning a new web application as part of her practicum requirements (October 3, 2015). Carrie remembered thinking:

> Another thing to learn? But I almost stopped that train of thought cause, you know, it's not that bad. Just do it and get it over with. So, I cognitively restructured it, so it didn't turn into a big monster in my head. (October 3, 2015)

Although learning a new technological application went against Carrie's affinity for using familiar technology, she accepted that this was a necessary task of her practicum placement. Carrie further described her process of coaching herself through this prospect:

> I've done this before [learned new technology]. It's not that bad. Just do it…. Yes, it wasn't doubt as much as it's been before, it was just slight irritation of something new to learn. But I just didn't want to spend time on it, but it really wasn't that bad – the doubt wasn't as bad. I knew it would be fine….and I had a whole room of people around me that knew how to use it, so I could ask them, in real time, hey, how do I access this? And it was answered within seconds and it was fine. (October 3, 2015)

In the above excerpts, Carrie described her initial, automatic thoughts about learning a new technology and her inner dialectic analysis of how she helped herself engage in learning the new application. Carrie reminded herself that she has successfully learned new technology in the past and this helped lessen her feelings of doubt about her ability to meet the demands of learning new technology. Also, Carrie accessed support from other people when she did not know how to use the application. Her proximity to others who were already familiar with the technology and being able to have her questions quickly answered facilitated Carrie's ability to learn and use the application efficiently. Having others around for support also minimized the time she spent feeling confused, frustrated, and ill equipped to engage with technology.

Supported technology use. Carrie described this theme when she shared about her husband's encouragement to get the new laptop for her schooling and the invariant constituent, encouraged by others to engage with technology. Carrie's opposition to learning a new operating system did not abate with the encouragement from her husband because she found the prospect of taking the time to learn a new operating system daunting based on her current technological understanding and skills. Carrie explained that her aversion and discomfort with technology related to a lack of knowledge about how technology works (October 3, 2015). Also, finite energy to dedicate to the task and the stress of engaging in change in several areas (i.e., starting a practicum, developing counselling skills while being evaluated by a supervisor, and learning a new form of technology) may have been additional factors that influenced Carrie's wish to continue using familiar technology. Another factor relating to Carrie's desire to avoid this

situation may have been that she was not confident that she could quickly receive support from others during this learning process.

Carrie described the invariant constituent, asking for help to understand technology, when she shared about her willingness to seek support from others to improve her understanding of technology. Carrie said that:

> I am not averse to asking pretty much anyone, though. If my phone crashed in the Starbucks line, I would ask the person behind me, what would you do? I've actually done that before. You know, on the iPhone when you press and then all those little things start shaking cause you tried to delete them…. Yah, I didn't know what that was at first. So, I just asked a stranger. What do I do? Press the button. (October 3, 2015)

Although Carrie views herself as an unsavvy technology user, her feelings about lacking technological knowledge do not restrain her from asking for help from other people. Instead, Carrie's feelings of fear and frustration when using technology motivated her to reach out to others.

Exploring possibilities with technology. Carrie shared about this theme when she described how she has learned to address gaps in her technological knowledge. Carrie described the invariant constituent, figuring out technology on one's own, when she explained:

> Recently, I've taken to, if I run into a problem on my computer, oh, for instance, when I was trying to format [an assignment]…. It had to be formatted differently than most of our GCAP [program] papers have been just the roman numerals and stuff. So, I was like, 'ahh, I can't figure this out!' So, I went on the internet, how

> do you…whatever I typed in, and I figured it out! And that was really empowering. I guess I'm more able to go find answers on my own now. (October 3, 2015)

Carrie used technology to resolve a technological issue on her own. This experience bolstered her sense of agency about interacting effectively with technology.

Carrie also shared about the invariant constituent, developing a better understanding of technology, when she explained how her mindset has shifted as she increased her technological knowledge:

> Also, I used to be scared that, if I made a mistake, I would crash the internet and most things I use on the computer aren't that fatal. You can usually push the undo button and it usually does work. So, it's the consequences as I once viewed them don't seem so dire anymore. (October 3, 2015)

Carrie's experiences and increased knowledge about technology supported her in interacting less fearfully with technology. Carrie shared that this shift in how she views using technology was also supported by "a function of me maturing" (October 3, 2015). For Carrie, exploring possibilities with technology was facilitated by increased technological knowledge, maturation, and greater confidence in using technology.

Technology as a tool. Carrie described this theme when she shared about the invariant constituent, using technology to achieve goals, meet needs, or make life easier. Carrie explained:

> The main forms of technology that I use now are my laptop, primarily for school, and my iPhone. So, I use a lot of tech for both work and personal purposes. I have four email accounts right now, for varying things, and I'm able to check all

> of them on my iPhone. And then, I'll also, I surf the net primarily for personal purposes. And then, I also, I have Zite and I look up stuff on Zite. Yup, sometimes Google Maps, but again, that scares me. (October 3, 2015)

Carrie used technology to achieve her educational goals, for work, to connect with people, and for entertainment. Although Carrie experiences feelings of aversion when faced with the prospect of learning new technology, she uses familiar technologies in her everyday life.

Carrie described another invariant constituent, using technology to keep in touch with friends and loved ones, when she explained that:

> The most [technology used] is probably texting. Actually, I much prefer, ironically not liking technology, I much prefer texting to phone. So, it's how I keep in contact with virtually all my friends, unless I'm seeing them in person. I prefer text versus phone…. I think it's mostly to do with the asynchronous ability to it…. Also, being a more visual person, I capture information more readily seeing the words versus hearing them. (October 3, 2015)

Carrie uses technology to connect with important people in her life in a way that suits her lifestyle and her learning style.

Carrie also shared her beliefs about engaging with others on social media. Carrie described the invariant constituent, setting limits on the role of technology in life, when she explained that she has evaluated the nature of online environments and decided not to have a presence on social media.

Social dynamics and technology. Carrie described the invariant constituent, dislike of content posted on social media, when she shared about how content on social

media is not relevant to her interests and does not add value to her life. When queried about not having a presence on social media, Carrie explained "my aversion to SM [social media] is that i (*sic*) think it is used mostly for useless, time-sump, type of stuff" (February 29, 2016). Carrie values being able to use technology to find information specifically relevant to her needs and interests, and social media does not facilitate this.

Carrie also described the invariant constituent, superficial nature of online environments, when she shared about friendships on social media and other content posted on social media. Carrie explained that "I am already in contact with the ppl (*sic*) [people] i (*sic*) want to be. It's too fake for me. I know that sounds negative but that's just the way i see it" (February 29, 2016). Carrie has effective ways of maintaining relationships with the important people in her life and she does not require social media to facilitate these connections. For Carrie, interacting on social media does not align with her values, or facilitate having her needs met.

Conclusion. Overtime, Carrie used technology for entertainment, as a tool to meet her needs, and to accomplish her goals. Carrie shared about struggling to understand technology, fearing technology, wishing to avoid technology, and feeling frustrated with technology. Carrie also experienced the support of other people when using technology. Carrie came to better understand technology with the support of others and by exploring technology on her own. Overall, Carrie prefers familiar technology and she has several applications that she uses in her everyday life. For Carrie, learning to use technology takes effort and she does not seek out new technologies. Carrie accepts that technology is a part of modern life and she uses technology when necessary, or beneficial.

Emily

Emily is a self-described moderate technology user (September 29, 2015). Emily is in her 20's and lives with her boyfriend. Emily's technology use evolved over time from being interested in trying out new technologies to her current attitude of preferring to use familiar technologies. Throughout her technology use, Emily shared about feeling uncomfortable with technology, exploring technology, viewing technology as a tool, and receiving support from others when using technology.

Initial experience with a form of technology. Out of the five themes identified among participants' initial experiences with a form of technology, four themes applied to Emily's experience. Emily shared about the themes of: supported technology use, exploring possibilities with technology, out of comfort zone, and technology as a tool.

Supported technology use. Emily recalled an early experience of using technology when, as a teenager, her family got a computer for their home (September 29, 2015). Emily's parents used computers in their work and modelled comfort with this technology (September 29, 2015). Parent(s) modelling comfort with technology is an invariant constituent under this theme. Emily explained that her parents' acceptance of technology "allowed me to, I guess, feel a little more comfortable with everything else that was coming out" (September 29, 2015). Emily learned from her parents' attitude about technology that technology was something to accept and try out.

Exploring possibilities with technology. Emily described the invariant constituent, fascinated with technology, when she shared that going online and being able to search the internet "was the coolest thing ever" (September 29, 2015). Emily had used computers at school before her family got a home computer, but her use had been

supervised (September 29, 2015). Using the computer unsupervised was a novel experience for Emily and she shared about the invariant constituent, figuring out technology on one's own. Emily explained that she enjoyed having her "own free, leisure looking into using a computer" (September 29, 2015). Emily was eager to try this technology out on her own and she felt confident enough to do so.

Out of comfort zone. Although Emily was excited to go online and explore the internet, she also found this experience challenging. Emily described the invariant constituent, struggling to understand technology, when she noted feeling "very frustrated in not really knowing how to work everything…. Not having all that [computer] knowledge, umm, that many other people had" (September 29, 2015). Emily felt exasperated by her lack of knowledge when online.

Technology as a tool. Emily shared her thoughts about technology at this time. She described the invariant constituent, using technology to achieve goals, meet needs, or make life easier, when she explained that:

> Even though, I mean social media sites weren't up…weren't out, just having this computer where I was able to, you know, type something. If I wanted to type a letter, or write a letter to my parents at the time, or something, you know, I had that ability to do so. So, I just kind of…I felt it made things a little easier. (September 29, 2015)

Emily's initial experience with a home computer was supported by her parents' openness to technology, her fascination with it, her belief in the benefits of using the computer to make her life easier, and her willingness to play around and figure out how the computer

worked. Emily also experienced frustration with not having the knowledge to engage with this technology in the ways she wanted.

Technology use over time. Of the eight themes identified for all participants' experiences with using technology in the past, Emily expressed seven themes in her interview about her previous use of technology: exploring possibilities with technology, supported technology use, social dynamics and technology, technology as a tool, technology as a distraction, out of comfort zone, and not wanting to engage with technology. Over time, Emily increased her familiarity with technology on her own and by interacting with other people.

Exploring possibilities with technology. Emily's interest in technology spurred her to learn more about using it. Emily described the invariant constituent, figuring out technology on one's own, when she explained that, "I think it helped, even though I wasn't comfortable with it [her family's computer], I was able to branch out with it and click on different things and try and figure all that out" (September 29, 2015). Emily shared about the invariant constituent, fascinated with technology, when she said "there was a coolness factor to it [going online]" (September 29, 2015). The social aspect of going online was an important factor in Emily's technology use.

Supported technology use. Emily shared how her interest in technology was reinforced by the people in her life. She described the invariant constituent, encouraged by others to engage with technology, when she recalled "I think friends helped a lot with that [going on online]" (September 29, 2015). Emily also shared about the invariant constituent, figuring out technology with others, when explained "friends would come

over and we would, you know, try and use the computer" (September 29, 2015). Emily learned about technology with people she was close to.

Social dynamics and technology. Emily found technology beneficial when she shared about the invariant constituent, different interactions online versus face-to-face. Emily explained that:

> I think one of the big things too it [chatting online]…it almost let you get away with, umm, things that you wouldn't necessarily get away with, if you're face-to-face…. Even in those young relationships, you know, as a teenager and having those relationships with boys. I don't think you would really talk about if you were face-to-face, or I wouldn't feel comfortable talking about face-to-face because I was a little bit more shy. So, I felt like I could be a little bit more honest on the computer. (September 29, 2015)

Emily found it easier to be more open online and she enjoyed how technology afforded her the opportunity to do so.

Emily shared about the invariant constituent, technology increasing social status, when she commented "it's almost like you're in a network, or you're in a club, if you have a computer. You're almost, like, socially accepted a little bit more" (September 29, 2015). Emily's increased social acceptance may have supported her continued engagement and exploration with technology and influenced the extent that she valued this technology.

Technology as a tool. Emily described the invariant constituent, using technology to keep in touch with friends and loved ones, when she shared that going on chat sites was "an easier way to connect with people [friends]" (September 29, 2015).

The ease that Emily experienced when communicating with her friends online also allowed her to explore her sense of self. Emily described the invariant constituent, using technology to achieve goals, meet needs, or make life easier, when she explained "just having those conversations without being face-to-face was, I think, the biggest thing for me" (September 29, 2015). Emily used technology to meet her need for social connection and for exploring her identity. Emily leveraged the less socially risky opportunity of communicating through technology to act bolder online. Being socially confident online may have also improved Emily's social confidence in face-to-face social situations.

Emily shared her thoughts about technology being a tool when she described the invariant constituent, using technology to achieve goals, meet needs, or make life easier. This occurred when Emily began working on her undergraduate degree and she came to the conclusion that "it [technology] just kind of became a necessity" (September 29, 2015). Technology provided Emily with a means to access her assignments and to locate research papers that she may not have found physically in the library (September 29, 2015). Thus, Emily used technology to reach her goal of obtaining a university degree.

Technology as a distraction. As Emily continued to engage with technology at home, she began testing boundaries put up by her parents for using the computer. Emily described the invariant constituent, absorbed by technology, when she shared that "I was socializing with people on the computer through MSN, but I think it started to take up more of my time" (September 29, 2015). As she deepened her involvement with technology, Emily shared about sneaking onto the computer after bedtime to continue chatting with her friends. She explained that "I think they [my parents] just caught on to

it because my bedroom light would be…shining underneath my door…. I'd be sluggish [the next day], or they would see a change in my attitude" (September 29, 2015). These behaviours resulted in the computer being moved out of her bedroom.

Out of comfort zone. Emily also experienced some challenges with using technology and she described the invariant constituent, struggling to understand technology. Emily remembered experiencing "a lot of frustration when something would go wrong with the computer. Not knowing how do I fix this? Where do I go? Just, umm, just getting really angry at it" (September 29, 2015). To resolve technological problems, Emily asked friends, or her parents for help, a strategy included under the theme of supported technology use.

Not wanting to engage with technology. Emily explained that she did not typically seek out new technologies. Emily described the invariant constituent, preferring to use familiar technology, when she said "I think I still used, MSN, or emailed each other more so than Facebook…. I think because I was familiar with it [MSN and email]. I knew how to use it… [and] that was my comfort zone" (September 29, 2015). Emily's technology use in the past was largely influenced by her desire to connect with friends and loved ones and to use technology to meet her needs, achieve goals, or to make her life easier. Emily used technology to explore how it could support her goals and needs, but she also preferred to use technologies that she was familiar with. When using technology, Emily experienced strong feelings of frustration when she encountered technological problems that she did not have the knowledge to resolve.

Current technology use. The same eight themes identified in participants' technology use over time also applied to their current experiences of using technology.

Emily expressed six themes about her present technology use: technology as a distraction, out of comfort zone, exploring possibilities with technology, supported technology use, technology as a tool, and not wanting to engage with technology.

Technology as a distraction. Emily described experiencing the invariant constituent, absorbed by technology, when she shared "I'll, you know, just get sidetracked by something that I really like….The next thing you know, you're clicking on this and then it brings you to something and it reminds you of something else" (September 29, 2015). Emily did not, however, express feeling concerned about occasionally being absorbed by technology. Emily also shared about using technology as a distraction from intense feelings and to help her regain calm feelings.

Out of comfort zone. Emily shared about feeling out of her comfort zone with technology when she described the invariant constituent, struggling to understand technology. Emily explained "if I get, well, sometimes when I get frustrated, I get really stuck [with technology], that's when I go back to Facebook. So, I kind of avoid the situation all together…. I take a break" (September 29, 2015). Emily uses going on social media sites to help calm down before dealing with a technological issue.

Emily shared about the invariant constituent, feeling behind the times. She shared that "I'm going to say that I'm a little below average compared to everyone else when it comes to technology…. I think with technology coming out, and there's so many things that are out there, everybody gets so excited about" (September 29, 2015). Emily pointed out that she does not feel excited by new technology. Her experience of not feeling excited by new technologies contributed to her beliefs that she is slightly below average in her technology use and to her feelings of being slow in the times with technology use.

Emily also explained another component of her feelings of being out of date with technology:

> I also, kind of, feel like I'm very, maybe behind the times, like, with some technologies…. I just went to visit my grandparents yesterday and they both pull out their tablets, you know, and they're showing me, like, how they're using, you know, their tablets to take photos and they're swiping through it. They've got the newest thing with the little stylist. I just use my cell phone and my boyfriend's computer, you know. So, they're showing me a bunch of new things. So, I kind of feel like, well, maybe like, get with the times kind of thing. (September 29, 2015)

Emily's experience with her grandparents highlighted gaps in her technological knowledge. Emily realized that how she is using technology is not on par with the technologies that are currently available.

Having other people in one's life who understand technology is another invariant constituent under this theme. When participants described having people in their lives who understood technology, they were also sharing about feeling out of their comfort zone. This is exemplified when Emily said:

> I get very frustrated with some technology now because connecting…like, my boyfriend is very tech savvy and he's like plugging in the computer to the TV and, you know, streaming this and he's, you know, downloading this on to that. I can't do any of that. (September 29, 2015).

Perhaps Emily does not need to address becoming comfortable with connecting different devices, downloading content, or streaming information because she has someone in

proximity who knows how to use technology in these ways. Although Emily feels frustrated with not knowing how to use technology as extensively as her boyfriend, her threshold of seeking this knowledge may not have been breached yet, due to other constraining factors of learning this technology (i.e., having the time, relevance to helping her have her needs met).

Supported technology use. When Emily shared about feeling frustrated with technology she also shared about the invariant constituent, asking for help to understand technology. Emily explained "if I don't know what I'm doing, I'll usually ask, like, my boyfriend, or I'll go back on Facebook and I'll message a couple of people that (*sic*) will be able to fix the problem" (September 29, 2015). Receiving support from friends, or family when using technology facilitated Emily being able to use technology in the manner she wants. Emily also explained:

> I made sure that I knew how to download Facebook. I made sure that I knew how to connect my email to my phone, so as soon as I get emails I could respond to them. So, those types of things, I made sure that I know how to do, or I certainly get somebody to do it for me, like, immediately. Cause those are, I guess, applications that I use quite frequently. (September 29, 2015)

Emily makes sure she understands how to use aspects of technology that are personally important, or if she does not know how to set up this technology she get support from someone to do so.

Not wanting to engage with technology. In Emily's case, this theme could be more accurately stated as not wanting to engage with *new* forms of technology. Emily shared about how her current technology use differs from how she used technology in the

past (September 29, 2015). Emily said recently she finds that she is less interested in trying out new technologies and she described the invariant constituent, preferring to use familiar technology. Emily explained the shift in how she uses technology:

> So, I think I was part of, you know, on the bandwagon [and] wanting to get all of these new things, but honestly, I don't really know how to use the full capability even of my phone…. I feel comfortable, much more comfortable with the computer. You know, it's how I do a lot of my connecting with people, but the same thing happens with my phone because all of those social media sites that I'm involved in are all on my phone as well…. Like, you know, I'll be okay to get, like, my boyfriend has a tablet, so I'm okay to use that, but, again, it's sticking to the things that I'm familiar with. (September 29, 2015)

The shift Emily described, of preferring to use familiar technology, could be that her needs are being sufficiently met through the forms of technology she already uses.

Emily shared that another component of her preference for using familiar technologies is related to feeling uncomfortable with new technology. Emily explained:

> I think part of that is maybe me not paying a whole lot of attention to, you know, new things that are coming out, or maybe just not being so comfortable with using it because it's something new. So, unless someone is going to show me exactly what I do, I'm not one to typically try and venture off to figure it out myself. (September 29, 2015)

Emily would rather stay in her technological comfort zone and avoid the stress and frustration of learning new technology on her own. Emily also explained that "I think that as I got older, technology progressed much quicker and I didn't have the time, or

desire to really learn everything that it [technology] has to offer" (March 25, 2016). Emily has found the technologies that work to meet her needs and she does not want to invest the time to learn new technologies.

Exploring possibilities with technology. Although Emily expressed her preference for using technology she is comfortable with she also shared about her fascination with technology. Fascination with technology is an invariant constituent under this theme. Emily described this component of her experience when she shared "I love to go, you know, if I'm at a place where they've got the new iPads, or the new tablets, or something, I like to go and fool around on them to see what they're like" (September 29, 2015). Emily also noted "but I won't be the first person standing in line to get one [a new iPad or tablet]" (September 29, 2015). Emily's belief in the necessity of technology likely supports her interest in exploring new technology.

Emily shared about the invariant constituent, figuring out technology on one's own. Emily explained "I feel happy when I'm able to accomplish something that maybe I didn't know how to use before and now I can use it" (September 29, 2015). Emily enjoyed the sense of achievement she experienced when she learned a new technology.

Emily also expressed a desire to develop a better understanding of technology, another invariant constituent under this theme. Emily explained "I'm comfortable in my little bubble, in my little area of technology…, but I'm also branching out…trying to realize that some of the applications that are now available makes even school work easier" (September 29, 2015). Emily is drawn to trying out new technologies because of their potential for making her life easier.

Technology as a tool. Viewing technology as a tool is the counterbalance attitude to experiencing technology as a distraction. Emily shared about experiencing the invariant constituent, setting limits on the role of technology in life, when she said:

> It is very nice to be able to turn off everything and, you know, not having anybody be
>
> > able to know where you are, or get a hold of you…. Especially with my phone, you know, people are calling, or texting and I just don't want to have anything to do with it. I won't answer, or I won't pick up, but it's become such a norm in society. I feel that, you know, people…like, if I don't pick up, or I don't answer, everybody's calling. Like, what's going on? Where are you? Are you okay? Why are you not replying? It's, like, I just needed some time to myself. (September 29, 2015)

Emily's experience of taking a break from technology set off a cascade of concern. The expectation for people to be easily accessible was in opposition to Emily's need for solitude. The social expectation of accessibility places an impetus on the need to reply within a certain time frame, or experience the consequences.

Emily remarked that one of her greatest "goals, I guess, that influenced me using technology is getting through school…. Just being able to do things a lot easier" (September 29, 2015). Using technology to achieve goals, meet needs, or make life easier is an invariant constituent under this theme. Emily also described the invariant constituent, using technology to keep in touch with friends and loved ones, when she shared about using Facebook to connect with her friends and family (March 25, 2016).

Emily engages with technology with the purpose of reaching her goals and connecting with loved ones.

In response to a follow up question, Emily explained how she uses Facebook differently now compared to when she first signed up for her account. Emily shared that:

> When I initially began using Facebook, it was more to communicate and look at other people's pictures. Now I think I that my use of Facebook has increased to much more. I find that I can not only continue to communicate with friends and family, but I find videos re: cooking, beauty, concerts, etc. that I often look up. (March 25, 2016).

Emily has expanded her use of social media to include areas of personal interest and knowledge development.

Social dynamics and technology. Emily shared about the invariant constituent, using technology to have meaningful interactions, when she described how her use of social media changed after the death of her infant son in 2015. Emily said that she:

> Quickly learned that there is a huge group of bereaved parents (as well as support groups) on Facebook that I have found helpful in connecting and expressing my grief. Without Facebook, I don't think that I would have found a way to connect with other moms in different parts of the world. (March 25, 2016)

Emily's grief and her desire to connect with other people who also experienced the death of a child supported her in seeking support online. Emily also said that using Facebook to share photos of her son and to post inspirational messages about infant loss "has allowed me to not feel so isolated in my journey of grief" (March 25, 2016). Emily used

social media as an outlet for her grief and as a means of connecting with other bereaved parents.

Conclusion. Four themes threaded throughout Emily's experiences of using technology over time: out of comfort zone, exploring possibilities with technology, supported technology use, and technology as a tool. Throughout Emily's experiences with using technology, she shared about struggling to understand technology, feeling fascinated with technology, figuring out technology on her own, getting support with using technology, using technology to achieve her goals, meet her needs, or make her life easier, preferring to use familiar technologies, getting distracted by technology, and experiencing online socializing in ways that differed and/or expanded on her face-to-face social connections. Over time, Emily used technology to develop confidence as a teenager, connect with friends and loved ones, achieve her academic goals, meet her needs for connection, and to help with grieving the loss of her son. Emily's technology use has been characterized by her desire for personal growth, using familiar technologies, academic success, and connecting with others.

Erin

Erin is a self-described knowledgeable technology user (February 19, 2016). Erin is in her thirties, is married, and she enjoys learning. Erin shared that the greatest influence on her technology use has been her goal of being efficient. She explained that "I want to pack as much as I can in my day, but I don't want to be busy just to be busy. So, I want to be productive" (February 19, 2016). Erin engaged with technology throughout her life with a sense of curiosity and interest.

Initial experience with a form of technology. Erin's initial experience with technology was imbued with excitement and fascination. Erin described two of the five themes identified among participants' initial experiences with a type of technology: supported technology use and exploring possibilities with technology.

Supported technology use. Erin shared about when her father brought home their family's first computer when she was five years old (February 19, 2016). The computer worked on DOS (disk operating system) and was run by typing in commands. Erin experienced the invariant constituent, parent(s) modelling comfort with technology, when she explained that "my dad would tell me what command to type in and I would type it in, and things would happen…. And that was really fun" (February 19, 2016). Erin's father set the tone for her future relationship with technology.

Exploring possibilities with technology. Erin was excited by the many potential uses of the computer. She remembered that "sometimes I would just play with the keyboard. Play with typing, but that was just pretending that I was doing something" (February 19, 2016). Erin described the invariant constituent, fascinated with technology, when she shared that "it was really exciting [using the home computer]…. I was really fascinated by it" (February 19, 2016). Erin also described the invariant constituent, eager to try new technology or expand possible uses of technology, when she remembered thinking:

> In my head, I'm going, well, I know I like it [their home computer] and I know that I want to use more of it. Just, at the time, I didn't know how I could use it. I mean, like, plus back then the technologies were for desktops, right? Mobility

> was an issue, so it's not like I can think about the ways, the computer was stuck in my parents' room…and there was no internet. (February 19, 2016)

Erin's exploration with computer technology was limited by her parents' rules for using the computer, her ability to access to the computer, and her lack of means to gather information about furthering her technological knowledge.

Technology use over time. Erin's technology use over time was influenced by her inquisitiveness, her father's encouragement, and her goal of using technology to be more efficient. Erin described four of the eight themes identified among participants' technology use over time: technology as a tool, supported technology use, exploring possibilities with technology, and sharing technological knowledge.

Technology as a tool. Erin learned to use technology to her advantage. She described the invariant constituent, using technology to achieve goals, meet needs, or make life easier, when she shared her realization:

> Oh, hey, guess what? I can type faster than I write, my writing is really terrible. So, for me, typing is actually much quicker…. It taught me, hey, I can make this [technology] a tool for myself. It will save me a lot of trouble down the line cause I don't have to re-write everything cause nobody can read it. I can just do it once and be done with it. (February 19, 2016)

A change in circumstances, where Erin's school began allowing students to submit typed assignments, and Erin's motivation to use her time wisely supported her using technology to achieve her goals and make her life easier. Erin also used technology for entertainment, another invariant constituent under this theme. Erin explained that "if I needed to just be on my own for a bit, it [gaming] helps that way" (February 19, 2016).

Erin found that technology could help her be more efficient at school and she used technology for times when she needed alone time to play and rejuvenate herself.

Erin also shared about using technology to connect with important people in her life. Erin described the invariant constituents: using technology to keep in touch with friends and loved ones, and using technology to have meaningful interactions. Erin explained:

> Being an immigrant…so, I still remember when we first came to Canada [and] long distance phone calls [were] quite expensive. And, so you would basically have to figure out, okay, who can we call with five dollars? So, you don't get a lot of minutes with five dollars, but it was better than nothing because it was just my mom, my brother, and myself here…. I remember we would record our voice, our messages in Excel cells. So, Excel spreadsheet each cell can actually contain audio data. So, we would put our voice in every single cell and record things and then we'll email it to dad, so that he can, you know, he will reply and send it back to us. (February 19, 2016)

Erin's family used technology in an economical way to stay in touch with each other. Erin and her family also used technology have more personal interactions, by communicating through audio recordings of each other's voices, when compared to the less personal option of sending emails.

Supported technology use. Erin shared that her father in particular modelled comfort with technology, an invariant constituent under this theme (February 19, 2016). Erin explained how he father taught her and her brother to use the internet safely:

> I was lucky enough that I have, you know, my dad really, truly believes in, okay, how do you use technology properly? What you do after that, he doesn't really care, but to, kind of, build the foundation of, here's how you respect technology and how to make technology become your tool and not run your life, right…. But I've also had a dad who truly believes that, if he wants to protect us [Erin and her brother] from being taken advantage of, then the best way is to make us knowledgeable in what we were doing…. And he's the one who introduced us to, okay, how do you do an effective search on Google? How do you [use] chatrooms. So, he actually took us to chatrooms and, you know, go, let's pick some people to talk. And, that's bad, you don't want to talk to these people, they're weird. Things like that. (February 19, 2016)

Erin's father believed that it was important for him to teach his children skills about how to use technology in a safe and beneficial manner.

Erin described the invariant constituent, encouraged by others to engage with technology. Erin shared that her father's "attitude, really, does make us not fear [technology] as much. Umm, I think that if he had been fear of technology…. I think our attitude would have been very different" (February 19, 2016). Erin's father displayed enthusiasm for learning and trying out new technology and Erin also experienced these attitudes about technology.

Exploring possibilities with technology. Erin shared about the invariant constituent, developing a better understanding of technology, when she explained how her father's support in using technology helped her and her brother learn "to use technology to connect to the outside world and also to do things" (February 19, 2016).

Erin also described the invariant constituent, eager to try new technology or expand possible uses of technology, when she said "over the years, I've been incorporating technology a lot more. In terms of, is there something that can reduce the likelihood that I have to repeat myself with the same task, [then] I'll use [that] technology" (February 19, 2016). Erin viewed technology as means of accomplishing her tasks and goals.

Sharing technological knowledge. Erin also used her technological knowledge to help others. Erin shared that she helped people one-on-one and in group settings (March 14, 2016). Erin said that "I did 'classes', made procedure manuals or step-by-step guides, made videos, [and helped on the] phone" (March 14, 2016). Erin sought out new uses and forms of technology to enrich her life and to make her life easier. She also used her technological knowledge to support other people in better understanding technology.

Current technology use. Erin's present technology use is similar in several areas when compared to her past engagement with technology. Erin's current technology use has also been influenced by the participatory nature of present day technologies. Erin described six of the eight themes identified among participants' present experiences with technology: supported technology use, exploring possibilities with technology, technology as a tool, technology as a distraction, social dynamics and technology, and sharing technological knowledge. Erin's present technology use continued to

Supported technology use. Erin shared that her father continues to model comfort with technology (February 19, 2016). Parent(s) modelling comfort with technology is an invariant constituent under this theme. Erin shared that "every time I go home, there's a new thing getting hooked up to the computer and things. We're not, we're pretty sure that in a few years the house will start talking to us" (February 19,

2016). Erin also explained that her mother supports Erin's father's enthusiasm for technology and she added "but I don't think that she's interested in it as much as I am" (February 19, 2016). Erin and her father share a connection due to their mutual enjoyment of seeking and trying out new technologies.

Sharing technological knowledge. Erin continues to help others by sharing her technological knowledge (March 14, 2016). Erin explained that "I teach mainly my co-workers and husband on different tech stuff and computer software usage all the time" (March 14, 2016). Erin also uses "YouTube as a medium to show people what to do, or what new programs I want them to get because of wjat (*sic*) those programs can do" (March 14, 2016). Erin explained that she uses content posted online by other people to help her co-workers and husband better understand technology. Erin's philosophy on using technology is "there's no point in re-inventing the wheel, so, if someone already figured out, hey, I can use this for this, well, okay" (February 19, 2016). Erin seeks out other people's technological knowledge and she uses this information when she is helping others develop their technological knowledge.

Exploring possibilities with technology. Erin shared about how she seeks to expand her technological knowledge. Erin described the invariant constituent, developing a better understanding of technology, when she explained her process:

> If it's something that's an add-on to something that I already know…I'll play with the software, but I do actually look on YouTube, or Google instructions in terms of, well, what are some of the ways that people are using it? (February 19, 2016)

Erin trusts in her own technological abilities and she also relies on other people's experiences to further her understanding.

Erin discussed the invariant constituent, figuring out technology on one's own, when she described how she uses a new form of technology. Erin shared that if the technology is:

> Something that I've never encountered…. Then I usually just play. So, I'm not one of those people who reads instructions. I don't like reading instruction manuals, so I'll just test it out and play around with it and just get familiar with it. (February 19, 2016)

Erin enjoys learning a new form of technology in an intuitive and exploratory manner. She views new technologies as opportunities to engage her curiosity.

Erin's enthusiasm for using technology in an exploratory and creative manner is captured by the invariant constituent, eager to try new technology, or expand possible uses of technology. Erin described this invariant constituent when she explained how she expands her understanding of new technology:

> There's a capacity, or potential to do this. Now, how far can I push this potential and see if there's other things on top of what it's meant to do, right. Cause I don't like to just use things for what it's meant to do. I care more about what it can do…. So now, let's see what else I can do. So, it [technology] saves me some time trying to figure things out to begin with. (February 19, 2016)

Erin's curiosity helps her attain her goal of using technology to improve her quality life.

Erin also described the invariant constituent, fascinated with technology, when she shared about how her beliefs about what is possible with technology have shifted over the years as the field of technology has expanded. Erin said:

> Now they have cars that drive themselves and so, wow! Really, where's the limit?! I honestly do not know…. And it seems so fictional, but I also know that, if I think back to 20 years ago, the thought of what do you mean cell phones can stream things? It seemed impossible. (February 19, 2016)

Erin described her intrigue with the possibilities of technology. Erin's enthusiasm about technology is similar to how she described her father's excitement about new technology. Erin shared that "he's…always saying, oh yah, you know, I think there's this new thing that came out. Let's get it, or hey, let's check out the price and wait for it to come down and then get it" (February 19, 2016). Erin's fascination with technology is threaded throughout her experiences of engaging with technology.

Another invariant constituent under this theme is trying technology to determine whether addresses needs. Erin described this aspect of her technology use when she explained:

> If they [other people] say well…I've used it [technology] for this purpose, I'll give it a try and see…. So, technology is that it can either be a tool that can help you or it slows you down. So, if someone says, oh, I've used this technology this way and I go, well, yah, but the amount of time you spend on using this particular tool to get where you need to be I could've done it by hand in five minutes. Okay, well, that's dumb. That's not a good use of it. But, if someone tests it out and goes, hey, if I use it this way, it will help me with these aspects in life. Okay, that makes sense. (February 19, 2016)

Erin's primary desire throughout her technology use has been to increase her efficiency and she uses this goal to evaluate whether certain technologies fit.

Social dynamics and technology. This is a more recent theme that emerged in Erin's experiences with technology. Erin described the invariant constituent, superficial nature of online environments, when she shared her concerns about how some people use social media. Erin explained that:

> It's kind of unfortunate that it's [human interactions] kind of shifting towards that, where if I don't want to talk to you…I don't need to put effort into it cause I can always find another friend on Facebook. I can always text somebody else and, so, you lose that quality piece there, I find. (February 19, 2016)

Erin observed that for some people maintaining relationships and choosing to work through disagreements may not be as valued activities as they once were, due to the ease of finding other people to connect with on social media. For Erin, discarding friends who hold diverse opinions from her own opinions is not an acceptable means of dealing with differences. Also, Erin values how these connections can enrich her life.

Erin also shared about the invariant constituent, less meaningful interactions, when she discussed her thoughts on relationships and social media. Erin explained that technological advances have allowed for:

> Much fewer barriers [in communication], but the flip side of that would be, because it is so readily available and easy to access, it almost takes the quality away…the value of it [connecting with others]. So, back then you get a phone call from Hong Kong, or vice versa, it's huge. Everybody gathered around because you never know if you will hear that person again for a few months. Now, missed a call, we missed a call. I'm busy, you know. I'll call you later, or I'll just text you cause, you know, we know you got it. So it's, it [technology]

> definitely changes that aspect of things. You don't see those interactions, you don't value it as much as back then. So, technology, like, it makes it easier [to connect with others], but it now weighs less. (February 19, 2016)

Erin's experiences with immigrating to a new country, but still maintaining relationships with people back home influenced her views on the importance of connecting with loved ones when possible. Erin noticed how technology makes it easier to view communicating with others as merely the need to exchange words without taking the time to really be present and connect with them, and to value those times of connection.

Technology as a distraction. Erin explained that this theme has become a more recent issue in her experiences of using technology. She described the invariant constituent, absorbed by technology, when she shared:

> Now, there are times where it [technology] distracts me a lot more than before…. Back then, I think because the technology wasn't quite advanced, so there's only really limited options of games that you can play…. You go online and you're searching for one thing and there's rarely things that distract you. Whereas now, the options of games…that, if you get bored with one thing, or if you don't want to play one thing, it's so readily available that, yah, I do get distracted sometimes. Or even YouTube, right. So, you're looking at one thing and then an hour later, you're like, huh? Now, I'm watching this completely different thing and an hour has gone by. (February 19, 2016)

Erin's fascination with technology and her curiosity about expanding the uses of technology contributed to her seeking out information, or entertainment online. Erin also finds that she sometimes spends more time online than anticipated. Although getting

distracted by technology is a more recent issue in Erin's experiences with using technology, she explained that "till this day, I am not concerned about how much I rely on technology" (February 19, 2016). Erin counterbalances her information seeking and going online for entertainment with other activities in accordance with her goals and beliefs.

Technology as a tool. Erin continues to view technology as a means of improving her life. Erin explained that her approach to using technology over time, or her:

> Fundamental mindset about using technology to help me make a difference in my life, kind of, stayed the same. So, I've always, when I was first introduced to computers, I already kind of see it as someday, you know, it's going to make my life easier. (February 19, 2016)

The invariant constituent, using technology to achieve goals, meet needs, or make life easier, applies to this component of Erin's experiences with technology. Erin's goal of using technology to make her life easier motivates how she engages with technology.

Erin's view of technology as a tool for improving the quality of her life contributed to her mindset about managing how much time she spends online. Erin shared about her experience with the invariant constituent, setting limits on the role of technology in life:

> So, there's actually trackers that you can use to track your computer online activities…. It's sometimes more of a feedback thing. You can have a set timer and it will give you an alarm, like, hey, guess what? Out of 24 hours today, you've already spent five hours on Facebook collectively…. Cause you don't

> notice, right, when you're on your phone checking Facebook for, like, two seconds, you're on your browser checking your email and then you check your Facebook again. It doesn't seem like a lot, but, when you add it together, you go, holy crap! Five hours! Out of 24 hours and it's only noon. Umm, okay, I need to get away from it for a little bit. So, that kind of helped. (February 19, 2016)

Erin's use of the online tracking application provided her with surprising information about how much time she was spending online. Erin shared "that was really an eye opener…. Okay, maybe there's certain things that are distracting me more so than before" (February 19, 2016). Erin used this information to re-evaluate how she was engaging with technology and to align her technology use more closely with her belief that technology is a tool for enhancing her life.

Erin described several strategies she used to set limits on the role of technology in her life. She explained:

> I'll just unplug the internet. I'll turn the modem off, so there's no phone. There's nothing. Like, if I really, absolutely have to get something done. Then I'll know that I won't get distracted by certain things…. Or I'll go to the library cause they have a really slow [internet] connection. Then, if you want to stream a YouTube video, unless you really wanted to watch it, it's not worth it. So, it's kind of a good way to, deterrent, right. (February 19, 2016)

Erin's curiosity about new technology led her to finding and trying out the online tracking application and she used that information from the tracking application to guide her future engagement with technology.

A third invariant constituent that Erin experienced was technological confidence. Erin explained:

> I'm one of those people that, if something went wrong [with technology], I always believe that there's some, either there's someone or there's some way to fix it. And, so, I've never really had, worried about breaking something cause I'm like, eh, Dad will fix it, or I'm pretty sure I can fix it, or someone will. And, so, I don't think that it was a really big concern for me. Yah, I'm not really have any negative feelings, or anything like that either [about technology]. (February 19, 2016)

Erin approaches technology with confidence because she believes that problems can be resolved. Erin has a number of means of figuring out technological issues and she has had many years of experience with using technology successfully, starting from the age of five years old.

Conclusion. Erin enjoys exploring new technologies and finding ways that it can enhance her life. Throughout her technology experiences, Erin was supported by her father in exploring technology and he taught her how to use technology safely. Erin and her father also share an avid interest in technology. Erin characterized her approach to technology as:

> Efficiency is what drives me to seek out different technology and part of it is also about curiosity, right. So, it's to know, okay, what's out there? What have people created? Because that's always fascinated me in terms of, wow, what prompted you to think of creating this? So, there's always that piece of curiosity about how people think. Yah, it's really fun. (February 19, 2016)

Erin engages her curiosity by trying out new technologies and she enjoys pondering the process that brought people to create a form of technology. Over time, Erin has viewed technology as a tool to make her life easier and she has revelled in the possibilities that technology holds.

Summarizing the Essence of Relating to Technology Over Time

Initial experience with technology. When participants engaged with a form of technology for the first time, the majority (four) shared about receiving support while using technology. See Appendix J for the themes each participant identified. Over half of participants shared about feeling out of their comfort zone with a new form of technology and of exploring possibilities with the unfamiliar technology (see Figure 1 p. 144). All participants did not have one theme in common when they described their first encounter with a new form of technology. The essence of most participants' first encounter with a new form of technology involved receiving support while using technology, feeling uncomfortable when using technology, and feelings of fascination and curiosity about the possibilities with technology.

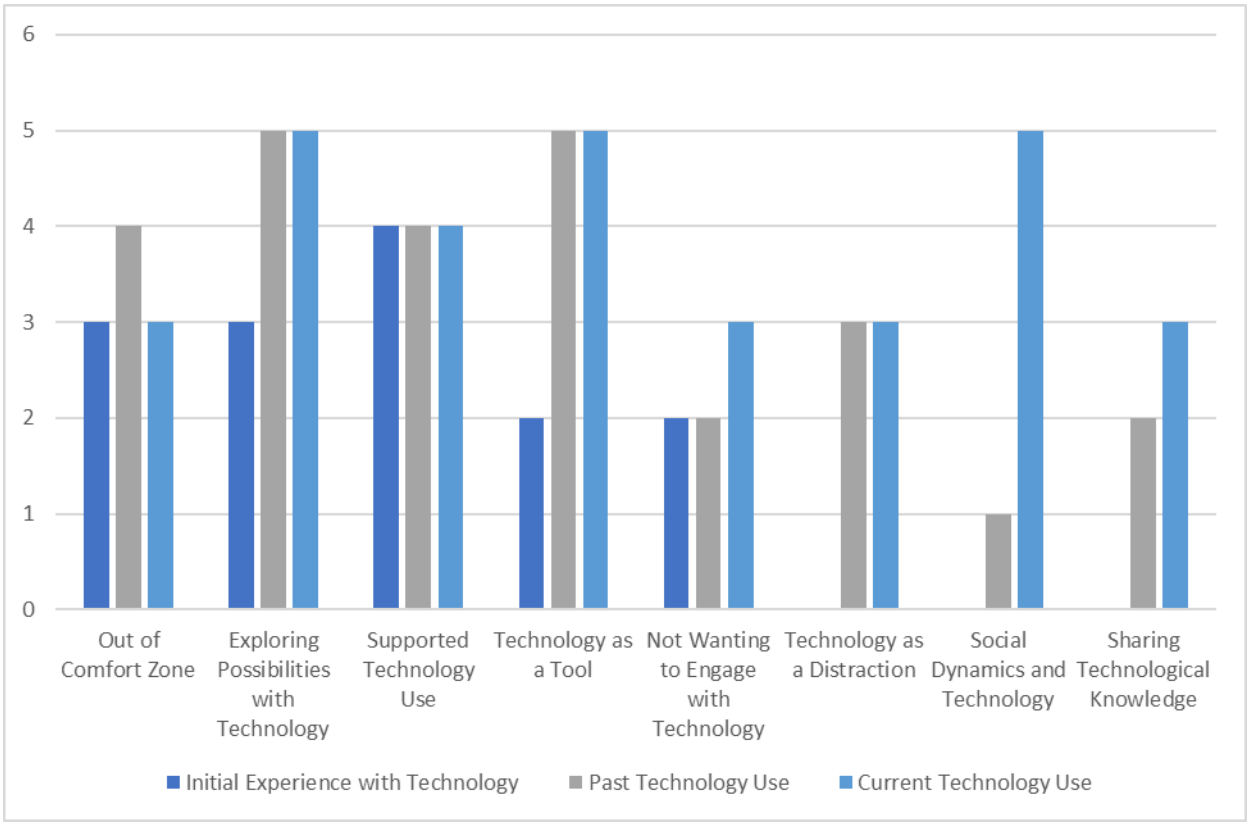
Past technology use. Although participants described relating to technology in a variety of unique incidents, they also had commonalities amongst their technology use experiences (see Appendix J). All participants shared about exploring possibilities with technology and of using technology as a tool. The majority of participants (four) described feeling out of their comfort zone when using technology and of receiving support for their technology use. Over half of participants also mentioned experiencing technology as a distraction. The essence, or core components, of using technology over time involved exploring possibilities with technology and using technology as a tool. For

over half of the participants, key aspects of engaging with technology also involved feeling uncomfortable while using technology, receiving support for their technology use, and experiencing technology as a distraction.

Current technology use. As participants continued to use technology in their present lives, they shared about several core components involved with using technology. All participants described exploring possibilities with technology, using technology as a tool to improve their lives, and the social dynamics of technology use. Most participants (four) shared about receiving support for using technology. Over half of participants shared about feeling out of their comfort zone when using technology, not wanting to engage with technology, experiencing technology as a distraction, and/or of sharing their technological knowledge.

As participants' technology use occurred over time, the essence of their experiences began to converge. Meaning that, over time, participants described their experiences with technology using more of the same themes (see Figure 1). This finding could be due to identifying a developmental trajectory for becoming increasingly familiar with using technology. Of note, the nature of technology contributed to the results of this study because Web 2.0 technologies, with their participatory quality, influenced how participants used technology over time.

Figure 1. Technology use themes experienced by participants.



Chapter V: Discussion

This chapter begins with a discussion of the research findings from an attachment perspective. I included a discussion of attachment theory with the findings as this theory facilitates answering the research question: What is the essence of how counselling students related to technology over time. Next, I briefly reviewed literature about technology adoption and I described several theories and research about problematic technology use (PTU). Theories about PTU account for various factors and motives associated with technology use patterns. However, researchers in this area have not explored people's patterns of relating to technology over time. Researchers investigating technology adoption have explored whether and what factors are associated with people engaging with technology and how technology adoption can unfold over time.

I conclude this chapter by describing the stages of technology use theory (Rempel & Jerry, 2013; see also Table 1 p. 157). Rempel and Jerry's (2013) theory extends current conceptualizations of technology use by incorporating research and theory about relational patterns, personality factors, family dynamics, and developmental issues. This theory extends our understanding of how people relate to technology either beneficially or problematically over time.

Research Findings and Attachment Theory

Lisa. Lisa related to technology in a range of beneficial and problematic ways over time. She used technology to meet her needs for connection with others through her role as a counsellor and as a stay at home mom. This aligned with her offline needs and goals and represents an integrated, secure way of engaging with technology. However, Lisa's technology use also interfered with her offline goals and values. Lisa experienced

frustration with her struggle to be present in her life (deal with issues) because of her tendency to use technology for avoiding real life issues. Lisa also described feeling worse about herself after engaging with technology, in the form of social media sites, and when she used technology to avoid her real-life relationships. These aspects of Lisa's technology use indicate an insecure, problematic pattern of using technology.

Sara. Over time, Sara used technology to connect with the people she cared about. For Sara, technology was a tool that allowed her to meet her goals and helped support her values. From an attachment perspective, Sara related to technology in an exploratory and secure manner because she used technology for her benefit and for the benefit of other people in her life. Researchers, Elliot and Reis (2003), found that secure attachment in adulthood "affords unimpeded, appetitive exploration in achievement settings" (p. 328). An achievement setting, in this study, referred to university course work (Elliot & Reis, 2003). However, Elliot and Reis (2003) made the assumption that the factors they investigated applied to "other achievement contexts, such as sport and occupational settings" (p. 328). It may also be that secure attachment is a factor associated with an exploratory approach to technology use. Further research is needed to investigate this possibility.

Additionally, Sara engaged with technology in an integrated, secure manner because her technology use did not detract from her offline life, goals, and/or values. Sara supported other people in her life with their technology use and she selected technologies that coincided with those of the people she was close to, so she could better connect with important people in her life. For Sara, technology was a tool that helped meet her relational needs.

Carrie. Carrie's technology use over time was characterized by feelings of aversion. Carrie accepted that technology is a part of modern life, but she would rather have used technologies that she already knew. Carrie did not seek to explore possibilities with technology unless she was required to do so, or she perceived a benefit that was worth the frustration and feelings of fear she experienced when using technology. Carrie used technology with the support of others and, if her friends were using a form of technology, Carrie was open to learning it. These aspects of her technology use indicate a secure way of relating to technology. However, over time, Carrie continued to experience fear, frustration, and an overall aversion for technology. These factors signify an insecure pattern of relating to technology. Presently, Carrie has begun to challenge her negative thoughts about engaging with new technologies. Carrie has moved from fear and frustration with technology to a place of greater acceptance for the need to learn technology to be able to achieve her goals. Carrie's current manner of engaging with technology involves a reticent acceptance of the need to use and learn new technologies. Carrie has gradually moved to a more secure way of relating to technology because of her acceptance of the necessity of technology in accomplishing her goals.

Emily. Emily related to technology in a secure manner over time. Although Emily felt out of her comfort zone with technology and struggled at times to use it, she sought help from other people to better understand technology. Emily also viewed technology as a tool that she could use to support her offline values, goals, and beliefs. Emily engaged with technology in a manner where she benefitted from her time spent online. Emily used technology to meet her needs, achieve her goals, and to find healing and support for the loss of her son.

Erin. Erin related to technology over time in an exploratory and curious manner. Erin's father was a role model of how to relate to and use technology in a safe and curious way. Erin sought to try new technologies to benefit her life and make things easier. Erin also found that technology helped her achieve her offline ambitions and supported her values. Erin engaged with technology in a secure and exploratory style. Erin also used her technological skills to assist other people in her life in making use of technology in a beneficial manner.

Technology Adoption Research

Technology adoption research explores the beliefs and circumstances involved in whether people use a form of technology or not and whether they continue to engage with that technology. Researchers have investigated factors and attitudes related to technology adoption amongst people in organizational settings (Rizzuto, Schwarz, & Schwarz, 2014), older adults (Immonen & Sintonen, 2015), and university students (Kher, Downey, & Monk, 2013; Sun & Jeyaraj, 2013). Technology adoption literature provides a better understanding of intrapersonal and interpersonal factors related to engaging with unfamiliar technology and of continuing to engage with technology over time.

Researchers Rizzuto, Schwarz, and Schwarz (2014) explored the roles of institutional context and personal characteristics with a focus on resistance to change (RTC) qualities amongst 258 purchasing agents. Rizzuto et al. investigated personal and contextual psychological influences that shaped employees' decisions to engage with newly implemented information technology (IT). Employees worked within 18 government agencies of one northeastern state and participation was voluntary yielding a response rate of 38% (Rizzuto et al., 2014).

In this study, Rizzuto and colleagues reported that employees who were generally more resistant to change, meaning they had a high distal RTC, took longer to adopt new IT. Rizzuto et al. (2014) further found that, after controlling for adaptability culture and distal RTC, "advocates for the IT initiative who are in work units with high levels of IT acceptance tend to adopt IT more cautiously than pro-initiative employees in work units that resist the IT initiative" (p. 485). Their findings indicated that work unit culture and climate, and personally scoring high on distal RTC influenced technology adoption behaviours (Rizzuto et al., 2014). Rizzuto and colleagues' findings were similarly reported by Sara (October 1, 2015), Carrie (October 3, 2015), and Emily (September 29, 2015) when they shared about the theme not wanting to engage with technology.

Immonen and Sintonen (2015) investigated changes in older adults' attitudes towards technology over two periods of time by engaging in a comparative study. Specifically, Immonen and Sintonen explored the relationship between physical restrictions, anxiety, perceived ease of use, behavioural control of technology, and time, in relation to older adults' technology use. Data was gathered over an eight-year period from cross-sectional mail surveys sent out in southeast Finland (Immonen & Sintonen, 2015). At the first data collection time, 143 people provided data within the study limitations and, at the second data collection point, 435 participants responded with usable data.

Immonen and Sintonen (2015) found that computer anxiety and physical restrictions were "sources of uncertainty regarding computer usage" (p. 600). They also reported that the structural model demonstrated "perceived behavioural control strongly depends on perceived ease of use, and the influence of computer anxiety, as well as

physical restrictions, is primarily mediated through ease of use" (Immonen & Sintonen, 2015, p. 600). Immonen and Sintonen (2015) noted that computer anxiety had "a stable influence on ease of use over time" (p. 600). These results point to the role of computer anxiety on how older adults engaged with technology (Immonen & Sintonen, 2015). Immonen and Sintonen's perceived ease of use construct relates to times when participants in this study shared about figuring out technology on their own under the theme of exploring possibilities with technology. The influence of computer anxiety was also captured in this study when participants shared about feeling out of their comfort zones with technology and of not wanting to engage with technology.

Sun and Jeyaraj (2013) explored factors associated with people's intentions to begin and continue using an IT innovation. According to Rogers, people can be categorized as innovators, early adopters, early majority, late majority, and laggards based on when they begin using an innovation (as cited in Sun & Jeyaraj, 2013). Venkatesh, Morris, Gordon, and Davis developed the unified theory of acceptance and use of technology (UTAUT) and included two contextual factors, social influence and facilitating conditions, associated with people's technology use (as cited in Sun & Jeyaraj, 2013). Sun and Jeyaraj collected data for their study at three points in time over 12 weeks and participation was voluntary. A total of 132 students provided completed surveys at all three data collection points (Sun & Jeyaraj, 2013).

Sun and Jeyaraj (2013) found that perceived usefulness and work compatibility had "significant effects on individuals' intentions to adopt or continue IT innovations" (p. 462). Sun and Jeyaraj also reported that self-efficacy and expertise were not associated with a person's intentions to use the IT system, Blackboard. They noted that this could

be due to self-efficacy and expertise being "more closely related to an individual's usage of an IT innovation rather than to the individual's intention to adopt" (Sun & Jeyaraj, 2013, p. 462).

Sun and Jeyaraj also found that facilitating conditions, a contextual factor, were not significantly associated with students' adoption and use of the new IT. Facilitating conditions were defined as the degree to which a person believes there is organizational and technical support for using the innovation (Venkatesh et al. as cited in Sun & Jeyaraj, 2013). The second contextual factor explored by Sun and Jeyaraj, that of social influence, was found to be significant at the later stage of the study. Venkatesh and colleagues (as cited in Sun in Jeyaraj, 2013) explained that social influence was "the degree to which an individual perceives that others important to him or her believe that he or she should use the innovation" (p. 459). As students began to use and talk about Blackboard, other students started adopting the technology as well (Sun & Jeyaraj, 2013). Sara also shared about how social influence played a role in her technology use when she described using technological applications that other people in her life used and the theme social dynamics and technology (October 1, 2015).

Sun and Jeyaraj concluded that "innovation attributes and individual characteristics drive adoption in the early stage, whereas innovation attributes and contextual factors drive adoption and continuance in the later stage" (p. 459). In this study, innovative attributes included perceived usefulness, perceived ease of use, and work compatibility (Sun & Jeyaraj, 2013). The individual characteristics Sun and Jeyaraj included in this research were personal innovativeness, self-efficacy, and expertise. Erin also described being innovative and feeling efficacious with technology when she

discussed the theme exploring possibilities with technology and of being curious about finding new ways to use technology (February 19, 2016).

Kher, Downey, and Monk (2013) explored how people's computer self-efficacy changed over time. They also investigated the role of computer anxiety as a predictor of computer self-efficacy development patterns (Kher et al., 2013). Kher and colleagues' study involved 230 university students taking a lab technology course and data was collected at four equally spaced points over the course of 13 weeks. Kher and colleagues (2013) explained that general computer self-efficacy (GCSE) "is a perception of ability for the entire computing domain and not restricted to a particular application or environment" (p. 1817). Kher et al. reported that GCSE increased amongst students over time and that the increase was not linear. Rather, they found little initial increase in GCSE, but significant increases in GCSE occurred in the latter half of the semester (Kher et al., 2013).

Kher and colleagues (2013) found that people with low levels of anxiety had high initial GCSE and people with high anxiety had low levels of initial GCSE. They noted that a person's "anxiety also significantly influenced their rate of change in GCSE" (Kher et al., 2013, p. 1821). However, they reported that "whether an individual's initial anxiety level is high or low, its relationship with GCSE growth rate is positive and significant" (Kher et al., 2013, p. 1821). Although a person's anxiety level influences his/her interactions with technology, GCSE increases with time and training. Kher and colleagues' findings about computer anxiety and positive GCSE growth were also reported by Carrie when she shared about over time becoming more confident in figuring out technology on her own (October 3, 2015).

Research on technology adoption and participants' experiences in this study have some similarities. For example, Rizzuto and colleagues' (2014) research on resistance to change is similar to Lisa, Sara, Carrie, and Emily's descriptions of the invariant constituents, preferring to use familiar technology and avoiding technology. Immonen and Sintonen's (2015) findings about the role of anxiety on computer use amongst older adults was also described by Carrie when she shared about her aversion to technology. Sun and Jeyaraj's (2013) concept of innovative attributes, those of perceived usefulness, perceived east of use, and work compatibility, were also described by Erin when she shared about exploring possibilities with technology to better understand the capabilities of that technology. Kher and colleagues' (2013) investigation on the role of anxiety on computer self-efficacy also reflects descriptions given by Lisa and Carrie about feeling uncomfortable with technology and doubting their technological abilities. Theories about problematic technology use also need to be taken into consideration to better understand how people relate to technology.

Theories of Problematic Technology Use

Researchers conceptualized PTU according to various behavioural, cognitive, and psychological foci. In research on Internet use, Young (1998) noted that people who were experiencing PTU reported struggling to fulfill their offline responsibilities, due to difficulty managing the amount of time they spent online. Young delineated a model for Internet addiction (IA) based on factors similar to those experienced by people with gambling and alcohol addictions. Young (1998) posited that, "Internet users become psychologically dependent on the feelings and experiences they get while using that machine, and that's what makes it difficult to stop" (p. 9). Young conceived that people

who were experiencing IA would hide their Internet use from other people, report that their Internet use resulted in damaging interpersonal relationships, and would feel agitated when away from the Internet. Young's model of IA accounted for a range of psychological motivations that supported the development of PTU and the behavioural manifestations of these psychological needs.

Young then worked with colleagues Griffin-Shelley, Cooper, O'Mara, and Buchanan (2000) and developed the Anonymity, Convenience, and Escape (ACE) model to explain online affairs and cyber-sex addictions. In the ACE model, Young et al. posited that adults who were part of a romantic couple and who engaged in online infidelities, or experienced cyber-sex addictions, did so based on several factors. For example, Young and colleagues theorized that adults who were involved in online affairs, or cyber-sex addictions, likely had certain patterns of relating to other people, poorer communication skills, experienced financial problems, and/or excluded their real-life partners, while fantasizing and participating in a fictionalized online world using a self-created, unrealistic online persona. Young et al.'s ACE model described how disengaging and avoiding significant others and/or life stressors were factors related to people experiencing PTU.

Davis (2001) outlined a cognitive behavioural model (CBT) model of pathological Internet use (PIU) based on the role of maladaptive cognitions. Davis explained that people who engaged in PIU were in a cycle of increasing isolation and guilt, due to struggling to regulate the amount of time they spent online. Davis (2001) explained that difficulties controlling Internet use led to feelings of "diminished self worth and further symptoms" (p. 193). Davis distinguished between experiencing

specific PIU and generalized PIU. In specific PIU, people are dependent on certain experiences they get from going online, for example, accessing Internet pornography, auction sites, or gambling (Davis, 2001). Whereas, in generalized PIU, people are over-using the Internet and generalized PIU "is assumed to be related to the social aspect of the Internet" (Davis, 2001, p. 188). Davis' CBT model of PIU explained how cognitions perpetuated the cycle of engaging problematically with technology and differentiated between two types of problematic use of technology.

In Davis' (2001) CBT model of PIU, Internet use ranged along a continuum from healthy to unhealthy, or adaptive to maladaptive Internet use, as determined by the individual who is going online. Davis (2001) defined healthy Internet use as, "using the Internet for an expressed purpose in a reasonable amount of time without cognitive or behavioral discomfort" (p. 193). Davis (2001) further explained that healthy engagement with the Internet occurred when people used "the Internet as a helpful tool rather than a source of identity" (p. 193). Davis' model of Internet use focused on explaining how people's maladaptive thoughts, either about themselves or about the world, resulted in a cycle of difficulty controlling time spent online, guilt, isolation, and further maladaptive thoughts.

Building on Davis' (2001) theory of Internet use, Caplan (2005) developed the social skill account of problematic Internet use, by incorporating research from the communications field. Caplan noted that people who reported believing they were deficient at engaging in face-to-face social contexts were also more likely to report a preference for the less risky social opportunities available online. Caplan also reported that the variable of preferring to socialize online predicted the extent that people reported

an inability to control their Internet use. Caplan noted that the social skill account model of Internet use accounted for 10% of the variance in negative life outcomes reported by people experiencing PTU. Caplan's research extended conceptualizing PTU by including people's socializing preferences and beliefs about social skills as variables associated with technology use patterns.

In further research, Caplan (2010) described and tested the Generalized Problematic Internet Use Scale 2 (GPIUS2). Caplan based the GPIUS2 on the GPIUS conceptual model of Internet use he developed by incorporating Davis's (2001) CBT model of generalized PIU, LaRose and colleagues' research on self-regulation and Internet use (as cited in Caplan, 2010), and his own previous research (see Caplan, 2005). Caplan (2010) designed the GPIUS2 to tap four constructs and tested the GPIUS2 among a group of 785 adults. The four constructs evaluated in the GPIUS2 were: (1) having a preference for online social interaction (POSI), (2) mood regulation, (3) deficient self-regulation, comprised of two subscales involving cognitive preoccupation with the Internet and compulsive Internet use, and (4) negative life outcomes (Caplan, 2010). Caplan used a two-step process of confirmatory factor analysis (CFA) and structural equation modeling (SEM) to test the 15-item GPIUS2.

Caplan (2010) reported that the variable of POSI positively predicted using the Internet as a means of mood regulation, with POSI accounting for 27% of the variance in mood regulation scores. Caplan also found that POSI positively predicted reports of deficient self-regulation of Internet use and noted that POSI and using the Internet for mood regulation accounted for 65% of the variance in deficient self-regulation scores. Caplan reported that deficient self-regulation of Internet use positively predicted negative

life outcomes. He further noted that the variables of POSI, mood regulation, and deficient self-regulation accounted for 61% of the variance in negative outcomes scores (Caplan, 2010). In sum, a composite score on the GPIUS2 subscales had a Cronbach's alpha of $\alpha = .91$ and CFA indicated that the GPIUS model fit the data well, with the GPIUS2 having adequate construct validity (Caplan, 2010). Caplan's (2010) research provided support for the roles of POSI, mood regulation, and the two factors that comprised self-regulation, compulsive Internet use and cognitive preoccupation with the Internet, as constructs affecting patterns of Internet use. Researchers have also explored the role of personality factors in various models that explain Internet use.

Kraut and colleagues (2002) conducted a study among 406 participants and incorporated numerous social and psychological well-being measures. Kraut et al. reported that the personality traits of extroversion and introversion related to different experiences with using the Internet. Kraut and colleagues (2002) explained that extraversion was "the tendency to like people, to be outgoing, and to enjoy social interaction" (p. 58). Specifically, Kraut et al. (2002) found that people who were extroverted and used the Internet more frequently, when compared to extraverts who went online less often, experienced "increased well-being, including decreased levels of loneliness, decreased negative affect, decreased time pressure, and increased self-esteem" (p. 64). Kraut et al. also found that people who were introverted and reported going online more frequently experienced decreases in well-being measures, meaning their loneliness levels increased, negative affect increased, sense of time pressure increased, and self-esteem decreased, when compared to introverts who reported spending less time online. Kraut and colleagues (2002) concluded this research supported their *rich-get-*

richer model of Internet use because "extraverts and those with more support benefitted more from their Internet use" (p. 69). However, the results reported by Kraut and colleagues (2002) appear to be more nuanced according to research studies conducted by Desjarlais and Willoughby (2010) and Szwedo and colleagues (2012).

Researchers Desjarlais and Willoughby (2010) conducted a longitudinal study exploring whether adolescents' Internet use patterns supported Kraut and colleagues' (2002) rich-get-richer model of Internet use and/or the *social compensation* model of Internet use. Kraut et al. (2002) posited in the social compensation model that, "those who are introverted or lack social support… profit most from using the Internet" (p. 58). Desjarlais and Willoughby included 1,050 adolescents in their study and investigated the interactions of gender, social anxiety, friendship quality, and computer use, either while in the physical presence of friends or for communicating online with friends when physically separated. Desjarlais and Willoughby (2010) reported that the factor of social anxiety amongst female participants did not impact "the relation between frequency of using computers with friends, either in person or online, and friendship quality" (p. 903). Desjarlais and Willoughby (2010) also found that "independent of social anxiety, adolescent girls who used the computer with friends to a greater extent reported more positive friendship quality than their peers who rarely used the computer with friends" (p. 903). Desjarlais and Willoughby concluded that data collected from female adolescents supported the rich-get-richer model and the social compensation model.

Desjarlais and Willoughby's (2010) research amongst adolescent males resulted in different findings, when compared to how adolescent females experienced the interactions of using technology, social anxiety, and friendship quality. Desjarlais and

Willoughby (2010) noted that adolescent boys who "reported high feelings of social anxiety and use of the computer with friends also reported more positive friendship quality in comparison to their socially anxious peers who rarely used the computer with friends" (p. 903). Based on this finding, Desjarlais and Willoughby concluded that male participants' data supported the social compensation model. Desjarlais and Willoughby (2010) also reported that the frequency that adolescent males used computers with friends did not influence the quality of their friendships. The researchers noted that for adolescent males this finding suggested "that the rich do not get richer" (Desjarlais & Willoughby, 2010, p. 903). Desjarlais and Willoughby's research findings on the differences between male and female adolescents' experiences with social anxiety, computer use, and friendship quality highlight the variability in technology use experiences. The longitudinal nature of Desjarlais and Willoughby's research allows insight into how computer use impacted adolescents' friendship quality over time.

In a longitudinal study that involved 89 young adults, Szwedo et al. (2012) found that people who believed they were socially competent were *more* likely to experience declines in their psychological well-being when they received a higher number of SNS communications from friends, when compared to the effects on the mental well-being of people considered socially competent who received fewer SNS messages. Alternatively, Szwedo and colleagues (2012) found that "when less socially accepted young adults received posts from a greater number of friends…they also experienced a residualized decline in anxious-depressive symptoms over time" (p. 463). Szwedo et al. (2012) surmised that "the number of different individuals youth engage with on social networking site (sic) may even be a more robust predictor of their future adjustment than

friend network size alone" (p. 463). Szwedo and colleagues' research supported Kraut and colleagues' (2002) social compensation model of technology use because less socially accepted young adults benefitted, by having fewer anxious-depressive symptoms over time, when they spent more time on SNS, when compared to the anxious-depressive symptoms reported by less socially accepted young adults who spent less time on SNS. Tentatively, Szwedo and colleagues' findings are generalizable, due to the sample size used and the longitudinal nature of the study. However, Szwedo et al.'s study indicates a need for further exploration of how managing and connecting using online network(s) impacts people's mental well-being over time. There is a need for research exploring how spending time online in various ways can impact users' subjective well-being (i.e., interacting with friends by way of posting on each other's SNS timelines versus simply reading information posted by others in one's SNS feed).

The PTU models and research studies described in this chapter explained some of the factors associated with how people use technology, but they do not account for identity development factors that Israelashvili and colleagues (2012) found influenced adolescents' technology use. For example, how does a newly divorced man relate to technology, when compared to how he used technology when he was in a committed relationship? Attachment theory can offer a more comprehensive account for patterns of using technology beneficially and problematically; however, a more comprehensive account of technology use is needed.

Stages of Technology Use Theory

Rempel and Jerry (2013) created a developmental model of technology use by adapting Erikson's (1950/1993) psycho-social developmental theory, while drawing from

Turkle's (2012) argument to use technology in ways that support offline goals and values. Rempel and Jerry (2013) named their model the stages of technology use theory (see Table 1).

Background for this Theory

Erikson (1950/1993) posited that people progressed through eight developmental stages throughout their lives that involved a psycho-social crisis. People resolved these psycho-social crises by either developing healthy ego qualities, meaning a healthy or secure sense of self and means of interacting with others, or they developed core pathologies, meaning they developed "hostile…expectations and attitudes" (Erikson, 1950/1993, p. 251), or an insecure sense of self and way of relating to others. Rempel and Jerry (2013) incorporated and adapted Erikson's eight psycho-social crises in terms of stages of technology use.

Stages of Technology Use Theory

Rempel and Jerry (2013) conceptualized the stages of technology use theory as eight stages of how people become more familiar with using technology, as adapted from Erikson's (1950/1993, 1959/1994, 1982/1998) psycho-social model of development (see Table 1). In each of Erikson's developmental stages, people were theorized to encounter a psycho-social crisis that, when resolved, either supported the healthy development of ego qualities (sense of self) or resulted in what Erikson (1982/1998) referred to as *core pathologies*. Erikson (1950/1993) further explained that in each stage "their basic conflicts can lead in the end to either hostile or benign expectations and attitudes" (p. 251). Erikson's ego qualities are conceptualized as a healthy, preferred sense of self. Also, this preferred sense of self is considered to be synonymous with an integrated sense

of self, characterized by having a well-developed self-esteem and sense of self-efficacy. Developing an integrated approach to technology use is theorized as leading to greater self-understanding, personal growth, and to the development of healthy intrapersonal conceptualizations and preferred interpersonal relationships. The development of an integrated attitude towards technology use is ascertained by how one relates beneficially to technology and uses technological applications.

Stage 1: Basic Trust Versus Basic Mistrust

Erikson's (1950/1993) first developmental stage involved the psychosocial crisis of establishing a sense of basic trust, or a sense of basic mistrust, in the dependability of others and in the capabilities and trustworthiness of one's self. People in the first stage of developing an integrated approach to technology use also work to resolve the crisis of developing a basic trust, or a basic mistrust, in technology. A question typically asked during this stage is "can I trust technology to work?" People just entering this stage will relate primarily to technology by keeping paper back-ups of documents, for example, they will print off emails to store them. As people develop a greater sense of trust in technology and in their abilities to use technology, an initial, integrated attitude toward technology begins to develop. If people develop a basic sense of mistrust in technology and in their abilities to use technology, they will experience using technology as a fear inducing situation. They will also find using technology as a confusing and burdensome aspect of modern life.

Stage 2: A Sense of Technological Autonomy Versus Shame and Doubt

Erikson's (1950/1993) second stage of psychosocial development involved the crisis of developing either a sense of autonomy or a sense of shame and doubt about

one's self. Erikson explained that a basic sense of trust in the continuity of one's self and of the world in general supported the developing urge to explore. It was due to the freedom allowed by a sense of security that promoted exploratory learning (Erikson, 1950/1993). People entering this second stage of developing technological understanding are asking "can I use technology without help (most of the time)?" An example of an integrated, autonomous task in this stage could be having one's phone crash and being able to get it working again, without the assistance of someone else. Someone who develops a digital sense of shame and doubt does not know how to get their phone working again after it crashes and may be too inhibited to ask for help in doing so. Experiencing a digital sense of shame and doubt also involves feeling insecure about one's abilities to learn to use technology.

Stage 3: Technological Initiative Versus Guilt

Erikson's (1950/1993) third developmental stage and resulting crisis involved the process of developing a sense of initiative, that "adds to autonomy [from the previous stage] the quality of undertaking, planning and 'attacking' a task for the sake of being active and on the move" (p. 255). If children passing through this stage are unable to develop, or are thwarted from developing a sense of autonomy, then they develop a sense of guilt due to "acts of aggressive manipulation and coercion" (Erikson, 1950/1993, p. 255). The sense of guilt children may develop at this stage resulted from their growing purposeful nature and their attempts to achieve their goals.

People entering the third stage of technology use are also negotiating whether they will develop a sense of initiative in their relationship with technology, or whether they will develop a sense of guilt about how they use technology. People in this stage

will typically ask themselves "is it okay to use this technology as much as I would like to, and is it okay to let technology involve more and more of my life/who I am?" An example of a task in the third stage could involve exploring applications and seeking out opportunities to learn new uses for technology. A person who is developing an integrated approach to technology use would feel comfortable with how much technology s/he is using because her/his technology use is not affecting offline relationships, goals, and values. A person who is developing a guilty sense of technology use will not be satisfied with how much s/he is using technology because technology use is negatively impacting her/his offline relationships, goals, and/or values.

Stage 4: Technological Industry Versus Inferiority

Erikson (1950/1993) wrote that children in this stage "can become an eager and absorbed unit of a productive situation" (p. 259). Children learn to harness their enthusiasm and begin working on developing their competency, which often occurs in social situations, for example at school (Erikson, 1950/1993). The developmental crisis that results, if children are unable to establish a sense of industry about their abilities and about their opportunities to perform as a productive member of society, involves developing a sense of inferiority about one's skills, opportunities, and/or about one's social status among peers (Erikson, 1950/1993).

In this fourth stage of developing an integrated sense of using technology, people begin to constructively focus on their engagement with technology and digital media applications. Questions typically asked by people in this stage include "can I use technology in my life and work in a way that helps me be productive?" and "what can I achieve with technology?" As people progress in developing a sense of technological

industry, they use technological applications and devices to the point where this technology becomes transparent for them, meaning they are using the technology seamlessly and almost effortlessly. During this stage, people's feelings of self-efficacy about using technology are increasing.

If people are struggling with their technology use and are developing a sense of technological inferiority, they will view themselves as less competent at using technology than their peers and less able to use technology productively. People experiencing a sense of technological inferiority will consider themselves as less knowledgeable about technology than others, less capable of figuring out technology on their own, and less able to regulate the amount of technology they are using, when compared to people who are developing a sense of technological industry.

Stage 5: A Digital Sense of Identity Versus Identity Confusion

Erikson (1950/1993) wrote that a sense of ego identity is an "accrued confidence that the inner sameness and continuity prepared in the past are matched by the sameness and continuity of one's meaning for others" (p. 261). Erikson explained that developing a sense of identity occurs in the adolescent years and that process of identity development involves a questioning of roles, beliefs, and values that could potentially be a suitable fit with one's identity and incorporated into one's sense of self. Adolescents who do not resolve the crisis of developing a sense of identity remain confused about their roles and their sense of self (Erikson, 1950/1993).

People in this stage of developing an integrated sense of technology use are also working to resolve what roles, values, and beliefs comprise their technological identities. People in this stage will typically ask, "who am I and what can I be with this

technology?" Examples of tasks associated with this stage of developing technologically include exploring what types of online relationships are acceptable and creating online persona(s). People experiencing digital identity confusion will use technology to explore their identities online and offline, but their reflections about their technology use will not influence changes in their behavior regarding whether their technology use aligns, or does not align with who they want to be, what roles they want to assume, and whether their technology use matches with their offline values, beliefs, and goals.

Stage 6: Digital Intimacy Versus Isolation

Erikson (1950/1993) explained that adults in this developmental stage established a sense of intimacy by demonstrating a capacity to be committed "to concrete affiliations and partnerships and to develop the ethical strength to abide by such commitments, even though they may call for significant sacrifices and compromises" (p. 263). Adults who do not successfully resolve the developmental crisis of this stage establish a sense of isolation due to "the avoidance of contacts which commit to intimacy" (Erikson, 1950/1993, p. 266). Technological development in this stage also involves either the deepening of relationships or of avoiding intimacy with others.

People in this stage of developing an integrated technological approach face the crisis of choosing to use technology for fostering intimacy, or of using technology to increase or maintain one's sense of isolation. Questions that are characteristic of people in this stage include "do I like my relationship with technology?" Another question is "do I like the role that technology plays in my life?" Also, they may ask themselves "does the way that I relate to technology negatively influence what is happening in my life, or do I use technology to support living my preferred lifestyle?" People who are

developing an integrated digital sense of technology use evaluate where, when, and to what extent they will use technology in their lives. They also proactively and deliberately decide how they will spend their time when they are connected (Turkle, 2012). Essentially, people with an integrated technological sense of intimacy use their online time to support, foster, and enhance their intimate relationships and their goals for their lives. Whereas, people with a digital sense of isolation are using technology to avoid and distract themselves from their offline relationships and their technology use is a barrier to achieving their offline goals.

Stage 7: A Generative Technological Sense Versus a Stagnant Sense

Erikson (1950/1993) wrote that generativity "is primarily the concern in establishing and guiding the next generation" (p. 267). Erikson's (1950/1993) conceptualization of generativity was not limited to the helping of one's own children and he noted that the construct of generativity was also synonymous with the terms "*productivity* and *creativity*, which, however, cannot replace it" (p. 267). Erikson (1950/1993) postulated that adults who do not resolve the developmental crisis of building a sense of generativity experience "regression to an obsessive need for pseudo-intimacy…often with a pervading sense of stagnation and personal impoverishment" (p. 267). Developing in terms of either digital generativity or digital stagnation also involve an interpersonal focus.

People negotiating the crisis of developing a generative approach to using technology typically ask, "what do I want from technology for my life and for the lives of other people, and how can I contribute to making this happen?" People progressing through this stage may also ask themselves "how can I use my technological knowledge

to benefit and support other people as they strive to develop their use of digital media?" Examples of how people engage generatively with technology include blogging, vlogging, and/or using other forms of information sharing to contribute to the technology field. Generativity in this stage can also involve advocating for others to re-frame, or re-negotiate their relationships with technology to better aligned with their offline goals and values (Turkle, 2012).

People developing a digitally stagnant approach to technology will use technology to maintain relationships that have elements of intimacy, but these relationships are easily compartmentalized. Having a digitally stagnant attitude toward technology involves avoiding intimacy and vulnerability through one's technology use (i.e., spending a lot of one's free time online, on social media sites, or playing games), or through the safety of online anonymity. People who experience a technologically stagnated approach have technological knowledge, but they do not use their learning to enhance the lives of others. Their focus in using technology is to avoid intimacy and vulnerability.

Stage 8: A Sense of Technological Integrity Versus Despair

Erikson (1950/1993) wrote that ego integrity "implies an emotional integration which permits participation by followership as well as acceptance of the responsibility of leadership" (p. 269). Erikson noted that people who do not successfully develop ego integrity experience a sense of despair, based on a fear of death and dissatisfaction with how one has lived one's life. Developing a technological sense of self in terms of either integrity or despair involves self-assessing the choices one has made.

People developing an integrated technological approach reflect on the role that they have allowed technology to play in their lives and they experience feelings of

satisfaction with their choices. They may also assess how they have used technology to add meaning to their lives, or to achieve important life goals. People negotiating this stage ask questions characterized by reflection and self-assessment. Typical questions posed during this stage are "have I used technology in a way that is congruent with my values and my beliefs?" and "have I related to technology in a manner that supported accomplishing my life goals?" People experiencing despair about their technology use are likely to engage in ruminative thoughts about how they lost valuable time, did not accomplish important goals, lacked alignment between their technology use and their values and beliefs, and/or how they damaged or lost relationships, due to using technology in a problematic way.

Conclusion

Working to establish an integrated approach to technology use involves progressing through the stages of the model outlined in this article (Rempel & Jerry, 2013). It is important to note that, while Erikson (1950/1993) conceptualized specific ages for encountering his developmental stages, Rempel and Jerry's (2013) stages of technology use theory is not restricted to addressing certain technological developmental tasks at specific ages. Furthermore, people's progression through the stages of developing their technological use may not occur in a linear fashion, although initial progress through the stages is hypothesized to occur in a relatively linear fashion. However, for example, life circumstances may result in a person who was developing their digital sense of generativity versus stagnation (Stage 8) to regress to the digital identity versus role confusion stage (Stage 5) because of the loss of their career, or the death of a partner.

Table 1

Stages of Technology Use Theory (Rempel & Jerry, 2013)

Age	Stage	Virtues – Basic virtues are italicized	Psycho-social crisis	Technology question	Examples
N/A	1	*Hope*, drive	Basic trust vs. mistrust	Can I trust technology to work?	Keeping paper backup by printing emails to store them.
N/A	2	*Willpower*, self-control	Autonomy vs. shame and doubt	Can I use technology without help (most of the time)?	Phone crashes, but able to get it running again without help.
N/A	3	*Purpose*, direction	Initiative vs. guilt	Is it okay to use this technology as much as I would like to?	Exploring applications and practicing using them.
N/A	4	*Competence*, method	Industry vs. inferiority	Can I use technology in my life and work in a way that helps me be productive? What can I achieve with technology?	Using technology to a point where it becomes transparent to me. Using technology to build feelings of self-efficacy.
N/A	5	*Fidelity*, devotion	Identity vs. identity confusion	Who am I and what can I be with this technology?	Using technology to support and develop relationships and/or to create online persona(s).
N/A	6	*Love*, affiliation	Intimacy vs. isolation	Do I like my relationship with technology? Alternatively, could ask: (a) Do I like the role that technology plays in my life? (b) Does my technology use control how I live my life, or do I control how technology influences my life (Turkle, 2012)?	Evaluating where, when, and to what extent I will use technology in my life and how I will spend my time when I am connected (online); setting boundaries with technology (Turkle, 2012).
N/A	7	*Care*, production	Generativity vs. stagnation	How can I use technology to benefit and support other people as they strive to achieve their goals?	Blogging, vlogging, establishing digital communities, and/or using other forms of technology to: (a) contribute to the technology field; (b) advocate for changes in technological applications, options, or access; and/or (c) use one's technological skills and life skills to support other people by adding to collective knowledge (Dede, 2009).
N/A	8	*Wisdom*, renunciation	Integrity vs. despair	Have I/am I using technology in a way that is congruent with my values and beliefs? Have I/do I use technology to help me accomplish my life goals (i.e., existential goals such as: cultivating the types of interpersonal relationships that I desire)?	Examining the role that I have allowed technology to play in my life. Reflecting on how I have allowed technology to influence the purpose of my life. Judging whether I have used technology to make meaning of my life and/or helped me achieve important life goals.

Note. Adapted from *Childhood and Society*, by E. H. Erikson, 1993, New York, NY: Norton & Co. (Original work published 1950).

Chapter VI: Implications of the Research and Conclusion

In this chapter, I examined several models of new media literacy skills. New media literacy models provide insight into the process of developing technical and critical media skills. Yao and Zhong (2014) wrote about the need for a more comprehensive theory of technology use when they observed that, "clearly, an integration of theories from media and communication studies and behavioral sciences is much needed to extend understandings about Internet addiction" (p. 169). I also described a conceptual model for Rempel and Jerry's (2013) stages of technology use theory, based on the findings of this study. I concluded this chapter by discussing participants' relationships with technology using the conceptual model.

New Media Literacy Models

New media literacy is written about in various fields including those of education and communication. Area and Pessoa (2012) explained that media literacy skills are referred to by a range of names including: digital age literacy, technological literacy, media literacy, digital literacy, multimedia literacy, or information literacy. Simsek and Simsek (2013) noted that "new literacies differ from the previous ones, mainly due to their operational, interactive and user-based technological characteristics" (p. 129). In this section, models about developing new media literacy skills are described and discussed.

Defining new media literacy. Authors have noted that new media literacy generally involves two skill sets (Buckingham, 2003; Cappello, Felini, & Hobbs, 2011; Chen, Wu, & Wang, 2011). Buckingham (2003) delineated two types of media literacy where *functional media literacy* involved being able "to understand and use media" (Chapter 3, Defining literacy section, para. 6) and *critical media literacy* "involves analysis, evaluation and critical reflection" (Chapter 3, Defining literacy section, para. 6). Cappello, Felini, and Hobbs (2011) also

conceptualized media literacy as involving two levels of skills. Cappello and colleagues (2011) wrote that first-level skills involved being able to use technology (i.e., using a computer, word processing program, accessing the Internet, or texting) and the development of second-level skills included the "deconstruction/ reconstruction of knowledge, learning and social action" (p. 72). Chen and colleagues (2011) also described new media literacy as consisting of two types of skills. Where computer literacy skills denoted having the technical skills required to use computers and software programs, and information literacy skills meant having familiarity with using the Internet, understanding the types and formats of information presented online, and engaging in critical thinking about the information provided from online sources (Chen et al., 2011). Consensus exists amongst the depictions of new media literacy skills where one skill set involved being able to use technology, or media, and the second set of skills related to critically using technology and/or critically evaluating online information.

Models of developing new media literacy skills. In this section, I described models of new media literacy skill development and examined how these theories related to using technology either primarily beneficially or problematically. By searching in my school library's general search engine for the term digital literacy, I found several articles about new media literacy skills. I also found articles by reading reference lists. New media literacy theories provide a means of understanding how people develop in their technology use over time.

Cappello and colleagues (2011) wrote about the opportunities and challenges in the field of media literacy education and they presented three directions for media literacy educators to follow. Cappello et al. (2011) noted that, first, educators needed to "continue to emphasize critical reading of the media but always in connection with the students' lived media experience" (p. 71). Cappello and colleagues (2011) explained that self-reflection about how one uses media

should be interwoven with media production experiences and with "a theoretical understanding of media as cultural-social-economic institutions" (p. 71). Contextualizing media use with theory facilitates an opportunity for critical evaluation of media consumption.

Secondly, Cappello et al. (2011) wrote of the value in educators bringing "pleasure into the classroom and develop[ing] a practice of affective reflexivity" (p. 71). The rationale for incorporating pleasure as a component of media consumption is due to the recognition that "media popularity…[lies] mostly in the consumerist production of pleasure" (p. 71). Cappello and colleagues (2011) explained that by encouraging critical analysis and one's personal use of media along with the experience of producing media "students can investigate the affective/pleasurable side of their media consumption and at the same time learn how to question it" (p. 72). The inclusion of pleasure in media use is important for understanding motives for consuming media and preferences.

Cappello and colleagues' (2011) third direction for media educators was the need to be a "scaffolder of learning" (p. 72). By scaffolding learning for students, as outlined in the other two directions, the media educator facilitates students' development of:

> Meta-cognitive self-reflection and a systematic capacity to *read* the media, *write* (with) the media, and also the ability to *meta-reflect* on the processes of reading and writing *per se* in order to understand and analyse their own experience as readers and writers. (Cappello et al., 2011, p. 72)

Cappello and colleagues' directions for developing critical media skills amongst students demonstrated an approach for engaging with technology analytically and holistically (i.e., by including reflection on one's actual media use, the affective component when using media, and the production of media). By inviting people to engage in Cappello et al.'s three directions of

media education and evaluation, the critical use of not just media, but of technology more generally would be encouraged. Also, by using technology more critically, the potential for greater benefit from using technology could be achieved.

Area and Pessoa (2012) created an integrated literacy model for Web 2.0. Area and Pessoa (2012) noted the importance of developing digital literacy as:

> With Web 2.0, it is now a place to publish and communicate through photos, videoclips, presentations or any other kind of multimedia file…. This requires subjects to be literate both as consumers of this type of product and as individual broadcasters. (p. 16)

Area and Pessoa's model is based on two pillars of competency development. The first pillar is comprised of six literacy dimensions, or environments that a "literate subject must know to be able to use Web 2.0" (Area & Pessoa, 2012, p.18). The six dimensions involved learning how to use the new cultural forms of Web 2.0 as: a universal library, a market of services, a jigsaw puzzle of interconnected microcontent, a public space for communication in social networks, a multimedia and audiovisual expression, and as a territory of virtual interactive experiences (Area & Pessoa, 2012). According to Area and Pessoa (2012), to acquire a fully integrated 21st century education one "must instruct the citizen how to act and participate on the multiple planes that converge in Web 2.0" (p. 18). Based on Area and Pessoa's first pillar, becoming a literate digital citizen involved learning to navigate and critically engage with Web 2.0 applications.

Area and Pessoa (2012) identified five areas of competency for their second pillar of developing digital literacy. Area and Pessoa (2012) explained that i*nstrumental competence* involves the practical knowledge and skills for using technology, while *cognitive-intellectual competence* occurred when "the subject learns to utilize data intelligently to be able to access information, give it meaning, analyse it critically and reconstruct it to his liking" (p. 18). Area

and Pessoa (2012) described their third area of competency as *socio-communicative competence* which involved the creation and dissemination of digital media content in different languages to establish "fluid communication with other subjects through the technologies available" (Area & Pessoa, 2012, p. 18). The assumption in the socio-communicative competency is that the digital user has "an inherently positive social attitude towards others that could take the form of collaborative work, respect and empathy within the social network of choice" (Area & Pessoa, 2012, pp. 18-19).

Area and Pessoa's (2012) fourth competency, *axiological competence*, referred to "the awareness that ICT are not aseptic or neutral from the social viewpoint but exert a significant influence on the cultural and political environment in our society" (p. 19). The fifth competency that Area and Pessoa wrote about was that of *emotional competence*. Literacy in emotional competence involved learning to control negative emotions in virtual settings and the development of empathy when interacting with others online (Area & Pessoa, 2012). Area and Pessoa's competencies covered practical technological skills, interpersonal skills, self-regulation skills, and critical thinking skills.

There is some overlap in Area and Pessoa's (2012) second pillar of digital literacy with their first pillar, as the second pillar competencies also included developing the skills necessary to use Web 2.0 technologies and being able to access information and analyze it critically. Their second pillar competencies extended from the dimensions in their first pillar by adding the skills of learning to communicate respectfully with others online, the ability to engage in self-regulation during online interactions, and analytically consuming and having critical awareness of online content within various spheres (i.e., personally, interpersonally, socially, and

politically) (Area & Pessoa, 2012). Area and Pessoa's competencies outlined the development of intrapersonal and interpersonal skills that aid in using technology.

Chen and colleagues (2011) reviewed literature on media literacy and proposed a framework for systematically investigating new media literacy. Chen et al. (2011) noted that new media consisted of socio-cultural and technical characteristics that "impact on the notion of media literacy" (p. 84). Chen and colleagues delineated three socio-cultural categories of new media. Chen et al.'s (2011) first category was the construction of media and they noted that "an empowering characteristic of new media lies in the fact that it enables ordinary users to construct and co-construct media content" (p. 85). Chen and colleagues (2011) wrote that the second category was that media has "embedded values and ideological implications" (p. 85). They noted that media is not neutral and that "media messages are neither facts nor truths" (Chen et al., 2011, p. 85). The third socio-cultural category of new media was that media serves varying purposes including social, political, commercial, and educational (Aufderheide & Firestone; Newby, Stepich, Lehman, & Russell; Pungente, Duncan, & Andersen, as cited in Chen et al., 2011). Being aware of Chen and colleagues' socio-political categories of new media provides users of technology with the opportunity to be more critical in their consumption of digital content.

Chen and colleagues (2011) wrote that new media has various technical characteristics that influence the development of new media literacy. Chen et al. (2011) wrote that the technical characteristics of new media included: automation (i.e., by tagging and being able to search for tags), variability in media production (i.e., ease of editing and sorting one's tags), and the development of new media languages, for example, on Twitter where language is "short, informal, inviting, and intriguing" (p. 84). The technical aspects of new media influence how

people interact with technology and have expanded the ways that people can communicate and share information with one another.

Based on the socio-cultural and technical characteristics of new media, Chen and colleagues (2011) wrote that classic literacy and computer literacy skills were insufficient for functioning in the 21st century. Chen et al. posited that an expanded notion of new media literacy was necessary and they created a new media literacy framework to capture this need. Chen and colleagues (2011) conceptualized new media literacy as developing along two continua "from consuming to prosuming literacy and from functional to critical literacy" (p. 85). Chen et al. (2011) wrote that consuming media literacy referred to "one's ability to access media message and use media at various proficiency levels" (p. 85). At the other end of this continuum, Chen and colleagues (2011) noted that prosuming media literacy involved the ability to produce media content along with having the consuming skills. Developing new media literacy skills along Chen and colleagues' consuming to prosuming continuum involved having the technical skills of accessing and using digital media, and the ability to create and produce digital content.

Chen and colleagues (2011) based their second continuum, of functional to critical media literacy, on Buckingham's conceptualizations of literacy. Chen et al. (2011) described functional media literacy as involving "the individual's textual meaning making and use of media tools and content" (p. 86). Chen and colleagues stated that functional media literacy is integral to using technology. They also noted that remaining at a functional level of media literacy was insufficient because "criticality is crucial in consuming and prosuming new media" (Chen et al., 2011, p. 86). Chen et al. explained that a critical consumer and prosumer "has a good grasp of social, economic, political and cultural contexts of the media consumption and production and

can exercise these critical views to his/her advantage in media consumption and production" (p. 86). Criticality is key to fully developing new media literacy skills.

Summary. The models of developing new media literacy skills in this section involved moving from having the technical skills of being able to use and consume digital media to analytically contextualizing messages in media and examining one's technology use and production. The fields of new media literacy education and psychology converge in respect to the socio-cultural and participatory (i.e., accessing and producing digital media content) aspects of using technology in the 21st century. Authors in the field of new media literacy education elucidated skill areas (Area & Pessoa, 2012; Cappello et al., 2011; Chen et al. 2011) that could be developed amongst people who are experiencing PTU and amongst people using technology beneficially who wish to develop additional technological skills. The new media literacy skills described in this section could be used to assist counselling professionals working with people who want to move from having a problematic relationship with technology to having a more beneficial relationship with technology.

Conceptual Model for the Stages of Technology Use Theory

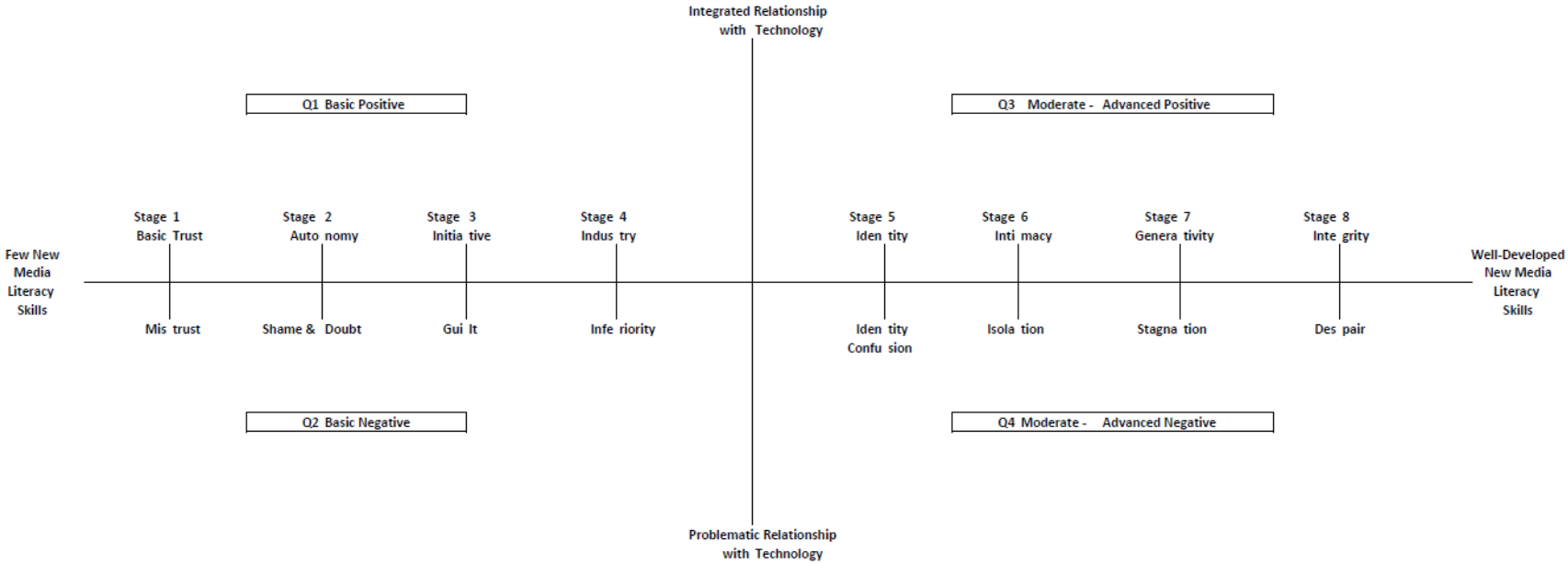
Participants in this study shared about positive (beneficial) and negative (problematic) experiences when they used technology. Erin described a positive example of how she communicated with relatives in another country using recorded messages in an Excel spreadsheet (February 19, 2016). Alternatively, Carrie provided an example of a negative aspect of technology use when she shared that her aversion to technology had stayed the same over time (October 3, 2016). Lisa provided another example of a negative experience with technology when she explained that "even if, somehow, I limit myself to once a day [on Facebook], I still don't feel good when I'm using it" (September 17, 2015). By incorporating participants'

positive/beneficial and negative/problematic experiences with technology, Rempel and Jerry's (2013) stages of technology use theory (see Table 1 p. 157) can be expanded into a two-dimensional model (see Figure 2 p. 168). This two-dimensional model involves: (a) how people relate to technology along a continuum ranging from having positive/beneficial relationships with technology, to using technology problematically, and (b) according to Rempel and Jerry's eight developmental stages of increasing technological skills, attitudes, awareness, and criticality.

Background of this model. Erikson's (1950/1993) eight stages of development involved encountering a psycho-social crisis at each stage. People resolved the psycho-social crises by developing either a secure sense of self and of relating to others, or by developing core pathologies, or an insecure sense of self and of relating to others (Erikson, 1950/1993, p. 251). The first dimension of this conceptual model was created by incorporating Erickson's psycho-social crises (1950/1993) as an axis for positive/beneficial to negative/problematic technology use (see Figure 2).

The first dimension of technology use: Positive/beneficial to negative/ problematic. The first continuum, vertical, in this model (see Figure 2) incorporates relational patterns, based on object relations theory (Levenson, 2003) and attachment literature (Bartholomew & Horowitz, 1991; Collins & Read, 1990; Lopez & Brennan, 2000), with Rempel and Jerry's (2013) adaptations of Erikson's (1950/1993) eight psycho-social crises (see Table 2 pp. 169-170). Determinations about how people are using technology are based on individuals' perceptions and their accounts about their technology use. This means that, at each stage of technology use (Rempel & Jerry, 2013), people are negotiating using technology in either an

Figure 2. Technology Use Conceptual Model. A two-dimensional model about relating to technology and developing media literacy skills, according to the stages of technology use theory (Rempel & Jerry, 2013).



Note. Adapted from *Childhood and Society*, by E. H. Erikson, 1993, New York, NY: Norton & Co. (Original work published 1950).

Table 2

Examples of Psycho-Social Crises in the Stages of Technology Use Theory

Stage	Psycho-social crisis	Examples
1	Basic trust vs.	People in this stage will relate primarily to technology by keeping paper back-ups of documents, for example, they will print off emails to store them.
	Mistrust	If people develop a basic sense of mistrust in technology and in their abilities to use technology, they will experience using technology as a fear inducing situation. They will find using technology as confusing and burdensome.
2	Autonomy vs.	An example of an integrated, autonomous digital sense of self task could be having one's phone crash and being able to get it working again, without the assistance of someone else.
	Shame and doubt	Someone who develops a digital sense of shame and doubt does not know how to get their phone working again after it crashes and may be too inhibited to ask for help in doing so. They may also experience feeling insecure about their abilities to learn to use technology.
3	Initiative vs.	People experiencing initiative would be exploring applications and seeking out opportunities to learn new uses for technology. They would also feel comfortable with how much technology they are using because their technology use is not affecting offline relationships, goals, and values.
	Guilt	People developing a guilty digital sense of self will not be satisfied with how much technology they are using because technology use is negatively impacting their offline relationships, goals, and/or values.
4	Industry vs.	As people progress in developing a digital sense of technological industry, they use technological applications and devices to the point where this technology becomes transparent for them, meaning they are using the technology seamlessly and almost effortlessly. During this stage, people's feelings of self-efficacy about using technology are increasing.
	Inferiority	People who are struggling with their technology use and developing a digital sense of inferiority will view themselves as less competent at using technology than their peers and less able to use technology productively. People experiencing a digital sense of inferiority will consider themselves as less knowledgeable about technology than others, less capable of figuring out technology on their own, and less able to regulate the amount of technology they are using, when compared to people who are developing a digital sense of industry.
5	Identity vs.	People in this stage of developing an integrated digital sense of self are working to resolve what roles, values, and beliefs comprise their technological identities (who they are/how they present themselves online).
	Identity confusion	People experiencing digital identity confusion will use technology to explore their identities online and offline, but their reflections about their technology use will not influence changes in their behavior regarding whether their technology use aligns, or does not align with who they want to be, what roles they want to assume, and whether their technology use matches with their offline values, beliefs, and goals.
6	Intimacy vs.	People with an integrated digital sense of intimacy use their online time to support, foster, and enhance their intimate relationships and their goals for their lives by setting boundaries around their technology use.
	Isolation	People developing a digital sense of isolation are using technology to avoid and distract themselves from their offline relationships and their technology use is a barrier to achieving their offline goals.

7	Generativity vs.	People who are engaged generatively with technology would be blogging, vlogging, and/or using other forms of information sharing to contribute to the technology field. They may also be advocating for others to re-frame, or re-negotiate their relationships with technology to better align with their offline goals and values (Turkle, 2012).
	Stagnation	People experiencing a digitally stagnant sense of self are avoiding intimacy and vulnerability through their technology use (i.e., spending a lot of one's free time online, on social media sites, or playing games), or through the safety of online anonymity. People at this stage have technological knowledge, but they do not use their learning to enhance the lives of others. Their focus (conscious or subconsciously) is to use technology to avoid intimacy and vulnerability.
8	Integrity vs.	People developing integrity in their digital sense of self reflect on the role that they have allowed technology to play in their lives and they experience feelings of satisfaction with their choices. They may assess how they have used technology to add meaning to their lives, or to achieve important life goals. People negotiating this stage ask questions characterized by reflection and self-assessment.
	Despair	People experiencing despair about their digital usage are likely to engage in ruminative thoughts about how they lost valuable time, did not accomplish important goals, lacked alignment between their values and beliefs, and how they used technology, and/or how they damaged or lost relationships, due to using technology in a problematic way.

Note. Adapted from *Childhood and Society*, by E. H. Erikson, 1993, New York, NY: Norton & Co. (Original work published 1950).

integrated manner, by developing a positive/beneficial approach to using technology (Quadrants (Q): Q1 and Q3 in Figure 2), or in a negative/problematic way, by developing a dis-jointed approach to technology use (Q2 and Q4 in Figure 2).

For example, in the first stage, people are negotiating developing either a sense of basic trust in technology or a basic mistrust of technology (Rempel & Jerry, 2013). People in this stage may initially print off copies of emails to store them, but, if they start to trust technology, then they will recognize that their emails are still available for accessing at a later point, see Table 2 (Rempel & Jerry, 2013). A person with low levels of new media literacy skills and who falls into Q1, *basic positive*, on Figure 2 would: (a) have minimal, basic practical skills for using technology (i.e., could use a word processing program, or go online to send emails), (b) report that their technology use was not causing problems in their life and their family members/close friends would concur, and (c) relate to technology in a tentative, yet exploratory manner. Erin shared about a basic positive experience when she told about her first encounter with a home computer (February 19, 2016). Erin shared that "sometimes I would just play with the keyboard. Play with typing…. I remember really, I was really fascinated by it" (February 19, 2016).

Alternatively, a person in Q2, *basic negative*, on Figure 2 would report similar basic, new media skill levels, when compared to people in Q1. However, a person in Q2 would also describe experiencing negative personal consequences due to their technology use (Rempel & Jerry, 2013). According to Rempel and Jerry's (2013) theory, people in Q2 may report having feelings of shame and doubt when using technology (see Table 2 for examples of this Stage 2 experience). They may also report feeling guilty (a Stage 3 experience) because they ignored significant others, due to their technology use, or report feeling frustrated, due to the disparity between their offline goals and online actions (a Stage 4 experience) (Rempel & Jerry, 2013).

Lisa shared about a basic negative experience when she described feelings of embarrassment about not knowing how to play PacMan and how she was "always afraid to ask, you know, the questions [about how to play]" (September 17, 2015). Lisa experienced shame and doubt because of her lack of knowledge which lead her "with PacMan, specifically, I think I just wouldn't even engage in it because I didn't get it" (September 17, 2015).

The second dimension: Basic to moderate-advanced skills and criticality. As people move through the process of developing increasing comfort with using technology, their new media literacy skills develop and become more sophisticated (Rempel & Jerry, 2013). For example, a person in Stage 2 of Rempel and Jerry's (2013) theory, would be working to use technology on their own, either in the basic positive (Q1) or basic negative quadrants (Q2) (see Figure 2). An example of a basic positive experience with technology was when Carrie shared about how her technology use has changed "when I don't know how to do something and I go find the answer myself on the internet. I like that" (October 3, 2015). Carrie found her own solutions to using technology and enjoyed knowing that she could do this for herself.

A person in Rempel and Jerry's Stage 5 would be using to technology to explore her/his online identity(ies) and relationships, either in the *moderate-advanced positive* (Q3) or the *moderate-advanced negative* (Q4) quadrants (see Figure 2). Emily shared an example of moderate-advanced positive (Q3) technology use when she explained that:

> When I initially began using Facebook, it was more to communicate and look at other people's pictures. Now I think that my use of Facebook has increased to much more. I find that I can not only continue to communicate with friends and family, but I find videos re: cooking, beauty, concerts etcetera, that I often look up. In addition, I have

> joined different support groups on Facebook which allows me to communicate more with people in different parts of the world. (March 25, 2016)

Emily's current use of Facebook involved keeping up relationships and receiving support from other parents, a Stage 5 activity (Rempel & Jerry, 2013).

Assumptions in the Stages of Technology Use Theory

The process of developing comfort with technology involves acquiring new media literacy skills that include developing technical aptitudes for using technology and of gaining and engaging in critical media literacy skills (Rempel & Jerry, 2013). The gaining and engaging of critical media literacy skills involves developing critical awareness and analyzing factors, producers, and messages in new media communications (see Area & Pessoa, 2012; Cappello et al., 2011; Chen et al. 2011). Another assumption in Rempel and Jerry's (2013) theory is that the process of developing comfort with technology involves a number of core elements common to the experience of becoming comfortable with using technology. The stages of technology use theory acknowledges that people do not develop new media literacy skills in a strictly uniform manner, nor are people believed to develop these skills to the same extent (Rempel & Jerry, 2013).

Limitations of this research. The findings in this study are tentative due to the participant group involved (all female students enrolled in a masters of counselling program at one distance learning university) and the nature of asking participants to recall events historically. More research is needed to: (a) establish how larger groups of diverse people use technology over time (i.e., by gathering data in quantitative and/or longitudinal studies) and (b) explore the validity and reliability of the stages of technology use theory (i.e., using factor analysis to delineate the validity and reliability of the eight stages). Further integration of new

media literacy theories with the stages of technology use theory may also be necessary, as participants in this study primarily reported consuming media (rather than prosuming media) in either a functional media literacy sense or a critical media literacy sense (Chen et al., 2011).

Potential uses of the stages of technology use theory and conceptual model. The four quadrants in the conceptual model presented in this chapter facilitate understanding whether people are using technology beneficially, or problematically, while taking into account their technological aptitudes. It is hoped that the two dimensions of technology use in this model could provide a tentative means for counselling professionals to easily conceptualize: (1) what stage of technology use clients are currently at, and (2) how clients' struggles with technology use can be addressed—by accounting for the contextual components of using technology (i.e., their relational patterns and technological aptitudes).

Conclusion

This research project found that an essence, or core component of relating to technology over time for most participants involved receiving support while using technology from their initial encounters with a form of technology to their current technology use. Most participants also shared about feeling out of their comfort zones while using technology, of exploring possibilities with technology, and of viewing technology as a tool. Social dynamics and technology was also a prominent theme amongst participants' current experiences with technology.

As participants gained greater familiarity with technology, they reported having curiosity about technology where they worked to figure out technology on their own, felt fascinated with technology, tried technology to determine whether it addressed their needs, developed a better understanding of technology, and felt eager to try new technology, or expand possible uses of

technology. Participants' technology use over time also involved the belief that technology could be used beneficially to enhance their lives. Participants shared about using technology to keep in touch with friends and loved ones, used technology to achieve their goals, meet their needs, or make their lives easier, set limits on the role of technology in their lives, experienced technological confidence in their decision-making about which technologies to use, and used technology for entertainment. Participants reported using technology in a social context where they asked for help to understand technology, figured out technology with others, were encouraged by others to engage with technology, and had parent(s) who modelled comfort with technology.

Amongst their current experiences with technology, participants noted adopting a critical approach to the social aspects of using technology and social media. They reported positive and negative experiences in this realm. Participants shared about reflecting on online persona(s) and their professional identity when participating on social media, how their friends and loved one's use of technology influenced their technology use, their dislike of content posted on social media, the superficial nature of online environments, using technology as a social barometer, how they used technology to have meaningful interactions, and how using technology could also result in having less meaningful interactions. The essence of technology use over time was a social, personally motivated, and actively sought out experience that involved seeking out the beneficial aspects of technology use to enhance life, while working to come to terms with and take into account the potential problematic, negative, and superficial nature of indirect communication.

References

Ainsworth, M. D. S., Bell, S. M. V., & Stayton, D. J. (1971). Individual differences in strange-situation behaviour of one-year-olds. In H. R. Schaffer (Ed.), *The origins of human social relations* (pp. 17-52). London, England: Academic Press.

Baker, J. R., & Moore, S. M. (2011). An opportunistic validation of studies on the psychosocial benefits of blogging. *Cyberpsychology, Behavior & Social Networking, 14*, 387-390. doi:10.1089/cyber.2010.0202

Bakken, I. J., Wenzel, H. G., Gotestam, K. G., Johansson, A., & Oren, A. (2009). Internet addiction among Norwegian adults: A stratified probability sample study. *Scandinavian Journal of Psychology, 50*, 121-127. doi:10.1111/j.1467-9450.2008.00685.x

Bartholomew, K., & Horowitz, L. M. (1991). Attachment styles among young adults: A test of a four-category model. *Journal of Personality and Social Psychology, 61*, 226-244. doi:10.1037/0022-3514.61.2.226

Bevan, M. T. (2014). A method of phenomenological interviewing. *Qualitative Health Research, 24*, 136-144. doi:10.1177/1049732313519710

Bowlby, J. (1988). The role of attachment in personality development. In, *A secure base: Parent-child attachment and healthy human development* (pp. 119-136). New York, NY: Basic Books.

Bradbury-Jones, C., Sambrook, S., & Irvine, F. (2009). The phenomenological focus group: An oxymoron? *Journal of Advanced Nursing, 65*, 663-671. doi:10.1111/j.1365-2648.2008.04922.x

Buckingham, D. (2003). Media literacies. In, *Media education: Literacy, learning and contemporary culture* (Chapter 3) [Kindle iPad version]. Retrieved from http://www.amazon.ca/

Buote, V. M, Wood, E., & Pratt, M. (2009). Exploring similarities and differences between online and offline friendships: The role of attachment style. *Computers in Human Behavior 25*, 560–567. http://dx.doi.org/10.1016/j.chb.2008.12.022

Caplan, S.E. (2005). A social skill account of problematic Internet use. *Journal of Communication,* 55, 721-736. doi: 10.1111/j.1460-2466.2005.tb03019.x

Caplan, S. E. (2010). Theory and measurement of generalized problematic Internet use: A two-step approach. *Computers in Human Behavior, 26,* 1089-1097. doi:10.1016/j.chb.2010.03.012

Cappello, G., Felini, D., & Hobbs, R. (2011). Reflections on global developments in media literacy education: Bridging theory and practice. *Journal of Media Literacy Education, 3*(2), 66-73. Retrieved from http://namle.net/publications/journal-of-media-literacy-education/

Chan, Z. C. Y., Fung, Y.-L., & Chien, W.-T. (2013). Bracketing in phenomenology: Only undertaken in the data collection and analysis process? *The Qualitative Report, 18*, 1-9. Retrieved from http://www.nova.edu/ssss/QR/

Chattaraman, V., Kwon, W.-S., & Gilbert, J. (2012). Internet use and perceived impact on quality of life among older adults: A phenomenological investigation. *International Journal of Health, Wellness, & Society, 2*(3), 1-13. Retrieved from http://healthandsociety.com/publications/journal

Chen, D.-T. Wu, J., & Wang, Y.-M. (2011). Unpacking new media literacy. *Journal of Systemics, Cybernetics, and Informatics, 9*(2), 84-88. Retrieved from http://www.iiisci.org/journal/sci/

Cloninger, C. R. (1987). A systematic method for clinical description and classification of personality variants. *Archives of General Psychiatry, 44*, 573-588. Retrieved from http://archpsyc.jamanetwork.com/journal.aspx

Colas, P., Gonzalez, T., & de Pablos, J. (2013). Young people and social networks: Motivations and preferred uses. *Comunicar: Scientific Journal of Media Education, 40*(XX), 15-23. http://dx.doi.org/10.3916/C40-2013-02-01

Collins, N. L., & Read, S. J. (1990). Adult attachment, working models, and relationship quality in dating couples. *Journal of Personality and Social Psychology, 58*, 644-663. doi:10.1037/0022-3514.58.4.644

Converse, M. (2012). Philosophy of phenomenology: How understanding aids research. *Nurse Researcher, 20*(1), 28-32. Retrieved from http://rcnpublishing.com/journal/nr

Cotten, S. R., Anderson, W. A., & McCullough, B. M. (2013). Impact of Internet use on loneliness and contact with others among older adults: Cross-sectional analysis. *Journal of Medical Internet Research, 15*(2), 13. doi:10.2196/jmir.2306

Creswell, J. W. (2013). *Qualitative inquiry and research design: Choosing among five approaches* (3rd ed.). Thousand Oaks, CA: Sage Publications.

Davis, R. A. (2001). A cognitive-behavioral model of pathological Internet use. *Computers in Human Behavior, 17*, 187-195. http://dx.doi.org/10.1016/S0747-5632(00)00041-8

Dede, C. (2009). Comments on Greenhow, Robelia, and Hughes: Technologies that facilitate generating knowledge and possibly wisdom. *Educational Researcher, 38*, 260-263. doi:10.3102/0013189X09336672

Dowling, M., & Cooney, A. (2012). Research approaches related to phenomenology: Negotiating a complex landscape. *Nurse Researcher, 20*(2), 21-27. Retrieved from http://rcnpublishing.com/journal/nr

Douglas, A. C., Mills, J. E., Niang, M., Stepchenkova, S., Byun, S., Ruffini, C.,...Blanton, M. (2008). Internet addiction: Meta-synthesis of qualitative research for the decade 1996-2006. *Computers in Human Behavior, 24*, 3027-3044. doi:10.1016/j.chb.2008.05.009

Dumas, T. M., Ellis, W. E., & Wolfe, D. A. (2012). Identity development as a buffer of adolescent risk behaviors in the context of peer group pressure and control. *Journal of Adolescence, 35*, 917-927. doi:10.1016/j.adolescence.2011.12.012

Elliot, A. J., & Reis, H. T. (2003). Attachment and exploration in adulthood. *Journal of Personality and Social Psychology, 85*, 317-331. doi:10.1037/0022-3514.85.2.317

Englander, M. (2012). The interview: Data collection in descriptive phenomenological human scientific research. *Journal of Phenomenological Psychology, 43*, 13-35. doi:10.1163/156916212X632943

Erikson, E. H. (1993). *Childhood and society.* New York, NY: Norton & Co. (Original work published 1950)

Fitzgerald, H., Howell, T., & Pontisso, R. (Eds.) (2006). *Oxford Canadian Dictionary* (K. Barber, Ed. in chief, Canadian dictionaries, 2nd ed.) [Paperback]. Don Mills, ON: Oxford University Press.

Glesne, C. (2011). *Becoming qualitative researchers: An introduction* (4th ed.). Boston, MA: Pearson Education.

Goel, D., Subramanyam, A., & Kamath, R. (2013). A study on the prevalence of Internet addiction and its association with psychopathology in Indian adolescents. *Indian Journal of Psychiatry 55*.2, 140-143. http://dx.doi.org/10.4103/0019-5545.111451

Hall, M., Nix, I., & Baker, K. (2013). Student experiences and perceptions of digital literacy skills development: Engaging learners by design? *The Electronic Journal of e-Learning, 11*, 207-225. Retrieved from http://www.ejel.org/main.html

Husserl, E. (2012). *Ideas: General introduction to pure phenomenology* (W. R. Boyce Gibson, Trans.) [Kindle iPad version]. Retrieved from http://www.amazon.ca/ (Original work published 1931)

Immonen, M., & Sintonen, S. (2015). Evolution of technology perceptions over time. *Information Technology and People, 28*, 589-606. doi:10.1108/ITP-12-2013-0219

Israelashvili, M., Kim, T., & Bukobza, G. (2012). Adolescents' over-use of the cyber world - Internet addiction or identity exploration? *Journal of Adolescence, 35*, 417-424. doi:10.1016/j.adolescence.2011.07.015

Khang, H., Kim, J. K., & Kim, Y. (2013). Self-traits and motivations as antecedents of digital media flow and addiction: The Internet, mobile phones, and video games. *Computers in Human Behavior, 29*, 2416-2424. http://dx.doi.org/10.1016/j.chb.2013.05.027

Kher, H. V., Downey, J. P., & Monk, E. (2013). A longitudinal examination of computer self-efficacy change trajectories during training. *Computer in Human Behavior, 29*, 1816-1824. http://dx.doi.org/10.1016.j.chb.2013.02.022

Kim, H.-K., & Davis, K. E. (2009). Toward a comprehensive theory of problematic Internet use: Evaluating the role of self-esteem, anxiety, flow, and the self-rated importance of Internet activities. *Computers in Human Behavior, 25*, 490-500. doi:10.1016/j.chb.2008.11.001

Kim, J., LaRose, R., & Peng, W. (2009). Loneliness as the cause and the effect of problematic internet use: The relationship between Internet use and psychological well-being. *CyberPsychology and Behavior, 12*, 451-455. doi:10.1089/cpb.2008.0327

Ko, C.-H., Yen, J.-Y., Chen, C.-C., Chen, S.-H., Wu, K., & Yen, C.-F., (2006). Tridimensional personality of adolescents with internet addiction and substance use experience. *Canadian Journal of Psychiatry, 51*, 887-894. Retrieved from http://publications.cpa-apc.org/browse/sections/0

Ko, C.-H., Yen, J.-Y., Yen, C.-F., Lin, H.-C., & Yang, M.-J. (2007). Factors predictive for incidence and remission of Internet addiction in young adolescents: A prospective study. *Cyberpsychology and Behavior, 10*, 545-551. doi:10.1089/cpb.2007.9992

Ko, C.-H., Yen, J.-Y., Yen, C.-F., Chen, C.-S., & Chen, C.-C. (2012). The association between Internet addiction and psychiatric disorder: A review of the literature. *European Psychiatry, 27*, 1-8. doi:10.1016/j.europsy.2010.04.011

Koepke, S., & Denissen, J. J. A. (2012). Dynamics of identity development and separation-individuation in parent-child relationships during adolescence and emerging adulthood: A conceptual integration. *Developmental Review, 32*, 67-88. doi:10.1016/j.dr.2012.01.001

Kraut, R., Kiesler, S., Boneva, B., Cummings, J., Helgeson, V., & Crawford, A. (2002). Internet paradox revisited. *Journal of Social Issues, 58*, 49-74. doi:10.1111/1540-4560.00248

Kuss, D. J., van Rooij, A. J., Shorter, G. W., Griffiths, M. D., & van de Mheen, D. (2013). Internet addiction in adolescents: Prevalence and risk factors. *Computers in Human Behavior, 29,* 1987-1996. http://dx.doi.org/10.1016/j.chb.2013.04.002

Lee, G., Lee, J., & Kwon, S. (2011). Use of social-networking sites and subjective well-being: A study in South Korea. *Cyberpsychology, Behavior & Social Networking, 14,* 151-155. doi:10.1089/cyber.2009.0382

Levenson, H. (2003). Time-limited dynamic psychotherapy: An integrationist perspective. *Journal of Psychotherapy Integration, 13,* 300-333. doi:10.1037/1053-0479.13.3-4.300

Li, D., Zhang, W., Li, X., Zhen, S., & Wang, Y. (2010). Stressful life events and problematic Internet use by adolescent females and males: A mediated moderation model. *Computers in Human Behavior, 26,* 1199-1207. doi:10.1016/j.chb.2010.03.031

Lopez, F. G. (1995). Attachment theory as an integrative framework for family counseling. *The Family Journal: Counseling and Therapy for Couples and Families, 3,* 11-17. doi:10.1177/1066480795031003

Lopez, F. G., & Brennan, K. A. (2000). Dynamic processes underlying adult attachment organization: Toward an attachment theoretical perspective on the healthy and effective self. *Journal of Counseling Psychology, 47,* 283-300. doi:10.1037/0022-0167.47.3.283

Morey, J. N., Gentzler, A. L., Creasy, B., Oberhauser, A. M., & Westerman, D. (2013). Young adults' use of communication technology within their romantic relationships and associations with attachment style. *Computers in Human Behavior, 29,* 1771-1778. http://dx.doi.org/10.1016/j.chb.2013.02.019

Morsunbul, U. (2009). Attachment and risk taking: Are they interrelated? *International Journal of Social Sciences, 4*, 233-237. Retrieved from http://www.sobiad.org/ejournals/journal_IJSS/index.html

Moustakas, C. (1994). *Phenomenological research methods*. Thousand Oaks, California: Sage Publications.

Notley, T. (2009). Young people, online networks, and social inclusion. *Journal of Computer-Mediated Communication, 14*, 1208-1227. doi:10.1111/j.1083-6101.2009.01487.x

Odaci, H. (2013). Risk-taking behavior and academic self-efficacy as variables accounting for problematic Internet use in adolescent university students. *Children and Youth Services Review, 35*, 183-187. http://dx.doi.org/10.1016/j.childyouth.2012.09.011

O'Reilly, T. (2007). What is Web 2.0: Design patterns and business models for the next generation of software. *Communications and Strategies, 65*(1), 17-37. Retrieved from http://www.comstrat.org/en/Digiworld/Communications-Strategies_41_.html

Park, S. K., Kim, J. Y., & Cho, C. B. (2008). Prevalence of Internet addiction and correlations with family factors among South Korean adolescents. *Adolescence, 43*, 895-909. Retrieved from http://www.ebscohost.com/academic/academic-search-complete

Quevedo, R. J. M., & Abella, M. C. (2011). Well-being and personality: Facet-level analyses. *Personality and Individual Differences, 50*, 206-211. doi:10.1016/j.paid.2010.09.030

Rempel, J. J., & Jerry, P. (2013, September 21). Erikson's stages and technology [theory in preparation]. In P. Jerry (Presenter), *Emerging Technologies and Issues in Psychology… and Don't Forget the Ethics!* [PowerPoint]. Presentation conducted at the College of Alberta Psychologists Annual Meeting and Professional Development Day, Edmonton, AB.

Rizzuto, T. E., Schwarz, A., & Schwarz, C. (2014). Toward a deeper understanding of IT adoption: A multilevel analysis. *Information and Management, 51,* 479-487. http://dx.doi.org/10.1016/j.im.2014.02.005

Schmidt, C. (2005). Phenomenology: An experience of letting go and letting be. *Waikato Journal of Education, 11,* 121-133. Retrieved from http://edlinked.soe.waikato.ac.nz/research/journal/item.php?id=39

Sim, T., Gentile, D. A., Bricolo, F., Serpelloni, G., & Gulamoydeen, F. (2012). A conceptual review of research on the pathological use of computers, video games, and the Internet. *International Journal of Mental Health and Addiction, 10,* 748-769. doi:10.1007/s11469-011-9369-7

Siomos, K., Floros, G., Fisoun, V., Evaggelia, D., Farkonas, N., Sergentani, E., & ... Geroukalis, D. (2012). Evolution of Internet addiction in Greek adolescent students over a two-year period: The impact of parental bonding. *European Child and Adolescent Psychiatry, 21,* 211-219. doi:10.1007/s00787-012-0254-0

Smilkstein, G. (1978). The family APGAR: A proposal for a family function test and its use by physicians. *Journal of Family Practice, 6,* 1231-1239. Retrieved from http://www.jfponline.com/

Smythe, L. (2012). Discerning which qualitative approach fits best. *New Zealand College of Midwives Journal, 46,* 5-12. Retrieved from http://www.midwife.org.nz/resources-events/nzcom-journal

Sun, Y. & Jeyaraj, A. (2013). Information technology adoption and continuance: A longitudinal study of individuals' behavioral intentions. *Information and Management, 50,* 457-465. http://dx.doi.org/10.1016/j.im.2013.07.005

Szwedo, D. E., Mikami, A. Y., & Allen, J. P. (2012). Social networking site use predicts changes in young adults' psychological adjustment. *Journal of Research on Adolescence, 22*, 453-466. doi:10.1111/j.1532-7795.2012.00788.x

Tuohy, D., Cooney, A., Dowling, M., Murphy, K., & Sixsmith, J. (2013). An overview of interpretive phenomenology as a research methodology. *Nurse Researcher, 20*(6), 17-20. Retrieved from http://rcnpublishing.com/journal/nr

Turkle, S. (2012). *Alone together: Why we expect more from technology and less from each other.* New York, NY: Basic Books.

Valenzuela, S., Park, N., & Kee, K. F. (2009). Is there social capital in a social network site?: Facebook use and college students' life satisfaction, trust, and participation. *Journal of Computer-Mediated Communication, 14*, 875-901. doi:10.1111/j.1083-6101.2009.01474.x

Walsh, S. P., White, K., & Young, R., Mc. (2010). Needing to connect: The effect of self and others on young people's involvement with their mobile phones. *Australian Journal of Psychology, 62*, 194-203. doi:10.1080/00049530903567229

Yao, M. Z., & Zhong, Z.-J. (2014). Loneliness, social contacts and Internet addiction: A cross-lagged panel study. *Computers in Human Behavior, 30*, 164-170. http://dx.doi.org/10.1016/j.chb.2013.08.007

Young, K. S. (1998). *Caught in the net: How to recognize the signs of Internet addiction—And a winning strategy for recovery*. New York, NY: John Wiley & Sons.

Appendix A

Athabasca University
RESEARCH CENTRE

July 13, 2015

Ms. Jody Rempel
Faculty of Health Disciplines
Athabasca University

File No: 21864

Expiry Date: July 12, 2016

Dear Ms. Jody Rempel,

The Faculty of Health Disciplines Departmental Ethics Review Committee, acting under authority of the Athabasca University Research Ethics Board to provide an expedited process of review for minimal risk student researcher projects, has reviewed you project, 'Then and Now: The Evolution of Developing Comfort with Technology'.

Your application has been **Approved on ethical grounds** and this memorandum constitutes a ***Certification of Ethics Approval***. It is noted that you require AU Institutional Permission to access university systems, staff or students to conduct your research project. As such, a request for this permission from the Vice-President, Academic has been initiated on your behalf.

Participant recruitment and/or data collection ***may not proceed*** until this institutional permission has been grated. You will be notified in writing of the outcome of this request for access.

AUREB approval, dated July 13, 2015, is valid for one year less a day.

As you progress with the research, all requests for changes or modifications,ethics approval renewals and serious adverse event reports must be reported to the Athabasca University Research Ethics Board via the Research Portal.

To continue your proposed research beyond July 12, 2016, you must apply for renewal by completing and submitting an Ethics Renewal Request form. Failure to apply for **annual renewal** before the expiry date of the current certification of ethics approval may result in the discontinuation of the ethics approval and formal closure of the REB ethics file. Reactivation of the project will normally require a new Application for Ethical Approval and internal and external funding administrators in the Office of Research Services will be advised that ethical approval has expired and the REB file closed.

When your research is concluded, you must submit a Project Completion (Final) Report to close out REB approval monitoring efforts. Failure to submit the required final report may mean that a future application for ethical approval will not be reviewed by the Research Ethics Board until such time as the outstanding reporting has been submitted.

At any time, you can login to the Research Portal to monitor the workflow status of your application.

If you encounter any issues when working in the Research Portal, please contact the system administrator at research_portal@athabascau.ca.

If you have any questions about the REB review & approval process, please contact the AUREB Office at (780) 675-6718 or rebsec@athabascau.ca.

Sincerely,

Sherri Melrose
Chair, Faculty of Health Disciplines Departmental Ethics Review Committee
Athabasca University Research Ethics Board

Appendix B

Email Recruitment Script for Participants

Subject Line: Invitation to Participate in a Research Study about Using Technology

Body of Email

Dear Graduate Centre for Applied Psychology Students,

I am a fellow GCAP student working on a qualitative research project as part of a thesis. The purpose of this email is to invite you to participate in a study titled "Developing Comfort with Using Technology".

In this research project, I am proposing to explore how people use technology over time. The term technology is broadly defined as using information and communication technologies (ICTs) including computers, tablets, cellphones, the Internet, and gaming devices for a range of purposes, for example, entertainment, connecting with other people, fact finding, and uploading content online (i.e., blogging, sharing one's creative work). While literature contains numerous studies about factors associated with how people use technology and about people's motivations for engaging with technology, there is a paucity of research exploring the process of developing comfort with using technology. The purpose of this study is to investigate how individuals used technology over time, to identify commonalities in their unique experiences of becoming increasingly familiar with using technology.

Your participation in this study will give you the opportunity to share your stories and your experiences with using technology in the past and currently. Your experiences are personal and will be treated with respect. The purpose of this research is not to judge, but to develop understanding about the common components of individuals' experiences with becoming more comfortable with technology.

You do not need to consider yourself as “highly skilled” in using technology to participate in this study. You simply need to have used technology for at least the past five years. I will select five individuals to participate in this study. If you are interested in participating in this research project, please send an email to jodyjrempel@gmail.com with a few sentences introducing yourself. I will then contact you to set up an interview, to be conducted either in person or via telephone, or Skype.

Thank you for considering my invitation. If you have any questions, please send me an email at: jodyjrempel@gmail.com, and I will be pleased to discuss them with you. Also, you may wish to contact my thesis supervisor, Paul Jerry, and he can be contacted by email at: pajerry@gmail.com

Sincerely,

Jody Rempel

Appendix C

Interview Script: Questions and Prompts

I will ask participants to share about their experiences with technology using the prompts on this list and by flexibly asking for additional descriptions about their technology use.

Introductory Paragraph

In this interview, I am inviting you to share your thoughts, feelings, beliefs, circumstances, values, and insights about your experiences with using technology. This is a reflective process where you are encouraged to move between remembering, thinking, feeling, and describing your experiences. Please respond authentically as you focus on the main idea or topic. There are no right or wrong answers. You are simply invited to share about your experiences, as you feel comfortable to do so.

Main Prompts

1. Think back to the first time you used a particular form technology. Pick a memory that is clear for you and share about your first experience of engaging with this technology. (Allow participants to select which type of technology they remember using). Probe for feelings, sensations, thoughts, beliefs, and ask about what key words mean for the participant. For example, if a participant says that s/he felt nervous, ask about what feeling nervous involved.
2. Describe how you used technology in the past. Seek details about participants' feelings, sensations, thoughts, beliefs, and external factors (i.e., family, social, situational factors). Ask where and when they typically used technology. Probe for details, including factors/beliefs/values/relationships/time/circumstances that facilitated, or inhibited their technology use.

3. Tell me about how you use technology now. Again, probe for feelings, sensations, beliefs, thoughts, where and when they typically use technology, and constraining/facilitating factors. Ask for clarification of key words used by the participant.

Additional Prompts and Questions

4. What has stayed the same with how you currently use technology, when compared to how you first engaged with technology? Probe for descriptions about attitudes, beliefs, feelings, situational factors, and relationships.
5. What is different about how you use technology now, when compared to how you used technology in the past? Probe for feelings, beliefs, contextual factors, etc.
6. What do you do when you want to use a type of technology in a different way (more extensively)?
7. What experience/belief/value/goal has influenced your technology use the most?
8. Who has influenced your technology use the most?
9. Share your greatest regret, fear, hope, or accomplishment with using technology.

Appendix D

Data Analysis Process

I analyzed each transcript following Moustakas' (1994) adaptations to van Kaam's data analysis method as follows:

1. *Listing and Preliminary Grouping*

   List every expression relevant to the experience. (Horizonalization)

2. *Reduction and Elimination*: To determine the Invariant Constituents: Test each expression for two requirements:

   a. Does it contain a moment of the experience that is a necessary and sufficient constituent for understanding it?

   b. Is it possible to abstract and label it? If so, it is a horizon of the experience. Expressions not meeting the above requirements are eliminated. Overlapping, repetitive, and vague expressions are also eliminated or presented in more exact descriptive terms. The horizons that remain are the invariant constituents of the experience.

3. Clustering and Thematizing the Invariant Constituents:

   Cluster the invariant constituents of the experience that are related into a thematic label. The clustered and labeled constituents are the core themes of the experience.

4. Final Identification of the Invariant Constituents and Themes by Application: Validation

   Check the invariant constituents and their accompanying theme against the complete record of the research participant. (1) Are they expressed explicitly in the complete transcript? (2) Are they compatible if not explicitly expressed? (3) If they are not

explicit or compatible, they are not relevant to the co-researcher's experience and should be deleted.

5. Using the relevant, validated invariant constituents and themes, construct for each co-researcher an *Individual Textual Description* of the experience.
6. Construct for each co-researcher an *Individual Structural Description* of the experience based on the Individual Textural Description and Imaginative Variation.
7. Construct *for each research participant a Textural-Structural Description* of the meanings and essences of the experience, incorporating the invariant constituents and themes. (pp. 120-121)

Appendix E

Invariant Constituent Labels

1. Struggling to understand technology
2. Embarrassed about lack of technological knowledge
3. Avoiding technology
4. Escaping into technology
5. Doubting technology abilities
6. Fascinated with technology
7. Using technology to keep in touch with friends and loved ones
8. Figuring out technology on one's own
9. Asking for help to understand technology
10. Teaching others about technology
11. Developing a better understanding of technology
12. Absorbed by technology
13. Setting limits on the role of technology in life
14. Less meaningful interactions
15. Using technology as a social barometer- "do people like me?"
16. Isolated
17. Using technology to achieve goals, meet needs, or make life easier
18. Using technology for entertainment
19. Figuring out technology with others
20. Aversion to technology
21. Preferring to use familiar technology

22. Encouraged by others to engage with technology
23. Trying technology to determine whether addresses needs
24. Dissonance between expectations of technology use at work and personal comfort with technology
25. Friends and loved ones' use of technology influencing technology use
26. Using technology to have meaningful interactions
27. Technological confidence
28. Technology increasing social status
29. Parent(s) modelling comfort with technology
30. Different interactions online versus face-to-face
31. Feeling behind the times
32. Eager to try new technology or expand possible uses of technology
33. Dislike of content posted on social media
34. Superficial nature of online environments
35. Noticing incongruence between thoughts, feelings, or behaviours
36. Taking into account online persona(s) and professional identity
37. Other people in life who understand technology

Appendix F

Themes and Invariant Constituents: Participants' Initial Experiences with a Form of Technology

1. Out of Comfort Zone
    i. Dissonance between expectations of technology use at work and personal comfort with technology
    ii. Doubting technological abilities
    iii. Isolated
    iv. Embarrassed about lack of technological knowledge
    v. Struggling to understand technology
2. Exploring Possibilities with Technology
    i. Eager to try new technology or expand possible uses of technology
    ii. Trying technology to determine whether addresses needs
    iii. Figuring out technology on one's own
    iv. Fascinated with technology
3. Technology as a Tool
    i. Using technology to keep in touch with friends and loved ones
    ii. Using technology to achieve goals, meet needs, or make life easier
4. Supported Technology Use
    i. Parent(s) modelling comfort with technology
    ii. Encouraged by others to engage with technology
    iii. Figuring out technology with others
5. Not Wanting to Engage with Technology
    i. Aversion to technology

ii. Avoiding technology

Appendix G

Themes & Invariant Constituents: Participants' Technology Use Over Time

1. Out of Comfort Zone
    i. Struggling to understand technology
    ii. Dissonance between expectations of technology use at work and personal comfort with technology
    iii. Doubting technological abilities
    iv. Other people in life who understand technology
    v. Isolated
2. Exploring Possibilities with Technology
    i. Figuring out technology on one's own
    ii. Fascinated with technology
    iii. Trying technology to determine whether addresses needs
    iv. Developing a better understanding of technology
    v. Eager to try new technology or expand possible uses of technology
3. Technology as a Tool
    i. Using technology to achieve goals, meet needs, or make life easier
    ii. Using technology to keep in touch with friends and loved ones
    iii. Setting limits on the role of technology in life
    iv. Using technology for entertainment
    v. Technological confidence
4. Supported Technology Use
    i. Parent(s) modelling comfort with technology

   ii. Encouraged by others to engage with technology
   iii. Figuring out technology with others
   iv. Asking for help to understand technology

5. Not Wanting to Engage with Technology
   i. Preferring to use familiar technology
   ii. Avoiding technology
   iii. Aversion to technology

6. Technology as a Distraction
   i. Absorbed by technology
   ii. Escaping into technology

7. Social Dynamics and Technology
   i. Technology increasing social status
   ii. Different interactions online versus face-to-face

8. Sharing Technological Knowledge
   i. Teaching others about technology

Appendix H

Themes & Invariant Constituents: Participants' Current Technology Use

1. Out of Comfort Zone
    i. Feeling behind the times
    ii. Struggling to understand technology
    iii. Doubting technological abilities
    iv. Isolated
    v. Other people in life who understand technology
    vi. Noticing incongruence between thoughts, feelings, or behaviours
2. Exploring Possibilities with Technology
    i. Fascinated with technology
    ii. Developing a better understanding of technology
    iii. Figuring out technology on one's own
    iv. Trying technology to determine whether addresses needs
    v. Eager to try new technology or expand possible uses of technology
3. Technology as a Tool
    i. Using technology to keep in touch with friends and loved ones
    ii. Using technology to achieve goals, meet needs, or make life easier
    iii. Setting limits on the role of technology in life
    iv. Technological confidence
    v. Using technology for entertainment
4. Supported Technology Use
    i. Parent(s) modelling comfort with technology

ii. Encouraged by others to engage with technology

iii. Asking for help to understand technology

5. Not Wanting to Engage with Technology

i. Preferring to use familiar technology

ii. Avoiding technology

iii. Aversion to technology

6. Technology as a Distraction

i. Absorbed by technology

ii. Escaping into technology

7. Social Dynamics and Technology

i. Taking into account online persona(s) and professional identity

ii. Friends and loved ones' use of technology influencing technology use

iii. Dislike of content posted on social media

iv. Superficial nature of online environments

v. Using technology as a social barometer

vi. Less meaningful interactions

iv. Using technology to have meaningful interactions

8. Sharing Technological Knowledge

i. Teaching others about technology

Appendix I

Email Invitation to Participants: Reviewing Composites for Accuracy

Here is the rather long-winded review invitation, but you can just read your composite and let me know if you would like any changes made due to misinterpretation etc. without reading below. The main thing is to get back to me in the next two (2) weeks, or so. Also, I used the pseudonym of _____ for you, but if you would prefer a different name just let me know.

You are invited to review your composite for the following factors specifically and for any inaccuracies, misinterpretations, etc.:

1. My groupings of your past technology use and present technology use- do they accurately reflect your experiences?
    a. Explanation for this question: I did not provide a definition or cut-off point for past and present technology use. Instead, I separated these two areas according to the prompts that I asked in the interview. However, when I was coding the transcripts I could have mistakenly coded your experience(s). As a general guideline, I would say that present technology use occurs in the two years leading up to the interview, while past technology use is two, or more years back.
2. Is any information missing in this composite that is important to your experiences with technology? Some questions you may want to reflect on that could facilitate a more accurate rendering of your experiences with using technology over time are:
    a. Was someone, or some experience in your life particularly influential on how you used/use technology? If so, who and what role did they play? And/or, what was the experience and how did, or does it influence your technology use?

b. Did a parent, sibling, friend, or relative who you were close to model comfort/discomfort with technology? How has their attitude influenced your past/present technology use?

c. How was technology viewed in your home when you were growing up? How have those attitudes impacted your use of technology?

d. Were any other factors, influences, people, experiences, events, etc. important to how you use(d) technology missing from this composite?

3. Overall, does this composite accurately capture your experience with using technology over time?

a. Consider whether aspects of your experience with technology were emphasized too heavily, or not enough.

b. Does this composite accurately account for and describe the underlying and precipitating factors that influenced how you engaged with technology over time?

i. Explanation for this question: Part of the research method that I am using involves a process called *imaginative variation* where I engaged in the imaginative exploration of the question, "how did the experience of the phenomenon [technology use over time] come to be what it is?" (Moustakas, 1994, p. 98). The purpose of seeking knowledge through imaginative variation is to "arrive at…the underlying and precipitating factors that account for what is being experienced [how you used technology over time]" (Moustakas, 1994, p. 98). I used imaginative variation to identify those underlying and precipitating factors that

> influenced your technology use over time, but this is purely my processing of the information that I collected in our interview. Similar to the counselling process, when a counsellor reflects meaning, or reflects emotion, I may not have accurately identified those underlying and precipitating factors that impacted your use of technology over time. If I have mistakenly represented those underlying and precipitating factors, or if those factors are missing from this composite, please inform me of these inaccuracies.

This is your opportunity to identify inaccuracies and/or missing elements, to guide, elucidate, and correct my analysis of the data. I view your feedback as a vital element in the process of shaping this project and I am open to all types of feedback. Perhaps I left out an important question in the above list, or perhaps my questions lack clarity. Please feel free to let me know how I can add clarity, accuracy, or improve this composite of your experiences with technology.

You can send me corrections by email, or, alternatively, we can discuss them over the phone, or on Skype. I am open to whatever method of communication you find convenient and that is best suited to your lifestyle and preferred learning/communication style.

If you are satisfied with your composite, you do not need to reply to this email. I will wait 14 days to hear back from you and, if you do not contact me, I will assume that it is an accurate rendering. If you require more than 14 days to review your composite, please send me a quick email/text message and let me know what timeline works for you. I want to provide you with sufficient time to review your composite and provide feedback.

I also want to take this opportunity to say a heartfelt *thank you!* Thank you for your generosity, your openness, sharing of your time, your frankness, your willingness to respond to follow-up questions, and the invaluable and dynamic views into your experiences with technology that you shared with me. I hope to do well by you! It has been a pleasure to delve into your unique and fascinating experiences with technology.

Yours very truly,

Jody Spreckley

Phone: xxx.xxx.xxxx

Appendix J

Themes Identified by Participants

Initial Experience with Technology

1. Out of Comfort Zone – Carrie, Lisa, and Emily
2. Exploring Possibilities with Technology – Emily, Erin, and Sara
3. Technology as a Tool – Emily and Sara
4. Supported Technology Use – Carrie, Emily, Erin, and Sara
5. Not Wanting to Engage with Technology – Carrie and Lisa

Technology Use over Time

1. Out of Comfort Zone – Carrie, Lisa, Emily, and Sara
2. Exploring Possibilities with Technology – Sara, Erin, Carrie, Lisa, and Emily
3. Supported Technology Use – Erin, Carrie, Lisa, and Emily
4. Technology as a Tool – Emily, Sara, Erin, Carrie, and Lisa
5. Not Wanting to Engage with Technology – Emily and Carrie
6. Technology as a Distraction – Lisa, Emily, and Sara
7. Social Dynamics and Technology – Emily
8. Sharing Technological Knowledge – Lisa and Erin

Current Technology Use

1. Out of Comfort Zone – Lisa, Emily, and Carrie
2. Exploring Possibilities with Technology – Carrie, Lisa, Emily, Sara, and Erin
3. Supported Technology Use – Erin, Carrie, Lisa, and Emily
4. Technology as a Tool – Sara, Erin, Carrie, Lisa, and Emily
5. Not Wanting to Engage with Technology – Emily, Sara, and Carrie

6. Technology as a Distraction – Lisa, Emily, and Erin
7. Social Dynamics and Technology – Lisa, Sara, Erin, Carrie, and Emily
8. Sharing Technological Knowledge – Lisa, Sara, and Erin