

EXPLORING THE EFFECTS OF TECHNOLOGY USE AND OVERUSE ON WELL-BEING
AMONG EMERGING ADULT COLLEGE STUDENTS:
A QUALITATIVE APPROACH

By

Alexis McCarroll

A THESIS

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

Media and Information—Master of Arts

2020

ABSTRACT

EXPLORING THE EFFECTS OF TECHNOLOGY USE AND OVERUSE ON WELL-BEING AMONG EMERGING ADULT COLLEGE STUDENTS: A QUALITATIVE APPROACH

By

Alexis McCarroll

Digital technology use, including smartphone and social media use, is increasingly necessary in the daily lives of emerging adult college students. The number of hours emerging adult college students spend online is increasing as they balance the multiple demands of their lives, including school and social activities. Additionally, concerns about mental and emotional well-being are growing among college students, who have an increased likelihood of experiencing problems such as anxiety, depression, and stress compared to other adults.

This thesis explores how both technology use and overuse impacts well-being and daily life among emerging adult college students. This thesis uses data from a series of in-depth, qualitative interviews from a sample of 19 college students aged 18-24 who self-identified as overusers of technology. Following an analysis of these interviews, it was found that technology overuse impacts the daily lives of college students who identify as overusers by making them feel anxious, creating pressure to respond to their social ties, making it difficult to focus on their education and social lives, and making it difficult to fall asleep at night. Positive aspects of overuse include feeling connected to others, improved mood, and personal development. Negative aspects of use include loneliness, feeling overwhelmed, and depressive symptoms. Based on these findings, implications for future studies are discussed.

Copyright by
ALEXIS MCCARROLL
2020

To my *Lola*,
whose love crosses oceans

ACKNOWLEDGEMENTS

First and foremost, thank you to my committee members for making this possible. To Dr. Shelia Cotten and Dr. Dar Meshi – thank you for letting me join your digital overuse project and allowing me to use this data for my thesis. I truly appreciate your guidance throughout my master’s program. To Dr. Bree Holtz, thank you for the opportunities you have given me and for all of your unending support. I would not have even considered pursuing graduate school had it not been for your encouragement.

Thank you to other faculty members who have supported me throughout my time at Michigan State University. Thank you to Dr. Susan Wyche for always leaving your door open for me and making yourself available to all my questions about graduate school. Thank you to Dr. Jennifer Olson for setting aside class time to ask about my thesis and check in on my well-being. And to Dr. Dave Ewoldsen, thank you for enduring three entire classes with me and recognizing the potential that I have right from the beginning. You sparked my interest in academic research.

Thank you to my brother, Steven McCarroll, for always being by my side and having my back. Thank you to my friend and former roommate, Shama Parekh, for always listening to my excited streams of consciousness about my research projects, concepts I learned in class, and of course, whichever television show I’m currently obsessed with. Thank you to Lorde – *Pure Heroine* and *Melodrama* got me through my long writing sessions while I was locked at home in the midst of a pandemic. And to my dogs, Sirius and Dutch, who have no idea what a master’s thesis even is, thank you for always providing joy and light in my life.

Finally, thank you to my parents, Steve and Esmeralda McCarroll, for pushing me to be my best and for providing me with my education. That is the most valuable gift anyone could

have ever given me. I would not be where I am today if it weren't for the opportunities that you have always provided for me throughout my entire life. This is the product of your unconditional love and support.

TABLE OF CONTENTS

LIST OF TABLES	ix
LIST OF FIGURES	x
CHAPTER 1: INTRODUCTION.....	1
CHAPTER 2: LITERATURE REVIEW.....	3
Technology Use Among Emerging Adults	3
Social Network Sites	6
Technology Overuse.....	9
Self-Perceptions of Technology Overuse	11
Technology Overuse Among Emerging Adult College Students.....	12
Emerging Adults.....	14
Technology Overuse and Well-Being	17
Research Questions	21
CHAPTER 3: METHODS	22
Research Design	22
Sample	22
Data Analysis.....	23
CHAPTER 4: RESULTS	25
Participants	25
Research Questions	27
RQ1: How College Students Describe Impacts of Technology Overuse on Daily Life	27
Feeling Anxious.....	28
Pressure to Respond to Others.....	29
Difficult to Focus.....	30
Difficulty Falling Asleep	33
Summary.....	35
RQ2: Positive Impacts on Well-Being	36
Connected to Others	36
Improved Mood	37
Personal Development.....	39
Summary.....	40
RQ3: Negative Impacts on Well-Being.....	40
Loneliness.....	41
Feeling Overwhelmed	43
Depressive Symptoms	45
Summary.....	47
Model of Possible Pathways Between Technology Use, Overuse, and Perceived Impacts	47

CHAPTER 5: DISCUSSION	50
Limitations.....	53
Future Directions	54
Conclusion.....	55
APPENDIX	56
REFERENCES	62

LIST OF TABLES

Table 1. Social media platforms and their key features. Based on Nadda, Dadwal, and Firdous (2015)	8
Table 2. Participant demographics	25
Table 3. Themes emerged from analysis for each research question	26

LIST OF FIGURES

Figure 1. A model of possible pathways between technology use, overuse, and perceived impacts.....	49
--	----

CHAPTER 1:

INTRODUCTION

Emerging adults, aged 18-29, are the highest adopters of social media and the Internet (Perrin & Anderson, 2019). Digital technology use is becoming increasingly necessary in order to engage with others, and while individuals across all ages are becoming more and more connected with each other online, emerging adults may be at the highest risk of experiencing the consequences of technology overuse. Emerging adults aged 18-34 spend nearly nine hours a day on technology such as smartphones, computers, and other devices (Nielsen, 2018), while still balancing the demands of work, school, and their social lives. Avoiding technology and social media is difficult to accomplish, as these domains of work, school, and social lives often require emerging adults to be connected online. This constant demand for high technology use in the day-to-day routine of emerging adults can impact their lives in several ways. One area of concern for technology overuse is its effects on mental health and well-being.

Mental and emotional well-being is a growing concern among emerging adults. Emerging adults ages 18 to 25 have a greater prevalence of experiencing any behavioral, emotional, or mental obstacle that significantly interferes with one's daily activities than any other adult age group in the United States (NIMH, 2019). Among college students specifically, which make up a considerable portion of the emerging adult population, anxiety (58.9%), depression (48%), and stress (46.9%) are the most common concerns that are addressed at college campus counseling centers (Leviness, Bershad, Gorman, Braun, & Murray, 2018). Anxiety, depression, stress, and similar concerns can affect academic performance and achievement, and college students are well aware of this. One in five college students report that depression has affected their academic performance, and over a quarter of college students report that anxiety has affected their academic performance (American College Health Association, 2019).

It is critical to understand the factors that may heavily impact well-being. However, it is unclear what the relationship is between technology use, or more specifically technology *overuse*, and well-being. This is a growing area of research among disciplines including media and information studies. Within the field, several quantitative methods have been used to attempt to identify a causal relationship between the two, but it is still not evident if technology overuse is caused by poor well-being, if poor well-being is caused by technology overuse, or if the relationship between the two is more dynamic than that. Some studies within this discipline have used qualitative methods, which provides the benefit of an in-depth, nuanced understanding. This approach is useful for understanding the perceptions of technology use and overuse among emerging adults and the perceived impacts they have on well-being.

This thesis focuses on the perceived impacts of technology overuse on well-being among emerging adults in the digital era, using a sample of nineteen undergraduate college students at a large midwestern university. Though this study cannot determine a causal relationship between technology overuse and mental health due to its qualitative design, it can explore the relationship in-depth. The purpose of this thesis is to provide a deeper insight about how emerging adult college students who self-identify as being overusers of technology such as smartphones and social media in their daily lives use digital technology and how they perceive this use to impact their mental health and overall well-being.

CHAPTER 2:

LITERATURE REVIEW

Young adults are connected to digital technology more than ever before due to the increasing number of professional and personal demands online. As young adults are online more frequently and for longer periods of time, this perceived technology overuse may negatively impact their overall mental health. Because mental health is becoming a growing concern among college campuses, this thesis will explore the nature of perceived technology overuse and mental health among college students specifically. This chapter presents a review of existing literature pertaining to emerging adults and their technology use, technology overuse, and the relationship between technology overuse and mental health. Following the review of these subjects, the research questions that will be explored in subsequent chapters are presented.

Technology Use Among Emerging Adults

Emerging adults have access to a wide variety of digital technologies in today's world. Smartphones, laptops, tablets, and similar devices provide emerging adults and others with Internet access. However, more and more emerging adults, as well as the general population, are becoming smartphone dependent, meaning that their smartphones are their primary means of Internet access. Nearly all emerging adults aged 18 to 29 (96%) own a smartphone today, with over a fifth of them (22%) being smartphone dependent (Pew Research Center, 2019). Emerging adults have the highest rate of smartphone dependence among all adults in the United States; smartphone dependency among other adult age groups include 18% of adults aged 30-49, 14% of adults aged 50-64, and 12% of adults aged 65 and over (Pew Research Center, 2019). While emerging adults use other devices such as laptops and tablets, smartphones are by far the most popular means of access among this demographic (Villanti et al., 2017).

In terms of hours of use, emerging adults ages 18-34 spend nearly nine hours a day connected to devices such as smartphones and computers (Nielsen, 2018). Over two and a half hours are spent on apps or the web on smartphones. Other devices that get daily use are tablets (0:36 minutes/day); computers (0:38); TV-connected devices such as game consoles (1:15); radio (1:25); and live and time-shifted TV (2:17) (Nielsen, 2018). Daily use on Internet-enabled devices spans across multiple devices, but smartphones are among the most heavily-used among emerging adults. For social media use in particular, young people ages 16-24 spend just under three hours a day on average on social media (Global Web Index, 2020), which is more than any other age group. Additionally, 70% of young people ages 16-24 state that they use social media while watching TV (Global Web Index, 2020), indicating that social media use is concurrent with other media use and activities, rather than sequential.

With digital technology use comes social media use. Online platforms such as Facebook and YouTube have consistently been widely used among *all* American adults, but platforms like Instagram and Snapchat are especially popular among 18- to 24-year-olds (Perrin & Anderson, 2019). Even within the distinct emerging adults category (18- to 29-year-olds), Perrin and Anderson (2019) found that 18- to 24-year-olds are far more likely than 25- to 29-year-olds to use Snapchat (73% vs. 47%) and Instagram (75% vs. 57%), indicating that the types of digital technology and social media used by emerging adults can vary drastically.

Reasons for digital technology and social media use vary, and many users use both to fulfill multiple purposes. In a review of existing studies exploring why people use social media, Whiting and Williams (2013) found that people use social media for (1) *social interaction*, or the ability to communicate with family and friends online, (2) *information-seeking*, such as finding information on social media about sales or upcoming events or self-educating via how-to-

instruction, (3) *passing time*, or occupying time and relieving boredom, often at work or school, (4) *entertainment*, such as playing games, watching videos, or reading social media posts for comic relief, (5) *relaxation*, or “escaping” from the real world, (6) *communicatory utility*, such as using social media to give users things to talk about with others, and (7) *convenience utility*, or how readily available social media is to users (Whiting & Williams, 2013).

These seven themes are based on uses and gratifications theory, which states that people select specific media to satisfy their wants and needs (Katz, Blumler, & Gurevitch, 1973).

Though uses and gratifications theory was originally applied in the context of television, the theory has become increasingly relevant in social media contexts due to users’ high ability to choose which social media platforms to use and how they interact with them, which align with the underlying assumption of uses and gratifications theory that users are actively involved in media selection (Dolan, Conduit, Fahy, & Goodman, 2014; Katz, Blumler, & Gurevitch, 1973). Additional gratifications that users fulfill through social media include (1) *the expression of opinions*, through means such as commenting, liking, or sharing posts, (2) *information sharing* through social media posts, and (3) *surveillance/knowledge about others*, or the ability to “spy on” other people as a method of staying-up-to-date as well as anonymously criticize others (Whiting & Williams, 2013).

These findings are not specific to emerging adults. However, they help to illustrate the varying uses and gratifications users obtain from social media. For emerging adults, specifically, it has been proposed that they turn to media use to aid in the development of their (1) *autonomy*, in which they select and decide what forms of media are consistent with their own values, (2) *intimacy*, which is developed over a period of time by nurturing friendships and relationships through media such as social media or video games, and (3) *identity*, in which media is used to explore aspects such as gender and sexuality (Coyne, Padilla-Walker, & Howard, 2016). This

specific set of gratifications stems from Arnett's (2006) key developmental tasks for emerging adults, which emphasizes the development of identity, autonomy, and relationship-building. For example, Facebook profiles and similar online profiles are used to reflect personality (Back et al., 2010), thus fulfilling an emerging adult's need for identity expression. In terms of building intimate relationships, social media and other forms of digital communication can be used to provide higher levels of self-disclosure among individuals who do not feel comfortable disclosing such information in face-to-face encounters (Rubin, 2009), either due to loneliness or anxiety. Using uses and gratifications theory, emerging adults may be specifically seeking out media that will fulfill these gratifications (Rubin, 2002), and they may avoid information and media that are not helpful for achieving these goals.

Social Network Sites

One widely-used form of digital technology is social network sites, and then more broadly, social media. Social network sites (SNS) are defined as:

Web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system. (boyd & Ellison, 2007, p. 211)

In other words, SNS allow users to create their own profiles, add other users as "friends", and view their list of friends and other users' lists of friends. While SNS such as Facebook and Snapchat refer to users within an individual's social circle as "friends", other SNS like Twitter or Instagram may refer to these users as "followers". The terminology used to describe users within a shared social circle can vary widely from platform to platform (e.g. "subscribers" on YouTube, "matches" on Tinder, or "connections" on LinkedIn), though they represent the same concept.

The first recognizable SNS, Six Degrees, was created in 1997. While other websites had existed prior to Six Degrees that had social features, Six Degrees was the first to allow users to

create profiles, add friends, and view friends lists. The website eventually closed in 2000, due to several shortcomings, including users' lack of interest in talking to strangers online and the difficulties in uploading and downloading content due to the lack of proper technology to do so (Ezumah, 2013). Shortly after the launch of Six Degrees, dating websites including BlackPlanet, AsianAvenue, and MiGente were launched between 1997-2000. Unlike earlier dating websites, these new websites allowed users to create their own profiles and identify friends/connections. In 2002, LinkedIn and Friendster were created, with Friendster rapidly rising in popularity, and later quickly falling due to frustrations with technical issues and site restrictions (boyd & Ellison, 2007). From 2003 onward, several SNSs launched, most notably MySpace (2003), Facebook (2004), and Twitter (2006). MySpace became widely used by several musicians who were looking to increase their audience, though the site declined in popularity by 2008 due to persistent technical issues and safety concerns about minors and sexual predators (Lusted, 2011). Facebook, however, which had its start among university students and eventually opened to the public in 2012, still remains the SNS platform with the largest number of users (nearly 2.5 billion monthly active users as of the fourth quarter of 2019) (Statista, 2020a). The introduction of Twitter provided all the same features as previous SNSs: users could create their own profiles and view their "followers" and other users' followers. However, Twitter introduced a faster and more concise means of communicating online with its 140 character limit per tweet. While Twitter was initially used among journalists, it was later popularized by celebrities as a platform to share events from one's daily life (Ezumah, 2013).

Though the creation of user profiles and friends lists are important elements of SNSs, boyd and Ellison's (2007) definition of SNSs does not include an increasingly-popular aspect of modern-day social networks: content creation (Hine, 2015). Today's social media platforms are a

part of “Web 2.0”, which focuses on the participatory nature of the Internet, including user-generated content (O’Reilly, 2005; Blank & Reisdorf, 2012). The content created and shared on social media platforms can be as simple as text posts and messages or they can be richer forms of content such as pictures, videos, and games. Because of the diverse functionality of social media platforms today, these platforms can include SNSs, micro-blogging sites, collaboration tools, content management systems, video and photo sharing sites, personal broadcasting tools, and virtual worlds (Nadda, Dadwal, & Firdous, 2015). The key features of these social media platforms are described in Table 1 below.

Table 1. Social media platforms and their key features. Based on Nadda, Dadwal, and Firdous (2015)

Social Media Platforms	Examples	Main Features
Social network sites (SNSs)	Facebook, Friendster	Users can create their own profile and connect with other users who share similar interests, backgrounds, or social connections
Micro-blogging sites	Twitter, Tumblr	Users can publish short written posts, which can include images, links, and video
Content management systems	WordPress, Wix, Squarespace	Users can create and modify digital content, usually on their own website
Collaboration tools	Wikipedia	Users can work together to create, edit, and manage content, either synchronously or asynchronously
Photo sharing sites	Instagram, Pinterest	Users can edit, upload, and share photos or videos
Video sharing sites	YouTube, Dailymotion	Users can edit, upload, and share longer videos
Virtual worlds	World of Warcraft, Second Life, Skyrim	Users can create avatars and interact with one another in a 3D computer-based online community

Today, the most widely used social media platforms among adults are YouTube, Facebook, Instagram, Pinterest, LinkedIn, Snapchat, Twitter, WhatsApp, and Reddit (Perrin & Anderson, 2019), the majority of which (Facebook, LinkedIn, Snapchat, WhatsApp, and Reddit) fall under the SNS category. However, using Nadda, Dadwal, and Firdous' (2015) categorization of social media platforms (Table 1), the most widely used platform, YouTube, is considered a video sharing site, meaning that its primary function is to allow users to share videos with their audience. Instagram and Pinterest fall under photo sharing sites, which enable users to upload and edit photos and videos. Twitter is considered a micro-blogging site, meaning that users are able to share short written entries ("tweets") with their audience.

The number of social media users is at an all-time high, with approximately 250 million Americans having their own online presence (Statista, 2020b). The social media apps with the most active monthly users in the United States are Facebook (170 million users), Instagram (121 million), Facebook messenger (106 million), Twitter (81 million), Pinterest (67 million), Reddit (48 million), and Snapchat (46 million) (Statista, 2020c). Among emerging adults specifically, the most popular social media platforms are Snapchat (73%), Instagram (75%), Twitter (44%), YouTube (90%), and Facebook (76%) (Perrin & Anderson, 2019).

Technology Overuse

While it is evident that technology use is nearly ubiquitous among emerging adults, it is hard to determine if high levels of technology use is considered an unhealthy behavior. There are several reasons why one may use technology to the extent that some people might consider "excessive" such as using it to fulfill work, school, or social obligations. Though it has become increasingly popular among the general public to label technology overuse as an "addiction," Griffiths (2010) states that excessive technology use, not explicitly defined, does not necessarily equate with addiction. In fact, in Griffiths's prior work, he argues that excessive technology use

can only be classified as an addiction if it fulfills the following six components: (1) salience, (2) mood modification, (3) tolerance, (4) withdrawal symptoms, (5) conflict, and (6) relapse (Griffiths, 2005). The components are briefly described within the context of technology use below.

Salience. Technology use dominates an individual's life and thoughts. Even when they are not actively engaging in technology use, it is still their primary focus.

Mood modification. Individuals use technology in order to positively alter their mood. A common example of mood modification is cigarette smokers reporting that they experience a "nicotine rush" when they smoke a cigarette. The addictive behavior is usually used as a coping mechanism in order to make the individual feel better about themselves.

Tolerance. In order to continue receiving the same level of pleasurable effects, an individual must increase their levels of technology use. This could mean increasing the frequency or duration of their use.

Withdrawal symptoms. When their technology use is reduced or discontinued entirely, an individual will experience unpleasant feelings or physical effects. Griffiths (2005) states that these effects may be psychological (e.g. irritability), or physiological (e.g. nausea or headaches).

Conflict. An individual may experience conflicts within themselves or among others because of their excessive technology use. Within this dimension, technology use is considered to be addictive if it conflicts with an individual's personal relationships, work and/or education, and other social activities. An individual may also find that it is difficult to stop using digital technology despite their desire to cut down use.

Relapse. Traditionally, relapse refers to an individual returning to their problematic behaviors after a period of abstinence. However, in the context of technology use, it is difficult for an individual to quit entirely because of how interwoven digital technology is in one's day-to-

day life. Relapse in this context can refer to high levels of technology use after a period of limited, controlled use.

Griffiths argues that these six components must be fulfilled in order for behaviors such as excessive technology use to be considered an addiction. Technology overuse is a better-fitting term because it is difficult to determine at what point individuals experience detrimental or withdrawal effects from technology use. However, despite technology overuse being a more apt term to describe high levels of use, several studies still use terms such as social media addiction or smartphone addiction when describing the phenomenon. These terms are used below.

For example, one study found through hierarchical regression that factors such as younger age, neuroticism, and fear of missing out (FOMO) predicted social media use, while only FOMO predicted social media addiction (Blackwell, Leaman, Trampusch, Osborne, & Liss, 2017). Social media addiction in this study was determined using the 6-item Bergen Social Media Addiction Scale (BSMAS; $\alpha = .88$; Andreassen, Torsheim, Brunborg, & Pallesen, 2012). Another study using the BSMAS as well found similar results. Andreassen, Pallesen, and Griffiths (2017) found in this study of over 23,500 Norwegians that factors such as younger age, being female, being a student, being single, narcissism, and lower self-esteem were associated with addictive use of social media. The six items from the BSMAS reflect Griffith's six components of addiction for websites such as "Facebook, Twitter, Instagram, etc." (Andreassen et al., 2012).

Self-Perceptions of Technology Overuse

Davis (2001) notes that the individual must determine the degree to which they are using digital technology in either an adaptive or maladaptive manner. Because of the complex nature of technology use (i.e., the many different reasons for using technology and its omnipresence in day-to-day lives), it is difficult for researchers and clinicians to provide a concrete definition for

technology overuse. Davis (2001) notes that it is difficult to draw the line between healthy technology use and maladaptive technology use because there is no specific “behavioral benchmark” or set time limit to determine the difference between the two. As such, Davis (2001) emphasizes that it is important for the individual to determine if their technology use is excessive based on how they perceive their own technology use and how they perceive any associated consequences.

Because Davis’ research on the subject was at the beginning of the century, his argument was for the Internet in general as it existed during that time. The Internet has evolved rapidly since then and has since expanded to include technologies such as smartphones and social media. This notion of the user perceiving their own technology overuse may still apply to social media and other prevalent digital technologies that are widely used today, due to the continued complexity of how users interact with these platforms.

Technology Overuse Among Emerging Adult College Students

Central factors for self-reports of high quantities of ICT use among young adults ages 21 to 28 include personal dependency on mobile phones and social media and work- or school-related demands for availability and achievement originating from work, study, social life, and individual aspirations (Thomée, Dellve, Härenstam, & Hagberg, 2010). Thomée et al. (2010) also found in the same study that some of the consequences of high ICT use, defined by high computer use (minimum of 10 hours/week for women and 26 hours/week for men) or high mobile phone use (minimum of 8 calls or SMS messages/day for women and 7 calls or SMS messages/day for men), among this group of young adults include mental overload, time pressure, feelings of guilt, social isolation, and the neglect of other activities and personal needs. The findings from this study suggest that there are several factors behind technology overuse that may result in multiple negative outcomes for young adults. However, due to the qualitative

nature of the study, Thomée et al.'s (2010) findings are specific only to the sample that was interviewed and are not generalizable to the general population within the emerging adults category.

Other researchers have used quantitative approaches to study technology overuse among emerging adult college students. Using a smartphone usage tracker to compare patterns of use, it was found that college students who were at-risk for smartphone overuse, measured by the Smartphone Addiction Proneness Scale for Adults (Kim et al., 2012), consume more online content over longer periods during the morning and evening than those who are non-risk and are more susceptible to respond to push notifications (Lee et al., 2014). Indicators of technology overuse include the more frequently that users compulsively open an app, the longer the duration that they used the app, and the more regularly they used an app (Ding, Xu, Chen, & Xu, 2016). These indicators are based on findings from college students' own perceptions of their technology "addiction" or overuse.

Mobile applications that college students feel they overuse the most are social media apps such as Facebook, Instagram, and Snapchat, as well as apps for communication such as MMS, WhatsApp, and Email (Ding et al., 2016). College students at risk for technology overuse demonstrate limited self-control when it comes to consuming online content (Lee, 2016). This lack of self-control may explain why emerging adults are using social media apps longer and more frequently than they would like. There are slight gender differences as well, with Ding et al. (2016) finding through unpaired two-tailed t-tests that females are more likely than males to think that the apps that they use are "addictive", meaning they feel that they perceive their use on those apps to be higher than they would like it to be.

Technology overuse can also impact self-esteem. Using measures for social media addiction, self-esteem, and satisfaction with life, it was found that while self-esteem has a

positive association with satisfaction with life, self-esteem also has a negative association with addictive social media use (Hawi & Samaha, 2017). This may indicate that individuals with problematic social media use, or technology overuse, also have a low satisfaction with their lives. Along with problematic social media use, problematic Internet use is associated with low self-esteem and depression (Nie, Zhang, & Liu, 2017). The causal ordering of these associations is not known.

Emerging Adults

This thesis focuses on emerging adults because emerging adulthood is a pivotal time of development in the life course. Emerging adulthood is characterized as a period of development from the late teens through the twenties in one's life (Arnett, 2000). While many cultures have their own indicators of emerging adulthood, Arnett initially proposed that the years 18-25 are years of profound change and importance for most young people in industrialized, or western, countries (Arnett, 2000). It is an important period that has lasting ramifications on the rest of one's life, with many adults expressing that the most important events of their lives took place during their emerging adulthood (Arnett, 2000; Martin & Smyer, 2009). Rather than being a transition between adolescence and adulthood, emerging adulthood is its own distinct life stage (Tanner & Arnett, 2009).

In recent years, cultural indicators that typically mark the beginning of adulthood, such as marriage and childbirth, have been delayed in an individual's lifespan, meaning that they occur later in one's life. Arnett observed around the turn of the century that these delays in marriage and parenthood over the last century have altered the nature of development for teenagers and young adults in their twenties (Arnett, 2000). As these milestones that culturally define adulthood are pushed further and further back, so is one's developmental period. Because it is hard to place an exact age on when this developmental period ends, Arnett further broadens the

emerging adulthood category as 18- to 29-year-olds, and even argues that this period of decision-making with lifelong ramifications can last into one's thirties as well (Arnett, 2015). Though the duration of the period for emerging adulthood is constantly changing due to ever-changing social norms and expectations, 18 to 29 is among the most commonly used age ranges and is the age range for emerging adulthood that will further be discussed in this paper.

Emerging adults share five characteristics: self-focus, instability, identity explorations, feeling in-between, and sense of possibilities (Arnett, 2004). Emerging adulthood is the period in which these five characteristics are prevalent, with a particular emphasis on emerging adulthood being the age of identity explorations. It is an age in which emerging adults explore different possibilities with personal and professional goals to develop a definite understanding of who they are (Arnett, 2020). This period of identity exploration contributes to the sense of possibilities, with many emerging adults feeling optimistic about their direction in life. Nearly all (89%) 18- to 24-year-olds in a national survey agreed with the statement, "I am confident that eventually I will get what I want out of life" (Arnett & Schwab, 2012, p. 18).

With these explorations also comes instability. As emerging adults explore the different possibilities their lives may take, their present lives often become unstable (Arnett, 2020), with 18- to 29-year-olds having a much higher rate of residential change in the United States than any other age demographic (Arnett, 2004), due to many emerging adults moving out to either gain independence from their parents or move to live on-campus at a college or university, for example.

As emerging adults navigate through this period of instability, they face challenges as their roles as adults become more demanding (Zarrett & Eccles, 2006). These challenges include the management of these increasingly-demanding roles, refining their skills in order to succeed in these roles, deriving meaning from the roles that they have acquired, and making necessary life

changes (i.e. moving) in order to succeed with these roles and coping with such changes (Eccles & Gootman, 2002). However, with this newfound independence and focus on exploring one's identity and one's possible paths in life, emerging adulthood is also an age of self-focus. As young adults are moving out of their parents' homes and not having children or getting married until their late twenties or early thirties, these years are spent focusing on themselves and the skills and knowledge they will need for their adult life (Arnett, 2004). Finally, because of the transition between adolescence and adulthood, two relatively stable periods of life compared to emerging adulthood, this period of life is also the age of feeling in-between. When asked "do you feel that you have reached adulthood?" the majority of emerging adults respond ambiguously, stating that they do feel like they have reached adulthood in some ways, but in other ways they do not (Arnett, 2012). This feeling of in-betweenness does not fade until one's late twenties or early thirties, during which emerging adults begin to start feeling adult (Arnett, 2020).

During this period of instability and changes, emerging adults have a higher risk of suffering from mental disorders (LeBlanc, Brown, & Henin, 2019). Mental disorders such as anxiety can interfere with an emerging adult's ability to achieve their goals, develop their own identities, and form intimate relationships with friends and significant others (LeBlanc, Brown, & Henin, 2019). Additionally, risk-taking is more prevalent during emerging adulthood, and may manifest into problems such as heavy drinking, drug use, and risky sexual behavior (Schulenberg, O'Malley, Bachman, Wadsworth, & Johnston, 1996; Miller & Quick, 2010). Because of this, men typically tend to struggle more than women while adapting to these changes during emerging adulthood (Nelson & Padilla-Walker, 2013).

On top of these challenges, many emerging adults use this age of self-exploration to achieve educational goals, now more than ever. While only 41.1% of adults ages 25 and over in 1960 had completed a high school education or higher, nearly 90% of adults the same age have

the same level of high school completion in 2018 (US Department of Education, National Center for Education Statistics, 2019). Similarly, more than a third (35%) of adults ages 25 and over have a bachelor's degree or higher in 2018, compared to the 7.7% of adults who had a higher education degree in 1960 (US Department of Education, National Center for Education Statistics, 2019). Because of this trend over the past decade or so for more and more emerging adults to seek out higher education immediately after high school, college students make up a considerable portion of the emerging adults category. As emerging adult college students typically share similar experiences with regard to self-focus, instability, identity explorations, feelings of in-between, and sense of possibilities, this demographic in particular is the focus of this study.

Technology Overuse and Well-Being

Because technology such as smartphones and social media are popular among all adults and emerging adults specifically, concerns regarding the impacts of potential overuse on mental health arise. Technology overuse can have consequences in many areas of people's lives, but the association between technology overuse and mental health is an increasingly popular area of research. This section briefly describes some existing studies that have explored the relationship between technology overuse and mental health and well-being factors including but not limited to self-esteem, loneliness, stress, depression, and overall satisfaction with life. All but one of the studies discussed in this section focus specifically on SNS use.

Prior studies have examined the effects of technology overuse on mental health by focusing on one SNS such as Facebook in particular (e.g. Turel, He, Xue, Xiao, & Bechara, 2014; Błachnio & Przepiorka, 2019). Błachnio and Przepiorka (2019) assessed the role of Facebook dependency or "Facebook intrusion" (a term dubbed by Elphinston & Noller, 2011) on phubbing, or the act of checking one's smartphone while having a face-to-face conversation with another individual (Karadag et al., 2015), and other factors such as self-esteem, loneliness, and

satisfaction with life in a cross-sectional study. An online questionnaire was sent to nearly 600 participants across the ages of 16 to 78 ($M = 21.22$ years, $SD = 6.52$) and measured these factors using the Phubbing Scale for communication disturbance ($\alpha = .81$) and phone obsession ($\alpha = .67$; Karadag et al., 2015), the Facebook Intrusion Questionnaire ($\alpha = .86$; Elphinston & Noller, 2011), a Polish adaptation of Rosenberg's Self-Esteem Scale (SES; $\alpha = .73$, Łaguna, Lachowicz-Tabaczek, & Dzwonkowska, 2007), the De Jong Giervald Loneliness Scale ($\alpha = .88$, Grygiel, Humenny, Rebisz, Switaj, & Sikorska, 2013), and the Satisfaction with Life Scale ($\alpha = .86$, Diener et al., 1985; Błachnio & Przepiorka, 2019). Findings from the study showed that women were more likely than men to score for communication disturbance and phone obsession, while low levels of self-esteem and life satisfaction were predictors of Facebook intrusion.

Turel et al. (2014) also assessed mental health factors and Facebook use, using neuroscientific methods. Through a series of MRI scans, Turel et al. (2014) found that Facebook “addiction”, measured using an adapted version of van Rooij et al.’s (2011) Facebook addiction scale, was positively associated with the activation of the amygdala-striatal system, or the area of the brain associated with impulsive behaviors, which is similar to other addictions such as substance addiction and gambling addiction. However, unlike other addictions, Facebook “addiction” did not activate the prefrontal cortex brain system, which is the area of the brain associated with inhibition. These findings demonstrate that while Facebook “addiction” and other technology-related “addictions” share some similarities with other established addictions, they are still different on at least one dimension (Turel et al., 2014). This approach to studying the effects of technology overuse on mental health (with addiction being considered a mental health condition) differs from many communication-based studies in the same field, which rely more heavily on questionnaires and other methods of self-report.

Other studies have examined the effects of multiple SNSs as a whole on mental health (e.g. Worsley, Mansfield, & Corcoran, 2018; LaRose, Connolly, Lee, Li, & Hales, 2014). Though Facebook has consistently been the most widely used SNS over the past decade or so, it is becoming increasingly common for people to use multiple SNSs (Perrin & Anderson, 2019) to fulfill different uses and gratifications. Research that examines multiple SNSs can help to paint a clearer picture of the relationship between technology use and mental health.

Low psychological well-being has been associated with problematic social media use (Worsley, Mansfield, & Corcoran, 2018). Emerging adults aged 18- to 25-years-old who have high self-acceptance, autonomy, purpose in life, positive relations with others, environmental mastery, and personal growth are less likely to experience problematic social media use as defined by Griffith's (2005) six components of addiction (Worsley, Mansfield, & Corcoran, 2018). Similarly, emerging adults (18- to 22-years-old) who use a higher number of different social media platforms (among Facebook, Instagram, Snapchat, and Twitter) report having poorer levels of psychological well-being (including higher levels of anxiety symptoms and depressive symptoms) (Vannucci, Ohannessian, Gagnon, 2019). These higher levels of anxiety symptoms and depressive symptoms may be due to technology overuse from high volumes of different social media platforms used. Additionally, attachment anxiety, or an individual's anxiety about their relationships with family, friends, and significant others, is indirectly related to problematic social media use when psychological well-being (based on the six dimensions from Ryff's Psychological Well-Being Scales: self-acceptance, autonomy, purpose in life, positive relations with others, environmental mastery, and personal growth) is a mediator (Worsley, Mansfield, & Corcoran, 2018; Ryff, 1989), meaning that those who experience attachment anxiety with others may seek to enhance their psychological well-being through social media, leading to problematic use.

There are also some positive effects on the psychological well-being of social media users (e.g. social capital; Ellison, Steinfield, & Lampe, 2007). The demands of social media use pertaining to friends and followers was found to have a negative correlation with negative affect (LaRose et al., 2014), meaning that connecting with others on social media can improve mood. Though other research has focused on the negative impacts of social media use on mental well-being, LaRose et al. (2014) found evidence that connection habits can help to alleviate bad moods and improve negative life outcomes by providing social support on online platforms for individual users. Additionally, social media may be used in a manner to help cope with existing conditions like anxiety (Vannucci, Flannery, Ohannessian, 2017), through means such as mental disengagement and emotional support from other users (van Ingen, Utz, & Toepoel, 2016). Image-based platforms such as Instagram and Snapchat appear to have more positive impacts than text-based platforms (e.g. Twitter), because shared images can quickly and effectively communicate emotions and feelings compared to text (Goh, Ang, Chua, & Lee, 2009). As such, image-based platforms have the potential to reduce feelings of loneliness due to their enhanced intimacy (Pittman & Reich, 2016).

Existing literature on technology overuse and mental health demonstrate that the relationship between the two is complex and can provide both positive (e.g. LaRose et al., 2014) and negative (e.g. Błachnio & Przepiorka, 2019; Worsley, Mansfield, & Corcoran, 2018) mental health outcomes. Many of the existing studies in this area utilize quantitative methods for data collection, with the majority of the studies apart from one (Turel et al., 2014) being reliant on self-reported data (e.g. surveys). Qualitative approaches such as semi-structured interviews can provide deeper insight on the relationships between all of the factors involved in technology overuse and mental health (e.g. Thomée et al., 2010).

Research Questions

The literature review demonstrates that there are multiple existing studies exploring technology overuse, mental health, and the relationships between the two. A large number of studies within the existing body of literature focus on technology overuse among emerging adults. However, more research can be done to explore the ways in which technology overuse impacts the mental health of emerging adults, or college students in particular, due to the demographic's prevalent and multifaceted technology use. In order to explore this further, the following research questions are put forth:

RQ1: How do college students describe the impacts of technology overuse on their lives?

RQ2: What are the perceived positive well-being consequences of technology use among college students who report overusing smartphones and/or social media?

RQ3: What are the perceived negative well-being consequences of technology use among college students who report overusing smartphones and/or social media?

CHAPTER 3:

METHODS

Research Design

A qualitative approach was used in order to examine the relationship between perceived technology overuse and mental health among emerging adults at a deeper level. Data was collected through in-depth semi-structured interviews, which allow the interviewer to prepare a general guide to follow as well as provide the benefit of providing rich and comparable qualitative data (Cohen & Crabtree, 2006). The study was approved by the institutional review board of Michigan State University. Each interview lasted approximately one hour, and the interviews were recorded and later transcribed. The interviews included a thorough discussion of digital technology use, including smartphones, social media, mobile applications, and general technology use. Participants were asked about effects of use and non-use of technology or social media and how it may impact their health and well-being. Pressures from smartphone and technology use, such as pressure to respond quickly to messages and anxiety from using (or not using) smartphones, are discussed in the interviews as well. The interview guide is attached in the Appendix.

Sample

The sample was selected as part of a larger study focused on technology overuse across the life course. Although participants from the larger study can be any age, and while all age groups are affected by technology overuse to some extent, this thesis focuses on college students within the emerging adults age category because of their high levels of technology use and worsening mental health and well-being.

College students who reported that they overuse technology were selected as the sampling frame for this thesis. Participants were recruited through the College of

Communication Arts and Sciences' SONA student pool, a subject pool software. This student pool is open to undergraduate students within the College of Communication Arts and Sciences at Michigan State University who are enrolled in a course that allows them to participate in research studies for extra credit. Participation in the study was voluntary, and the interviews began after participants gave their consent. Participants received course extra credit upon completion of their interview. Nineteen undergraduate college students between the ages of 18 to 24 participated in the study. This sample is illustrative of emerging adults who are undergraduate college students who take courses in a college of communication at a land-grant university in the midwestern region of the United States. However, due to the qualitative nature of the research design and the small sample size from one university, the findings may not be representative of this larger student population.

Data Analysis

After the surveys were completed and transcribed, the data was qualitatively coded by three members of the research team using NVivo 12, a qualitative data analysis software. All three coders coded the same transcript and met to identify and resolve disagreements. To ensure inter-coder reliability, a selection of transcripts were coded by all three coders until they reached adequate reliability (Cohen's kappa > 0.80). Interview dialogue was coded into a set of forty-eight nodes that were developed by the larger team and based on the content of the interviews, including but not limited to addiction/problematic use, affective state/personality, digital distraction, effects of use/non-use, health, productivity, presentation and social comparison, sleep, conflict, and phone use.

After all of the transcripts were coded, I selected nodes that were relevant to each of the three research questions. I went through each of the selected nodes to find similarities among participant responses to develop a sense of themes that are present in the transcripts. For RQ1,

nodes related to technology overuse were included. For RQ2 and RQ3, nodes that related to technology use and well-being were included. A list of these themes based on content coded under these nodes was developed, and finalized into broader, overarching themes, with three to four themes per research question. The themes that were developed in this analysis are presented in the results section, and are used to answer RQ1, RQ2, and RQ3.

CHAPTER 4:

RESULTS

This study uses interview data from college students to determine the impacts of digital technology on their daily lives. Participants were specifically asked about the effects of technology use and overuse on areas of their lives, including their affective state, health, sleep, and relations with others. This chapter presents the results that are organized based on themes that emerged from the interviews.

Participants

Nineteen college students who self-identified as technology overusers participated in the study. The average age of these participants was 20.2 years old, with ages ranging from 18 to 22 years old. One participant, P12, did not specify his age but was included in the study as he was a college student. Nearly half (47.4%) of participants identified as female, with the remaining 52.6% identifying as male. Of the participants, 36.8% identified as White or Caucasian, 21% identified as Asian, 10.5% identified as African American, 10.5% identified as Hispanic or Latino, and 21% identified as another race. Table 2 shows the participant demographics. Participants are labelled by their ID number in the study. These ID numbers are used to identify quotes in this section. The majority of these participants (78.9%) owned iOS devices (i.e., iPhones), and the average number of hours spent on their smartphones per day was 3.7 hours.

Table 2. Participant demographics

Participant ID	Age	Gender	Ethnicity
P01	20	Female	Other
P02	19	Female	White or Caucasian
P03	22	Female	White or Caucasian
P04	19	Female	African American
P05	21	Female	White or Caucasian
P06	21	Male	Other
P07	20	Male	White or Caucasian
P08	21	Male	Hispanic/Latino
P09	20	Male	African American
P10	19	Male	White or Caucasian
P11	24	Male	Other
P12		Male	Hispanic/Latino
P13	19	Female	Other
P14	18	Female	Asian
P15	21	Female	White or Caucasian
P16	21	Male	White or Caucasian
P17	21	Male	Asian
P18	19	Male	Asian
P29	19	Female	Asian

Research Questions

RQ1 asks how college students describe the impacts of technology overuse on their lives. RQ2 and RQ3 further explore these impacts by asking what the positive and negative consequences of technology use on well-being are among students who identify as overusers of technology. These research questions were investigated using thematic analysis, with themes for each research question developed based on the codes from the interview transcripts. Table 3 identifies the themes that emerged from each research question. The following sections describe the themes that emerged in detail.

Table 3. Themes emerged from analysis for each research question

How college students describe impacts of technology overuse on daily life (RQ1)	Positive impacts of technology use on well-being (RQ2)	Negative impacts of technology use on well-being (RQ3)
• Feeling anxious • Pressure to respond to others • Difficult to focus • Difficulty falling asleep	• Connected to others • Improved mood • Personal development	• Loneliness • Feeling overwhelmed • Depressive symptoms

RQ1: How College Students Describe Impacts of Technology Overuse on Daily Life

Participants discussed the impacts of technology overuse on their lives throughout their interview sessions. Participants noted that technology overuse resulted in feeling anxious, feeling pressure to respond to others, made it difficult for them to focus on tasks and relationships, and made it difficult to fall asleep. The following sections explore how participants describe these impacts on their daily lives (RQ1).

Feeling Anxious

Anxiety is another common feeling among college-aged overusers, which stems primarily from not being able to use or access their smartphones or social media. Participants use their phones to escape from difficult situations or moods (e.g., boredom), or to stay in the loop with current events. Not being able to access their phones or social media in order to accomplish either one of these two tasks can be stressful for overusers which may lead to them feeling anxiety.

Because college-aged overusers use their smartphones and social media as a form of escapism, not having access to either can be difficult to deal with. Primarily female participants mentioned feeling anxious as a result of this. When asked how she feels when she cannot access her smartphone, a 19-year-old female participant shared:

Sometimes I get anxious.... It just depends on the day or the time. Like if I'm bored, more than anything, I'll be like 'Okay, I want my phone.' (P02)

When it comes to staying in the loop with current events, many of the participants expressed that they experience the fear of missing out, or FOMO, which makes them feel anxious. One participant, a 21-year-old woman, stated:

Yeah [not having access] makes me pretty anxious and worried that I'm missing something important. (P05)

Another participant, a 19-year-old woman, explained that she feels anxiety when she does not have access to her phone. She worries about missing certain content or big news if she is not on social media. She explained:

I just feel like I'm out of the loop. Like I could miss something really big if I'm not on social media. Like, 21 Savage [hip-hop rapper] is in police custody... because his visa expired or whatever.... Also, there has been a pattern of African American rappers being arrested throughout the month. Throughout Black History Month there has been a black rapper arrested literally every day... I wouldn't have known that if I hadn't been on social media. (P04)

Just the thought of not having their smartphones attached to them causes anxiety as well. Another 21-year-old female participant explained how her dependency on her smartphone causes her to panic. In the scenario she described, the need to constantly have her smartphone in visible sight at all times to prevent anxiety and panic is indicative of problematic use. She said:

I get a little anxious, especially like when I can't find [my phone] in the [bed]sheets. I'm like, 'Shoot, where is it?' Like, a little bit of a heart attack, like, 'Where is it? Where is it? Where is it?' It's not like I'm going to die, like, 'Oh my God, it's gone.' I do get a little panic and like, 'Where's my phone? I need my phone'. It just repeats itself. It's a system. I'll forget I even just lost it and do the same thing again. Like, 'Oh, shit, where's my phone? Oh, wait, how long has it been since I tried to look for my phone?' It's always just a hunt for my phone. 'Where is my phone?' (P15)

Overall, this dependency on smartphones and social media is indicative of overuse. Female participants feel anxious or uncomfortable when they do not have their smartphones on them, or if they are in situations where they are unable to access their smartphone or social media. Much of this anxiety is driven by the fear of missing out on important updates or events in the world, or by not being able to avoid difficult moods such as being bored.

Pressure to Respond to Others

In addition to feeling anxious, participants noted that they feel pressure to respond to others' messages, either through text or on social media. However, most participants agree that this pressure is heavily dependent on who the messages are from. Many participants stated that they only experience pressure from certain people, but have no problem responding to others. For example, P03 explained:

I think it depends on who I'm talking to, and what we're talking about, because I do find times where I can have six or seven texts come through, when I'm doing something on my laptop, or doing something important. Then I'm like... I don't care enough to respond. I'm focused on whatever I'm doing. It's like it can wait. But if it's like my parents or something, then I'll respond quickly. (P03)

In addition to parents, P03 also expressed that she feels this pressure from her boyfriend at times.

My boyfriend likes to call a lot. So sometimes I feel pressured if I don't answer. Then he calls me like three, four times. Then he gets mad if I don't answer, so then it was like, 'I'm studying. I don't want to be interrupted.' So sometimes [I feel pressure] there. (P03)

Another participant, a 21-year-old man, noted that he feels pressure when it comes to responding to messages from group members for class, but not from friends. When asked if he feels pressure to respond quickly, he answered:

Only if it's maybe from my class groups or work. I feel like if it's my friends, I could read it later, unless they're tagging me in it, for me to respond. That's it... I think the only times [I feel pressure] are maybe when group work is getting close to due dates and they just want to check on if people have done their parts, so we can turn it in. That's about it. (P17)

This sort of expectation to respond to group members quickly seems to be typical for college students. Another participant, P02, explained that she also experiences this pressure, and stated:

It depends on who it is and what it's for. Like I have three labs this semester, so we all work on projects together. So, if it's them, I try and answer quickly. My friends, if we're just having a regular conversation about our days, it doesn't really matter, like I'll respond when I want to. (P02)

She clarified that her group members expect a quick response, as well as her parents:

My parents [expect me to respond]. Probably people in our lab group, my lab group, are hoping I respond quickly, so they can get our content done. I guess if they want me to respond, they'll text me again. I've gotten texts like that, 'Please answer,' or, 'Answer now,' or, 'Hello, are you there?' (P02)

When participants perceive that there is an expectation for a quick response, in this case for parents or lab groups, they typically note that they experience more pressure than they would from friends.

Difficult to Focus

Participants indicated that using smartphones or social media made it difficult to focus, particularly when it comes to their school and their social lives.

Difficult to Focus on Schoolwork

Technology overuse often interferes with school and education, particularly in regard to time management. When asked which situations their overuse has impacted them the most, one participant, a 21-year-old woman, answered:

I've probably overused it and didn't focus on my project that's due the day of. Like, I just get so stressed out and procrastinate so much where I'll end up only having an hour left to do homework. That's, the overuse... doesn't help. I'll disrupt my homework. Since my boyfriend is a gamer, I've started gaming on my computer now, and now that's my thing. I'll forget how long I've been gaming for, and here I am, like, got to turn in the assignment. (P15)

According to P15, gaming on a computer with their romantic partner easily distracts her from school assignments and makes it difficult to focus. This lack of focus due to overuse can lead to negative affective states, as P15 notes feeling stressed due to improper time management.

Another participant, a 19-year-old woman, felt similarly in regard to managing their time while studying for a difficult exam, and she stated:

It hit me this semester that... I have to actually put time in and work and effort and not just think that if I read this lecture that I'll automatically know, because I don't. When I was supposed to be studying for exams, I definitely most of the time end up on my phone and then be on my phone for at least 15 minutes. Then I'll realize, 'Oh, let me lock it and go back to studying.' That back and forth doesn't do anything for me at all. I'm not learning anything because I can't keep switching off like that. You're supposed to study for a while and then take a little break, and that's like a snack break. It's not to be on your phone. (P13)

Technology serves as a distraction from difficult tasks such as schoolwork, with an 18-year-old woman who explained the following:

If some friend texts me, I will not study anymore and play on my phone. Maybe one hour will pass very quickly. (P14)

Receiving notifications makes it difficult for self-reported overusers of technology to focus on assignments, with a couple of participants explaining that their phone is salient in their thoughts while they should be focusing on completing homework. P16, a 21-year-old man,

explained that while doing homework on their computer, they are solely focused on the notifications on their phone. Another participant, a 21-year-old woman, expressed a similar statement. This preoccupation with smartphone use makes it difficult to focus on assignments because participants are planning which actions (i.e., texting back a friend) they plan to take next on their smartphones.

If I get a notification, I'll kind of look over at my phone and then go back to my work, and then over the next... I'll finish whatever part I was doing of my homework and then I'll go right to it, but I'll be thinking about that the whole time. (P16)

When I'm in class and I have a bunch of unread messages, it's hard to focus because I'm planning what I'm going to say to them. (P05)

Participants who note being distracted by technology while completing schoolwork have said that this has negative impacts on their grades. A couple students expressed the following sentiments:

I think it [smartphone use] will affect my grade because I can't focus in class" (P14).

I failed the [course] exam, the first one, and it was because I was on my phone most of the time. That's why I turned it off when it was time to study for the next one because I couldn't fail again. I can't do that" (P13).

However, one participant noted the opposite, and said, "I get my schoolwork done first" (P19), which indicated that it may be less difficult for them to focus on work despite their overuse.

Difficult to Focus on Social Life

There were some instances that participants mentioned smartphone and social media use interfering with their relationships with their peers. Many participants use their phones while spending time in-person with their friends or significant others, yet they are often not present in conversations with them. A 19-year-old male participant noted:

When I'm with my friends, I noticed I'll be on Twitter, my roommate will be talking to me, and I think, 'Wait do I remember anything he just said?', sometimes I'll have to be like,

'Listen, focus on what he's saying. ' I don't find that happening too often, usually when he starts speaking, I'm good to be able to put it down, but that doesn't happen sometimes, when I'll be like preoccupied with both, and I'll be like, 'you've got to focus on who's talking to you, right now'' (P10).

In this instance, the participant is aware of their preoccupation with his phone and has to work harder to pay attention to what his roommate is saying. Another participant, a 21-year-old woman, also noted how easy it is to get distracted on her phone while having a conversation with a friend. She explained:

I have a hard time... walking out of class, and my friend is talking to me, but I'm texting my ride, like, 'I'm here,' and I don't know what she's saying because I can't type and think at the same time, so she'll have to repeat it and she'll be like, 'Dude, come on. I just said this.' (P15).

This interference with participants' interpersonal relationships can cause frustration among their friends and peers. In a similar statement, a 19-year-old female participant noted:

I realized that I miss out on more social interactions with actual people. Sometimes my friends will come to me and my roommate's dorm and we'll all be together. They'll be talking but I'll get on my phone and then I'll realize that I miss something. I'm like, 'Wait, can you go back, tell me again? I missed what you were saying.' Stuff like that. (P13)

Throughout all of these scenarios, participants have to ask their friends to repeat what they were saying, indicating that they are not present in "real time" due to smartphone preoccupation. This appears to be a common occurrence among college students who are self-identified overusers and indicates that difficulty focusing on interpersonal relationships is a side effect of technology overuse.

Difficulty Falling Asleep

Most participants noted that they go to bed with their phones in reach, either on a nightstand or directly under their pillows. Participants were asked about their nightly routines with their phones and how they use them before they fall asleep. Many noted that it was difficult for them to fall asleep even after putting their phones down, because their thoughts were

preoccupied by the activities and conversations they were having on their phones. One participant, a 19-year-old woman, explained that this is an issue for her:

Sometimes I'll fall asleep using [my phone]. Other times I'll notice it takes me a while to fall asleep after I've been on it for a couple hours.... Because there's a lot of stuff going on in my head, per se. I'm thinking about things [I've seen on social media], overthinking things... Things I have to do, things I want to do, stuff like that. (P02)

Another participant, P13, shared her frustration over being preoccupied with her phone before bed instead of using this time awake to be more productive. Phone overuse not only disrupts her sleep schedule, but negatively impacts her affective state as well due to not accomplishing the work goals she set to finish by the end of the night. She said:

Mostly, when [not being able to fall asleep] bothers me is when I realize I didn't get any work done. Usually, I'd like to say that I stayed up because I was doing work, but usually I'm staying up because I'm on my phone. Then it irritates me because I'm tired and I don't want to do work anymore, so then I just go to sleep and didn't get any work done. That's what bothers me the most, but I can't help it. (P13)

What is interesting to note about phone use before bed is that many participants noted that they used their phones to help them fall asleep even though they know that it may not be the best for them. For example, P15 stated:

I also have a hard time sleeping at night as is.... My doctors have prescribed me sleeping medication, but I personally don't like to take it, so I use the phone as a substitute trying to help me sleep, even though everybody says, 'Don't use it; it will make you less tired,' obviously. (P15)

Another participant stated that she plays music and soothing sounds at night to help her sleep, but she is not sure if other aspects of phone use negatively impact her quality of sleep. She described the following scenario:

There was a period of time where I needed to be listening to something to fall asleep. I don't really know why that happened, but I just needed to be listening to something. So, having access to like YouTube was huge, because I would just play like the Lofi, sleeping-girl music, study-girl music, and it was a live stream so it just plays the entire night. And when I woke up it's still playing.... I don't know if like social media hurt my sleeping schedule and then it got it back on track or something, or if there was like an external force that changed my sleeping schedule, but it does help sometimes. (P29)

Overall, while some participants use their smartphones before bed to help them fall asleep, like by listening to music as P29 described, it is typically seen as detrimental to their quality of sleep. Smartphone use before bed can preoccupy one's thoughts to the point where their mind is too busy to relax enough to fall asleep, or they can use their devices so long that they stay up longer than they intended to, without accomplishing any of their goals (such as homework) for the evening.

Summary

RQ1 asks, "How do college students describe the impacts of technology overuse on their lives?" Based on the interview data, technology overuse impacts college students who are overusers by making them feel anxious, creating pressure to respond to their social ties, making it difficult to focus on their schoolwork and social lives, and by making it difficult to fall asleep at night. College students in this sample feel anxious by not having access to their smartphones to avoid difficult moods such as boredom and may experience FOMO. The pressure to respond to their social ties typically stems from pressure to respond to parents or project group members. In one instance, a participant expressed that they feel pressure to respond to their significant other. College students in this sample typically do not experience pressure to respond to their close friends. Additionally, college students find it difficult to focus on their schoolwork which leads to issues with time management. Students in this sample shared that they also find it difficult to focus on face-to-face conversations with their friends due to their smartphone and social media use. It is difficult for students in this sample to fall asleep at times because of their phone use, yet some still use it to help them fall asleep at night. These themes that emerged are based on participants' own perceptions of their use.

RQ2: Positive Impacts on Well-Being

Unlike RQ1, which focuses on technology *overuse*, both RQ2 and RQ3 look at the impacts of technology *use* on well-being. Though well-being is a broad construct and can be defined in several ways, both questions focus on psychological well-being. For RQ2, which focuses on the perceived positive well-being consequences of technology use among college students who report overusing smartphones, social media, or both, it was found that technology use has the potential to improve relationships with others, improve one's mood, and can aid in one's personal development. These themes are explored in the following subsections.

Connected to Others

One positive aspect of technology use that participants noted was the ability to improve relationships with family and friends due to connectedness on social media. One reason that overusers of technology continue to use smartphones and social media is because they believe it reduces their feelings of loneliness by being able to talk to their loved ones whenever and wherever. P09, a 20-year-old man, stated:

[Social media] is a booster in regard to being social, because it helps people be social. If I wasn't to have it, since I am an introvert and I don't like talking to people because it is so much work, I'll feel more lonely in a sense. When you feel lonely you feel depressed, because you're isolated. I feel as if a phone will help you connect more with introverted people, in a sense. (P09)

Richer forms of content such as pictures can also reduce feelings of loneliness. One participant, a 21-year-old man, expressed that he rarely experiences any negative effects of technology use on his well-being and mainly focuses on the positive aspects:

[Social media] can have a negative effect if you let it. I have kept it positive. I guess, a few positive effects would be the pictures, communication, being able to call my parents every day, stuff like that... Negative effects, I couldn't really... I don't really have any of those. (P06)

Another participant further explained the benefits of sending pictures to one another. According to P03, pictures can enhance conversations that take place over social media because

they provide a visual aid to feel more connected. When asked about her motivations for Snapchat use, she explained:

I guess being able to have conversations and also kind of see what people are doing at the same time [is my motivation]. Like, people will send me a picture of their homework assignment or what show they're watching, and we'll talk about it. So just being able to have that kind of visual, along with the conversation aspect of it. (P03)

Being connected to others through smartphones and social media also helps participants feel safer. Particularly for young women, it is important for them to have their smartphone for this added sense of security. Two female participants shared the following:

I think the greatest advantage of having a phone is... for safety. Like if I ever go somewhere and I'm not really comfortable where I'm at, I could always call somebody and be like, 'Hey, I'm here, just letting you know if I come up missing, I'm here.' And then I have the Find My Friends App, so people have my location, so they can always look and see, 'Hey, she isn't answering her phone and I haven't heard from her in a while,' they can be like, 'Okay, she's at home, she's just asleep.' (P04)

Especially being a female, I have my share location on with a lot of my friends, so when I'm out and about, I have it on me, so I feel safer knowing people know where I am. (P15)

Being connected to others through smartphones and social media provides this sample of college students multiple benefits, including reducing feelings of loneliness and keeping in touch with their loved ones. For some people who are more introverted by nature, like P09, smartphones and social media make it less difficult to connect with other people because it is less work for them. For women especially, this aspect of use makes them feel safer when they are alone, because they can use location services to know where their loved ones are at all times, and vice versa.

Improved Mood

Participants, primarily women, expressed that using their smartphone and/or their social media helps improve their mood. One participant, a 19-year-old woman, shared how her

smartphone helps her feel better by connecting her to her loved ones. She indicated that she relies on her smartphone and social media as tools for social support. She said:

My smartphone use has had a good effect on my well-being because if I'm feeling down or if I'm ever in a rut I can always just call somebody and be like, 'Hey, I'm feeling bad. Make me feel better,' and then they can help me cheer up. (P04)

What is interesting to note about technology use as a means to improve mood, is that participants explain that their mood typically improves when they talk to their friends and family. So, while being connected to others is its own positive aspect of technology use (as described in the previous section), participants also describe that it facilitates these good moods. One participant noted that she treats social media as her emotional outlet and relies on others to make her feel better. Though she mentioned that she likes to stay vague about her specific problems online, just hinting that something is wrong so that others can offer support is enough for her. She described this by saying:

I feel like I usually use social media as my outlet, but it's like somewhere for me to put it out, like just put it out. Instead of writing in a diary, that's where I'm putting it. Like my social media's my diary, but I don't want everyone actually asking me what the problem is. That's like someone going in your diary and then asking you why you wrote it down.... Sometimes, instead of them asking me what's wrong so I have to explain it, I like when they just shoot me a nice little message and then it just makes me feel better. (P13)

P01, a 20-year-old female participant, explained that sharing fond memories with loved ones over her phone makes her feel happy. She said:

If I do use my smartphone, it gives me a better experience because you can go back to the memories, good, bad, and funny. So sometimes you're like, do you remember this time? Then you're like, dang, I wish I had a video, or sometimes like now Snapchat has like two years ago. You look at a video, and you're like, wow, it's been two years since this video, and you still laugh at the memories and the videos. Whoever was involved, you send it to them, and they're like, 'oh my gosh, I remember this.' It makes you smile. It makes you happy, and it makes you have a memory of old history. (P01)

The type of social media platform that is used appears to make a difference in one's mood as well. One participant explained:

Instagram, I just got bored with it. It all became the same, so, I don't like Instagram. But with Twitter, the difference for me is that it makes me laugh, makes me happy, because there is a lot of funny stuff on Twitter... And it's just easier to post, I feel like, and so it's a lot more of an enjoyable time being on Twitter. (P10)

The reason for this difference in mood on Instagram versus Twitter was not made explicitly clear, other than that the content posted on Twitter made P10 happy. While the ability to connect with others through smartphone and social media use is a reason for improved mood among the other participants, it appears that the type of content posted matters as well.

Personal Development

One positive aspect of smartphone and social media use that participants mentioned was that it helps aid with their personal development. Personal development can refer to developing new skills or qualities that can help one meet their goals. For example, one participant, P15, shared that social media helped her to be more creative, which she felt benefited her and her career goals. She said:

Being able to look at the social media kind of made me more creative. I get to see all the creative sides of everybody, and just like the ideas and just like a lot of relatable stuff that I can use in my own life, and being an advertising major, it makes me more creative, kind of. It just gives me ideas of what I should be looking for on social media, and what people need. A lot of internships I'm applying for, they want me to be proficient in social media use and stuff like that, so I think it will be beneficial, honestly, for the future in my jobs at least. (P15)

Aside from career goals, social media can help users find the skills to meet their fitness goals. When asked why they use Reddit over any other social media, one participant, a 21-year-old man, shared:

Every once in a while, I post something on Reddit, when I need advice or something about something, and I just post on it. And I get feedback from Reddit more than any other social media. Sometimes I just ask about how I can do...be better at a certain video game or a certain, since I started working out, I just ask for workout advice and stuff. And just tips to help lose weight, stuff like that. (P08)

He further explained how reliable this advice usually is for him, and said:

I usually post at night and when I wake up there's a decent amount of responses. That way when I wake up, I have something to look at. I usually just read everything and then just take it with an open mind. And I just see if I think if it'll work with me or not. (P08)

Additionally, while comparing himself to others on social media might make him feel bad at times, it has also motivated him to go after his goals, which he considers to be a positive aspect of use. He explained:

Sometimes, I see people going places or doing all these exciting things or something and I'm just like, 'Dang, I'm over here just sitting on my phone watching these people live their life or something.' Like, going to Australia or something.... It's just seeing those things just kind of motivates you to do better... Just so I could start accomplishing more of my goals and stuff like that. (P08)

Alternatively, others view technology use as a hindrance for their personal growth. However, while they may want to decrease their use at times, they are unlikely to do so because they want to stay connected to others so that they do not miss out on what is happening in the world around them. When asked if she wishes she could more effectively limit her smartphone and social media use, P13 responded:

I do [want to limit my use] in the sense for my mental health, so that I would stop comparing myself and getting down about that type of stuff, so for myself and my personal growth, and for school I wish I would.... But, in a sense, I don't want to [limit my use] because, like I said, I would like to stay connected to what my friends are doing, what's going on in the world, and I feel like if I wasn't on it as much, I would miss out on something. (P13)

So, while personal development is a benefit of technology use for some college students, it is not considered that for everyone. But for those that do feel that their personal development benefits from smartphone and social media use, talking to others online for advice or gaining inspiration for them helps them meet their personal goals.

Summary

RQ2 asks, “What are the perceived positive well-being consequences of technology use among college students who report overusing smartphones and/or social media?” Participants in

this sample shared many positive aspects of technology use, which fit into the broad themes of feeling connected to others, experiencing improved moods, and aiding in personal development. Emerging adult college students use their smartphones and social media to feel more connected to their loved ones and other social ties, which can also provide the benefit of improving their moods by having positive interactions with these ties. For personal development, getting inspiration from other people online or turning to them for advice can help individuals meet their personal goals. These positive consequences of technology use on well-being are perhaps why college students who are overusers continue using their smartphones and social media.

RQ3: Negative Impacts on Well-Being

Like RQ2, RQ3 looks at the impacts of technology use on well-being. Specifically, RQ3 asks what the negative well-being consequences of technology overuse among college students who report overusing smartphones, social media, or both. This research question is primarily concerned with psychological well-being rather than other aspects of well-being, such as physical or economic well-being. Based on the interview data, the following themes regarding negative impacts on well-being include loneliness, feeling overwhelmed, and depressive symptoms. These themes are further explained in the following subsections.

Loneliness

One negative consequence on well-being that technology use has is loneliness. Though results for RQ2 found that college-aged overusers feel more connected to others, participants also described that smartphone and social media use can make them feel more detached from others.

When asked how smartphone and/or social media use impacted their well-being, P15 said:

I think some of the bad stuff [effects], it's made me a little bit antisocial... I think like in high school I was a lot more active, and I wasn't on my phone as much as I am in college. When I would come to college and I'd be at a party, I'd just be on my phone awkwardly. That's my safe spot. I just didn't want to communicate with anybody because I didn't

know anybody, and I'm too shy and like a freshman, so that would limit me from that. (P15)

In other words, she used her smartphone as a sort of “crutch” to avoid uncomfortable social interactions, thereby limiting her communication with others and making herself more “antisocial,” as she described. Another participant explained that he intentionally shuts himself out from the real world sometimes, but that it can be too much sometimes. While this form of isolation is self-imposed and is originally meant for enjoyable alone time, it can sometimes turn into a negative experience. He explained:

I guess, sometimes I can shut off. Like, if I go to lunch, I have my earbuds in and I'll be watching a video, and I guess I'm kind of like, closed off to the world around me, I guess. Which, sometimes it is nice to have alone time, but I guess another case is it can be just kind of isolate myself a little too much with that, I guess.... Sometimes I feel like maybe I should have been more open to the world around me” (P10).

Alternatively, another participant explained that he would actually feel *less* lonely if he no longer had access to his smartphone. Regarding this, he said:

I would probably be less lonely [if I did not have my smartphone] because I would actually want to go out and socialize with people instead of just checking social media. (P16)

Another participant, P02, also expressed that she would be less lonely if she did not have her phone to begin with. She said:

So, if I was on my phone less, maybe I'd spend more time with actual people and do things. But then when no one's doing anything or no one wants to hang out or anything, I'd be on my phone because I can look at what other people are doing. If I go out with friends, I'd be less lonely. But if I'm on my phone, I'd be more lonely. (P02)

Loneliness is usually felt among college students in this sample when they spend more time using their smartphones and/or social media more than they would engaging in real-life social scenarios. While this use may originally be used to avoid uncomfortable social situations, like in P15's instance, or to unplug from the real world temporarily, like in P10's case, it can eventually lead into feeling lonely. Participants in this sample noted that they would actually feel

less lonely if they did not have access to their smartphones, as they would be forced to socialize with people in real life.

Feeling Overwhelmed

Most participants explained that they are, or have at some point, felt overwhelmed by social media overuse. This feeling of being overwhelmed typically stemmed from expectations of what to post online. In terms of what content to post online, social comparison with their online friends has contributed to many participants feeling overwhelmed. A 19-year-old female participant explained:

Social media makes you compare yourself to others sometimes, so there's a lot of Instagram models that I'm always comparing myself to and it makes me overwhelmed because I don't look like them, and it's super annoying. (P13)

When asked to explain why she feels overwhelmed by comparing herself to others, P13 further explained that “I already know that I am insecure, so that’s my problem”, indicating that these feelings stem from pre-existing low self-esteem.

Other participants have also felt overwhelmed due to social comparison, Another 19-year-old woman shared:

I think sometimes it's made me a little down because I see all the cool things that other people are doing, and I fail to recognize the cool things that I'm doing. And so it's weird brain limbo of, 'Oh, everyone else is living such a cool life.' So yeah, sometimes I'm like overwhelmed. (P29)

Another participant, this time a 21-year-old man, felt similarly, specifically on Instagram. He said:

I realized that with Instagram I was definitely overwhelmed a little bit, stressed out that everybody has their life together and I don't yet,” he explains. “Through Instagram I felt overwhelmed by seeing how together everybody else's life was. (P16)

Beyond social comparison, other participants have indicated that they feel overwhelmed by the expectation to constantly provide updates on social media. When asked if she feels overwhelmed by social media, a 22-year-old woman explained:

I feel like there's pressure to always be posting. And I don't really like to, so being able to use it everyday kind of takes a little bit of pressure off. (P03)

This comment indicates that the only way to relieve this pressure is to be on social media every day. This solution for easing feelings of being overwhelmed continues problematic use by making social media overusers feel that they have to continue posting in order to relieve negative moods.

Constantly sharing updates about their lives is also overwhelming for some overusers. One participant, an 18-year-old woman from China, shared that the aspect of everyone knowing the details of her life bothers her. “I play with Weibo every day, so I think my life is all on there. Everyone kind of knows it” (P14), she said. She further clarified that this aspect of social media use can be very overwhelming for her.

A few participants shared that they found ways to overcome the overwhelming feeling of social media and the pressure that comes with it. Understanding that people only present the best versions of themselves helps ease feeling overwhelmed due to social comparison. Reducing time spent on social media also eases these negative feelings. A 21-year-old male participant explained:

There was a time where I was going through a realization that it [others' presentation on social media] was just false. Because people are posting all these pictures at certain times, when they're looking their best or things like this. Just to gain popularity. And also ... I also realized that when you're taking a picture, why are you going to take a picture when you can enjoy [living in the moment]? (P06)

This tactic of reducing use is also used by other college students. One 20-year-old male participant shared:

I for sure [feel overwhelmed] and sometimes I just like to walk away from it and not think about it I guess if something is going on in either my private world... or if it's something that's going on around the world, either politically, etc. that's just having everybody's attention and it just drives me mad that that's the only thing that I'm seeing and then I just want to walk away from it and not think about it. (P07)

Another participant, another 20-year-old man, expressed that he rarely feels overwhelmed because he always has the sense that he can turn off his phone or delete his social media apps if they become too stressful. He shared:

I can just turn [my phone] off or uninstall [an app]. Sometimes, especially when I got out of a recent relationship, I felt the need to always get on Snap just to see what she was doing, or whatnot, because that whole little breakup stage, or whatever. When I get overwhelmed with trying to see what she's doing... that's when I delete it, because that's not for me, or something like that. If I was to ever get too many notifications on Twitter, I always got the option to just delete Twitter, or the option that I'll mostly likely use is just mute a thread. (P09)

While being overwhelmed by social media is a common feeling among college students who identify as technology overusers, typically because of social comparison or expectations to always post online, it appears that college students deploy several strategies to limit their smartphone and social media use in order to combat this.

Depressive Symptoms

A few participants shared that they experience depression, or symptoms of depression, as a result of using smartphones or social media. One participant went so far as to share that he sometimes experiences “breakdowns” from social media. When further asked about what these breakdowns entail, he explained that:

It's more of a depressed type thing, because when I get in that state of mind, I start comparing myself to others, which goes back to the whole flex thing, or something. Like 'I just bought my first car at age 20,' or age 23, 'I got my first house,' or something like that. Then when I'm depressed or something, I'm like 'I don't even know what career or what field I want to be in once I graduate. People are getting their houses and they're living their lives and they're traveling to Cancun and Paris, and... Yet I'm still going to be living with my parents, trying to figure out what I'm doing with myself. (P09)

This type of breakdowns that P09 describes seem to be a result of social comparison, with him feeling worse about himself after seeing his peers post the successful aspects of their lives on social media. This participant has tried to work on ways to stop feeling this way, with limited success, and stated the following:

I'm trying to figure out what steps I need to take, and I try to overcome it. However, I don't know how to do that.... Then it just makes you feel a more depressed individual until you realize the fact that, 'I got other people that don't know where they're going either,' so we can not know where we're going together, versus me just being by myself and not knowing what to do with my life. (P09)

However, P09 further explained that these types of breakdowns are not frequent, with him saying he experiences them, “Not too often. Maybe twice... in a year.”

Social comparison appears to be a driving force for many of the participants who feel depressed from social media. When asked if she experiences anxiety by comparing herself to Instagram models, P13 said:

It doesn't make me feel anxious, it just makes me feel depressed. More depressed than anxious. It just makes me feel down that I don't look like them... I just feel sad for a while, and then I'll probably just get off their [profiles] Actually, I'll usually accidentally get sucked in by their page, so I'll just keep on looking. Then I'll screenshot and think of ways that I could pull whatever look they have going on.... I'll screenshot it and keep it on my photos to try and remind myself, like don't forget. It's weird, but it's the truth. (P13)

Unlike P09, who tends to compare himself based on others' milestones such as buying a house or travelling, P13 tends to compare herself to others based on their appearance, which makes her feel depressed.

A couple participants have tried to limit their social media use in order to feel less depressed, which appears to be beneficial. One participant, P29, deleted her Instagram app because she felt that social media was negatively impacting her well-being. She explained:

I went through a bit of an episode where I wasn't feeling myself. I was just a little depressed, and I thought that the cause of that was social media and I think it was sort of a factor. So, I uninstalled Instagram for a month or so during the summer, which is really the prime time to be using Instagram. Yeah, I felt fine about it and I was okay. (P29)

Feelings of depression on social media tend to derive from comparing oneself to others and their successes. For some, perhaps more for women, this comparison is based on physical appearances. Other points of comparison include milestones in life such as buying a house or

traveling the world. Upward social comparison in these instances make individuals in this sample feel as if they are not accomplishing anything with their own lives, which in turn can lead to depressive states.

Summary

RQ3 asks, “What are the perceived negative well-being consequences of technology use among college students who report overusing smartphones and/or social media?” This research question is similar to RQ2, only it focuses on the negative impacts rather than the positive.

Similar to RQ2, RQ3 has broad themes that fit the specific negative consequences of technology use on well-being that participants described. These themes include loneliness, feeling overwhelmed, and depressive symptoms. College students in this sample experience loneliness because they spend more time on their smartphones than they do engaging in real-life social scenarios. They feel overwhelmed because they compare themselves to others on social media, and also feel that they are expected to constantly be online. They also feel depressed at times because they compare themselves to their peers on social media. Despite being aware of these consequences, college students who are technology overusers still continue to use their smartphones and social media, perhaps due to the necessity and/or desire to be connected to others.

Model of Possible Pathways Between Technology Use, Overuse, and Perceived Impacts

The proposed model shows possible pathways among the concepts that emerged from the analysis (see Figure 1). Given the nature of the data, it is important to note that these relationships are not testable, and that they are purely speculative based on the small qualitative sample of emerging adult college students. This model shows that technology use has pathways to both positive and negative impacts on well-being. The positive impacts include connected to others, improved mood, and personal development, with a possible pathway from connected to

others to improved mood. This is because participants noted feeling better after talking to their close social ties online. Negative impacts on well-being that result from technology use include loneliness, feeling overwhelmed, and depressive symptoms.

The model proposes that both positive and negative impacts on well-being may provide a motivation for continued technology use, which may lead to technology overuse. Positive impacts may be a motivation for continued use because users may desire to sustain the connection with others and improved mood, and they may continue using smartphones and social media to aid with their personal development. For negative impacts, factors such as loneliness and feeling overwhelmed may provide the motivation for continued use to relieve these negative states. This continued use may eventually evolve into technology overuse, can lead to problems such as feeling anxious, feeling pressure to respond to others, difficulty focusing (in the domains of school and social life), and difficulty falling asleep. It is important to note that there are other possible factors that may lead to technology overuse and other effects of use and overuse that are not included in this model; the concepts included here are ones that have emerged from this specific analysis.

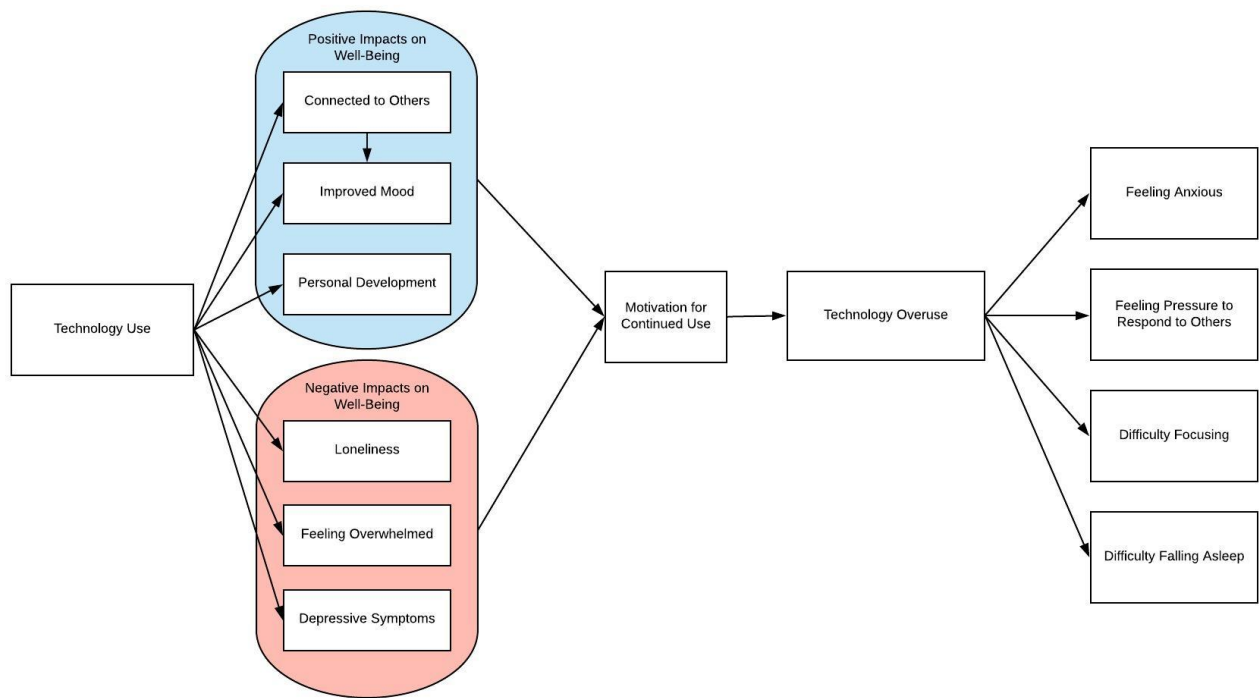


Figure 1. A model of possible pathways between technology use, overuse, and perceived impacts

CHAPTER 5:

DISCUSSION

Technology use impacts college students who self-identify as overusers in many ways. In their daily lives, technology overuse makes college students feel anxious, pressured to respond to others, experience difficulty focusing on schoolwork and their social lives, and experience trouble sleeping at night. In terms of their well-being, some positive aspects of general *use*, not necessarily overuse, included feeling connected to others, feeling improved moods due to use, and technology use aiding in the development of personal development. Also, in regard to their well-being, some negative aspects of general use included loneliness, feeling overwhelmed, and depressive symptoms.

It is important to make the distinction between *use* and *overuse*. RQ1 explored how participants perceive how technology *overuse* impacts their daily lives. This refers to excessive technology use, or problematic use. Problematic use has previously been defined as being overly concerned about smartphones or social media and to spend so much time using them that it impairs daily function, relationships with others, or one's psychological well-being (Andreassen, 2015; Andreassen & Pallesen, 2014). In this study, *overuse* was based on participants' own perceptions and is not explicitly defined. On the other hand, RQ2 and RQ3 explored how *general use* impacts well-being. This use is not inherently problematic and refers to the day-to-day use from the participants. Because overuse implies problematic use, it is detrimental to users by nature. Because this thesis explored both the negative and *positive* impacts on well-being, general use was included, as general technology use has the capacity for both affordances and drawbacks for its users.

What is interesting to note about the results that emerged from the analysis is its relation to previous literature. Based solely on Griffiths' (2005) operational definition of addicted

behavior, one would have anticipated the college student sample to heavily describe aspects of overuse that would fall into the six components of addiction (salience, mood modification, tolerance, withdrawal symptoms, conflict, and relapse). In fact, few participants gave answers in their interviews that could fit into this framework.

The most notable component that relates to the interview data is perhaps conflict, which includes conflict with social life and daily function. Participants noted that it is difficult to focus on their education due to smartphone and social media use, which can relate to interfering with their daily function. This relates to prior literature that has shown that smartphone and social media use is negatively associated with academic performance (Lau, 2017; Giunchiglia, Zeni, Gobbi, Bignotti, & Bison, 2018; Feng, Wong, Wong, & Hossain, 2019). Additionally, another component of addiction that may relate to the results found in this thesis is mood modification, as participants expressed that technology use can improve their mood. This supports a study that has shown that social media use can increase happiness due to increased perceived intimacy with others (Pittman, 2018). Comments relating to salience, tolerance, withdrawal symptoms, and relapse were rarely, if not at all, mentioned among this sample. It may be possible that participants were not aware of these symptoms of their smartphone use, or that they do not experience these components at all.

Data from the interviews suggest that college students who are overusers experience improved mood, or positive affect, after connecting with their loved ones on social media. More specifically, participants in this sample shared that they often relied on social support from family and/or friends to improve their mood (e.g., “If I’m feeling down or if I’m ever in a rut I can always just call somebody and be like, ‘Hey, I’m feeling bad. Make me feel better,’ and then they can help me cheer up” from P04). This supports existing evidence that perceived social support on social media enhances positive affect (Oh, Ozkaya, & LaRose, 2014, LaRose et al.,

2014). Additionally, social engagement was found to be a motivation for sharing information on social media (Oh & Syn, 2015). This is supported by one participant, P13, expressing that she posts information on social media that hints that she is not feeling well in order to receive support from friends and peers.

Some consequences of technology use on well-being that participants described included loneliness and depressive symptoms. This supports previous evidence that social media use is associated with increased levels of loneliness and depression (De Choudhury, Gamon, Counts, & Horvitz, 2013; Brandtzæg, 2012; Hunt, Marx, Lipson, & Young, 2018; Lin et al., 2016; Primack et al., 2017). However, almost paradoxically, participants also said that technology use made them feel more connected to their social ties. This was perhaps the greatest advantage of smartphone and social media use that participants in this sample described. Previous literature has shown that social media can actually improve college students' social capital when used to communicate with friends, family, and other social ties (Ellison, Steinfield, & Lampe, 2007; Kim & Kim, 2017; Shane-Simpson, Manago, Gaggi, & Gillespie-Lynch, 2018). However, when smartphones are used for asocial activities such as surfing the web it can further isolate individuals from their communities (Wellman, Haase, Witte, & Hampton, 2001). This is demonstrated in a scenario that P10 described during his interview, in which he would wear his earbuds during meals to watch a video and feel "closed off to the world" around him, to the point that he would sometimes feel too isolated. Results from this thesis support both assertions that smartphone and social media use can improve communication with others (Ellison, Steinfield, & Lampe, 2007; Pittman, 2018; Pittman & Reich, 2016) as well as decrease involvement with social ties through social isolation (Primack et al., 2017; Whaite, Shensa, Sidani, Colditz, & Primack, 2018).

College students in this sample also indicated that they feel depressed (based on their own definitions) and overwhelmed as a result of upward social comparison. This finding is consistent with available evidence that social media use can foster adverse social comparisons, which may in turn lead to feelings of depression (Appel, Gerlach, Crusius, 2016). Additionally, some participants believe that their technology overuse interferes with their sleep. Some research has shown that mobile phone use before bed is associated with negative sleep outcomes among adults, and that problematic use is associated with worsened quality of sleep among college students (Exelmans & Van den Bulck, 2016; Sahin, Ozdemir, Unsal, & Temiz, 2013), which aligns with findings from the results.

This thesis provides a thorough investigation in how smartphone and social media use impacts the daily lives and well-being of self-identified technology overusers. This information is valuable because it describes attitudes and perceptions of individuals' own smartphone and social media use. The model proposes ways in which technology use, overuse, and their impacts may be related to each other based on perceptions of this sample of emerging adult college students. Understanding these perceptions may be beneficial for promoting healthy behavior change among individuals who exhibit symptoms of problematic smartphone and/or social media use.

Limitations

This thesis has a few limitations. Most notably, because this thesis borrows data from a larger project focused on all aspects of technology overuse across the life course, only a small amount of the interview data was specifically about health and well-being. While participants discussed their moods, affective states, and well-being throughout their interviews, only a couple questions (e.g., "Do you ever experience anxiety from using or not using your smartphone?" and

“Do you think your smartphone and/or social media use has any effect on your overall well-being?”) in the interview guide specifically asked about well-being.

Also, another limitation to note is that due to the qualitative design of this study, the results found in this thesis are not generalizable to the general public. This thesis uses a very specific sample (college undergraduates between the ages of 18 and 24 who take communication courses at a large, Midwestern land-grant university and are self-described overusers of technology), so the impacts of technology use or overuse on well-being and daily life may be vastly different for someone who does not fit within this sampling frame. In addition, students chose to participate in this study to receive extra credit for courses that offered this option through the SONA system. In order to achieve results that can be generalized, a quantitative study with a larger sample size should be conducted.

Furthermore, because this is a qualitative, exploratory study, it is impossible to determine causality. That is to say, the results from this thesis do not indicate if technology overuse causes these positive and negative consequences on well-being or vice-versa. Connectedness to others, improved mood, personal development, loneliness, feeling overwhelmed, and depressive symptoms are all themes that emerged from college students’ own perceptions of their use, and feeling anxiety, feeling pressure to respond, difficulty focusing, and trouble falling asleep all emerged from perceptions of their overuse. Additionally, alternate factors that may account for technology overuse or poor well-being were not considered. As such, a causal link between these concepts cannot be identified at this time.

Future Directions

Future work on this project should look at quantitative data from the questionnaires that participants filled out just before their interviews took place. This questionnaire includes measures for problematic smartphone and social media use; actual participants’ raw screen time

data from their phones should be examined too. Analyzing this data will help to understand the relationship between hours of use and addictive or problematic behavior. In order for this data to be useful for understanding emotional well-being, a questionnaire tailored specifically for well-being needs to be developed and deployed among college students who self-identify as technology overusers. While this thesis has the benefit of providing detailed knowledge due to its qualitative design, a quantitative approach would be a beneficial next step to help provide a clearer picture on how technology use and overuse impacts the emotional well-being of self-described overusers. Additionally, future work should thoroughly investigate when regular technology use evolves into overuse. Other effects of use and overuse could be examined in future research and can be used to add on to the model proposed in this thesis.

Conclusion

College students who are self-identified technology overusers describe negative impacts of overuse on their daily lives, including feeling anxious, feeling pressure from others to respond, and difficulty focusing, and difficulty falling asleep. Technology use, on the other hand, has both positive and negative impacts on college students' well-being. Despite negative aspects of use, such as loneliness, feeling overwhelmed, and depressive symptoms, college students who are self-identified technology overusers continue to use their smartphones and social media because it helps them stay connected to their loved ones, including friends and family, which also has the capacity to improve their mood. It is important to stress that these effects are perceived by the users themselves, and these perceived effects can vary greatly from person to person or within individuals depending upon context, timing, and other factors. One may find more benefits than drawbacks to technology use and another may feel that technology use is more detrimental to their well-being. Such perceptions are reliant on multiple factors in one's life, including but not limited to personality (e.g., introvert vs. extrovert) and lifestyle (e.g., hours of use, habits, sleep,

daily activity, etc.). The relationships between technology use, overuse, and well-being is complex and will likely continue to evolve as technology becomes more integrated with daily life. Findings from this thesis provide a snapshot of perceptions and attitudes toward emerging adults' own technology overuse at this given point in time.

APPENDIX

Tech Overuse Study Interview Questions:

Tech Ownership

- How long have you had a smartphone?
- How did you first acquire your smartphone – did you buy it, someone gave it to you, etc.?
- Why did you first decide to start using a smartphone?
- Do many of your peers also own smartphones?
 - What about social media accounts? Do some not? (if so, why not)?

Smartphone Use

- Tell me about how you use your smartphone.
 - Walk us through a typical day in how you use your phone.
- How many hours a day do you use your smartphone?
- Do you take your smartphone everywhere or only to certain places? Why?
- What are the top 3 applications you use most frequently on your smartphone?
 - If they mention Facebook, Instagram, or other similar platforms, ask the number of friends or followers, etc. they have on these platforms.
- How do you use your smartphone most: for work, play, socially, or academic reasons?
- Tell me about how you control alerts/notifications from your phone.
 - Do you put it on vibrate, turn it off, have alerts for certain things, etc.?
- **How many times do you check your phone per day?**
 - What does your routine look like when you're checking your phone?
- **How many times do you check social media per day?**
 - What does your routine look like when you're checking social media?
- Where do you put your phone when you go to bed?
- How many hours a day is your smartphone/tech “within reach”? (from Extended Mind Questionnaire).
- How many people do you regularly text with?
 - Are they mostly family, friends, coworkers, etc.?

Social Media Use

- What device do you most frequently use to check/use social media?
- How did you choose which social media platforms to join?
- Which social media account do you spend the most time using?
- What activities do you perform most frequently on social media?
 - Lots of things you can do from lurking (just browsing/scrolling) to liking, to posting, to creating new groups, etc. – what things do you tend to do most frequently?
- What are your main motivations for using social media?
- Do you ever feel overwhelmed by social media? If so, please explain.

Limiting Technology Use

- Do you ever attempt to limit your smartphone use? If so, why? If so, when? ○ Are there any particular times of the day when you try to limit your use? If so, which times of the day do you do this? ○ Do you try to limit it before bedtime?
- If so, was there a specific moment, like an “Ah-ha!” moment, that triggered you to limit your smartphone use?
- What about social media use? Do you ever attempt to limit it? If so, why?
- How have you attempted to limit your smartphone use (ex. Put limitations on it – only use X time, etc.)? What about social media use?
 - How successful were you in trying to limit this use?
- Are there any barriers to limiting your smartphone use? If so, what are they? What about social media use?
- How do you think you could more effectively limit your smartphone use? How about social media use?
 - As a note, we want to be able to provide people in the future with suggestions/ways to help them limit it when they want to do, what would be helpful for people?
- What do you think works well when you try to limit your smartphone use? What about social media use?
- Are there any norms that you have about how you use your phone and/or media?
- In what types of situations do you try to limit your smartphone use (e.g., before bed, during social gatherings, etc.)? What about social media use?
- Have you ever used an application to monitor your smartphone/tech use (e.g., Screen Time on iPhones)?
 - If so, what application did you use and why?

- What did you think about the amount of time the application showed versus how much time you thought you spent on your phone? Why or why not?
- Has anyone ever asked you to get off your phone while in their presence? How did this make you feel? Vice versa? How does it **make you feel** when **you ask someone** else to get off their phone?

Pressures from tech use

- Do you ever feel pressure to respond quickly when you receive a text message, email, snap, etc. from your peers? (adapted from original Barber and Santuzzi method, 2015)
 - Why?
 - Is it affected by the type of person who is sending the message?
- Do you ever feel that others expect too much of you when it comes to being responsive via your smartphone? If so, does it occur more often with friends/peers, family, or work related?
- Do you ever feel that others expect too much of you when it comes to being responsive via social media? If so, does it occur more often with friends/peers, family, or work related?
- Which social media platform do you feel most pressured to use/be responsive? Explain why.
- Do you ever **'feel compelled'** to check your smartphone throughout the day? ○ Why or why not?
- Do you ever experience anxiety from your use of social media? (derived from out of sight out of mind); why do you think this is the case?
- Do you ever experience anxiety from **using or not using** your smartphone? Why?
- How does it make you feel when you cannot access your smartphone or access the Internet? (adapted from Adapted CIUS)
- Have you ever noticed missing moments/experiences in your personal life due to your smartphone use? If so, how does this make you feel?
- How do you feel when you have many unread messages?
- Do you ever feel pressured to check your own smartphone when you are with others who are checking theirs?
- Do you ever find it difficult to focus on tasks at hand when you know you just received a notification on your smartphone? (derived from original Barber and Santuzzi method, 2015)
 - Do certain notifications make it harder for you to focus on tasks at

hand than others? If so, what types?

Perceptions of personal smartphone use

- If you could change one thing about the way you use your phone, what would it be? (taken from MyTime study)
- How do you feel about the amount of time you spend on your phone? (taken from MyTime study)
- Do you wish to spend more, the same, or less time on your smartphone? Please explain.
- Do you think the questions we have asked you today will make you want to change the amount of time you spend on your phone?
- Do you consider yourself a “**constant checker**” when it comes to checking your smartphone? (APA Stress in America) Why?
- Do you think you would be more or less lonely without regular access to your smartphone? (Adapted from Pew Research Center) Why?
- Do you think you would be more or less lonely without regular access to social media? Why?
- Who/what motivates you to continue using your smartphone?

Perceptions of self

- Do you consider yourself “tech-savvy” or “tech-challenged”? Why?
- Do you ever feel uncertain about using your smartphone? Why or why not?
- Do you struggle keeping up with the tech world at all? If so, how?

Advantages/Disadvantages of Smartphones/Social Media

- What do you think is the greatest advantage to owning your smartphone? What about your social media?
- Do you think your smartphone helps you be more, the same, or less efficient with your time compared to when you do not have it? Why? What about social media?
- What aspects of your life do you think would be hindered or enhanced if you did not have access to your smartphone? Why? How about social media?
- Do you feel that smartphone use has made you more or less connected to your loved ones? Please explain. How about social media?

Effect of Tech Use on Health

- Do you think your smartphone and/or social media use has any effect on your overall well-being? Why or why not?
 - Does it affect your physical, mental, or emotional health? How so?
- What are the impacts, if any, of your smartphone/social media **OVER** use on your life?
- **Do you use any health or fitness related apps on your smartphone?**
- Do you use your smartphone/tech for any sort of health reasons? If so, what are they?
- Do you ever find it hard to fall asleep directly after using your smartphone and/or social media? If so, why?
- **If you could change anything about your technology or technology use, what would it be?**
- Is there anything else about your use of your phone and/or social media that you would like to tell us that we have not asked you about today?

REFERENCES

REFERENCES

- American College Health Association. American College Health Association-National College Health Assessment II: Reference Group Executive Summary Spring 2019. Silver Spring, MD: American College Health Association; 2019.
- Andreassen, C. S. (2015). Online social network site addiction: A comprehensive review. *Current Addiction Reports*, 2(2), 175-184.
- Andreassen, C., & Pallesen, S. (2014). Social network site addiction-an overview. *Current pharmaceutical design*, 20(25), 4053-4061.
- Andreassen, C. S., Pallesen, S., & Griffiths, M. D. (2017). The relationship between addictive use of social media, narcissism, and self-esteem: Findings from a large national survey. *Addictive behaviors*, 64, 287-293.
- Andreassen, C. S., Torsheim, T., Brunborg, G. S., & Pallesen, S. (2012). Development of a Facebook addiction scale. *Psychological Reports*, 110, 501-17.
- Appel, H., Gerlach, A. L., & Crusius, J. (2016). The interplay between Facebook use, social comparison, envy, and depression. *Current Opinion in Psychology*, 9, 44-49.
- Arnett, J. J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American psychologist*, 55(5), 469.
- Arnett, J. J. (2004). *Emerging adulthood: The winding road from the late teens through the twenties*. Oxford University Press.
- Arnett, J. J. (2006). *Emerging Adulthood: Understanding the New Way of Coming of Age*.
- Arnett, J. J. & Schwab, J. (2012). *The Clark University poll of emerging adults: Thriving, struggling, & hopeful*. Worcester, MA: Clark University.
- Arnett, J. J. (Ed.). (2015). *The Oxford handbook of emerging adulthood*. Oxford University Press.
- Arnett, J. J. (2020). Emerging adulthood. In R. Biswas-Diener & E. Diener (Eds), *Noba textbook series: Psychology*. Champaign, IL: DEF publishers. Retrieved from <http://noba.to/3vtfyajs>
- Back, M. D., Stopfer, J. M., Vazire, S., Gaddis, S., Schmukle, S. C., Egloff, B., & Gosling, S. D. (2010). Facebook profiles reflect actual personality, not self-idealization. *Psychological science*, 21(3), 372-374.

- Blachnio, A., & Przepiorka, A. (2019). Be aware! If you start using Facebook problematically you will feel lonely: Phubbing, loneliness, self-esteem, and Facebook intrusion. A cross-sectional study. *Social Science Computer Review*, 37(2), 270-278.
- Blackwell, D., Leaman, C., Tramposch, R., Osborne, C., & Liss, M. (2017). Extraversion, neuroticism, attachment style and fear of missing out as predictors of social media use and addiction. *Personality and Individual Differences*, 116, 69-72.
- Blank, G., & Reisdorf, B. C. (2012). The participatory web: A user perspective on Web 2.0. *Information, Communication & Society*, 15(4), 537-554.
- boyd, D. M., & Ellison, N. B. (2007). Social network sites: Definition, history, and scholarship. *Journal of computer-mediated Communication*, 13(1), 210-230.
- Brandtzæg, P. B. (2012). Social networking sites: Their users and social implications—A longitudinal study. *Journal of Computer-Mediated Communication*, 17(4), 467-488.
- Cohen, D., & Crabtree, B. (2006). Qualitative research guidelines project.
- Coyne, S. M., Padilla-Walker, L. M., & Howard, E. (2013). Emerging in a digital world: A decade review of media use, effects, and gratifications in emerging adulthood. *Emerging Adulthood*, 1(2), 125-137.
- Davis, R. A. (2001). A cognitive-behavioral model of pathological Internet use. *Computers in human behavior*, 17(2), 187-195.
- De Choudhury, M., Gamon, M., Counts, S., & Horvitz, E. (2013, June). Predicting depression via social media. In *Seventh international AAAI conference on weblogs and social media*.
- Diener, E. D., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of personality assessment*, 49(1), 71-75.
- Ding, X., Xu, J., Chen, G., & Xu, C. (2016, May). Beyond smartphone overuse: identifying addictive mobile apps. In *Proceedings of the 2016 CHI Conference Extended Abstracts on Human Factors in Computing Systems* (pp. 2821-2828).
- Dolan, R., Conduit, J., Fahy, J., & Goodman, S. (2016). Social media engagement behaviour: A uses and gratifications perspective. *Journal of Strategic Marketing*, 24(3-4), 261-277.
- Eccles, J. S., & Gootman, J. A. (2002). Features of positive developmental settings. *Community programs to promote youth development*, 86-118.
- Ellison, N. B., Steinfield, C., & Lampe, C. (2007). The benefits of Facebook “friends:” Social capital and college students’ use of online social network sites. *Journal of computer-mediated communication*, 12(4), 1143-1168.

- Elphinston, R. A., & Noller, P. (2011). Time to face it! Facebook intrusion and the implications for romantic jealousy and relationship satisfaction. *Cyberpsychology, Behavior, and Social Networking*, 14(11), 631-635.
- Exelmans, L., & Van den Bulck, J. (2016). Bedtime mobile phone use and sleep in adults. *Social Science & Medicine*, 148, 93-101.
- Ezumah, B. A. (2013). College students' use of social media: Site preferences, uses and gratifications theory revisited. *International Journal of Business and Social Science*, 4(5).
- Feng, S., Wong, Y. K., Wong, L. Y., & Hossain, L. (2019). The Internet and Facebook usage on academic distraction of college students. *Computers & Education*, 134, 41-49.
- Giunchiglia, F., Zeni, M., Gobbi, E., Bignotti, E., & Bison, I. (2018). Mobile social media usage and academic performance. *Computers in Human Behavior*, 82, 177-185.
- Global Web Index (2020). The latest social media trends to know for 2020. Retrieved from <https://www.globalwebindex.com/reports/social>.
- Goh, D. H. L., Ang, R. P., Chua, A. Y., & Lee, C. S. (2009, October). Why we share: A study of motivations for mobile media sharing. In *International Conference on Active Media Technology* (pp. 195-206). Springer, Berlin, Heidelberg.
- Griffiths, M. (2005). A 'components' model of addiction within a biopsychosocial framework. *Journal of Substance use*, 10(4), 191-197.
- Griffiths, M. D. (2010). The role of context in online gaming excess and addiction: Some case study evidence. *International Journal of Mental Health and Addiction*, 8(1), 119-125.
- Grygiel, P., Humenny, G., Rebisz, S., Świtaj, P., & Sikorska, J. (2013). Validating the Polish adaptation of the 11-item de Jong Gierveld Loneliness Scale. *European Journal of Psychological Assessment*.
- Hawi, N. S., & Samaha, M. (2017). The relations among social media addiction, self-esteem, and life satisfaction in university students. *Social Science Computer Review*, 35(5), 576-586.
- Hine, C. (2015). *Ethnography for the internet: Embedded, embodied and everyday*. Bloomsbury Publishing.
- Hunt, M. G., Marx, R., Lipson, C., & Young, J. (2018). No more FOMO: Limiting social media decreases loneliness and depression. *Journal of Social and Clinical Psychology*, 37(10), 751-768.
- Katz, E., Blumler, J. G., & Gurevitch, M. (1973). Uses and gratifications research. *The public opinion quarterly*, 37(4), 509-523.

- Karadağ, E., Tosuntaş, Ş. B., Erzen, E., Duru, P., Bostan, N., Şahin, B. M., ... & Babadağ, B. (2015). Determinants of phubbing, which is the sum of many virtual addictions: A structural equation model. *Journal of behavioral addictions*, 4(2), 60-74.
- Kim, B., & Kim, Y. (2017). College students' social media use and communication network heterogeneity: Implications for social capital and subjective well-being. *Computers in Human Behavior*, 73, 620-628.
- Kim, D., Lee, Y., Lee, J., Nam, J. K., & Chung, Y. (2014). Development of Korean smartphone addiction proneness scale for youth. *PloS one*, 9(5), e97920.
- Łaguna, M., Lachowicz-Tabaczek, K., & Dzwonkowska, I. (2007). Skala samooceny SES Morrisa Rosenberga–polska adaptacja metody. *Psychologia społeczna*, 2(4), 164-176.
- LaRose, R., Connolly, R., Lee, H., Li, K., & Hales, K. D. (2014). Connection overload? A cross cultural study of the consequences of social media connection. *Information Systems Management*, 31(1), 59-73.
- Lau, W. W. (2017). Effects of social media usage and social media multitasking on the academic performance of university students. *Computers in human behavior*, 68, 286-291.
- LeBlanc, N. J., Brown, M., & Henin, A. (2020). Anxiety Disorders in Emerging Adulthood. In *Clinical Handbook of Anxiety Disorders* (pp. 157-173). Humana, Cham.
- Lee, U., Lee, J., Ko, M., Lee, C., Kim, Y., Yang, S., ... & Song, J. (2014, April). Hooked on smartphones: an exploratory study on smartphone overuse among college students. In *Proceedings of the SIGCHI conference on human factors in computing systems* (pp. 2327-2336).
- LeViness, P., Bershad, C., & Gorman, K. (2018). The association for university and college counseling center directors annual survey. Retrieved from <https://www.aucccd.org/assets/documents/Governance/2017%20aucccd%20surveypublic%20apr26.pdf>.
- Lin, L. Y., Sidani, J. E., Shensa, A., Radovic, A., Miller, E., Colditz, J. B., ... & Primack, B. A. (2016). Association between social media use and depression among US young adults. *Depression and anxiety*, 33(4), 323-331.
- Lusted, M. A. (2011). Social Networking: MySpace, Facebook & Twitter: MySpace, Facebook & Twitter.
- Martin, P., & Smyer, M. A. (1990). The experience of micro-and macroevents: A life span analysis. *Research on Aging*, 12(3), 294-310.
- Miller, C. H., & Quick, B. L. (2010). Sensation seeking and psychological reactance as health risk predictors for an emerging adult population. *Health communication*, 25(3), 266-275.

- Nadda, V. K., Dadwal, S. S., & Firdous, A. (2015). Social Media Marketing. In *Handbook of Research on Integrating Social Media into Strategic Marketing* (pp. 359-379). IGI Global.
- Nelson, L. J., & Padilla-Walker, L. M. (2013). Flourishing and floundering in emerging adult college students. *Emerging Adulthood*, 1(1), 67-78.
- Nie, J., Zhang, W., & Liu, Y. (2017). Exploring depression, self-esteem and verbal fluency with different degrees of internet addiction among Chinese college students. *Comprehensive Psychiatry*, 72, 114-120.
- Nielsen (2018). The Nielsen total audience report: Q1 2018. Retrieved from www.nielsen.com/us/en/insights/reports/2018/q1-2018-total-audience-report.html.
- NIMH (2019). Statistics: Mental Illness. Retrieved from <https://www.nimh.nih.gov/health/statistics/mental-illness.shtml>.
- Oh, H. J., Ozkaya, E., & LaRose, R. (2014). How does online social networking enhance life satisfaction? The relationships among online supportive interaction, affect, perceived social support, sense of community, and life satisfaction. *Computers in Human Behavior*, 30, 69-78.
- O'Reilly, T. (2005, September 30). What Is Web 2.0. Retrieved from <https://www.oreilly.com/pub/a/web2/archive/what-is-web-20.html>.
- Perrin, A., & Anderson, M. (2019, April 10). Share of U.S. adults using social media, including Facebook, is mostly unchanged since 2018. Retrieved from <https://www.pewresearch.org/fact-tank/2019/04/10/share-of-u-s-adults-using-social-media-including-facebook-is-mostly-unchanged-since-2018/>.
- Pew Research Center. (2019, June 12). Mobile Fact Sheet. Retrieved from <https://www.pewresearch.org/internet/fact-sheet/mobile/#who-is-smartphone-dependent>.
- Pittman, M. (2018). Happiness, loneliness, and social media: perceived intimacy mediates the emotional benefits of platform use. *The Journal of Social Media in Society*, 7(2), 164-176.
- Pittman, M., & Reich, B. (2016). Social media and loneliness: Why an Instagram picture may be worth more than a thousand Twitter words. *Computers in Human Behavior*, 62, 155-167.
- Primack, B. A., Shensa, A., Sidani, J. E., Whaithe, E. O., yi Lin, L., Rosen, D., ... & Miller, E. (2017). Social media use and perceived social isolation among young adults in the US. *American journal of preventive medicine*, 53(1), 1-8.

- Rubin, A.M. (2002), "The Uses-and-Gratifications Perspective of Media Effects,". *Media Effects: Advances in Theory and Research*, Jennings Bryant and Dolf Zillmann, eds. Mahwah, NJ: Erlbaum, 525-548.
- Rubin, A. M. (2009). Uses and gratifications. *The SAGE handbook of media processes and effects*, 147-159.
- Ryff, C. D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of personality and social psychology*, 57(6), 1069.
- Sahin, S., Ozdemir, K., Unsal, A., & Temiz, N. (2013). Evaluation of mobile phone addiction level and sleep quality in university students. *Pakistan journal of medical sciences*, 29(4), 913.
- Schulenberg, J., O'Malley, P. M., Bachman, J. G., Wadsworth, K. N., & Johnston, L. D. (1996). Getting drunk and growing up: trajectories of frequent binge drinking during the transition to young adulthood. *Journal of studies on alcohol*, 57(3), 289-304.
- Shane-Simpson, C., Manago, A., Gaggi, N., & Gillespie-Lynch, K. (2018). Why do college students prefer Facebook, Twitter, or Instagram? Site affordances, tensions between privacy and self-expression, and implications for social capital. *Computers in Human Behavior*, 86, 276-288.
- Statista (2020a). Facebook users worldwide 2019. Retrieved from <https://www.statista.com/statistics/264810/number-of-monthly-active-facebook-users-worldwide/>.
- Statista (2020b). Percentage of U.S. population with a social media profile from 2008 to 2019. Retrieved from <https://www.statista.com/statistics/273476/percentage-of-us-population-with-a-social-network-profile/>.
- Statista (2020c). Most popular mobile social networking apps in the United States as of September 2019, by monthly users. Retrieved from <https://www.statista.com/statistics/248074/most-popular-us-social-networking-apps-ranked-by-audience/>.
- Tanner, J. L., & Arnett, J. J. (2009). The emergence of emerging adulthood (S. 39–45).
- Thomée, S., Dellve, L., Härenstam, A., & Hagberg, M. (2010). Perceived connections between information and communication technology use and mental symptoms among young adults-a qualitative study. *BMC Public Health*, 10(1), 66.
- Turel, O., He, Q., Xue, G., Xiao, L., & Bechara, A. (2014). Examination of neural systems subserving Facebook "addiction". *Psychological reports*, 115(3), 675-695.

- U.S. Department of Education, National Center for Education Statistics (2019). Retrieved from https://nces.ed.gov/programs/digest/d18/tables/dt18_104.10.asp.
- Vannucci, A., Flannery, K. M., & Ohannessian, C. M. (2017). Social media use and anxiety in emerging adults. *Journal of affective disorders*, 207, 163-166.
- Vannucci, A., Ohannessian, C. M., & Gagnon, S. (2019). Use of multiple social media platforms in relation to psychological functioning in emerging adults. *Emerging Adulthood*, 7(6), 501-506.
- van Ingen, E., Utz, S., & Toepoel, V. (2016). Online coping after negative life events: Measurement, prevalence, and relation with internet activities and well-being. *Social Science Computer Review*, 34(5), 511-529.
- van Rooij, A. J., Schoenmakers, T. M., Vermulst, A. A., van den Eijnden, R., & van de Mheen, D. (2011). Online video game addiction: identification of addicted adolescent gamers. *Addiction*, 106(1), 205-212.
- Villanti, A. C., Johnson, A. L., Ilakkuvan, V., Jacobs, M. A., Graham, A. L., & Rath, J. M. (2017). Social media use and access to digital technology in US young adults in 2016. *Journal of medical Internet research*, 19(6), e196.
- Whiting, A., & Williams, D. (2013). Why people use social media: a uses and gratifications approach. *Qualitative Market Research: An International Journal*.
- Worsley, J. D., Mansfield, R., & Corcoran, R. (2018). Attachment anxiety and problematic social media use: the mediating role of well-Being. *Cyberpsychology, Behavior, and Social Networking*, 21(9), 563-568.
- Zarrett, N., & Eccles, J. (2006). The passage to adulthood: Challenges of late adolescence. *New directions for youth development*, 2006(111), 13-28.