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Internet Addiction and the Relationship to Self and Interpersonal Functioning Within the Alternative Model for Personality Disorders (AMPD): Implications for Psychosocial Development

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INTERNET ADDICTION AND THE RELATIONSHIP TO SELF AND INTERPERSONAL FUNCTIONING WITHIN THE ALTERNATIVE MODEL FOR PERSONALITY DISORDERS (AMPD): IMPLICATIONS FOR PSYCHOSOCIAL DEVELOPMENT

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ABSTRACT

INTERNET ADDICTION AND THE RELATIONSHIP TO SELF AND INTERPERSONAL FUNCTIONING WITHIN THE ALTERNATIVE MODEL FOR PERSONALITY DISORDERS (AMPD): IMPLICATIONS FOR PSYCHOSOCIAL DEVELOPMENT

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Internet addictive use inclusive of inextricably interconnected mobile devices, applications, and social media predicts diminished Self and Interpersonal functioning. Internet addiction research is burdened by conflicting theoretical views, lack of standardized definitions and criteria, and the use of assessment measures adapted from those used for substance use disorders. Alternative and dimensional diagnostic models for internet addiction through a psychosocial developmental lens might further understanding of Internet addiction and reduce challenges which impact the ability to advance research and achieve clinically useful, culturally informed, and evidence-based practices for the assessment and treatment of Internet addiction. This dissertation is available in open access at AURA, http://aura.antioch.edu and Ohio Link ETD Center, https://etd.ohiolink.edu/etd.

Keywords: internet addiction, identity, personality, alternative model personality disorders

Dedication

I dedicate this project to my grandmother who inspired me to follow my dreams, and to my son who motivated me to achieve them.

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I offer my deepest appreciation for my committee chair Christopher L. Heffner, PsyD, PhD whose unwavering support and encouragement allowed me to experience remarkable joy and passion for learning throughout this process. I offer gratitude to the other members of my committee. Michael J. Sakuma, PhD inspired me to lay the foundation for this project early in my academic journey and shaped my interest in mixed-methodology research. Jeffrey E. Hansen, Ph.D. instilled confidence in me with his unwavering support and constant attention to the clinical implications of this project.

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Table of Contents

List of Tables

List of Figures

CHAPTER I: INTRODUCTION

Behavioral addictions have been increasingly studied since pathological gambling was initially included in the Diagnostic and Statistical Manual (DSM) 3rd edition, in 1980. The DSM-5 recognizes just one addictive behavior—Gambling Disorder (GA), which is categorized as a substance-related disorder within Addiction and Related Disorders (American Psychiatric Association [APA], 2013). The concept of Internet Addiction as a behavioral disorder similar to gambling disorder was initially conceptualized in 1996 (Young, 2004). The DSM-5 references Internet Gaming Disorder in Appendix III, noting the need for additional study and potential for future inclusion within Addiction and Related Disorders. The DSM-5 also introduced dimensional aspects to substance use disorders and the Alternative Model for Personality Disorders based on the dimensions of Self and Interpersonal Functioning.

Eysenck (1997) suggested that personality traits contribute prominently to vulnerability in all types of addiction. Research suggests positive correlations between personality trait dimensions of neuroticism (We et al., 2015; Yan et al., 2014), psychoticism (Ying et al., 2015); and impulsivity (Burnay et al., 2015; Floros et al., 2014); negative correlations to openness to new experiences, conscientiousness, extraversion, and agreeableness (Cao & Su, 2007; Kayis et al., 2016; Xiuqin et al., 2010). Early studies indicate the character dimension of self-directedness might predict internet addiction (Montag et al., 2010, 2017; Sariyska et al., 2014) and warrants further consideration in research and potential treatment of internet addiction (Montag & Reuter, 2017). To date, research does not show the relationship between internet addiction and Self and Interpersonal Functioning through the DSM-5 Alternative Model for Personality Disorders (AMPD). Thus, the research study proposed in this dissertation aims to explore relationships

between internet addiction and Self and Interpersonal Functioning through the DSM-5 AMPD and potential implications for psychosocial development.

Statement of the Problem

Internet and other behavioral addictions are constrained by inconsistent definitions (Griffiths, 2005), categorical diagnostic models (APA, 2000), diagnostic criteria developed for substance abuse (Starcevik, 2016), and concerns about the potential for over-pathologizing everyday behaviors (Billieux et al., 2015). There are no formal alternative or dimensional models for internet or other behavioral addictions (APA, 2013; World Health Organization [WHO], 2019). Thus, clinical assessment, diagnosis, and treatment of internet and other behavioral addictions are impaired by the lack of valid measures, reliable criteria, and evidence-based practice all of which raise ethical questions. The current approach to internet addiction also lacks multicultural and social justice sensitivity because people who have financial resources or other means are able to access goods and services that might help them to relieve their suffering.

Significance of the Study

Historically, sociocultural factors influenced opinions and approaches to excessive behaviors as indicators of moral failings (Sripada & Railton, 2019). Behavioral addiction nosology has been shaped by a multitude of theoretical approaches and studies that conceptualized addiction etiology from impulsion, compulsion, habit, tolerance, avoidance, hereditary, and neurobiological factors (Grant, Potenza, Weinstein, & Gorelick, 2010). Advances in radiographic technology in the past decade have led to increased understanding of addiction circuitry in the brain (Volkow, Wang, Fowler, & Tomasi, 2012) detection of brain structure, mass, and neurochemical response variations in those experiencing behavioral addiction (Boileau et al., 2012; Joutsa, Saunavaara, Parkkola, Niemela, & Kaasinen, 2011; Zois et al., 2017).

However, despite these advances, there are no standardized criteria for clinical assessment and diagnosis of internet addiction disorders (APA, 2013; WHO, 2019). Understanding the relationships between Internet Addiction and Self and Interpersonal Functioning might contribute to efforts to conceptualize Internet Addiction and standardize diagnostic criteria using dimensional diagnostic models.

Purpose and Goals of the Study

The purpose of this study is to explore the relationships between internet addiction and self and interpersonal functioning. Specifically, it seeks to understand how internet addiction is experienced in regards to self-identity and self-direction within the construct of Self, and empathy and intimacy within the construct of Interpersonal functioning. Further, this study seeks to understand how these relationships are experienced in the context of a psychosocial development theory. My interest and approach to this research topic are influenced by my previous experiences working in the technology industry, family history of multiple substance addiction, practicum exposure to populations experiencing co-occurring disorders, and passion to pursue emerging and translational research to advance clinical practice for disorders that are not adequately addressed by categorical diagnostic models.

While there is considerable research that correlates relationships between personality traits and internet addiction, most studies represent small sample sizes, focus on individual trait exploration within a cultural context, and employ a range of personality frameworks (Montag & Reuter, 2017). Initial studies suggest self-directedness plays a role in internet addiction (Montag et al., 2010; Sariyska et al., 2014) and warrants further study of its potential in research and treatment (Montag & Reuter, 2017). The goal of this study therefore is to advance understanding of internet addiction through exploration of its relationship to Self and Interpersonal Functioning

using a statistically sound model working with valid measures to demonstrate the use of an alternative, dimensional model for internet addiction.

Gaps in Research

There are no studies that demonstrate empirically that internet addiction fulfills categorical criteria for disorder designation (APA, 2013; WHO, 2019). Experimental evidence has not been identified to determine causality of relationships between internet addiction, self and interpersonal functioning and manipulating independent variables in this study are not practical and might introduce ethical challenges. Further, internet addiction literature lacks exploration of alternative and dimensional models of diagnosis. Finally, a psychosocial development theory remains to be explored in the context of the limited evidence base for treatment of internet addiction demonstrated to be effective with both adolescent and adult populations.

Assumptions

Assumptions are statements taken for granted or considered true, even though they have not been scientifically tested (Walker, 2012). The assumptions for this study are as follows:

1. A population of 250 people who exhibit clinically relevant symptoms of internet addiction can be recruited through the Prolific research platform.
2. There are relationships between internet addiction and self and interpersonal functioning.
3. The Prolific platform will continue to operate and fulfill legal and contractual obligations to fulfill regulatory standards for data and privacy protection to the standard required for 45 CFR 46.101(b) Categories of Exempt Human Subjects Research.
4. The Categories of Exempt Human Subjects Research established in 45 CFR 46.101(b) will not change prior to completion of this study.

Hypotheses

H1: Internet addiction will be related to diminished self-functioning as measured by the Internet Addiction Test (IAT) and the DSM-5 Alternative Model for Personality Disorders.

H2: Internet addiction will be related to diminished interpersonal functioning as measured by the Internet Addiction Test (IAT) and the DSM-5 Alternative Model for Personality Disorders.

Research Questions

Mixed methods research approaches provide capacity to consider different aspects of research questions (Teddlie & Tashakorri, 2009). The design reflects consideration for mixed methodology research as a distinct integration of quantitative and qualitative data collection, analysis, deductive and inductive understanding that can produce more comprehensive research questions, more dependable/reliable data, expanded options for data analysis, improved inference quality (internal validity/credibility) and transferability (external validity; Creswell & Clark, 2017).

The following combination of quantitative and qualitative research questions allow for consideration of different aspects of research through deductive understanding followed by inductive exploration of the connections in the experience of internet addiction, self, and interpersonal functioning. Specifically:

RQ1: What relationships exist among internet addiction, self and interpersonal functioning using the DSM-5 alternative model for personality development (AMPD)?

RQ2: How might the experience of internet addiction in relation to self and interpersonal functioning influence case conceptualization based on the psychosocial theory of development?

Future Research

While determination of causality of relationships between internet addiction, self and interpersonal functioning is outside the scope of this study, positive or negative correlations might inform theories of internet addiction and further predictive or experimental research.

CHAPTER II: REVIEW OF LITERATURE

Addiction

The current edition of the *Diagnostic and Statistical Manual of Mental Disorders, 5th ed.* (DSM-5) organizes substance-related and addictive disorders based on 10 substance classes: alcohol, caffeine, cannabis, hallucinogens, inhalants, opioids, sedatives/hypnotics/anxiolytics, stimulants, tobacco, and other/unknown (APA, 2013). Diagnoses of Intoxication, Disorder, Withdrawal, Other -Induced Disorder, or Unspecified -Related Disorder can be applied to each of these 10 substances except for Caffeine, which is not eligible for a Use Disorder diagnosis (APA, 2013). Addiction refers to a chronically relapsing disease of the brain that involves physiological and molecular changes to the underlying brain structure and neural systems involved in reward, motivation, and memory as a result of prolonged exposure to an addictive agent (Leshner, 1997).

Addiction is characterized by impaired behavioral control, craving, loss of control and inability to abstain from substance use, diminished recognition of one's significant responsibilities and problems with interpersonal relationships, dysfunctional emotional responses, and continued substance use despite knowing about the problems that it causes (American Society of Addiction Medicine [ASAM], 2011; APA, 2013). Addiction is progressive; without treatment or participation in recovery activities addiction can result in disability or premature death (Center for Substance Abuse Treatment [CSAT], 2006).

This pathological pattern of addictive behavior is positively reinforced by substance-induced euphoria and negatively reinforced by increasing physiological distress in the absence of substance use (Volkow & Morales, 2005). Drugs and substances of abuse produce changes to the brain's underlying neurophysiology and impair neural pathways involved in the

systems and processes of motivation, reward, and inhibitory control (Volkow & Li, 2005). These changes also affect decision-making and self-regulation, which contribute to addictive behaviors. Substance abuse can cause persistent, irrevocable changes to the brain's structure and underlying biochemical or neurophysiological processes (Volkow & Morales, 2015).

The study of addiction has been influenced by contributions from diverse disciplines with conflicting views of its etiology and even the definition (Shaffer, 1986). The prevailing medical model characterizes addiction as a primary, progressive, terminal illness (Wakefield, 2017). Sociological models reflect views of publicly unacceptable and morally deviant behaviors (Conrad & Schneider, 1992). Critics of the disease model argue that it limits reconciliation of developmental and learning aspects of addiction (Lewis, 2017). Addiction researchers have argued that approaching the problem through the construct of addiction can limit the ability to consider alternative explanations that provide value (Gambino & Shaffer, 1979; Shaffer, 1986). Concerns have been raised for the potential implications of considering addictions from such narrow perspectives (Kardefelt-Winther, 2017; King & Delfabbro, 2014; Shaffer, 1986).

Neurophysiology of Addiction

The common factor in addiction is activation and modification of the circuits, behavioral, and synaptic mechanisms underlying the mesolimbic reward system in the brain (Volkow et al., 2012). Addictive substances activate this system by increasing levels of the neurotransmitter dopamine (DA) through a combination of increased synthesis and release or inhibition of DA reuptake (Volkow, Koob, & McLellan, 2016). When dopamine neurons (DA) in the ventral tegmental area (VTA) increase in response to the addictive substance, DA levels reach the nucleus accumbens (NAc) which initiates a motivational state of desire and expectation. (Volkow et al., 2012).

The amount and frequency of DA release varies in response to different substances and their routes of administration (Sussman, 2017). Faster routes of administration such as intravenous injection produce a more intense reward effect. Therefore, faster routes of administration produce more addictive effects on the reward system than slower routes like oral administration. Higher frequency of DA release increases the strength of cortico-striatal synapses and glutaminergic mechanisms involved in embedding cues associated with substance use in the amygdala (Volkow, Koob, & McLellan, 2016).

DA signals engage ventral striatal pathways involved in modulation of reward and motivation (Volkow et al., 2012). DA receptor stimulation of the indirect ventral striatal pathway mediates reward while inhibition of the direct striatal pathway reduces avoidant response (Volkow & Morales, 2015). The fast DA release associated with the "high" of drug abuse generates a reinforcing effect when levels and frequency are sufficient to activate both the direct and indirect ventral striatal pathways (Volkow et al., 2012). This effect leads to stimuli associated with drug use becoming conditioned, resulting in DA release in response to conditioned co-exposure signals the expectation of reward (Volkow & Morales, 2015) which manifests as the intense craving that is observed in addiction (APA, 2013).

Studies have shown that craving is related to substance availability as opposed to how long the user has been without the substance (Dar et al., 2010). Following exposure to the CS, increased activity in the dopaminergic system contributes to motivation for compulsive substance seeking (Volkow & Morales, 2015). Substance abusers also exhibit impaired orbital frontal cortex functioning in circuitry that promotes behavior based on perceived value of expected outcomes, resulting in impaired judgement and poor decision-making (Schoenbaum & Shaham, 2008).

In addition to DA, other neurotransmitters such as glutamate, gamma-Aminobutyric acid (GABA), serotonin and various neuropeptides are involved in abnormal functioning in brain circuits (Egervari, Ciccocioppo, Jentsch, & Hurd, 2018). Imaging studies of substance abusers have identified abnormal activity not only in the mesolimbic system, but also in the orbitofrontal cortex and anterior cingulate gyrus (Fowler, Volkow, Kassed, & Chang, 2007). These regions are involved in salience attribution and inhibitory control which are involved in compulsive behavior and disinhibition observed in addiction. Increased use of addictive substances causes corticotropin-releasing factor (CRF) levels in cerebrospinal fluid to rise, activating the hypothalamic-pituitary-adrenal axis (HPA) and amygdala which are involved in regulation of stress hormones, contributing to the addictive process and progression of addiction disorders (Volkow & Morales, 2015).

Addiction progression is further complicated by unique neurobiological effects of drugs of abuse (Egervari et al., 2018). With natural reinforcers such as sex, DA signals triggered by the CS will stop when the reinforcer is procured (e.g., when sex is initiated;Volkow & Morales, 2015). However, in drugs of abuse, DA signals will continue to fire after the substance is procured and will continue to fire throughout consumption causing unrelenting triggers of craving and sustaining motivation to continue to use (Volkow & Morales, 2015). These recently discovered neurobiological effects help to explain how drugs of abuse generate much more powerful addictive responses than natural reinforcers, essentially hijacking and overwhelming volitional mechanisms of reinforcement and inhibition.

Etiology of Addiction

The study of addiction has evolved over the past decade with advances in non-invasive neuroimaging, most notably in functional magnetic resonance imaging (fMRI) to understand

brain structures and the states of neuropathways, neurotransmitters, receptors, and enzymes involved in synthesis and metabolism (Adinoff, 2004; Volkow et al., 2010). As a result of these advances, addiction is commonly believed to arise from a complex interaction of polygenic and environmental risk factors that influence vulnerability and resilience to onset and development of addiction (Fowler et al., 2007; Volkow, Wang, Fowler & Tomasi, 2012). Studies estimate that 10-40% of people who experiment with various drugs of abuse will go on to become addicted (Van Etten & Anthony, 1999; APA, 2015; Vsevolozhskaya & Anthony, 2016). Heritability of addiction ranges between 40-70%, with alcohol at 50%, cocaine and opiates 60%-70% (Goldman, Oroszi, & Ducci, 2005).

However, it is not yet understood why some individuals who are exposed to addictive substances go on to become addicted whereas others do not (Volkow et al., 2012). No single factor has yet been identified to definitively predict addiction (Volkow & Morales, 2015). Research using animal models, genome-wide association and linkage analysis determined that chromosomes 4, 5, 9-11, 15, and 17 play a role in genetic vulnerability to addiction (Li & Burmeister, 2009). Common genetic variations and polymorphisms in neurotransmitters such as Dopamine (DA), in GABAergic genes involved in the glucocorticoid response and GABA—the most abundant inhibitory neurotransmitter, and in enzymes such as aldehyde dehydrogenase (ALDH2) predict vulnerability to alcohol, cannabis, cocaine, and other substances of abuse (Palmer et al., 2015).

Some genetic variations appear to increase the risk of developing addiction only in those individuals who have experienced significant stress, particularly in childhood (Heath & Nelson, 2002). Experiencing childhood maltreatment such as physical, sexual, or emotional abuse and cumulative stress—particularly in early childhood, predicts early-onset adolescent drinking and

adult alcohol and substance use disorders (Enoch, 2011). Exposure to early-life stress disrupts the hypothalamic pituitary adrenal (HPA) axis and glucocorticoid signaling, both of which affect homeostatic cortisol levels (Enoch, 2011; Lee et al., 2014). Dysregulation of the HPA axis results in epigenetic effects on the genes that regulate activity within the axis which results in persistent, long-term, and potentially irreversible changes in the neurodevelopmental processes of neurotransmitter regulation in the mesolimbic dopamine reward pathways (Brunson, Chen, Avishai-Eliner, & Baram, 2003).

Addiction and mental illness are frequently co-occurring, with some conditions such as anxiety, depression, and schizophrenia more commonly emerging prior to onset of substance abuse (APA, 2015; Sussman, 2017). People who experience mental illness are more likely to engage in substance use and develop addiction (APA, 2015; Substance Abuse and Mental Health Services Administration [SAMHSA], 2018). Since most people now live in a state where marijuana is either legal for recreational use or available for medical use (National Institute on Drug Abuse [NIDA], 2019), people who previously relied on alcohol might now instead choose to use marijuana as a coping mechanism.

People who are genetically vulnerable to particular addictions or specific mental illness who also engage in experimental substance use might inadvertently trigger or worsen a mental health condition (Volkow & Morales, 2015). Studies have shown that cannabis use increases the risk of developing psychosis and it is associated with earlier onset of psychosis, particularly in frequent and high-potency cannabis users (Di Forti et al., 2014). These factors underscore the importance of collecting and maintaining a full client history that includes medication and recreational substance use in order to recognize and address potential vulnerabilities and risks with clients.

Clinical Profile and Course of Addiction

The clinical profile of addiction reflects a pattern of pathological behaviors characterized by distinctive signs, symptoms, and progression as the disorder advances (APA, 2013; ASAM, 2013). The DSM-5 bases substance use disorder diagnosis on 11 criteria common to all substances (APA, 2013). Formal diagnosis requires at least two of these 11 criteria are met within a 12-month period. The DSM-5 describes criteria 1-4 as Impaired Control which consists of (a) substance use in larger amounts over longer-than-intended periods; (b) persistent desire or unsuccessful efforts to reduce or stop substance use; and (c) time dedicated to obtain, use, or recovery from the effects; and (d) the strong desire to use referred to as "craving." Clients exhibiting Impaired Control symptoms experience impaired executive control which can contribute to their inability to recognize substance use problems and to seek help (Volkow & Morales, 2015).

As substance use progresses, behaviors result in symptoms characterized as Social Impairment (APA, 2013). At this point, addictive behaviors could lead friends, family, and coworkers to recognize the substance user is experiencing impaired cognition, decreased memory, and personality shifts such as increased irritability. These symptoms might not be attributed to substance use, particularly in groups where substance use and intoxication are commonly observed. Diagnostic criteria consist of: (e) failure to fulfill major role obligations at work, school, or home; (f) persistent or recurrent social or interpersonal problems caused or complicated by substance use; (g) substance use is the cause for important social, occupational, or recreational activities to be reduced or abandoned. People at this stage of addiction might experience irreparable harm to their interpersonal relationships, occupational standing, and earning capacity (Stanger & Weber, 2019; Sussman, 2017).

Advanced stages of addiction are categorized as Pharmacological (APA, 2013), which is indicative of the user's experience of addiction symptoms reflected in criteria: (h) tolerance to the effects of the substance, which requires increasing amounts or frequency of substance use in order to achieve similar effects; and (i) withdrawal, a syndrome in which physiological and psychological distress occur when there is a decline of substance levels in the blood or tissue concentrations after prolonged, heavy substance use (APA, 2013). Withdrawal symptoms might range from imperceptible changes in mood or affect to significant alterations in neurobiological and cognitive functioning that might require immediate and long-term medical intervention (Center for Substance Abuse Treatment, 2006).

Psychological factors that might influence the clinical presentation of addiction include history of insecure attachment, impaired identity development, intrusive or maladaptive thoughts, impaired ability to self-regulate, and limited problem-solving or coping skills are involved in addiction (Eysenck, 1997; Sussman, 2017). Substance use commonly serves as a coping mechanism to manage a wide variety of individual, social, and interpersonal challenges (Giedd, Keshavan, & Paus, 2008; Sussman, 2017).

For example, clients who experience anxiety, emotional reactivity, or elevated response during emotionally salient interactions or in certain environments such as work, social events, family conflict, or intimacy might choose to use substances to help them manage. Another example is the increasing use of addictive pharmaceutical substances to enhance cognitive performance, despite mixed results in studies that measure their actual benefits (Farah, Smith, Ilieva, & Hamilton, 2014). These factors underscore the importance of gaining a thorough understanding of a client's history of substance use and their attitudes toward prioritizing substance use over other coping mechanisms to manage their perceived psychological distress.

Personality traits and temperaments of high novelty and sensation seeking, low harm avoidance, negative affectivity, and need for external validation have been associated with substance abuse (Skewes & Gonzalez, 2013). People experiencing addiction also exhibit elevated emotional reactivity, impulsivity, proneness to stress, and negative affect (Davis & Loxton, 2013). Therefore, substance users who struggled with psychological problems before experiencing the added burden of early stage addiction symptoms might be particularly vulnerable to the effects of loss of control and craving. Early signs of addiction might also be mistakenly attributed to other mental health problems such as anxiety and insomnia.

Psychological Ramifications of Addiction

The psychological ramifications of addiction arise from the move from ego-syntonic behaviors that fit to existing personal values, beliefs, and goals to ego-dystonic behaviors of addiction that conflict with one's previous view of self and self in relation to others (Flanagan, 2019). It appears, additional psychological ramifications might arise from sources such as self-criticism, loss of social supports, sense of betrayal or abandonment, and feelings of confusion, shame, and hopelessness. There is also an enormous psychological burden for people who are addicted to navigate through social and cultural attitudes and practices that marginalize their condition with pejorative, stigmatizing connotations that cast judgement for perceived moral failings (Larkin, Wood, & Griffiths, 2006).

As a result of experiencing addiction, the person is essentially no longer who they and others hoped, planned, or expected them to be (Flanagan, 2019). Conceptually, psychological experiences of addiction invoke elements of death and the process of grieving loss of the self/ego, as well as rebirth in redefining one's purpose and values, and the struggle to find meaning, purpose, and hope in the face of overwhelming challenges.

Social and Cultural Factors in Addiction

Recent studies report that 8-10% of people age 12 or older in the United States—approximately 22 million people, are addicted to alcohol or other drugs (SAMHSA, 2018). The collective cost of addiction in the United States reached $171.7B in 2009 and is projected to reach $280.5B in 2020 with industry growth projected at a rate of 4.6% annually (SAMSHA, 2014). Reports indicate that between 1999–2017 over 700,000 people died from drug overdose; 68% of the 70,200 deaths in 2017 involved opioids (Centers for Disease Control and Prevention [CDC], 2017; Scholl et al., 2018). According to these reports, 130 Americans die each day from opioid abuse—more than were killed in the entire Vietnam War.

The Centers for Disease Control (CDC) and the U. S. Surgeon General called attention to reported declines in life expectancy—the first in many years, with attention to the "opioid crisis" (Rutkow & Vernick, 2017). The United States Attorney General, CDC, and other government agencies have embarked on efforts to increase awareness, prevention, and intervention to allocate congressional funding for federal and state efforts to address the "opioid epidemic" at levels last seen at the height of the acquired immunodeficiency syndrome (AIDS) crisis (CDC, 2018). Social, cultural, and economic factors that contributed to the current crisis indicate actions on the part of commercial, government, and healthcare industry elements were primarily motivated by some combination of financial and power/influence incentives (deShazo, Johnson, Eriator, & Rodenmeyer, 2018).

During the earliest days of the AIDS crisis (AIDS.gov, 2016) a story appeared in the New York Times (Leland, 2017) about Larry Kramer, who in 1981 organized a meeting of 80 gay men at his New York City apartment and raised $6600.00 to fund research by Dr. Alvin E. Friedman-Kien. Dr. Friedman-Kien, a dermatologist, was diagnosing young gay men with

idiopathic Kaposi Sarcoma before AIDS had been identified. Larry later went on to co-found the activist group AIDS Coalition to Unleash Power (ACT UP). Leland (2017) opened the article with a description of a 1991 incident in which Larry inspired a group of fellow activists with his screaming outburst, “Plague! We are in the middle of a plague! . . . Until we get our acts together, all of us, we are as good as dead.” This is an example of effective partnership between social awareness and research efforts to draw attention, to produce quality research, and to achieve results despite the lack of formal support or endorsement from established government or academic institutions.

Addiction Treatment

Treatment for addiction, as with other chronic diseases, focuses on helping clients to counteract the immediate short-term and long-term negative effects of damage caused by chronic substance use, as opposed to working toward a cure (ASAM, 2013; NIDA, 2007). Addiction treatment involves interventions that address physical dependence and psychological issues associated with the addiction, to include behavioral problems and social factors that contributed to or arose from the addiction (ASAM, 2013; CSAT, 2006). There are a variety of addiction treatment models and evidence-based practices for delivery in a range of settings based on each person’s status and needs (SAMHSA, 2018).

The immediate priority in addiction treatment for chronic substance abuse is detoxification, “detox”, to reduce systemic levels of addictive substance to a healthier level (ASAM, 2013). The *Detoxification and substance abuse treatment - treatment improvement protocol (TIP) Series 45* recommends hospitalization or some other form of 24-hour medical care. The goal of medical care is to manage the risks associated with rapid discontinuation in which withdrawal symptoms for alcohol, sedatives, and opiates can lead to fatal reactions

(SAMHSA, 2018). Evidence indicates that people who have previously gone through withdrawal are at greater risk of experiencing increased withdrawal symptom severity such as seizures, delirium tremens, and decreased responsiveness to pharmacological interventions in subsequent withdrawals (ASAM, 2013; NIDA, 2007).

Numerous best practices and guidelines for addiction treatment recommend integrated, multidiscipline approaches that deliver evidence-based, patient-centered interventions (ASAM, 2013; CSAT, 2006; SAMSHA, 1999; The Management of Substance Use Disorders Work Group [MSUDWG], 2015). Some models adhere to patient-centered care that emphasizes individualized treatment approaches which are based on each patient's unique needs, capabilities, goals, and preferences (ASAM, 2013; MSUDWG, 2015). Evidence substantiates that patient-centered care contributes to increases in patient trust, decreases in anxiety, improved treatment adherence, and cost containment resulting from decreased need for access to health services (Bertakis & Azari, 2011; MSUDWG, 2015).

Addiction treatment models commonly involve some combination of attention to motivation, behavior, and systems to promote therapeutic relationships, to help clients improve their readiness and self-efficacy for change, to strengthen coping skills, to reinforce existing resources, and to improve social supports for recovery (Stanger & Weber, 2019). Two of the most prominent therapeutic approaches to addiction treatment are Motivational Interviewing (Miller & Rollnick, 2013; Miller, Taylor, & West, 1980) and Seeking Safety (Najavits, 1999). Motivational interviewing is based on the Transtheoretical Model which is also referred to as the Stages of Change Model (Prochaska & DiClemente, 1989, 2002, 2004). This model, developed through research working with people addicted to smoking, observes that people approach the process of change gradually.

According to the Stages of Change Model, the process of undergoing change involves progression through a predictable series of six stages, each of which represents a particular belief about change and level of readiness for change. The six stages are Precontemplation, Contemplation, Preparation, Action, Maintenance, and Relapse. Motivational interviewing is a highly structured approach to therapeutic focus, rapport building, and engagement to help clients change their perceptions about their current behaviors and risks, to contemplate the possibility of change, to prepare for and act to effect change, and to maintain the effects of change in order to prevent relapse (Stanger & Weber, 2019). VA and DoD guidelines for substance use treatment call for the use of motivational interviewing in all patient encounters (MSUDWG, 2015).

Cognitive behavioral therapy (CBT) is perhaps the most widely adopted evidence-based treatment for addiction (Stanger & Weber, 2019). CBT treatment goals focus on helping clients to better manage their problems by changing the way they think and behave in order to reduce affective negativity and to improve goal attainment (CSAT, 2006). Seeking Safety is an evidence-based psychotherapeutic approach to CBT adapted for treatment of post-traumatic stress disorder (PTSD) and substance abuse (Najavits, 1999, 2002, 2012). In this model, the guiding principle and first goal of treatment is safety, which encompasses work on 25 specific topics using CBT methods to help clients to discontinue substance use, reduce risks such as suicidality and exposure to human immunodeficiency virus (HIV), to let go of dangerous relationships, and to gain control over extreme behaviors such as dissociation and self-harm (Najavits, 2012).

According to Najavits (1999, 2002, 2012), these self-destructive behaviors are re-enactments of trauma experiences, particularly those experienced through childhood abuse which applies to a large segment of the population diagnosed with PTSD and substance use

disorders. The Seeking Safety approach to treatment conceptualizes that even though the trauma might have happened long ago, clients treat themselves in ways that essentially repeat it, ignore their own needs, and perpetuate their pain—occasionally in the guise of attempting to fulfill immediate impulses (Najavits, 2012). Seeking safety essentially represents the work to help patients to free themselves from their maladaptive behavior and, through that process, to free themselves from deeply held trauma.

A number of other therapeutic approaches such as 12-step groups and mindfulness-based approaches have demonstrated efficacy to reduce the likelihood of relapse and to shorten time between relapse and return to sobriety (Witkiewitz, Bowen, Douglas, & Hsu, 2013). Pharmacological research and emerging addiction treatments emphasize approaches that combine behavioral interventions with drugs to mitigate or compensate for damage to brain circuitry for reward, motivation, learning, executive function, and inhibitory control (Volkow & Li, 2005).

Treatment of Internet Addiction and other behavioral disorders appears effective in managing compulsive behaviors in the short term, however there is a lack of rigorous clinical trials (Goslar et al., 2020). CBT has demonstrated efficacy in treatment of addiction to online video gaming (Kaptsis et al., 2016; King et al., 2010; Young, 2013). Most protocols published for internet gaming disorder rely on substance use disorder treatment protocols with little focus on generalizability or efficacy of treatment (King, 2017). Some case studies about individual and small group treatment outcomes claim efficacy through treatment that combines pharmacotherapy intervention with methylphenidate and buproprion in conjunction with counseling, and motivational interviewing via online software (King et al., 2011).

Behavioral Addictions

In 1992, the World Health Organization (WHO, 1992) identified habit and impulse disorders characterized by repeated acts associated with uncontrollable impulses, with no clear rational motivation that generally harm the person's own and others' interests. The DSM-IV-TR expanded on these impulse control disorders with a description of increased tension preceding or when resisting the behavior, followed by pleasure, gratification, or tension relief (APA, 2000). Behavioral addiction nosology has been shaped by a multitude of theoretical approaches and studies that conceptualized addiction etiology from impulsion, compulsion, habit, tolerance, avoidance, hereditary, and neurobiological factors (Grant, Potenza, Weinstein, & Gorelick, 2010). Advances in radiographic technology in the past decade have led to increased understanding of addiction circuitry in the brain (Volkow, Wang, Fowler, & Tomasi, 2012). Brain structure, mass, and neurochemical response variations have been detected in those experiencing behavioral addiction (Boileau et al., 2012; Joutsa, Saunavaara, Parkkola, Niemela, & Kaasinen, ,2011; Zois et al., 2017).

The DSM-5 introduced several changes to categories of diagnostic criteria and codes which affect behavioral addictions (APA, 2013). The DSM-IV category Impulse Control Disorders (ICD) was eliminated entirely and disorders in that category were redistributed. This change led to the ICD-11 Working Group on Obsessive-Compulsive and Related Disorders reconsideration of the ICD-10 groups. After review of scientific evidence and clinical utility of the DSM-5 approach, the Working Group chose to retain a group of Impulse Control Disorders (WHO, 2019) in ICD-11.

The DSM-5 change resulted in redistribution of Gambling Disorder to Non-substance-related Disorder—the only disorder in that category. There are no diagnostic criteria or codes for Other or Unspecified Other Non-Substance-Related Disorder in the DSM-5 (APA, 2013). The previous DSM-IV category of Substance-related Abuse and Dependency was changed to Substance-Related and Addictive Disorders with two sub-divisions: substance-related disorders and non-substance-related disorders. Non-substance-related disorders, defined as addictions that do not involve ingestion of a psychoactive substances, are commonly referred to as behavioral addiction (Kardefelt-Winther, 2017).

Internet Addiction

Historical Context

An understanding of the evolution of Internet addiction might best be informed by placing it in the context of the history of home computing adoption, the birth of the World Wide Web, and proliferation of Internet use. The first mass-produced, commercially successful home computer—the Altair, named for a Star Trek *Enterprise* destination—was launched to the market in a cover story in the January 1975 issue of *Popular Electronics* (Roberts & Yates, 1975). Home computing became common following the 1981 introduction of the IBM Personal Computer (PC; Halfhill, 1986). The World Wide Web was invented in 1989 by Tim Berners-Lee, a scientist at CERN European Organization for Nuclear Research, to facilitate global information sharing between scientists in universities and institutes (CERN, n.d.). Later in 1989, the first commercial Internet Service Provider (ISP) launched, providing dial-up service (Garfinkle & Grunspan, 2018). In 1991, Berners-Lee announced public availability of the World Wide Web (WWW; CERN, n.d.). In April 1993 CERN released the WWW software into the public domain, making it freely available for anyone to use or to improve.

The global information technology industry is projected to reach $5.2 trillion in 2020 (International Data Corporation [IDC], n.d.). The technology industry encompasses telecommunication services, technology outsourcing, hardware maintenance, technology consulting, systems integration services, software, communications equipment, and computer equipment. According to IDC, the United States represents 32% of that total—approximately $1.7 trillion, the largest tech market in the world. Measured as a percentage of gross domestic product, the economic impact of the U.S. technology sector exceeds most other industries (Computing Technology Industry Association [CompTIA], n.d.). Further, CompTIA reports that classification of certain types of technology purchases can be difficult due to increasingly blurred lines between work and personal life.

Proliferation of internet use in the past 30 years has resulted in the United States having the third highest number of Internet users behind China and India, with 88.5% of the population accessing the Internet (Internet Live Stats, 2016). The United States is one of the largest smartphone markets, with over 260 million users which constitutes over 80% of the population (Holst, 2020). Thirty-seven percent of American are online primarily through their smartphones; one in five use smartphones as their primary means of online access at home (Pew Research, 2019). In the United States, 64% of children access the Internet via their own laptop or table and 24% have private access from their bedrooms (Influence Central, 2016). This same study found that half of children have social media accounts by age 12 and use their phones primarily for texting; 31% of parents reported texting with their children when they’re in the same home together.

Precursors to Internet Addiction

Anecdotal social commentary in the late 70s and early 80s suggested that long-term computer use could lead to harmful effects. Weizman (1976) allocated an entire chapter in his classic critical analysis, *Computer Power and Human Reason* to express his misgivings about "compulsive programmers." Almost a decade after his seminal work on the Stanford Prison Experiment, Zimbardo (1980) described the cloistered existence of Stanford computer science students. He characterized their rejection of alternative development paths and encounters with the outside world while working silently surrounded by other programmers for much of their early twenties as symptomatic of generational disenchantment. Shallis (1984), a former astrophysicist, warned of social demise arising from the dehumanizing effects of computer usage.

One of the earliest studies in computer addiction involved "dependent" computer users age 14–64 (n = 75) and control groups (Shotten, 1991). Standardized psychometric tests and in-depth interviews about initial computing experiences, and computing and leisure activities were administered to both groups. The study concluded that dependent users reported logical reasons for choosing to interact with computers in order to satisfy their needs, noting "the need to control the computer is neither neurotic or pathological, but provides an admirable means of coping for those who have previously felt inadequately fulfilled" (Shotten, 1991).

The concept of technology addiction was introduced in 1995 by a researcher who had been studying adolescent gambling, slot machine, pinball, video, and computer game playing (Griffiths, 1995, 1996). Griffiths offered an operational definition of technology addiction as a behavior addiction involving human-machine interaction. Griffiths had previously described "amusement machine addiction" (Griffiths, 1998) in comparison to criteria established for other

addictions. He conceptualized technology addiction using these same criteria of salience, euphoria, tolerance, withdrawal symptoms, conflict, and relapse.

Conceptualization of Internet Addiction

The concept of internet addiction was first introduced in 1995 as a joke by the late New York psychiatrist Dr. Ivan K. Goldberg (Wallis, 1997). Dr. Goldberg was the founder of www.PsyCom.net —a type of online community known at the time as a "bulletin board" for psychiatrists to communicate and collaborate. Dr. Goldberg jokingly posted parodical criteria and symptoms for Internet Addiction Disorder intended to demonstrate the complexity and rigidity of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM), then in its 4th edition (American Psychological Association [APA], 1994). The responses by Dr. Goldberg's colleagues unexpectedly contained self-reported symptoms and endorsements for Internet addiction criteria (Wallis, 1997).

In a 1997 interview (Wallis, 1997), two years after his original post, Dr. Goldberg reflected on his redefinition from Internet addiction to pathological Internet-use disorder:

> IAD makes it sound as if one were dealing with heroin, a truly addicting substance… To medicalize every behavior by putting it into psychiatric nomenclature is ridiculous. If you expand the concept of addiction to include everything people can overdo, then you must talk about people being addicted to books, etc.

Goldberg's view is particularly noteworthy because pathological gambling—the first behavioral addiction—was first included in the DSM-IV in 1994 (APA, 1994). Inclusion of behavioral addictions in the DSM continued to face widespread scrutiny with endorsement from diverse clinical practitioners (Grüsser et al., 2007; Hagedorn, 2009) and resistance by senior members of

DSM-5 development committees (Frances, 2012). This pressure might easily have presented a carryover effect to emerging behavioral addictions.

Criteria for Internet Addiction were first introduced with a formal presentation at the 104th annual meeting of the American Psychological Association (Young, 1996). Young's study reported that 396 out of 496 self-selected regular Internet users were dependent on the Internet. Young also conducted the first large scale study involving qualitative analysis of 600 case studies of heavy Internet users based on criteria adapted from the DSM-IV for pathological gambling (Young, 1998). Young (2015) later attributed her interest in the subject to the experience of her close friend whose husband spent excessive time online which resulted in financial difficulties, infidelity, and ultimately the demise of the marriage. While the marriage did not survive, Young's work set the foundation for Internet Addiction and fueled a controversy that has continued for almost 25 years of debate about the construct, standardized diagnostic criteria, measurement, and research approaches (Czincz & Hechanova, 2009; Kardefelt-Winther, 2017; Mitchell, 2000; Starcevic & Aboujaoude, 2017; Weinstein & Lejoyeux, 2010)

Young's 1996 report today presents somewhat of a time capsule of computer use during the mid-90s with references to chat rooms, multi-user dungeons (MUDs), virtual bulletin board message systems, and newsgroups. The results of Young's qualitative analysis suggested significant behavioral and functional Internet usage differences between the groups. Specifically, those engaged in excessive use of the Internet reported personal, family, and occupational problems similar to those found in alcoholism, pathological gambling, and eating disorders (Young, 1996).

Working in parallel to Young's research focused on Internet Addiction, Hayes et al. (1996) proposed a dimensional diagnostic model for behavioral addictions to overcome the

limitations of the existing categorical model which failed to identify functional pathological processes that allowed for testable, replicable classification systems. The study involved review of a wide range of research, demonstrating that many forms of psychopathology could be conceptualized as unhealthy efforts to escape and avoid painful emotions, thoughts, memories, and private experiences. The authors argued that the experiential avoidance dimension might lead to integrated efforts and findings across a wide variety of research interests, theoretical orientations, and clinical domains in order to advance new approaches to the study and treatment of behavioral addictions.

Early Research in Internet Addiction

In the late 1990s, consumer media, subjective commentary, and introspective personal opinions drew early attention to Internet Addiction more so than academic, peer-reviewed studies (Pratarelli et al., 1999). Rather, at that time, Internet addiction research was composed primarily of case studies, exploratory surveys, and intuitive rationalizations based on descriptive statistics (Grohol, 1999). Increased instances of community-specific population focus (Chou et al., 2005; Douglas et al., 2008) appears to coincide with expanded global interest for the subject among early-career researchers.

Many early studies of Internet addiction were limited by small sample sizes that focused on college students. For example, Black et al. (1999) conducted structured and semi-structured assessments of college students ($N = 21$) who reported excessive computer use interfered with social or occupational functioning or caused personal distress. Another study involving 20 participants (Shapira et al., 2000) found that all met criteria for an ICD not otherwise specified (NOS) and lifetime history of at least one DSM-IV Axis I diagnosis in addition to their problematic Internet use.

Other early studies with more participants relied entirely on descriptive statistics. In a survey of Internet users (*N* = 563; Brenner, 1997), 55% of participants reported that at some point they spent too much time on the Internet, 28% found it hard to stop thinking about the Internet when offline, and 22% had unsuccessfully attempted to spend time offline. In another study involving 450 college students (Egger & Rauterberg, 1996), 10% self-reported that they considered themselves addicted or dependent on Internet use; however, this group did not report significant levels of addiction-specific symptoms based on criteria for established addictions. Greenfield (1999) reported 6% of people met criteria for Internet addiction based on a 36-item survey about Internet use that was published at the ABC News website.

While the types of early Internet addiction research helped to establish descriptions of how people felt about themselves and their Internet use, they were not by design able to statistically establish relationships between the behaviors and their causes (Grohol, 1999). Early studies lacked reliability testing and relied largely on face validity provided by advocates for Internet addiction who observed concerning behaviors in practice (Pratarelli et al., 1999). The vast majority of studies were limited in focus on college students and privileged white males who had the means to access computing resources (Brenner, 2002; Chou et al., 2005; Scherer, 1997).

Conclusions drawn from these early studies of Internet addiction were arguably purely speculative, subjective in nature, and unsupported by existing data (Grohol, 1999; McKenna & Bargh, 1999). Some early Internet addiction researchers later attributed the inability of Internet addiction to achieve formal disorder status to limitations in research design and execution (Brenner, 2002; Pratarelli et al., 1999). These limitations led to unprecedented and at times highly public criticism of Internet addiction research from the broader research community

which characterized studies as lacking in statistical relevancy and over-reaching in assertions (Caruso, 1998).

Internet Addiction Models

This section is organized by prominent conceptual approaches to Internet addiction. Against the backdrop of controversy and criticism of early Internet addiction research, diagnostic criteria and conceptual models were proposed with a variety of names to reflect the positions of respective researchers. Based on names alone, there is lack of clarity of meaning and differentiation of efforts between Internet addiction (Young, 1996), Internet addiction disorder (Goldberg, 1996), Internet dependency (Scherer, 1997), Pathological internet use (Morahan-Martin & Schumacher, 2000), Problematic Internet Use (PIU; Davis, 2001), and Compulsive Internet use (Caplan, 2002). The variety of definitions and terminology contribute to persistent controversy associated with conflicts between opinions regarding criteria, risks, antecedents, assessment, outcomes, and treatment (Cash et al., 2012; Chou, 2005; Kardefelt-Winther, 2014b).

Criteria for Internet addiction was first proposed (Young, 1998) based on eight of the 10 DSM-IV (APA, 1994) criteria for pathological gambling. Young argued that both conditions shared symptoms of preoccupation, loss of control, and functional impairment. She proposed that five or more of these 8 criteria were required to fulfill diagnostic criteria: (a) cyber-sexual which includes cyberporn, (b) cyber-relationship which entails overinvolvement in online relationships, (c) compulsive online behaviors such as shopping, gambling, and day trading, (d) compulsive web surfing or data searches, and (e) computer addiction inclusive of obsessive computer gaming.

Young (1998) reported that problematic internet use might lead to severely disrupted sleep patterns, problematic interpersonal relationships, difficulty engaging in daily tasks, and physical ailments such as back and eye strain. She also suggested that online interactions might compensate for deficiencies in real-life social interactions. Beard and Wolf (2001) later proposed a modification to diagnostic criteria which required the first five criteria in addition to one of the last three. These diagnostic criteria have been repeatedly criticized by other researchers for arbitrarily transposing existing pathological gambling criteria (Grohol, 1999) and disregarding impulse disorder not otherwise specified criteria (APA, 1994; Shapira et al., 2003).

Griffiths (1999) argued that Internet use fueled other addictions. He distinguished addiction to the Internet from engaging in addictive behavior on the Internet (2000a), argued for increased attention to Internet addiction (2000b), explored Internet sex addiction (2001), and online gaming addiction (2007). Griffiths proposed a components model of addiction (2005) wherein distinct factors of salience, mood changes, tolerance, withdrawal, conflict, and replace were considered in the context of a biopsychosocial process. This model was influential in the proliferation of research into Internet addiction (Kuss et al., 2014). In a systematic review of 68 epidemiological studies, Kuss et al. (2014) identified four factors associated with Internet addiction: (a) psychosocial factors, (b) sociodemographic variables, (c) Internet use variables, and (d) comorbid symptoms. The researchers in that study, which included Griffiths, indicated their results might imply that Internet addiction and other addictive disorders be conceptualized as a syndrome with similar etiology and components, but distinctly different behavioral expressions (Kuss et al., 2014).

Weiser (2001) proposed a functional use model that divided Internet activity into categories of Socio-Affective Regulation (SAR)—comprised of social and interpersonal use of

the Internet, and Goods and Information (GIA) use to obtain knowledge and products. Weiser founded that Internet use associated with SAR was associated with fewer real-world interpersonal relationships and decreased psychological well-being as compared to GIA use. Similar functional use models (Song et al., 2004) distinguished between content gratification involving Internet use to seek information related to participation in real-world activities, and process gratification which brought fulfillment in browsing and gaming activities that pulled away from real-world activities. Song et al. (2004) reported process gratification activities were associated with greater likelihood for addictive behavior on the Internet, noting the difficulty of distinguishing between types of online activities.

A cognitive-behavioral model of Problematic Internet Use (Davis, 2001) distinguished categories for specific behaviors involving online content and generalized behaviors involving more interactive or social functions. Interactive online functions were found to be more highly associated with risk of developing Internet addiction (Li & Chung, 2006; Morahan-Martin & Schumacher, 2000; Young, 1998). The most commonly cited interactive activities associated with risk of developing Internet addiction were chat rooms, bulletin boards, online games, gambling, and cybersex. According to Young (1998), sexual gratification was the highest risk factor for developing Internet addiction.

Caplan (2005) proposed a more comprehensive and traditional cognitive-behavioral model which attributed problematic Internet use to cognitive symptoms such as ruminative cognitive style, low self-worth, low self-esteem, feelings of self-consciousness, depressive cognitive style, and social anxiety. Caplan argued that an underlying psychopathology must be present in order for Internet addiction to emerge through the process of experiencing rewards,

reinforcement, and operant conditioning. Caplan proposed treatment prioritize focus on the maladaptive Internet use as opposed to targeting underlying psychopathology (Caplan, 2005).

Classification of Internet Addiction

Although the DSM-5 working committee for substance-related and addictive behaviors considered pathological internet use as a disorder, the committee determined there was insufficient evidence to substantiate its inclusion in the DSM-5 (Petry et al., 2014). In support of this position, an epidemiological research review of internet addiction studies from 2004 to 2014 found lack of a standard classification system for internet addiction, 21 different assessment measures and reported prevalence rates from 0.8% to 26.7% as a result of the different measures and cut-off thresholds (Kuss et al., 2014). This same study elucidated the wide range of comorbid symptoms and disorders associated with internet addiction in both adolescents and adults. While internet addiction isn't directly referenced, the DSM-5 includes Internet Gaming Disorder in Appendix III, noting the need for additional study and potential for future inclusion within Addiction and Related Disorders (APA, 2013).

Following publication of the DSM-5, controversies arose from disparate approaches to establishing standardized criteria for internet security (Griffiths et al., 2016; Kiralyi, 2015; Petry et al., 2014). Internet addiction research and development of assessment measures face criticism for bases in addiction diagnostic criteria and a priori determination of addiction in targeted behaviors (Starcevik & Khazaal, 2017). Despite the absence of specific diagnostic criteria, two sub-types of internet addictions have been proposed: dual-diagnosis to indicate those who suffer with psychological problems that existed prior to onset of addiction, and new internet addicts who have no prior psychiatric or substance addiction histories (Young, 2017a, b). This model appears to be based on Young's research that identified associations between internet addiction

and social anxiety, obsessive compulsive disorders, impulsivity, depression, and other general psychiatric problems. Young (2004) reported dual diagnosis addicts believe their compulsive internet use is safer than substance addiction and allows them to avoid their underlying substance addiction.

In 1992, the World Health Organization addressed habit and impulse disorders in the ICD-10 Classification of Mental and Behavioural Disorders: Clinical descriptions and diagnostic guidelines (WHO, 1992). WHO considered these disorders as dependence syndromes characterized by repeated acts that had no clear rational motivation which were experienced as uncontrollable and were generally harmful to the person's own and others' interests. While the ICD-10 definition was largely substance-based, coding for impulse and behavioral disorders was specified using non-specific codes for "other impulse disorders" (F63.89), "impulse disorder, unspecific" (F63.9), "other conduct disorders" (F91.8), and "conduct disorder, unspecified" (F91.9; WHO, 1992).

The International Advisory Group for the Revision of the *ICD-10 Mental and Behavioural Disorders* published a conceptual framework (2011) for the revision which prioritized clinical utility, global applicability, and scientific validity to inform changes. Following their review of the clinical utility of ICD-10 diagnoses and DSM-5 approaches to impulse control disorders, the ICD-11 Working Group on Obsessive-Compulsive and Related Disorders chose to deviate from the DSM-5 approach by grouping pathological gambling, compulsive sexual behavior, and problematic internet use within the category of impulsive control disorders (Grant et al., 2014).

Factors that influenced the Working Group's position reflect consideration that these disorders are evolving. For example, while similar brain abnormalities and shared genetic

vulnerabilities have been identified for pathological gambling and substance disorders, the prefrontal cortical dysfunction in pathological gambling appears similar to individuals with mania and there is a shared genetic vulnerability with depressive disorders. The Working Group reiterated their intent to improve clinical utility and to encourage screening for all impulse control disorders (Grant et al., 2014).

Internet Addiction Assessment Measures

Internet addiction is not only challenged by the use of non-standardized definitions and inconsistent models, but also the application of multiple instruments to assess for different symptoms and constructs (Petry et al., 2018). A critical review of Internet addiction assessment measures and their psychometric properties (Laconi et al., 2014) identified 45 tools. Just 17 of 45 had been subject to more than one evaluation of their psychometric properties. Laconi et al. (2014) reported factor analysis results revealed a large degree of inconsistency and most measures exhibited inadequate validity. Generalizability of the majority of samples is limited by composition comprised of students and adolescents (Huang et al., 2007; Osada, 2013) and inadequate sample sizes (Guertler et al., 2014; Huang et al., 2007). There is a lack of validation studies among individuals who meet diagnostic criteria for Internet addiction because most studies involve exploratory surveys where participants do meet criteria for Internet addiction (Kardefelt-Winther, 2014b; Kim et al., 2013; Kardefelt-Winther, 2017).

The Internet Addiction Test

The Internet Addiction Test (IAT; Young, 2017a) is based on the first validated measure of Internet addiction used in clinical settings. It is now widely used in research and has been validated in multiple languages to include French (Khazaal et al., 2008), German (Barke et al., 2012), Norwegian (Johansson & Götestam, 2004), Finnish (Korkeila et al., 2010), Italian

(Ferraro et al., 2007), Greek (Siomos et al., 2008), Iranian (Ghassemzadeh et al., 2008), Chinese (Lam et al., 2009), and Arabic (Hawi, 2013). The IAT is a 20-item self-report questionnaire that measures through 5-point Likert scale the characteristics and behavior associated with compulsive use of the internet and problems related to personal, occupational, and social functioning arising from problematic internet use. IAT validation studies include Bartlett's test of sphericity which indicated chi square value of 746.34, $p < 0.0001$; Kaiser-Meyer-Olkin sampling adequacy value of 0.83, and identification of six factors from a basic scree-test and eigenvalue at >1.0 criteria. The six factors explain 68.16% of the variance. Cronbach's alphas were calculated to measure internal consistency within the items in each factor with all found highly to moderately reliable. The six IAT factors all significantly correlated (Pearson's r) with each other, with the correlations ranging from $r = 0.62$ to $r = 0.226$.

The IAT yields an estimate of the overall severity of Internet addiction based on the respondent's self-report (Young, 2017a). Cutoff scores reflect normal level of internet use ($z = < 31$), mild level of Internet addiction ($z = 31–49$), moderate level of Internet addiction ($z = 50– 79$), and severe dependence upon the Internet. Cluster scores can be generated for salience, excessive use, neglect of work, anticipation, lack of control, and neglect of social life. Salience (five items) indicates the respondent likely experiences preoccupation with Internet use, hides their behavior from others, experiences diminished interests in other activities or relationships outside of their Internet use, prefer solitary time spent online to alternatives. High salience cluster scores indicate that respondents use the Internet as a form of mental escape and may believe that life without Internet use would result in feelings of boredom, emptiness, and joylessness (Young, 2017).

Excessive use (five items) high scores indicate the respondent engages in excessive and compulsive online use and experiences intermittent inability to control their time spent online. High scores on this cluster suggest the respondent hides their Internet use from others and is likely to experience depression, anxiety, or anger if forced to not use the Internet for an extended period of time (Young, 2017). The cluster score for Neglect of Work (three items) indicates the respondent considers Internet use a necessary appliance such as a telephone, television, or microwave. High scores suggest the respondent exhibits poor productivity and impaired job or school performance due to the amount of time spent engaging in Internet use. Respondents who report high scores in the Neglect Work cluster might become defensive or secretive if confronted about the amount of time they spend online (Young, 2017a).

The Anticipation (2 items) cluster relates to the respondent thinking about Internet use and feeling compelled to engage in Internet use when they when they are not online. Lack of control cluster items indicate the respondent experiences difficulty managing their time spent online, frequently spends more time online than they intended, and is subject to others' complaints about the amount of time the respondent spends online. Social Life Neglect (2 items) cluster scores relate to the use of online relationships as a coping mechanism to manage situational problems and to reduce tension or stress. High scores indicate respondents frequently form new relationships online and rely on Internet use to provide social connections that might be missing in their lives (Young, 2017a).

Prevalence of Internet Addiction

Internet addiction rates have been reported to range from 0.8% to 26.7% (Kuss et al., 2014). Prevalence rates in the United States and Europe are reported to range between

1.5%–8.2% (Weinstein & Lejoyeux, 2010). The majority of studies involved adolescents and college students outside the United States using a variety of cut-off scores. Representative general population samples have shown prevalence rates of 1% in Germany (Rumpf et al., 2014) and 3.4% in the Czech Republic (Šmahel et al., 2009). Kuss et al. (2014) reviewed six studies using the Internet Addiction Test in sample sizes ranging from 1,034 young adults in Turkey to 13,558 Internet users in Korea with reported prevalence ranges from 1.2% to 9.7%. Four percent of Korean adolescents are estimated to meet criteria for Internet addiction (Jang et al., 2008).

Caution is warranted when interpreting and generalizing prevalence reporting due to the wide range of prevalence rates generated by the use of varying measures with questionable validity (Christakis, 2010; Weinstein & Lejoyeux, 2010). The use of variable measures and non-standard thresholds also complicates interpretation of longitudinal studies. For example, Yu & Shek (2013) conducted a 3-year longitudinal study of Hong Kong adolescents which found a decrease from 26.7% to 22.5% of participants who met criteria for Internet addiction. However, different assessment measures were used for the first and last reports.

There is a paucity of studies involving Internet addiction among young adults in the United States (Kuss et al., 2014). A recent study by Rosenthal et al. (2018) found that the IAT has good reliability in a young adult population in the United States. However, increased research focused on Internet Gaming Disorder in Section 3 of the DSM-5 (APA, 2013) and specific “cyberaddictions” might limit advancement of understanding the general construct of Internet addiction (Lopez-Fernandez, 2015).

Features and Associations of Internet Addiction

Due to the prevalence of exploratory research using self-reported measures, Internet addiction has been associated with a wide range of psychosocial and developmental

characteristics. Early studies (Shotton 1991) reflected socioeconomic, education, and cultural status factors influencing the largely white, highly-educated, male population reporting dependent computer use. Cases of Internet addiction have been reported across age, gender, and cultural groups as well as personality types (Young, 1998). This section presents psychological, and sociological features associated with Internet addiction in adolescents, in the general adult population, and neurobiological associations.

Adolescents and Internet Addiction

Adolescents have been characterized as particularly vulnerable and at high risk for developing Internet addiction (Czincz & Hechanova, 2009). Adolescent males are reportedly at higher risk than females, although results have varied (Lu & Shek, 2013; Morahan-Martin & Schumacher, 2000). Studies have attributed higher adolescent risks to the process of psychological maturation (Kaltiala-Heino et al., 2004), emerging identity along with desire for intimate relationships and ease of Internet use (Lei & Wu, 2007; Nalwa & Anand, 2003; Widyantao & Griffiths, 2006).

Adolescents experiencing Internet addiction have been found to exhibit increased shyness, loneliness, self-consciousness, depression, anxiety, and difficulties with interpersonal relationships (Cao et al., 2007; Lu & Shek, 2013). Neuroticism, extraversion, and openness to experiences have positively predicted Internet addiction in adolescents while conscientiousness and agreeableness were negative predictors (Montag, Jurkiewicz & Reuter, 2010; Zhou et al., 2017). Comorbid hypomania, dysthymia, and avoidant, borderline, and obsessive-compulsive personality disorders have been found in adolescents exhibiting Internet addiction in the United States (Bernardi & Pallanti, 2009).

Internet addiction in adolescents is highly associated with negative experiences in the family environment (Kim & Kim, 2015). Interparental conflict is a risk factor for adolescent Internet addiction (Yang et al., 2016). Emotional insecurity mediates the association between interparental conflict and Internet addiction (Zhou et al., 2017). Adolescents with Internet addiction perceive their parents as uninvolved, unaccepting, emotionally unavailable, and providing inadequate supervision and support (Karaer & Akdemir, 2019). These adolescents also struggled with inadequate social support and greater difficulty identifying, expressing, and regulating their emotions. In this group, lower parental engagement and supervision, higher alexithymia, and anxiety disorders were found to predict Internet addiction. Peer-related loneliness predicts problematic internet use in adolescents and detachment from parents mediates the association between parent-related loneliness and problematic Internet use (Musetti et al., 2020). These findings present clear connections from lack of secure attachment, supportive and engaged parents, and good social support to the development and maintenance of Internet addiction.

Features, Risk Factors, and Comorbidities Associated with Internet Addiction

Studies have reported that Internet addiction is associated with higher rates of depression (Kim et al., 2006), anxiety, attention-deficit hyperactivity disorder (ADHD) and obsessive compulsive symptoms, hostility, and aggression (Carli et al., 2013), loneliness and shyness (Caplan, 2002, 2003, 2005; Ceyhan & Ceyhan, 2008; Chak & Leung, 2004; Kim et al., 2009), low self-esteem (Armstrong, 2004; Fioravant et al., 2012), social anxiety (Weinstein et al., 2015), physical ailments such as back and eye strain and severely disrupted sleep patterns (Young, 1998), and problematic interpersonal relationships (Beard & Wolf, 2001; Young, 1998). High rates of comorbid affective major depression, dysthymia, dissociative disorders, bipolar,

and antisocial, borderline, and narcissistic personality disorders are associated with Internet addiction (Kuss & Lopez-Fernandez, 2016).

People who are experiencing Internet addiction report less faith, greater belief in the irresistible power of others, and higher trust in chance to determine one's life course as compared to those who are not experiencing Internet addiction (Chak & Leung, 2004). Internet addiction is also associated with higher rates of sensation seeking (Armstrong et al., 2000; Velezmoro et al., 2010; Widyanto & McMurran, 2004), disruption in menial daily tasks (Bear & Wolf, 2001), suicidality (Kim et al., 2006, 2009), attention deficits, hyperactivity, and impulsivity (Yoo et al., 2004). Diminished life satisfaction is significantly correlated with Internet addiction (Longstreet & Brooks, 2017). Internet addiction has been associated with maladaptive personality traits; negative affectivity, disinhibition, and psychoticism have been found to predict Internet addiction (Gervasi et al., 2017; Leung, 2007;). Higher novelty seeking and harm avoidance, and lower reward dependence are associated with higher likelihood of Internet addiction (Ko et al., 2006; Ko et al., 2010).

Personality traits correlated with Internet addiction have been widely studied in adolescents and young adults (Floros & Simios, 2014). Neuroticism, emotional reactivity and instability, sensitivity to punishment, psychoticism / negative valence, sensation and novelty seeking have all been positively correlated to Internet addiction (Charlton & Danford, 2010; Dong et al., 2012; Fisoun et al., 2012; Meerkerk et al., 2010; Yan et al., 2014). Extraversion, conscientiousness, reward dependence and sensitivity, agreeableness, sentimentality, self-directedness, persistence have all been negatively correlated with Internet addiction (Charlton & Danford, 2010; Ko et al., 2006, 2007, 2010; Kuss et al., 2013; Montag et al., 2010; Müller et al., 2013; Rahmani & Lavasani, 2011). Negative affectivity, avoidant attachment style,

and dissociative symptoms of depersonalization/derealization are strongly associated with Internet addiction in young adults (Schimmenti et al., 2019).

Gervasi et al. (2017) explored young adults' aged 18–25 (N = 349) maladaptive personality traits and Internet Addiction as measured by the Personality Inventory for DSM-5 Brief Form Adult (PID-5-BF; Kreuger et al., 2012) which represents the five personality domains according to the DSM-5 Alternative Model for Personality Disorders (AMPD; APA, 2013). The sample produced a mean IAT score of 38.05 with most participants reporting scores in the normal range (Gervasi et al., 2017). A hierarchical, multiple regression analysis found that negative affect, disinhibition, and psychoticism predicted internet addiction symptoms. This research is consistent with previous studies (Gervasi et al., 2017; Leung, 2007). However, it is unclear that the sample size and characteristics are sufficient for the statistical tests of multiple linear regression. Further, there is no exploration of the dimensional aspects of the alternative model constructs of self and interpersonal functioning (APA, 2013).

Difficulties in emotion regulation have been associated with development and maintenance of problematic Internet use (Billieux & Van der Linden, 2012). Difficulties engaging in goal-directed behaviors and lack of emotional regulation have been observed as significant antecedents to Internet addiction (Ceyhan et al., 2019). In the same study, participants with preoccupied and fearful attachment styles were more likely to engage in problematic Internet use that resulted in functional impairment. Emotion regulation difficulties predict the severity of Intern addiction (Oktan, 2011). Estevez et al. (2017) demonstrated that emotion regulation predicted both substance and behavioral addictions whereas attachment predicted only non-substance-related addictions to include Internet addiction. Another study involving late adolescents found gender-unique symptoms of alexithymia among females and trauma

experience in males to be independently related to Internet addiction, suggesting difficulty in emotion regulation for females and traumatic memories in males might increase the risk of Internet addiction during this developmental period (Schimmenti et al., 2017).

Kandell (1998) found that college students exhibiting Internet addiction were often dealing with underlying issues such as problematic relationships or academic difficulties. Kandell observed that once the underlying psychological issues were addressed, individuals reestablished balance and Internet addiction symptoms resolved. Huang (2006) expounded on this view in a study of the implications of psychosocial development with 33,959 Taiwanese college students. Huang found significant correlations between increased time spent online and unsuccessful resolution of Identity and Intimacy crises (Erikson, 1963).

Internet addiction been further considered from a developmental perspective, arising from attachment insecurity or stressful childhood experiences (Schimmenti et al., 2014). Literature supports the role of attachment and Internet addiction with insecure (Lin et al., 2011; Severinoa & Craparob, 2013), anxious and avoidant (Shin et al., 2009) and dismissive, preoccupied attachment styles (Odacı & Çıkrıkçı, 2014) all confirmed risk factors for development and maintenance of Internet addiction. Secure attachment has negatively predicted Internet addiction (Monacis et al., 2017). In this same recent study, Monacis et al. found that attachment styles incrementally explained between 9.2% and 14% of Internet addiction severity while Identity styles accounted for between 21.2% and 30% of the variance with informational and diffuse-avoidant styles identified as risk factors.

Intrapersonal variables have shown smaller statistical effects on Internet addiction than interpersonal variables, suggesting that intrapersonal stress and psychosocial developmental difficulties are more likely to predispose individuals to Internet addiction than interpersonal

conflicts (Koo & Kwon, 2014). Adolescents with severe Internet addiction report lower family functioning and extraversion, higher neuroticism and psychoticism, and more stressful life events while those with mild Internet addiction report higher neuroticism and more difficulty with health and adaptation issues (Yan et al., 2014). Males have shown higher rates and severity of Internet addiction (Durkee et al., 2012; Morahan-Martin & Schumacher, 2000). Good family functioning has predicted lower probability of Internet addiction over time (Lu & Shek, 2013). Internet addiction has been suggested to arise from Internet use as a mechanism to cope with real life difficulties (Young, 1998). The Self-Medication Hypothesis (Kantzian, 1985, 2003) proposed addiction as a self-regulation problem that manifests from adaptations in an attempt to self-medicate painful or confusing emotions, reflective of disordered personality organization.

Multiple studies involving clinical samples found that half of those experiencing Internet addiction presented with at least one other psychiatric disorder and 38% with a concurrent narcissistic, borderline, or avoidant personality disorder (Floros et al., 2014; Müller et al., 2014). Studies involving clinical populations have found high rates of comorbid affective major depression, dysthymia, dissociative disorders, bipolar, and antisocial, borderline, and narcissistic personality disorders associated with Internet addiction (Kuss & Lopez-Fernandez, 2016). As compared to healthy controls, Internet addicts receiving psychiatric treatment exhibit significantly higher rates of comorbid depression, dissociation and obsessive-compulsive symptoms (Te Wildt et al., 2010; Wölfling et al., 2013). Another study involving a clinical population (N = 368) found increased psychopathological symptomatology with 30.9% meeting criteria for a bipolar disorder (Wölfling et al., 2015).

Cheng et al. (2015) identified statistically significant mediating effects of both avoidant and inflexible coping on Internet addiction .An exploratory study of the relationships between

social support, coping style, and tendencies toward Internet addiction found that higher perceived social support in everyday life was negatively correlated with tendencies toward Internet addiction, vigilant coping style was positively correlated, and no robust associations were observed between cognitive avoidant coping styles and tendency toward Internet addiction (Jung et al., 2019).

Caplan (2005) demonstrated that preference for online social interactions leads to compulsive Internet use, resulting in negative outcomes. Social anxiety, loneliness, and preference for online social interactions are significantly correlated with Internet addiction (Caplan, 2007). Caplan reported that social anxiety is a significant predictor—more so than loneliness, of preference for online social interactions. Recent studies proposed exploration of relationships between pathological social withdrawal, "hikikomori", and Internet addiction, noting the prevalence of comorbidity for both conditions and growing social trends resulting in increased isolation and dependence on the internet (Kato et al., 2020).

Some have suggested Internet addiction is a symptom of underlying pathology (Davis, 2001; Morahan-Martin, 2005), noting the difficulty of distinguishing Internet addiction causality from underlying pathologies. A longitudinal study involving college students (N = 59; Dong et al., 2011) found elevated obsessive-compulsive behaviors were present prior to onset of Internet addiction. Following onset of Internet addiction, higher rates of depression, anxiety, hostility, interpersonal sensitivity, and psychoticism were reported whereas somatization, paranoid ideation, and phobic anxiety showed no changes during the study.

Neurobiological Associations with Internet Addiction

Advances in technology have contributed to studies involving radiographic imaging techniques capable of detecting structural changes and functional differences in the brains of

people experiencing Internet addiction (Bai et al., 2001; He et al., 2017; Ko et al., 2009; Wang et al., 2017; Yuan et al., 2011). These studies have helped to contribute to understanding the pathophysiology of Internet addiction. The brains of people with Internet addiction show multiple areas of decreased gray matter volume, white matter changes, and abnormal white matter structures suggesting long term Internet addiction results in structural alterations that contribute to chronic dysfunction (Yuan et al., 2011).

Abnormal white matter structures throughout the brain, decreased delta and beta powers, fast-wave brain activity during resting states, and abnormalities in the dopaminergic system have been suggested as biomarkers of Internet addiction (Choi et al., 2013; Kim et al., 2011; Lee et al., 2014; Lin et al., 2012). Rahmani et al. (2019) proposed microstructural biomarkers of connectivity in the corpus callosum and parts of bilateral corticospinal tracts for predisposition to Internet addiction in a healthy population.

Studies to compare activation within the orbitofrontal cortex and anterior cingulate of those addicted to the Internet and healthy controls suggested that Internet addicts have enhanced reward sensitivity and decreased loss sensitivity which is consistent with findings from studies of other addictions (Dong et al., 2011). Subsequent studies of event-related brain potential (ERP) in conjunction with behavioral measures showed the Internet addicted group exhibited reduced medial frontal negativity (MFN) deflection and impaired executive ability with longer reaction times and more response errors as compared to the normal, healthy group (Dong et al., 2011). Internet addicts have also been observed through electroencephalogram (EEG) recording to perform at higher risk levels and exhibit smaller feedback-related negativity (FRN) indicative of weaker sensitivity to punishment and stronger sensitivity to reward as compared to normal groups (He et al., 2017).

Functional Magnetic Resonance Imaging (fMRI) studies of people with Internet addiction showed decreased right frontal-parietal network (FPN) and increased left FPN inter-hemispheric functional connectivity, reduced functional connectivity in the dorsalmedial prefrontal cortex (mPFC) of the anterior default mode network (DMN), and reduced functional connectivity between the salience network (SN) and the anterior DMN (Darnai et al., 2019). These findings appeared to further explain Internet addiction symptoms of difficulties with stopping and controlling overuse. Examination of neuroimaging findings has led researchers to suggest that Internet addiction shares psychological and neural mechanisms with drug addiction (He at al., 2017; Yuan et al., 2011; Xu, 2012).

Abnormal dopamine regulation detected within the prefrontal cortex (PFC) of Internet addicts might further contribute to difficulties with underlying motivational value and uncontrolled behavior characteristic of Internet addiction (Zhu et al., 2015). Recent studies to elucidate the neurobiological mechanisms of Internet addiction involved exploration of the striatal dopamine transporter (DAT) system as measured by single photon emission computed tomography (SPECT) brain scans. Hou et al. (2012) demonstrated that as compared to a normal group, people addicted to the Internet exhibited decreased volume and weight of the bilateral corpus striatum and greatly reduced dopamine receptors, further supporting the claim that Internet addiction shares neurobiological abnormalities with other addictive disorders.

Emerging Approaches to Internet Addiction

The case has been made that Internet addiction can be conceptualized as compensation versus compulsion (Kardefelt-Winther, 2014b). Kardefelt-Winther argued that due to the predominance of examining vulnerabilities to Internet addiction in isolation, significant values might obfuscate confounding effects of other underlying factors. He referred to his previous

work controlling for the effects of stress on Internet addiction (Kardefelt-Winther, 2014a), which resulted in reductions in previously significant relationships between both loneliness and social anxiety with Internet addiction.

Kardefelt-Winther (2017) endorsed earlier speculations that Internet addiction occurred as a result of attempts to cope with real-life situations which has been repeatedly mentioned over the course of 15 years by Young (1998), Armstrong et al. (2000), Whan et al. (2003), Chak & Lueng (2004), Widyanto & Griffiths (2006), Kim et al. (2009), Young (2009), Shen & Williams (2011), and Kuss et al. (2014). Kardefelt-Winther noted earlier studies that found heavy TV watching was more likely during dysphoric states (Kubey & Cxikszentmihalyi, 1990) which informed speculation that this logic might also apply to Internet use as a form of self-medication (Bessier et al., 2004). Later studies found that Internet users are able to compensate for the lack of real-life interaction through the exchange of online messages (Caplan, 2007).

The behavioral addiction field has been challenged for its potential over-pathologizing of everyday behaviors through a formulaic, atheoretical, and confirmatory approach in which *a priori* consideration targets behavior based on anecdotal observations (Billieux et al., 2015; Kardefelt-Winther, 2017). The process is described as continuing on to development of screening tools adapted from traditional substance abuse criteria which determines that certain risk factors are involved in the development and maintenance of new behavioral disorders. Billieux et al. (2015) argued that such diagnostic-centric approaches might lead to neglect of the underlying motivations, affect, cognitions, and interpersonal or social processes contributing to the development or maintenance of the maladaptive behavior. Kardefelt-Winther (2017) argued that exploring problematic Internet use independent of the addiction framework might allow less

constrained perspectives and increased focus on understanding the problem of Internet addiction and why it occurs and persists.

Detractors of these proposals suggested abandoning the concept of Internet addiction entirely, rather to investigate very specific problematic behaviors involving the Internet such as online gaming or sexual activity (Starcevic & Aboujaoude, 2017). This approach appeared to exponentially increase the very issues that arguably inhibited progress in reaching formal standards and definitions for Internet addiction (Billieux et al., 2015; Kardefelt-Winther, 2017). A highly critical analysis followed (van Rooij & Kardefelt-Winther, 2017), characterizing pervasive dependence on flawed literature and chaotic, confusing approach that the authors argued should not result in generating new disorders.

Kardefelt-Winther et al. (2017) further debated the merits of conceptualizing behavioral addictions which resulted in pathologizing everyday behaviors. An operational definition and exclusion criteria were proposed along with supportive justifications for closing gaps and shortcomings unaddressed by other theoretical frameworks. Most notably, the authors invited researchers to contribute to the definition and ongoing work through the Open Science Foundation.

In response, an argument was made that the proposed removal of tolerance and withdrawal from diagnostic criteria and exclusion of functional impairment arising from the consequences of willfully chosen behavior ran counter to fundamental conceptualizations of addiction (Thege, 2017) and the components model of behavioral addiction in particular (Griffiths, 2019). Griffiths further endorsed the confirmatory approach to behavioral addiction based on his view that similarities align behavioral addictions and idiosyncrasies distinguish specific variants of addiction. Acknowledging the apparent stalemate in the field, yet another

framework emerged that considered the consequences of problematic Internet use as social construct within a world of ubiquitous Internet use rather than medicalization of mental disorders (Helmersson Bergmark, 2017). This pattern is similar to the previously referenced conflicts of opinions and approaches to addiction.

Categorical Diagnostic Models

Categorical models of operationally defined psychiatric diagnoses with strict criteria emerged in the late 20th century in response to criticism of weak diagnostic reliability (Kirk & Kutchins, 1994). The DSM-III forced increased reliability with explicit diagnostic criteria for individual clinical syndromes, independent and differentiated from other disorders (APA, 2000). The expectation with this approach was to demonstrate individual disorders by unique and discernable molecular genetics, pathophysiology, common clinical course substantiated by empirical testing, ultimately to be treated with standardized pharmacological and psychotherapeutic interventions (Regier, Narrow, Kuhl, & Kupfer, 2009). The influence of these expectations can be seen in each subsequent edition to include the current DSM-5.

While categorical models adopted in DSM-III led to increased diagnostic reliability, validity suffered. Overlapping clinical presentations, high levels of comorbidity, and over-use of catch-all "not otherwise specified" diagnoses were common challenges indicative of validity issues (Bender, Skodol, First, & Oldham, 2017). Further, treatment response was less specific because some medications were effective in treating a wide range of disorders (Regier et al., 2009). In response to these limitations and a groundswell of clinical support, the APA Board of Trustees introduced new dimensional approaches in DSM-5 (APA, 2013).

DSM-5 Alternative Model for Personality Disorders

The DSM-5 Alternative Model for Personality Disorders (AMPD) provides a model to explore relationships between behavioral addiction and self and interpersonal functioning. The AMPD measures personality functioning and pathological personality traits (APA, 2013). The construct of personality functioning is organized by the elements of Self which consists of Identity and Self-direction, and Interpersonal which consists of Empathy and Intimacy (see Table 2.1). Pathological personality traits are organized within a taxonomy of five trait domains which consist of 25 trait facets identified through review of existing trait models, meta-analytic reviews, and empirical data demonstrating relationships to DSM-IV diagnoses for personality disorders.

Table 2.1

Dimensions Within the Alternative Model for Personality Disorders

Self	Interpersonal
Identity	Empathy
Self Direction	Intimacy

Identity is defined as the experience of "oneself as unique with clear boundaries between self and others; stability of self-esteem and the accuracy of self-appraisal; capacity for, and ability to regulate, a range of emotional experience" (APA, 2013, p. 762). Self-direction is the "pursuit of coherent and meaningful short-term and life goals; utilization of constructive and prosocial internal standards of behavior; ability to self-reflect productively" (APA, 2013, p. 762). The Interpersonal element consists of Empathy which is characterized as "comprehension of and appreciation of others' experiences and motivations; tolerance of differing perspectives; understanding the effects of one's own behavior on others" (APA, 2013, p. 762). The Intimacy functioning is characterized as "depth and duration of connection with others; desire and

capacity for closeness; mutuality of regard reflected in interpersonal behavior" (APA, 2013, p. 762).

Psychosocial Development

Erik Erikson (1963, 1968) conceptualized a psycho-social model for how people develop beliefs about themselves and learn to psychologically exist within their communities in order to become productive, satisfied members of society. Erikson's model consists of eight developmental stages of psychosocial maturation. In the model, development is achieved through sequential resolution of distinct conflicts faced at each stage. Successful resolution of these conflicts produces distinct virtues and strengths for each given stage. Failure to favorably resolve a particular conflict is believed due to negative experiences during that stage. The result of failed resolutions to conflict are maladaptive psychological responses associated with specific stages. Theoretically, the outcome of conflict resolution at each stage—success or failure, accrues and remains throughout the lifecycle, contributing to efforts and experiences in later stages.

Erikson's 1968 collection of essays and observations *Identity Youth and Crisis* includes a chapter on adolescence that seems as relevant today as it was when it was published some 50-odd years ago. Erikson's theory of adolescent development is grounded in the pursuit of identity, a self-constructed internalized ideology congruent with the society in which the adolescent will transition to adulthood. During this stage, adolescents are expected to explore the possibilities of their future life and begin to form their own identities. Erikson describes the adolescent exploration of their independence and development of a sense of self as "stormy" in their pursuit of affirmation by peers, confirmation by influential adults, and inspiration for worth-while, ideological pursuits. Adolescents are viewed in this model as struggling to choose work in which they can experience not only financial success but the ability to function with

unique excellence. This attitude is presented by Erikson as a preference to be perceived as acting foolishly from free-will rather than forced to act in ways they perceive as shameful.

Erikson (1968) viewed technological advances as extending childhood by delaying the onset of adulthood because they represented more possibilities of potential career roles, and therefore, identities to choose from. Erikson considered the "stormy" experience as less intense for those adolescents who were "gifted and well-trained in the pursuit of expanding technological trends" (p. 130) which influenced their career choices. According to Erikson's model, the inability to select and settle on an occupational identity creates the most distress for young people. Romantic pursuits, group affiliation, and interpersonal relationships at this developmental stage are primarily attempts to arrive at a sense of one's identity.

Based on Erikson's model (1968), adolescents who struggle to overcome the crisis in this stage of development might experience distantiation rather than achieve the basic virtue of fidelity and strength of devotion which fuel intimacy and commitment. Distantiation manifests as "readiness to repudiate, isolate, and, if necessary, destroy those forces and people whose essence seems dangerous to one's own" (p. 136) with heightened, "fanatical" sensitivity to guard one's existing territory of intimacy and solidarity against perceived threats. Remnants of adolescent dangers will re-appear anywhere there may be actual, or perceived, intimacy or competition. Erikson makes a clear and compelling case for the importance of successful identity development in adolescence with occupation selection. While career development evolves across the lifespan, occupation selection in adolescence results in the ability to experience fidelity and commitment in later stages of development.

CHAPTER III: METHODOLOGY

This chapter presents the study methodology to include sample and inclusion/exclusion criteria, data collection instruments, design procedures, and data analysis.

Sample and Inclusion Criteria

The study was comprised of 363 adults age 25–39 living in the United States and meeting criteria for at least mild internet addiction as measured by the Internet Addiction Test (IAT;Young, 2017a). Inclusion criterion was developed based on the prevalence of technology adoption by the U.S. based millennial population with birth dates between 1981 and 1996, 93% of whom have been shown to own smart phones (Vogel, 2019). Focus on this particular age range also contributed to understanding participants' experience of internet addiction and diminished self and interpersonal functioning relative to specific stages of Erikson's psychosocial developmental theory. Partial completion of the study measures were grounds for exclusion from the study.

Design

Mixed methods research approaches provide capacity to consider different aspects of research questions (Teddlie & Tashakorri, 2009). The design reflects consideration for mixed methodology research as a distinct integration of quantitative and qualitative data collection, analysis, deductive and inductive understanding that can produce more comprehensive research questions, more dependable/reliable data, expanded options for data analysis, improved inference quality (internal validity/credibility) and transferability (external validity; Creswell & Clark, 2017).

This mixed methods study involved sequential, convergent, and nested quantitative and qualitative data collection followed by descriptive and inferential statistical analysis to explore

relationships between internet addiction and self- and interpersonal functioning. Subsequent inductive thematic analysis informed identification of themes and patterns in the data aligned to the study focus and with consideration for current events at the time of the study. A pragmatic approach was used to combine the approaches to inquiry in order to more fully explore understanding within the focus of the study.

The study design was influenced by the researcher's integrated theoretical orientation and inherently pragmatic approach —working under the assumption that there are multiple, legitimate ways of seeking to understand and to make meaning, to think about what is of importance, and to assign priority (Leavy, 2017). As such, the inclusion of qualitative research questions in the study reflect the author's position that knowledge is both constructed and based on the world in which we live. Therefore, identification of themes and data patterns might more fully inform understanding of the experience of internet addiction.

The study incorporates online research platforms which, in recent years, demonstrate more scalable, timely, cost-effective, and representative samples than traditional lab research that relies heavily on student participants (Buhrmester et al., 2011; Paolacci & Chandler, 2014). The proliferation of crowdsourcing platforms such as Mechanical Turk (MTurk) helped to advance the use of such services in the economic, social, and behavioral sciences (Peer, Brandimarte, Samat, & Acquisti, 2017). The proliferation of online research in the social and behavioral sciences in recent years is supported by evidence that they provide high quality data in more scaled, timely, cost-effective, and representative samples than classical lab experiments with student participants (Palan & Schitter, 2018).

Prolific (www.prolific.co) is a commercial research recruitment platform that manages a pool (N = >96,500) from which researchers can recruit participants for online behavioral and

social science research (Prolific, n.d.). Prolific is designed and proven to meet the specific needs and requirements of academic researchers (Callan et al., 2016). Prolific differentiates their recruitment platform with features such as offering prescreening filters prior to study launch and adherence to ethical research practices such as preventing participation by minors and enforcing minimum payment levels (Prolific, n.d.).

According to Prolific's (n.d.) published guidance, participants who are enrolled in the platform are recruited for specific studies through emails which are sent by Prolific to a random subset of all eligible participants once a study is posted. All participants are able to see currently available studies for which they are eligible when they are logged in and navigate to the active studies' page. If a study does not reach the maximum number of participants within 48 hours, Prolific sends additional email invitations every 48 hours to all participants eligible for the study in order to fulfill maximum participation. Prolific reports quality standards for each participant and study, monitors for potential fraud indicators, and enforces a rate-limiting mechanism to distribute studies evenly across the participant pool in order to prevent participants from turning into professional survey takers (Prolific, n.d.). As compared to other crowdsourcing platforms, Prolific has demonstrated higher data quality, geographic and ethnic diversity, and participant naivete to common research tasks (Palan & Schitter, 2018).

The Prolific Academic Participation Terms (n.d.) establish privacy protections that Prolific does not disclose personal data between participants and researchers. Researchers see only anonymized demographic data for screening and study purposes. Prolific implements protective measures to prevent participants' release of personally identifiable information to researchers. Prolific also provides for secure, anonymized email through its platform for confidential, anonymous communication between researchers and study participants.

Data Collection Instruments

Instruments were selected to support the collection and analysis of data to conduct a mixed-methods study via online data collection. Appropriate permissions were granted by copyright holders as demonstrated in Appendix A for the use and modification of data collection instruments for online data collection.

Internet Addiction Test (IAT)

Participants were administered the Internet Addiction Test (IAT; Young, 2017a) a self-report measure consisting of 20 questions in a 5-point Likert scale where 1 = Rarely and 5 = Always. The IAT measures characteristics and behavior associated with compulsive use of the internet and problems related to personal, occupational, and social functioning arising from problematic internet use. The IAT has been proven to be a reliable measure of symptoms of internet addiction with internal consistency of the 20 items within six factors as highly to moderately reliable as measured by Cronbach's alpha calculations (Widyanto & McMurran, 2004).

The IAT has been characterized as the first validated measure of internet addiction used in clinical settings and is one of the most widely used in research (Young, 2017). The IAT has been validated in multiple languages to include French (Khazaal et al., 2008), German (Brand et al., 2016), Norwegian (Johansson & Götestam, 2004), Finnish (Kaltiala-Heino et al., 2004; Korkeila et al., 2010), Italian (Ferraro et al., 2007), Greek (Siomos et al., 2008), Iranian (Ghassemzadeh et al., 2008), Chinese (Lam et al., 2009), and Bangladeshi (Karmin & Nigar, 2014).

The Level of Personality Functioning Scale – Brief Form 2.0 (LPFS-BF 2.0)

The Level of Personality Functioning Scale—Brief Form 2.0. (LPFS-BF 2.0; Weekers et al., 2018) is a 12-item self-report questionnaire to assess the level of personality functioning as described in Section III of the DSM-5 (APA, 2013). The 12-items in the LPFS-BF 2.0 are clustered in two higher-order domains: self and interpersonal functioning. Participants rate the 12 items on a 4-point Likert scale that ranges from 1 (completely untrue) to 4 (completely true). The LPFS-BF 2.0 demonstrated satisfactory internal consistency and validity of internal structure and construct validity (Weekers et al., 2018). The LPFS-BF 2.0 provides a brief, user-friendly measure of the severity of personality pathology with consideration for the Alternative Model for Personality Disorders introduced in Section III of the Diagnostic and Statistical Manual of Mental Disorders (*DSM-5*; APA, 2013).

Semi-Structured Interview

Participants enrolled in the study were administered a semi-structured interview following completion of the IAT and LPFS-BF 2.0. The interview consisted of two questions with narrative responses limited to 1000 characters. Question 1: The Internet affects people's lives in different ways. How does the Internet affect your life? Please describe and explain at least two examples of how the Internet affects your life. Question 2: How are things going in your life with work, housing, and relationships? When responding describe each area as opposed to giving one-word answers. Demographic data was collected about participants' age, gender, location, employment, and socioeconomic status.

Recruitment

Participants aged 25–39 in the United States were recruited randomly through the Prolific research platform in April 2020. The platform has demonstrated its ability to meet the specific needs and requirements of academic researchers whose work has been published in peer-reviewed journals (Callan et al., 2016; Peer et al., 2017). Reputation systems of online research platforms have demonstrated sufficient data quality for academic research purposes (Peer et al., 2017). Further, the proliferation of online research in the social and behavioral sciences is supported by evidence that these approaches provide more scaled, timely, cost-effective, and representative samples than classical lab experiments predominantly limited to student participants (Palan & Schitter, 2018; Rasmussen, 2017).

A priori power analysis determined that given the study parameters, at least 250 participants should be enrolled based on the assumption of detecting moderate effects, alpha .05, and conservative estimate of 20% attrition. The recruitment effort was configured to reach 400 potential participants in order to enroll the conservative target of 250 participants who met criteria for exhibiting at least minimal Internet Addiction as measured by the IAT (Young, 2017a). Respondents were each compensated $1.25 which equates to the hourly rate of $12.62. This rate was determined by the study author based on a calculation of the estimated time required for each participant to complete the study. Based on the average response completion time, the adjusted compensation equates to an hourly rate of $8.57. An additional fee of $0.42 per respondent was provided to Prolific for recruitment services and use of their research platform. The total cost for recruitment was $668.00.

Data Collection

The study involved collection of deidentified and anonymous data via web-based submissions managed through the Prolific Academic Research Platform and Survey Monkey, an online survey platform. Survey Monkey Premier service was used in order to meet the Prolific Academic Research Platform requirement for an automatic survey redirect upon completion of the survey. This mechanism reduces the risks of inability to compensate respondents or to attribute responses.

Informed consent (see Appendix C) was managed through the Prolific Research Platform. A data-time stamped digital record was created for each participant based on their unique, 24-digit Prolific user identification number. Participants were also required to provide this identification number in response to the first item on the study. This entry was recorded through the Survey Monkey platform, which created a separate date-time stamped digital record for each participant.

Preceding administration of the 20-item Internet Addiction Test (Young, 2017a) respondents were presented with the following text adaptation:

> *The following questionnaire consists of statements about all types of use of the Internet (desktop, laptop, mobile device, tablet). After reading each statement, select the response which best describes you. If two choices seem to apply equally well, choose the option that best represents how you were most of the time during the past month. Be sure to read each statement carefully before making your choice.*

Immediately upon completion of the IAT, respondents were administered the 12-item Level of Personality Functioning Scale—Brief Form 2.0. (LPFS-BF 2.0; Weekers et al., 2018).

Following completion of the LPFS-BF 2.0, respondents were presented with two required questions (QR1 and QR2) that each called for free-form responses. Each item was allocated up to 500 characters in response. This structure provided participants the ability to submit 100-150 word free-text responses for each narrative item: QR1: *The Internet affects people's lives in different ways. How does the Internet affect your life? Please describe and explain at least two examples of how the Internet affects your life.* QR2: *How are things going in your life with work, housing, and relationships? When responding, describe each area as opposed to giving one-word answers.* Respondents were then asked to complete demographic questions about gender, which was comprised of four groups, age, which was comprised of three groups each one spanning five years between age 25–39, zip code, and employment status.

Respondents were presented with a closing splash screen. The screen provided information about the Substance Abuse and Mental Health Services Administration's National Helpline 1-800-662-HELP (4357). The Helpline is a free, confidential service that provides multi-lingual treatment referral and information for individuals and families facing mental and/or substance use disorders. Respondents were provided a maximum of 55 minutes to complete the submission process. The average response completion time was seven minutes. The longest completion time was 37 minutes. The shortest completion time was two minutes.

Data Analysis

Data was exported from Prolific Academic Research Platform and Survey Monkey into a desktop version of Microsoft Excel licensed within Microsoft Office Home and Student 2019. The study sample (n = 363) was formed as a subset of the 400 responses which produced scores of at least 30 points on the IAT—indicating mild or greater internet addiction. Study data was

then transferred to a separate Excel workbook, imported to a licensed desktop version of IBM SPSS Statistics 26, and uploaded to Dedoose web-based software for qualitative data analysis.

Descriptive statistics were initially calculated with manual input of formulas in Excel. The results were then validated through re-calculation using IBM SPSS Statistics 26. Frequencies and percentages were calculated for ordinal and nominal data such as gender, age category, earnings category, and level of severity of internet addiction. Means, medians, and standard deviations were calculated for ordinal and ratio data such as scores from IAT and LPF-BF 2.0 measures.

Inferential statistics to test the hypotheses involved correlation analysis of the degrees of association between internet addiction and diminished self and interpersonal functioning as measured by the IAT and LPFS-BF 2.0. Calculations were initially performed using IBM SPSS. The results of these calculations were then validated through recalculation in Excel using the Data Analysis ToolPak function.

Critical Reflexive Thematic Analysis

Critical Reflexive Thematic Analysis seeks to interrogate patterns of meaning from the theoretical orientation that language creates rather than reflects reality (Terry et al., 2017). This approach to qualitative research is characterized by theoretical flexibility with analysis informed by the researcher's unique experiences, skills, inherently biased perspective, and depth of familiarization with the data (Braun & Clarke, 2006). Erikson's Psychosocial Developmental Theory (1959, 1968) informed the researcher's analysis of participants' experience of Internet addiction and development of themes following inductive coding. The researcher's interpretation of dominant patterns of meaning and the development of themes within a guiding theoretical

framework is consistent with both the data collection approach and the conceptual underpinnings of Critical Reflexive Thematic Analysis (Braun & Clarke, 2006, 2019; Terry et al., 2017).

This critical approach considers the researcher's subjectivity as integral to the organic, flexible process of analysis through increasing familiarity with the data (Braun & Clarke, 2006). The researcher is expected to subjectively interpret the data to produce not only themes but also greater meaning identified within the data. Grounded theory concepts and procedures such as saturation, constant comparative analysis, and line by line coding might introduce problematic procedural assumptions to critical reflexive thematic analysis (Clarke & Braun, 2019). Data quality in Critical Reflexive Thematic Analysis arises from the intersection of the researcher's skills, experience, theoretical lens, familiarity with the data, and effective critical analysis (Braun et al., 2019).

The process of critical reflexive thematic analysis in this study involved phased, iterative, recursive analysis and reporting (Alvesson & Sköldberg, 2018). The initial phase of analysis involved familiarization with the data through reading and re-reading the corpus of data comprised of the 363 participants' responses which consisted of 726 unique extracts. Emphasis during this phase was familiarization with the complex and rich data through curiosity and questioning that generated early and provisional analytic ideas (Braun & Clarke, 2006; Braun et al., 2019; Terry et al., 2017). Initial ideas generated through observations and notes during this phase influenced later use of Dedoose software in order to effectively manage the sheer volume and complexity of data. Initial identification of codes captured experiences relative to current social events that were unrelated to the study's focus. This approach allowed for improved data reliability by removing codes that were not relevant to the research questions.

During the second phase of reflexive thematic analysis, inductive coding was completed using Dedoose software for qualitative analysis. While inductive coding is more commonly encountered in ground theory research, the sheer volume and complexity of the data in this study precipitated this approach to ensure effective integration of the data collection and analysis methods (Braun & Clarke, 2019). Following development of initial codes, data was exported from Dedoose to Excel where initial codes were integrated and collated with all study data to facilitate the initial production of themes. Themes were identified with consideration for Erikson's Psychosocial Developmental Model and the researcher's depth and breadth of familiarity with the data. All excerpts were reintegrated with study data within Excel. Analysis, review, and further immersion in the data led to collated, integrated codes across the entire data set and generation of two preliminary, overarching themes.

During the third phase of analysis, a systematic, iterative, recursive analysis of the entire data set informed the development of six themes and an early thematic map that placed the themes within an overarching framework influenced by Erikson's Psychosocial Development Model (see Figures 2 and 3). The researcher's ongoing analysis led to refinement of descriptions for each theme and an overarching story told by the analysis. These outcomes informed the final analysis and analytic reporting with specific aspects and features of representative experience to form the basis for analytic claims that relate themes back to the research questions (Terry et al., 2017).

Design Quality and Interpretive Rigor

This section describes considerations for addressing mixed methods research design quality and interpretive rigor which impact the quality of inferences and integrity of the meaning-making process. A social perception or attribution model was applied to consider the

quality and integrity of research inferences (Heider, 1958; Kelly, 1967; Teddlie & Tashakorri, 2009). An integrative framework assumes transferability to various contexts, entities, and alternative approaches to conceptualization. Statistical tests of validity using SPSS version 26.0 will consider sample size, data skewness and kurtosis. Inference transferability considered the consistency of integrated data, data analysis, and conclusions from the context of data saturation (Clarke et al., 2019; Teddlie & Tashakorri, 2009). Immersive and repeated inductive coding and theme development are assumed to be subjective and interpretative processes that are strengthened through detailed engagement with the data (Braun et al., 2019; Braun & Clarke, 2006; Terry et al., 2017). Validation of descriptive and explanatory inferences reflect the researcher's consideration for the research questions, theoretical lens, and ability to explain or predict observations reached through critical reflexive thematic analysis (Braun et al., 2019; Braun & Clarke, 2006; Terry et al., 2017).

CHAPTER IV: RESULTS

The findings of the study are reported in four sections. The Sample Characteristics section will describe the participants major demographic characteristics and specify study-specific characteristics. The Descriptive Statistics section describes and summarizes study data measures of central tendency and dispersion. The Inferential Statistics section reports the results of analysis of relationships between Internet Addiction as measured by the Internet Addiction Test (IAT; Young, 2017a) and Self and Interpersonal Functioning based on the Alternative Model for Personality Disorders (AMPD) in Section III of the *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; DSM–5; American Psychiatric Association, 2013) as measured by the Level of Personality Functioning—Brief Scale 2.0 (LFPS-BS 2.0; Weekers et al., 2018). The Reflexive Thematic Analysis section presents the explicit and implicit ideas, meanings, and concepts within the data relative to the focus of the study and the researcher's theoretical orientation.

Sample Characteristics

The sample was comprised of 363 adults age 25–39 in the United States who meet criteria for at least mild Internet Addiction as measured by the Internet Addiction Test (Young, 2017). Participants were randomly recruited through the Prolific academic research platform. Of the 400 respondents to the study recruitment, 363 met criteria for enrollment in the study. The average age of participants was 30 years. Men comprised 48.58% (n = 176), women 48.76% (n = 177), transgender 1.38% (n = 5), and other unspecified gender 1.38% (n = 5).

As shown in Tables 4.1, 4.2, and 4.3, and Figure 4.1, the demographic characteristics of the sample reflect diverse and relatively balanced representation within categories of gender, age, socioeconomic status, and level of Internet addiction. Exceptions include over-representation of

women in age group 35–39 (52.9%) and transgender in age group 25–29 (2.2%) as shown in Table 4.2. Women are over-represented by up to 7% in the three lowest-earning socioeconomic status groups and 18% in the highest earning group (see Table 4.3). Transgender are almost triple their representation in the lowest-earning socioeconomic group. Figure 4.1 presents a pattern of gender distribution with male representation increasing at higher income levels and female representation decreasing steadily until the highest group (n = 3) which includes two women who report annual earnings in excess of $150,000. Although the study was not designed to generate a representative sample, due to the distribution of participants' sociodemographic characteristics the generalizability is increased.

Table 4.1

Sample Gender Characteristics

Gender (N=363)	Frequency	%
Male	176	48.58%
Female	177	48.76%
Trans	5	1.38%
Other	5	1.38%

Table 4.2

Sample Age Group and Gender Characteristics

Age	Frequency (N=363)	Male	Female	Trans	Other
25-29	185	49.2%	47.0%	2.2%	1.6%
30-34	108	48.1%	49.1%	0.9%	1.9%
35-39	70	47.1%	52.9%	0.0%	0.0%

Table 4.3

Sample Socioeconomic Status and Gender Group Characteristics

Annual Earnings	Frequency (N=363)	%	Male	Female	Trans	Other
< $15K	88	24.2%	40.9%	52.3%	4.5%	2.3%
$15K - $29,999	81	22.3%	43.2%	55.6%	1.2%	0.0%
$30K - $49,999	78	21.5%	47.4%	51.3%	0.0%	1.3%
$50K - $74,999	65	17.9%	53.8%	44.6%	0.0%	1.5%
$75K - $99,999	30	8.3%	63.3%	33.3%	0.0%	3.3%
$100K - $150K	18	5.0%	72.2%	27.8%	0.0%	0.0%
> $150K	3	0.8%	33.3%	66.7%	0.0%	0.0%

Figure 4.1

Gender Representation in Socioeconomic Status

Descriptive Statistics

The sample (n = 363) was generated from a randomly recruited population of 400 adults each of whom completed the IAT, LPF-BF 2.0, and semi-structured interview. Based on this response rate, the prevalence of those exhibiting at least mild internet addiction exceeds 90%.

The sample size (n = 363) exceeded a priori power analysis estimates to detect moderate effect sizes at a significance level (α) of .05 in the relationships between Internet addiction and diminished self and interpersonal functioning.

Table 4.4 shows the results of descriptive statistical analysis of the variables Internet Addiction, Self-Functioning, and Interpersonal Functioning. Test of skewness and observation of the data found the variables Self-Functioning and Interpersonal Functioning are normally distributed. The variable Internet Addiction exhibits moderate positive skew of 1.099 with a standard error of skew of .128. This distribution is not considered extreme or worthy of correction for purposes of this type study (Hanneman et al., 2012). However, for purposes of demonstrating thorough analysis and reporting in this study, a conservative test was performed in SPSS 26.0 to correct the positive skew through transformation of the variable to fit the normal distribution model. A re-computation of inferential statistics with the transformed variable found conclusions consistent with the uncorrected variable within .004. Therefore, the uncorrected variable was retained.

Table 4.4

Descriptive Statistics for Variables Internet Addiction, Self-Functioning, and Interpersonal Functioning

N=363	Range	Min	Max	Mean $\bar{x}$	s	S2	Skewness	SE
Internet Addiction (IAT)	69.00	31.00	100.00	47.41	12.18	148.35	1.099	.128
Self Functioning (LPFS-BF 2.0)	18.00	6.00	24.00	13.56	4.47	19.98	.060	.128
Interpersonal Functioning (LPFS-BF 2.0)	16.00	6.00	22.00	11.94	3.63	13.24	.281	.128

Inferential Statistics

Variables exhibit normal distribution, linearity, and homoscedasticity therefore parametric analyses were performed. Bivariate statistical analysis using Pearson's r correlation was used to measure the relationships between Internet Addiction and Self- and Interpersonal functioning. The analysis identified statistically significant relationships between severity of Internet addiction and diminished Self functioning (r = .418, p = <.05) and Interpersonal functioning (r = .502, p = <.05; Table 4.5).

In the present study, Cronbach's alpha for IAT was .88, LPFS-BF 2.0 Self Functioning was .88, and LPFS-BF 2.0 Interpersonal Functioning was .76, consistent with previously referenced studies of internal consistency, further validating the reliability of these measures and the interpretability of the results.

Table 4.5

Intercorrelations for Study Variables Internet Addiction and Self Functioning

N=363		Internet Addiction (IAT)	Self Functioning (LPFS-BF 2.0)	Interpersonal Functioning (LPFS-BF 2.0)
Internet Addiction	Pearson *r*	1	.418**	.502**
Self Functioning	Pearson *r*	.418**	1	
Interpersonal Functioning	Pearson *r*	.502**		1

**. Correlation is significant at the 0.01 level (2-tailed).

Reflexive Thematic Analysis

Reflexive thematic analysis (Alvesson & Sköldberg, 2018; Clark et al., 2019) informed inductive coding of 726 excerpts which produced 106 semantic codes that capture explicit meaning in participants' responses to the questions: (a) The Internet affects people's lives in different ways. How does the Internet affect your life? Please describe and explain at least two

examples of how the Internet affects your life; and (b) How are things going in your life with work, housing, and relationships? When responding describe each area as opposed to giving one-word answers.

Further analysis of the 106 semantic codes collated with the study data was guided by the research question and the researcher's theoretical orientation. From this work, two overarching latent themes of Seeking and Suffering establish concepts to explain the meaning of the data. These two overarching themes reflect participants' commonly articulated experiences. The overarching latent theme of Seeking is defined by the description of participants' use of the Internet to attempt to fulfill specific underlying desires. The latent theme of Suffering is defined by participant's experience of particular adverse outcomes as a direct result of their Internet use.

Working through the lens of Erikson's Psychosocial Developmental Theory (Erikson, 1968), rich and complex interconnections were identified among clusters of semantic codes which formed primary themes within each Seeking and Suffering latent theme. Figure 4.2 presents the interconnections between semantic codes within the Seeking latent theme, forming three primary codes titled: (a) Basic Trust & Autonomy with 17 semantic codes, (b) Initiative & Industry with 17 semantic codes, and (c) Identity & Intimacy with 13 semantic codes. Figure 4.3 presents primary themes within the Suffering latent theme titled: (a) Mistrust, Shame, & Doubt with 21 semantic codes, (b) Inferiority with 18 semantic codes, and (c) Role Confusion and Isolation with 20 semantic codes.

Latent Theme—"Seeking"

The definition of the latent theme of Seeking reflects participants' commonly and candidly articulated experiences of essential reliance on Internet use to attempt to pursue fulfillment of underlying desires. Participants commonly spoke of their Internet use arising from

early age and prominently influencing their understanding of themselves, others, and the larger world. In accordance with Erikson's Psychosocial Developmental Theory, the latent theme of Seeking reflects attempts to resolve existential questions such as, "Can I trust the world? Is it okay to be me?" Resolution of these questions results in developmental achievement of specific competencies and virtues.

Seeking—Basic Trust and Autonomy Theme

The Basic Trust and Autonomy Theme is defined by participants' experience of using the Internet to attempt to gain a sense of safety and security, to control themselves and their response to the world around them. Participants frequently describe their Internet Use as attempts to seek relief from potential distress, to seek to regulate distressing emotions, and to seek to escape from actual and perceived sources of internal and external distress. Participants described feeling emotionally overwhelmed at the prospect of experiencing boredom. Some noted and attributed their Internet use to increasing difficulty focusing their attention on other people and activities without simultaneously being online. According to Erikson's Psychosocial Developmental Theory (1968), these expressions are consistent with attempts to answer the existential questions "Can I trust the world? Is it okay to be me?"

Seeking—Initiative and Industry Theme

The Initiative and Industry theme is defined by participant's experience of using the Internet in order to attempt to express initiative, pursue ambitions, to achieve competency, and to experience a sense of confidence in themselves. Participants emphasized their ability to "constantly" access "unlimited" information. Participants related this access to building their own knowledge, skills, and abilities without financial burdens in formal education or relational dependencies in having to turn to others.

Participants' perceived value of this knowing was reflected in their observations about the impact of its potential loss. These reflections commonly contained more emotional salience than observations about potential or actual lost interpersonal relationships. According to Erikson's Psychosocial Developmental Theory (1968), these expressions are consistent with attempts to answer the existential questions "Is it okay for me to do, move, and act? Can I make it in the world of people and things?"

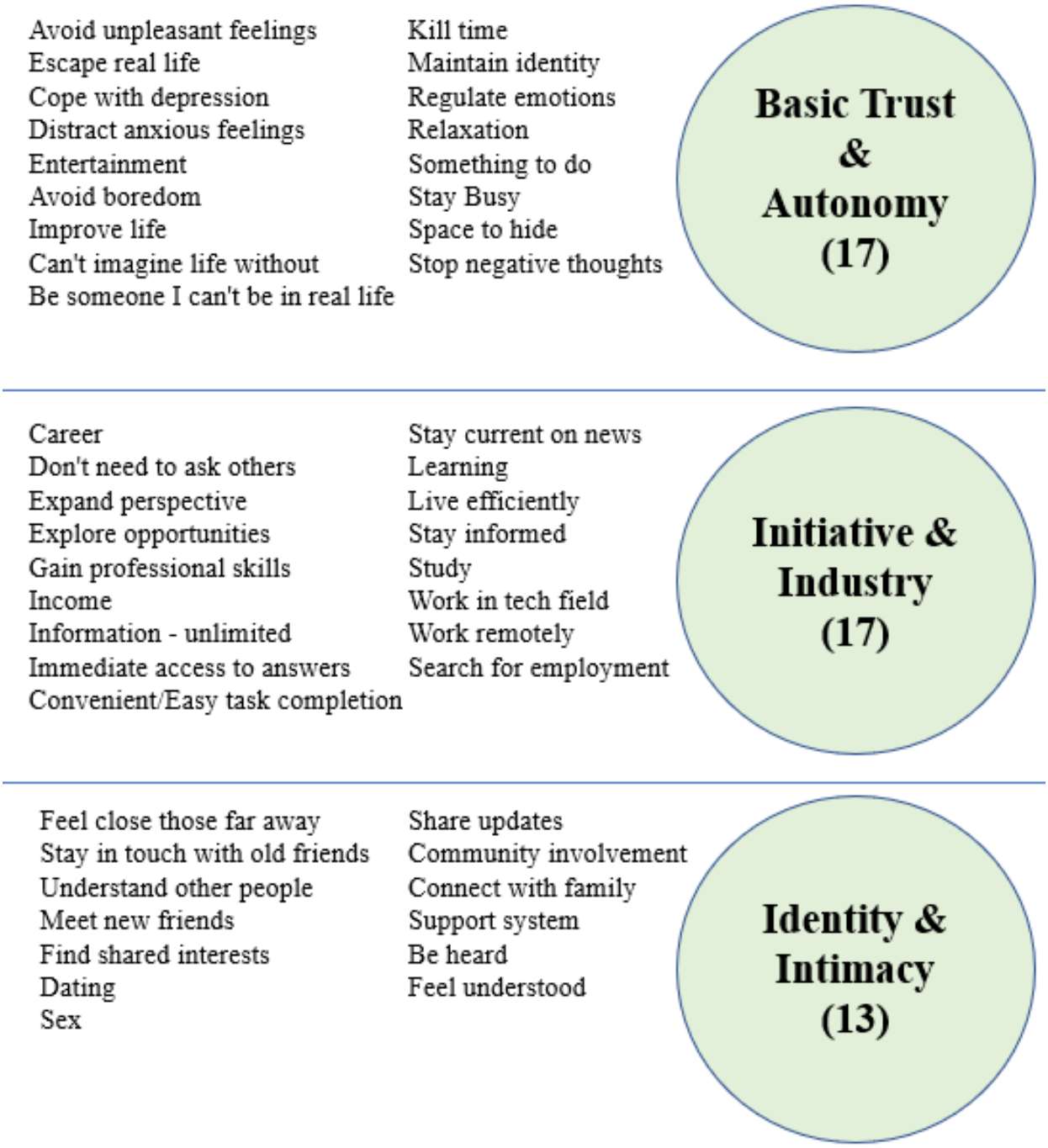
Seeking—Identity and Intimacy Theme

The Identity and Intimacy theme is defined by participants' experience of using the Internet to attempt to explore and find a sense of personal identity and to experience fulfilling relationships with others. Participants primarily relied on Internet use to seek, engage, and maintain social interactions and interpersonal relationships. An overwhelming number of responses noted their geographic isolation from family and loved ones. Internet use was often characterized as the mechanism for feeling a sense of connection to the world and to other people.

Respondents commonly preferred online over "real-life" social interactions. The perceived burden of effort required for "in-person" interactions was notably higher than required to engage in online interactions. According to Erikson's Psychosocial Developmental Theory (1968), these expressions are consistent with attempts to answer the existential questions "Who am I? Who can I be? Can I love?"

Figure 4.2

Primary Themes Within the Overarching Experience of Seeking in Internet Addiction



Latent Theme—"Suffering"

The Suffering latent theme is defined by participant's experiences of particular adverse outcomes which they attribute to resulting from their Internet use. Participants' commonly reflected on their lack of feeling a sense of safety and security when not using the Internet. Internet use was identified as a primary means of coping with perceived and actual sources of internal and external distress. Participants frequently described numerous unsuccessful attempts to stop their internet use. Participants expressed their inability to control their actions despite adverse effects on their physical and mental health, employment, families, and other interpersonal relationships.

Responses frequently characterized a sense of having lost control, being out of control, and feeling unable to take back control. Participants noted adverse outcomes arising from Internet use yet expressed fear at the prospect of not having the ability to engage in Internet use. In accordance with Erikson's Psychosocial Developmental Theory, the latent theme of Suffering reflects failed developmental attempts to resolve existential questions that results in inability to achievement specific competencies and virtues.

Suffering—Mistrust, Shame, and Doubt Theme. The Mistrust, Shame and Doubt theme is defined by participants' experiences of suffering with lack of a sense of safety and security within themselves and their surroundings, internalized shame, and doubt in their ability to withstand what might otherwise be considered normal life circumstances. Internet use was frequently characterized as a primary coping mechanism to manage immediate emotional distress. The concept of boredom as something to fear and avoid was pronounced.

Participants often reflected their Internet use was only effective in managing emotional distress in the moment, and ultimately it contributed either directly or indirectly to greater

distress. The sense of internalized shame was pronounced throughout the data. According to Erikson's Psychosocial Developmental Theory (1968), these expressions are consistent with failed attempts to answer the existential questions "Can I trust the world? Is it okay to be me?" resulting in the internalized beliefs that the world is not safe and it is not okay to be.

Suffering—Guilt and Inferiority Theme. The Guilt and Inferiority theme is defined by participants' experiences of inadequate achievement, feelings of failure, and sense of inability to adequately control themselves. Participants consistently remarked on their waste of time and resulting loss of productivity arising from Internet use. Internet use was characterized as a source of content to influence motivation and setting a standard by which participants measured themselves, frequently resulting in a sense of inadequacy.

Participants characterized their Internet use leading to feelings of discouragement and degradation of their motivation, aspirations, productivity, and achievement of professional and interpersonal goals. Self-criticism and inadequacy were conveyed in descriptions of failings in areas of self-care, family responsibilities, and work obligations. Participants acknowledged risk to their employment and lack of professional advancement arising from their Internet use, yet continued to engage in the behavior.

According to Erikson's Psychosocial Developmental Theory (1968), these expressions are consistent with failed attempts to answer the existential questions "Is it okay for me to do, move, and act? Can I make it in the world of people and things?" Erikson's model describes the results of these failed attempts as internalized beliefs that it is not okay to do, move and act; that it is not possible to make it in the world of people and things.

Suffering—Role Confusion and Isolation. The Role Confusion and Isolation theme is defined by participants' experiences of lacking sense of their own personal identity, relating to

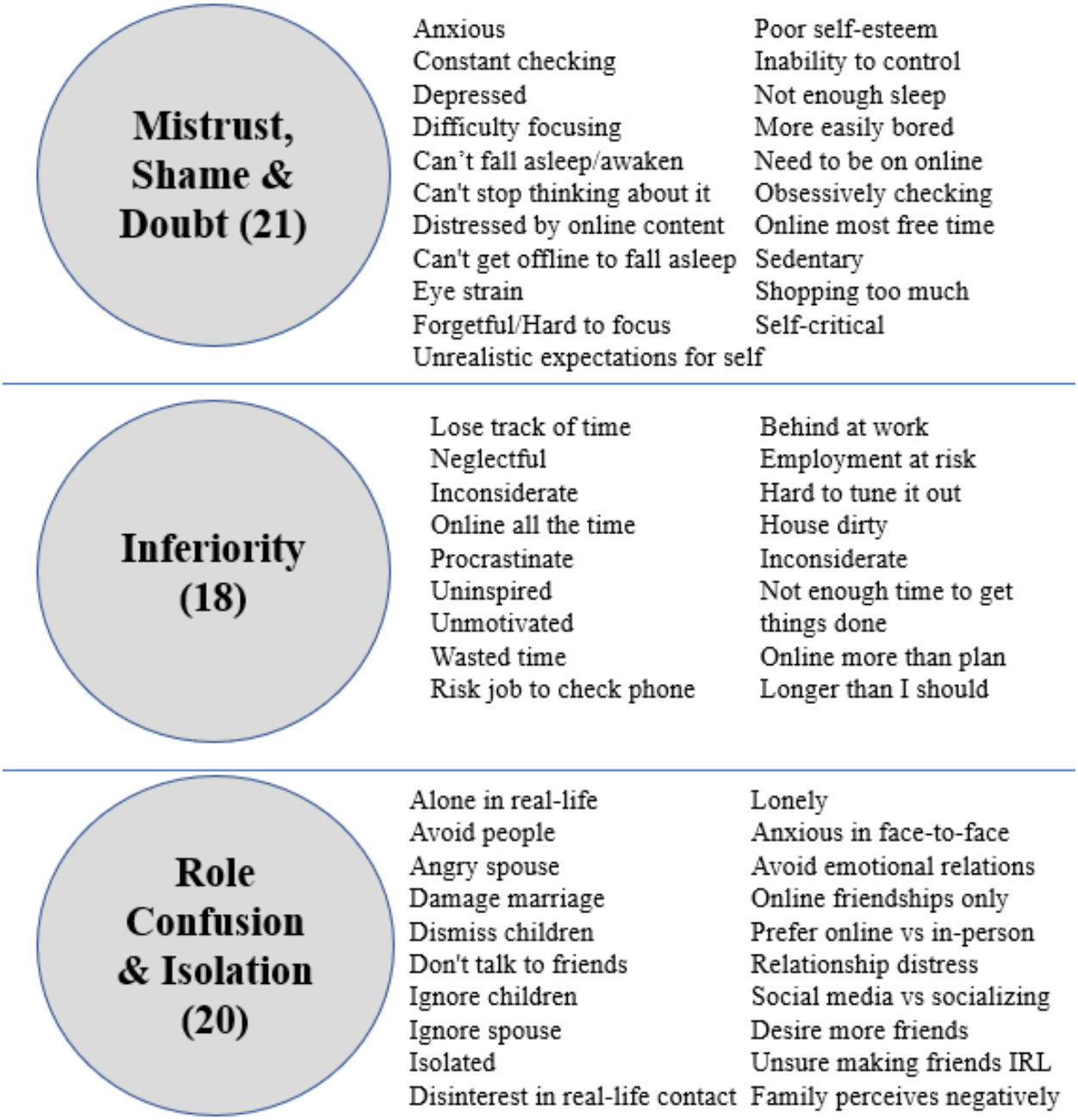
others, and engaging in fulfilling interpersonal relationships. Some participants described themselves as having grown up on the Internet, gaining an understanding of themselves and the world through the Internet. Others noted that they engaged primarily in online relationships, lacked the ability to understand and even enjoy primarily in-person relationships. Participants reflected on their preference to present images of themselves through the managed interface of Internet use.

The perceived psychological burden of engaging in real-life socialization was described as higher and less desirable. Concepts of isolation and loneliness prevailed across the data, and some participants reflected on connections between these feelings and their predominantly online interactions. Some participants clearly described their feelings of remorse over the harm their Internet use caused to their spouses and children. However, other respondents acknowledged that their Internet use caused distress to others and conflict within relationships, home, and work environments—then characterized those relationships, home, and work environments as being in good standing or even ideal.

According to Erikson's Psychosocial Developmental Theory (1968), these expressions are consistent with failed attempts to answer the existential questions "Who am I? Who can I be? Can I love?" Erikson's model describes the results of these failed attempts as internalized sense of not knowing oneself, not being able to envision one's potential, diminished self-esteem, and inherent belief in one's unlovability.

Figure 4.3

Primary Themes Within the Overarching Experience of Suffering in Internet Addiction



Hypotheses Testing

Research Question 1

RQ1: What relationships exist among internet addiction, self and interpersonal functioning using the DSM-5 alternative model for personality development (AMPD)?

Internet Addiction was measured by the Internet Addiction Test (Young, 2017a). Self and Interpersonal functioning were measured by the Level of Personality Functioning—Brief Form 2.0 (Weekers et al., 2018) based on the *DSM-5* (APA, 2013) Alternative Model for Personality Disorders (AMPD). Correlational analysis was used to examine the relationship between Internet Addiction and Self Functioning.

Alt H1: Internet addiction will not be related to diminished Self- Functioning using the *DSM-5* (APA, 2013) Alternative Model for Personality Disorders (AMPD; $p > 0$).

Analysis confirmed statistically significant direct relationship between Internet Addiction and diminished Self Functioning, $r\ (363) = .418$, $p < .01$. These results suggest that people who experience Internet Addiction at increasing levels of severity experience increasingly diminished Self and Interpersonal Functioning as measured by the *DSM*-5 (APA, 2013) AMPD. Therefore, the null hypothesis was rejected.

Alt H2: Internet addiction will not be related to diminished Interpersonal Functioning using the *DSM-5* (APA, 2013) Alternative Model for Personality Disorders (AMPD; $p > 0$).

Analysis confirmed statistically significant direct relationship between Internet Addiction and diminished Interpersonal Functioning, $r\ (363) = .502$, $p < .01$. These results suggest that people who experience Internet Addiction at increasing levels of severity experience increasingly diminished Interpersonal Functioning using the *DSM*-5 (APA, 2013) AMPD. Therefore, the null hypothesis was rejected.

Research Question 2

RQ2: How might the experience of internet addiction in relation to self and interpersonal functioning influence case conceptualization based on Erikson's Psychosocial Development Theory?

The results of this study suggest that individuals exhibiting Internet addiction are engaged in unsuccessful attempts to achieve mastery and develop specific virtues of Will, Purpose, Competency, Fidelity, and Love (Erikson, 1968). Latent and primary themes might aid in the understanding of clients and their current problems, inform treatment selection and intervention techniques, and contribute to the process of client-centered monitoring of treatment progress and client change.

CHAPTER V: DISCUSSION

The present study was conducted to explore the relationships between Internet addiction and Self and Interpersonal Functioning based on a dimensional diagnostic model, the Alternative Model for Personality Disorders (AMPD). The study also sought to understand how participants' experiences of Internet addiction might inform case conceptualization based on Erikson's Psychosocial Developmental Theory. Additional consideration was given to the sample characteristics and insights such as social and cultural considerations at the time of the study.

Question 1: What relationships exist among internet addiction, self and interpersonal functioning using the DSM-5 alternative model for personality development (AMPD)?

In this study of adults age 25–39, statistically significant relationships were identified between Internet addiction and Self and Interpersonal functioning, demonstrating that Internet addiction predicts impaired Self and Interpersonal functioning. These findings provide more clarity to the problem of Internet addiction and the benefits of using alternative, dimensional models in the clinical assessment of problematic Internet use.

The present study appears to support a theory of Internet addiction as a coping mechanism in which individuals who are far beyond adolescence and early adulthood respond to increasing severity of Internet addiction with progressively diminished self and interpersonal functioning which are significantly below the level expected for their developmental stage. The findings further suggest that Internet addiction might also predict changes to personality and increasingly diminished personality functioning beyond early adulthood as opposed to the prevailing understanding of personality development reaching final adult levels at about age 30 then remaining stable with few, subtle changes (McCrae & Costa, 1994).

Question 2: How might the experience of Internet addiction in relation to Self and Interpersonal functioning influence case conceptualization based on the psychosocial theory of development?

The experience of Internet in relation to Self and Interpersonal functioning reflects expressed desire to achieve specific psychosocial developmental stages as well as professed suffering relative to failed achievements. Latent themes of Seeking and Suffering reflect these experiences. The primary Seeking codes of Basic Trust and Autonomy, Initiative and Industry, and Identity and Intimacy reflect the expected psychosocial competencies expected to result from successful achievement of specific developmental stages (Erikson, 1963). The primary Suffering codes of Mistrust, Shame and Doubt, Guilt and Inferiority, and Role Confusion and Isolation. Figures 2 and 3 explicate all codes within these categories, further informing the interpretation of the Internet Addiction Test (IAT) and Level of Personality Functioning – Brief Form 2.0 (LPF-BF 2.0) within the alternative dimensional model of diagnosis.

Broad Findings and Themes

Previous Internet addiction studies have elucidated personality traits (Landers & Lounsbury, 2006; Leung, 2007; Lo et al., 2005; Whang et al., 2003), psychological states (Armstrong et al., 2000; Chak & Leung, 2004; Fioravanti et al., 2012; Kim et al., 2006), comorbid psychological disorders (Kim et al., 2006; Yoo et al., 2004), environmental and psychosocial developmental factors (Byun et al., 2009; Caplan, 2007; Dukuee et al., 2012; Kuss et al., 2014; Morahan-Martin & Schumacher, 2000; Young & Abreu, 2011), and adverse effects associated with Internet addiction (Young & Abreu, 2011). Internet addition research is largely exploratory in nature, investigating the relationship of specific risks and contributing factors of

Internet addiction focused on adolescents and young adults. Poor internal and external validity, limited generalizability, invalid statistics, and
over-reaching claims based on anecdotal observations using screening tools adapted from traditional substance abuse criteria are prominent throughout Internet addiction research (Billieux et al., 2015; Byun et al., 2009; Cash et al., 2012; Chou et al., 2005; Christakis, 2010; Douglas et al., 2008; Kuss et al., 2014; van Rooij & Kardefelt-Winther, 2017).

Internet addiction has been theorized as arising from attachment insecurity or adverse childhood experiences (Schimmenti et al., 2014). Literature supports the role of attachment and Internet addiction with insecure (Lin et al., 2011; Severinoa & Craparob, 2013), anxious and avoidant (Shin et al., 2009) and dismissive, preoccupied attachment styles (Odacı & Çıkrıkçı, 2014) all confirmed risk factors for development and maintenance of Internet addiction. Secure attachment negatively predicts Internet addiction; overall attachment accounts for up to 14% of Internet addiction severity whereas Identity styles account for up to 30% of variance (Monacis et al., 2017).

Internet addiction has been theorized as a coping mechanism (Kardefelt-Winther, 2017). Emotion regulation difficulties are significant antecedents and predictors of the development and maintenance of Internet addiction and the severity of symptoms (Billieux & van der Linden, 2012; Ceyhan et al., 2019; Estevez et al., 2017; Oktan, 2011). Gender-unique symptoms of psychological distress indicate that emotion regulation difficulties in females and traumatic memories in males increase the risk of Internet addiction onset during late adolescence.

Psychosocial developmental approaches to Internet addiction research have demonstrated significant relationships between increased time spent on the Internet and failure to resolve Identity and Intimacy crises within the context of Erikson’s Psychosocial Developmental model

(Huang, 2006; Kandell, 1998). The present study appears to support a theory of Internet addiction as a coping mechanism in which individuals who are far beyond adolescence and early adulthood respond to increasing severity of Internet addiction with progressively diminished coping abilities that are remarkably below the level expected for their developmental stage.

Limitations

This study is limited by design to not allow for determination of causation of Internet addiction nor to perform analysis to identify statistically significant relationships beyond the variables in scope for the study. Additionally, participants for the study were recruited through an online platform which indicates their familiarity with and use of the Internet. Participants between the ages of 25–39 in the United States increases the likelihood that they have been exposed to computer use and Internet access from a young age (Influence Central, 2016). These factors might have contributed to the over 90% rate of Internet Addiction observed in the population from which the sample (N = 363) was recruited.

Data collection for the study occurred in early April 2020 during a period of social and cultural upheaval associated with the COVID-19 pandemic. As a result of the pandemic, people who might have otherwise worked outside the home might have been working remotely or even experienced breaks in employment. While responses specific to these circumstances were removed from the data prior to reflective thematic analysis, the possibility of circumstantial influence on the broader response set remains.

Another limitation of the design of this study is the collection of qualitative data using open-ended, space constrained questionnaires. This limitation might have resulted in truncated responses. Unlimited space for response or in-person interviews might have generated richer narrative and insights.

Strengths

This study reflects multiple strengths which result in unique and clinically useful contributions to the field of Internet addiction. First, the mixed methods design produces increased insight that might inform efforts currently underway to firm up basic theories and definitions of Internet addiction which are lacking in the field (van Rooij & Kardefelt-Winther, 2017). The sheer scope of qualitative data generated through this study exceeds previous instances in the literature (Kuss et al., 2014). Additional strengths of this study relate to the quality of the sample which is comprised of a large (N = 393), diverse and representative group based on gender and socioeconomic status.

All participants were age 25–39, in the United States, and meet criteria for at least Mild Internet addiction—all variables which are uncommon in literature (Kuss et al., 2014). Exhaustive search of academic databases did not produce similar studies focused on this age range in which all participants were experiencing Internet addiction. A final strength of this study is that it provides evidence of the effects of Internet addiction which helps to strengthen an evidence base which does not currently substantiate the nature and severity of effects that are comparable to substance use disorders (van Rooij & Kardefelt-Winther, 2017).

Other Factors for Consideration

Several factors to consider relative to participants' experience of Internet addiction include the psychosocial developmental impact and prevailing sociological effects of normative, pervasive Internet use from very early developmental stages. Culturally sensitive, dimensional models of assessment, diagnosis, psychoeducation and interventions through a psychosocial developmental lens could improve clinical outcomes by focusing simultaneously on resolving psychosocial development issues and reducing the impact of Internet addiction. Harm reduction

approaches to Internet addiction might reduce the stigma that accompanies addiction diagnoses while acknowledging the impracticalities of entirely eliminating Internet use. The pervasive nature of contemporary Internet use reflects what might be considered normalized dependence in order to achieve optimal health and social inclusion.

Implications

The implications of this study include the potential for increased clarity of the conceptualization and definition of Internet addiction, re-evaluation of the criteria for Internet addiction, and the use of dimensional models of assessment and diagnosis of Internet addiction. The results of this study have also informed the clinical case formulation and selection of treatments to focus on resolution of psychosocial developmental issues.

Further implications include reconsideration of the prevalence of Internet addiction in the context of pervasive Internet use where motivations might shift at various stages of psychosocial development, resulting in differing clinical presentations of diminished Self and Interpersonal functioning. These differences might reflect cultural dimensions that are yet to be considered.

Recommendations for Future Research

Recommendations for future research include studies to advance the field of Internet addiction and contribute to efforts focused on alternative and dimensional models of diagnosis. Specifically, a grounded theory study with quantitative data collected from the clinical use of a dimensional approach to assessment and diagnosis of Internet addiction integrated with qualitative data collected in semi-structured interviews with those experiencing Internet addiction. Although not a part of this critical reflexive thematic analysis by design, the richness and complexity of data might inform future experiential reflexive thematic analysis. This approach would ideally make tacit meanings and processes of Internet addiction and diminished

Self and Interpersonal functioning explicit, reducing theoretical conflicts among researchers and producing standardized definitions and criteria for Internet addiction.

Participant responses in this study that might further inform future experiential reflexive thematic analysis include: “I spend too much time online even though I know I should pay more attention to my children,” “I don't feel I need to achieve much in life because I get enough enjoyment out of the things I do online, even though the things I do are pointless and nothing worthwhile comes from them,” “The internet gives me an out to express myself in ways I can't offline; I can be anyone I want online versus being the person everyone knows,” “Having grown up using the Internet, I feel that it has shaped my personality both positively and negatively. It's made me a curious and inquisitive person who always looks for answers. It shaped me negatively by limiting my social skills to an online world and that severely impacts my personal relationships. Both romantic and platonic relationships have been non-existent in my life for the last few years. I think Internet use definitely negatively affects my mental well-being and happiness.”

Standardized definitions and criteria for Internet Addiction would inform longer-term research focused on the transdiagnostic (Harvey et al., 2004) psychological and behavioral processes that underpin a broad array of behavioral addiction presentations in order to focus on specific treatments (Barlow et al., 2004). Translational approaches to such research might advance clinical usefulness as well as broad public health interventions and prevention programs. Research might also explore how advances in technology combined with pervasive Internet use might impact current understanding of personality development and the resulting sociological and psychological effects.

Conclusion

In conclusion, this study supports the position that Internet addiction predicts diminished Self and Interpersonal Functioning and the experience of Internet addiction embodies aspects of both Seeking and Suffering. The present study appears to support a theory of Internet addiction as a coping mechanism in which individuals who are far beyond adolescence and early adulthood respond to increasing severity of Internet addiction with progressively diminished self and interpersonal functioning which are significantly below the level expected for their developmental stage. The findings further suggest that Internet addiction might also predict changes to personality and increasingly diminished personality functioning beyond early adulthood, raising questions of the implications for the impact of technology on prevailing views of personality development.

The field of Internet addiction is burdened by conflicting theoretical views, lack of standardized definitions and criteria, and reliance on measures adapted from substance abuse criteria. The present study might contribute to resolving aspects of these challenges. Future research could advance efforts toward achieving full resolution of the issues with clinically useful and culturally sensitive dimensional diagnostic criteria and evidence-based interventions.

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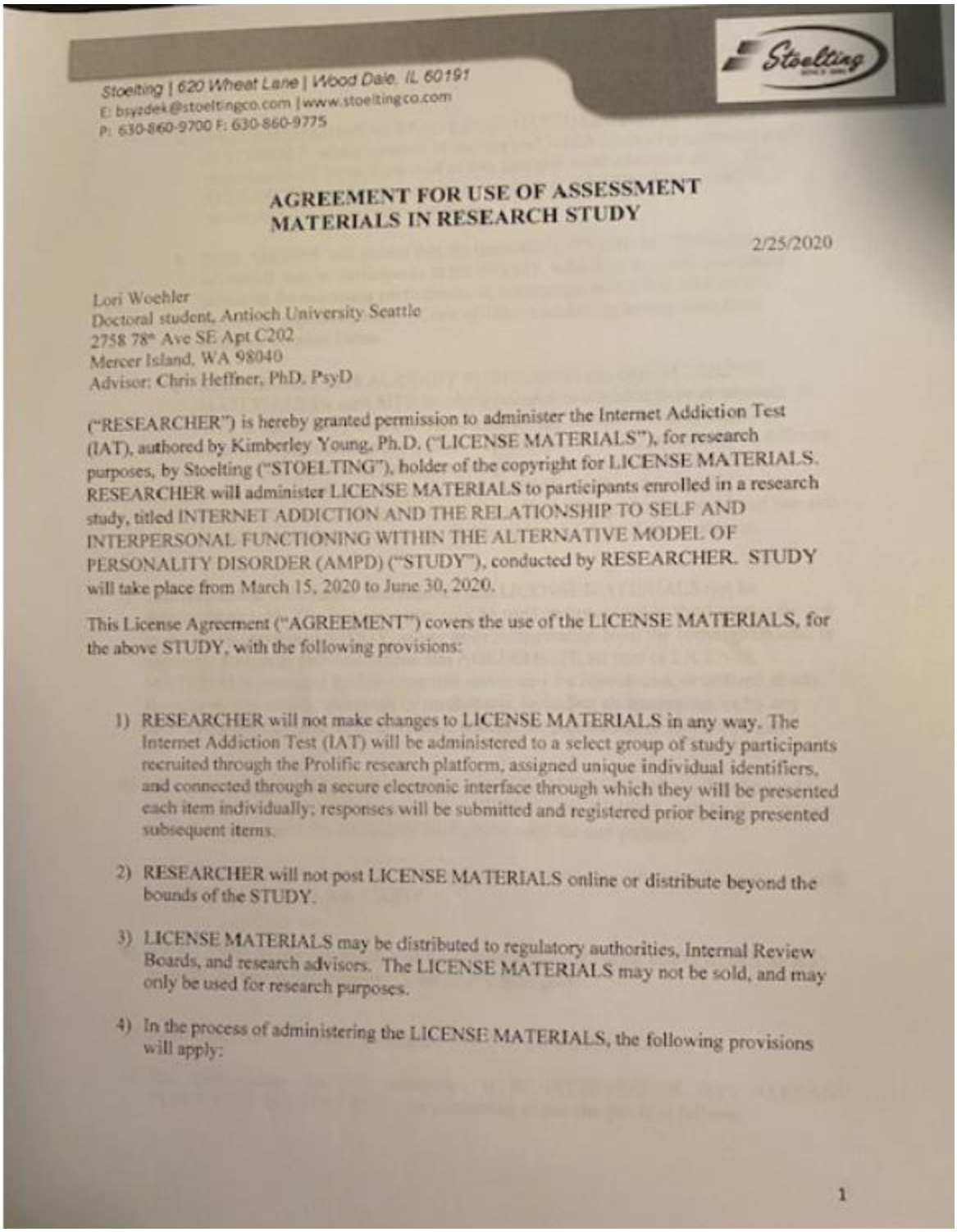
Internet Addiction Test (IAT)



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AGREEMENT FOR USE OF ASSESSMENT MATERIALS IN RESEARCH STUDY

2/25/2020

Lori Woehler
Doctoral student, Antioch University Seattle
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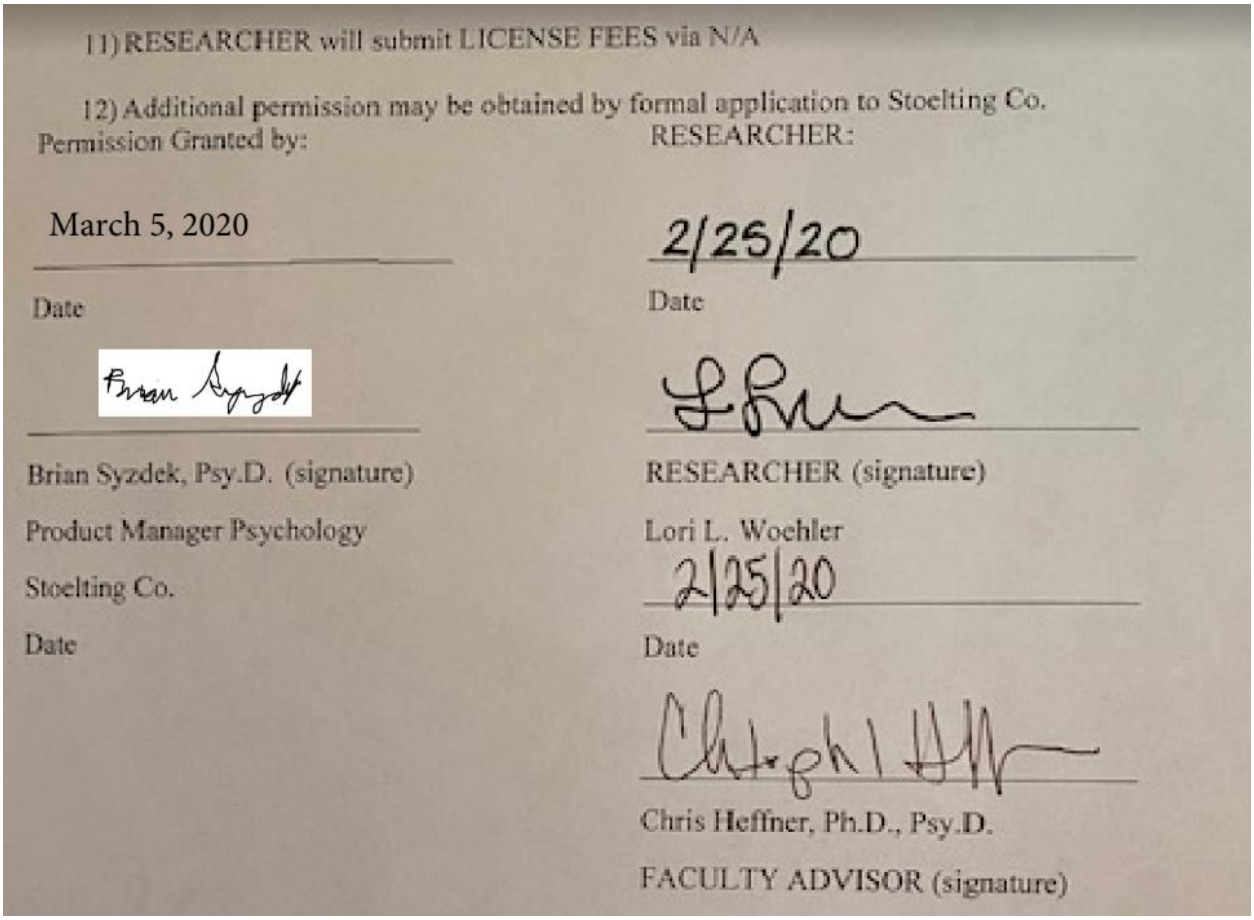

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Van: Lori Woehler <lwoehler@antioch.edu>
Verzonden: vrijdag 21 februari 2020 22:50
Aan: Laura Weekers <Laura.Weekers@deviersprong.nl>
Onderwerp: Request - LPFS-BF 2.0

Hello Laura,

I am a fourth-year doctoral student of clinical psychology working on my dissertation research to explore the relationships between internet addiction and levels of personality functioning based on the DSM-5 AMPD.

I am contacting you to request permission to administer the LPFS-BF 2.0 to the participants in my study. This use would not involve publication of the measure, and all use would be appropriately cited in the study.

I look forward to your response and would be pleased to answer any questions you may have about my research.

Best regards,

Lori Woehler
lwoehler@antioch.edu
(425)785-1553

APPENDIX B

Informed Consent

You are invited to participate in a research study. The purpose of this research study is to explore the relationships between internet use and self and interpersonal functioning. You are being asked to participate because you are an internet user. If you participate in this research, you will be asked to complete a brief survey about your internet activities, personal beliefs, and behaviors. You will be asked to provide demographic information about your date of birth, gender, employment, socio-economic status, and your attitudes about your internet use and status.

Potential risks of participating in this study might involve physical discomfort due to lack of movement while completing the study. Your participation will take approximately 10 minutes. Compensation is provided in accordance with the terms of the Prolific research platform. Your participation in this research is strictly voluntary. You may refuse to participate entirely, or choose to stop your participation at any point in the research, without fear of penalty or negative consequences of any kind.

The information/data you provide for this research will be treated confidentially, and all raw data will be deidentified by the Prolific research platform prior to receipt by the principal investigator. Results of the research will be reported as aggregate summary data only, and no individually identifiable information will be presented. Privacy and confidentiality of individually identifiable information is provided by the Prolife research platform.
You also have the right to review the results of the research if you wish to do so. A copy of the results may be obtained by contacting the principal investigator: Lori Woehler lwoehler@antioch.edu

Your direct personal benefits from your participation in this research included compensation for your time and participation as a member of the Prolific research platform. The

results of the research may contribute to ongoing efforts to understand problematic internet use or to society as a whole.

I understand that this research has been reviewed and Certified by the Institutional Review Board, Antioch University, Seattle. For research-related problems or questions regarding participants' rights, I can contact Antioch University's Institutional Board Chair, Mark Russell, PhD at mrussell@antioch.edu. The primary researcher conducting this study is Lori Woehler, MA doctoral student of clinical psychology under the research supervision of Chris Heffner, Ph.D., Psy.D. If you have questions later, you may contact Lori Woehler at lwoehler@antioch.edu

I have read and understand the information explaining the purpose of this research and my rights and responsibilities as a participant. By clicking the accept button below, I give my consent to participate in this research study, according to the terms and conditions outlined above.