

SOCIAL ANXIETY, PORNOGRAPHY USE, AND LONELINESS: A MEDIATION
ANALYSIS

by

Melissa J. Ostrander

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Philosophy

Liberty University

March, 2021

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2021

APPROVED BY:

Fred Volk, Ph.D., Committee Chair

Carolyn Moen, Ph.D., Committee Member

Raquel Guidry-Davis, Ed.D., Committee Member

ABSTRACT

Research has indicated a positive correlation between pornography use and loneliness; however, with only six published studies to date, more research is required. This study used the extant literature on the relationship between internet use and loneliness to inform the current study since internet use and pornography use are similar constructs, especially in individuals' use of both to avoid negative emotions and social interactions. Further, social anxiety has been shown in the internet use literature to be a confounder in the relationship between internet use and loneliness, making social anxiety a major variable to consider in the relationship between pornography use and loneliness. This study sought to support the current literature by exploring the relationship between social anxiety and internet use and the relationship between pornography use and loneliness and extend the literature by investigating whether internet use mediates the relationship between social anxiety and loneliness. Additionally, as the relationship between social anxiety and pornography use has not been researched to date, the current study explored this relationship including whether pornography use mediated the relationship between social anxiety and loneliness. Lastly, this study measured whether avoidance moderated the relationship between social anxiety and pornography use. The results indicated that, as hypothesized, social anxiety and internet use were positively correlated, but that internet use did not mediate the relationship between social anxiety and loneliness. The results also showed, as hypothesized, that social anxiety and pornography use were positively correlated and pornography use and loneliness were positively correlated. Finally, the results indicated that pornography use weakly mediated the relationship between social anxiety and loneliness. The moderated mediation analysis was not significant for avoidance.

Keywords: social anxiety, pornography use, loneliness, avoidance, internet use

Acknowledgments

I would not have been able to complete this journey without the unfailing support of those around me. I am forever grateful to those who encouraged and challenged me to be persistent and dedicated to completing my dissertation. First, I would like to thank my chair, Dr. Volk, for knowing what I needed, whether it was encouragement or challenge, and being a major support through this process. Thank you also for talking me off the ledge a time or two when I thought I'd have to start over. Your mentorship has helped me find excitement in research and has grown my aspiration to become a researcher. To my committee, Dr. Moen and Dr. Guidry-Davis, thank you for your helpful feedback and helping me think objectively through my study. To my cohort, thank you for providing the space to vent all the emotions and being supportive throughout this process. Anytime I needed encouragement, you all were there! To my kids, thank you for your understanding and for the countless days of watching movies while I worked tirelessly. Saving the best for last, to my husband, thank you for walking alongside me throughout this entire journey. You have been the one that has been my ultimate encourager and safe person, my shoulder to cry on, and many times, you were the only reason I could keep going. Thank you for supporting me, helping me balance our crazy schedule, and holding me accountable to keep going. I love you. We finally made it!

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List of Abbreviations

Amazon's Mechanical Turk (MTurk)

Brief Fear of Negative Evaluation Scale-Revised (BFNE-II)

Institutional Review Board (IRB)

Liebowitz Social Anxiety Scale (LSAS)

Pornography Use Motivations Scale (PUMS)

Preference for online social interaction (POSI)

Social anxiety disorder (SAD)

Taijin kyofusho (TKS)

CHAPTER ONE: INTRODUCTION

Pornography use is common in the US (Regnerus et al., 2016; Wright, 2013), with research showing that approximately 69% of men aged 18–39 use pornography, 40% of whom view pornography at least weekly and approximately 14% of whom report using at least three to five times a week (Regnerus et al., 2016). Women also use pornography, but less commonly than males. Research is consistent in its reports of women users aged 18–39, with Regnerus and colleagues (2016) showing approximately 31% and Wright and colleagues (2013) showing approximately 33% of women use pornography. However, most women use it once a month or less, though approximately 16% of women use pornography on a weekly basis (Regnerus et al., 2016).

With this level of frequency of pornography use, the effects of pornography use have been the focus of researchers, who seek to understand both the motivations to use and the outcomes of use. While many pornography users report positive outcomes, including opportunity to explore sexual fantasies (Cooper et al., 2002), improved sex life and attitudes toward sex (Hald et al., 2008), and increased sex education (Watson & Smith, 2012), many negative outcomes related to pornography use have also been reported, such as negative psychological effects (Grubbs et al., 2015; Levin et al., 2012; Nelson et al., 2010; Weaver et al., 2011), negative outcomes in sexual and romantic relationships (Carvalheira et al., 2015; Ford et al., 2012; Morgan, 2011; Zitzman & Butler, 2009), and values conflicts causing personal distress (Grubbs et al., 2018).

Studies show evidence that some people use pornography as a means of avoiding negative emotions (Fall & Howard, 2015; Wetterneck et al., 2012; Wood, 2011; Young, 1999, 2008), as well as to escape relational and sexual encounters with other people (Baltazar et al.,

2010; Short et al., 2016; Weber et al., 2018). Research has shown that when pornography is used in an avoidant way, its use has a higher probability of becoming problematic (Borgogna et al., 2019; Levin et al., 2012; Wetterneck et al., 2012).

Loneliness is one of many negative emotions that has been researched as it relates to pornography use. Although the research is scant, a significant positive relationship has been found to exist between pornography use and loneliness (Efrati & Amichai-Hamburger, 2019; Tian et al., 2018; Wery et al., 2020; Yoder et al., 2005), with the relationship being bidirectional, meaning that loneliness predicts pornography use and pornography use predicts loneliness (Butler et al., 2018).

Social anxiety is an important construct to consider, as social anxiety disorder (SAD) affects approximately 12% of the population (Crome et al., 2015; Stein & Stein, 2008), though it is likely that symptoms of social anxiety (without a diagnosis) affect a far greater portion of the population (Fehm et al., 2008; Hofmann & DiBartolo, 2014). Social anxiety causes significant disruption in the lives of those who suffer from it, affecting them socially and causing physical discomfort, cognitive distortions, fears, and occupational distress (Heiser et al., 2009; Hofmann & DiBartolo, 2014). Social anxiety is experienced in childhood through adulthood and among all genders; however, it is most prevalent in females aged 25–64 (Crome et al., 2015; Kessler et al., 2012). Like loneliness, those with social anxiety often cope by trying to avoid the emotions and symptoms that arise (Hoffmann & DiBartolo, 2014).

The internet provides the link between pornography use, loneliness, and social anxiety. Internet and pornography use relate significantly, as the internet is the leading avenue for viewing pornography (Cooper, 1998; Griffiths, 2012; Regnerus et al., 2016; Young et al., 2000). Internet use has been shown to predict higher levels of loneliness (Hebebcı & Shelley, 2018).

Research has shown that those with social anxiety avoid their negative feelings by using the internet (B. W. Lee & Stapinski, 2012), leading to a higher probability of problematic internet use (Huan, Ang, & Chye, 2014; B. W. Lee & Stapinski, 2012). Additionally, social anxiety and loneliness are related to internet use, and research has shown that social anxiety mediates the relationship between loneliness and problematic internet use (Huan, Ang, & Chye, 2014). It is possible that social anxiety is also a confounding variable in the relationship between internet use and loneliness as well as a confounding variable in the relationship between pornography use and loneliness, which will further be discussed in the next section and detailed in Chapter Two.

Background of the Problem

The research on pornography use and loneliness suggests a significant positive relationship between the two constructs (Butler et al., 2018; Efrati & Amichai-Hamburger, 2019; Tian et al., 2018; Weber et al., 2018; Wery et al., 2020; Yoder et al., 2005), yet the existing research is limited to only six published studies to date evaluating this relationship. However, the research between internet use and loneliness is more established, with research beginning in the late 1990s. This research has shown that higher internet use predicted higher loneliness (Ceyhan & Ceyhan, 2008; Morahan-Martin, 1999; Seepersad, 2004). Prior to Caplan's (2007) study, research showed that lonely people used the internet more, had higher problematic internet use (Ceyhan & Ceyhan, 2008; Laier et al., 2018; Morahan-Martin & Shumacher, 2003; Rose & Dhandayudham, 2014), and preferred online social interaction over direct contact with others (Caplan, 2003; 2005). However, Caplan (2007) found that social anxiety was a confounding variable in the relationship between preference for online social interaction (POSI) and loneliness, showing that when social anxiety was accounted for, the relationship between POSI and loneliness was no longer significant. This research changed the direction of future studies on

internet use and loneliness, as it showed that social anxiety is an important variable to consider when researching loneliness and internet use.

While the relationship between social anxiety and pornography use has not been researched to date, the relationship between social anxiety and internet use has been established in the literature. Several studies have found evidence that people use the internet in an avoidant way to escape feelings and symptoms associated with social anxiety (Odaci & Kalkan, 2010; Shepherd & Edelman, 2005). The negative effects of pornography use and internet use are similar as they relate to psychological well-being (Aboujaoude, 2013; Spada, 2014), which likely includes experiences of loneliness. Similarly, since the relationship between social anxiety and internet use has also been established in the literature, it is likely that a relationship between social anxiety and pornography use would exist since some people use both the internet and pornography to avoid negative emotions (Fall & Howard, 2015; Levin et al., 2012; Paul & Shim, 2008; Seepersad, 2004; Wetterneck et al., 2012). However, the relationship between social anxiety and pornography use has not been researched to date. Since social anxiety and pornography use has not been researched, there is a gap in the literature on pornography use and loneliness since this additional construct (social anxiety) has not been considered in the existing studies on the relationship between pornography use and loneliness.

The clinical implications of the strong, positive correlation between social anxiety and loneliness are significant. Loneliness affects individuals of all ages at all stages of life and is pervasive in its effects on individuals (Cacioppo & Cacioppo, 2014). Similarly, social anxiety is excruciatingly uncomfortable for a large population, both the 12% who have been diagnosed and those with symptomology who suffer from its effects without a diagnosis. If both of these variables are related to pornography use and pornography is used to avoid both emotions,

additional implications may be identified, as using pornography to avoid emotions it heightens users' probability of developing problematic pornography use.

Purpose of the Study

The current study explores the relationships between social anxiety and pornography use, pornography use and loneliness, and social anxiety and loneliness. The direction of these relationships is also of importance to this study, including whether pornography use mediates the relationship between social anxiety and loneliness. Similarly, this study sought to support the existing research by assessing the relationships between social anxiety and internet use, as well as between internet use and loneliness, and identifying whether internet use mediates the relationship between social anxiety and loneliness. Of equal importance, it was necessary to research whether avoidance of emotions and social interactions moderates the relationship between social anxiety and pornography use. Additionally, this study explored how other constructs relate to this study's findings, including any differences among genders and/or ages of participants.

Research Questions

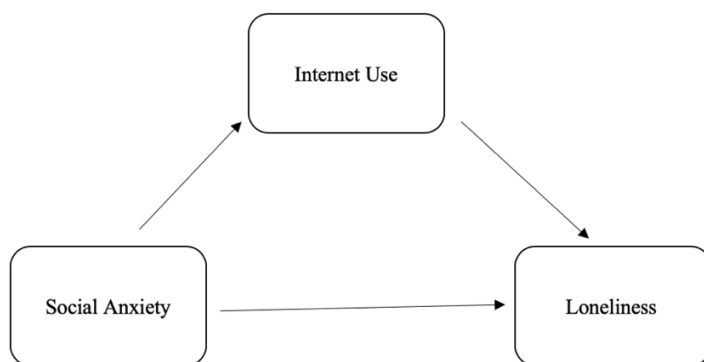
The first research question examined the relationship between social anxiety and internet use. The current literature shows that social anxiety and internet use are positively correlated with one another (Gross et al., 2002; Huan, Ang, & Chye, 2014; B. W. Lee & Stapinski, 2012; Shepherd & Edelman, 2005). Based on the current literature, it was hypothesized that social anxiety and internet use are positively related to one another.

The second research question asked if internet use mediates the relationship between social anxiety and loneliness. Caplan (2007) found that when social anxiety was considered in the relationship between POSI and loneliness, loneliness was no longer significant, showing that

social anxiety was a confounding variable in the relationship between POSI and loneliness. It was hypothesized that social anxiety has an indirect relationship to loneliness when assessing internet use in the last week, specifically, that internet use mediates the relationship between social anxiety and loneliness. This evidence-based theoretical model is shown in Figure 1.1. This mediation model is an extension of the current literature.

Figure 1.1

Proposed Theoretical Model of Research Question 2



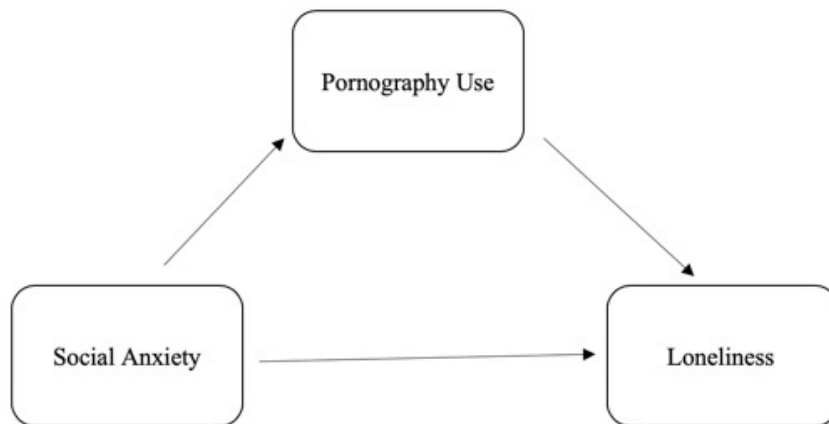
The third research question examined the relationship between social anxiety and pornography use. The rationale behind this question is the empirically supported relationship between social anxiety and internet use (Gross et al., 2002; Huan, Ang, & Chye, 2014; B. W. Lee & Stapinski, 2012; Shepherd & Edelman, 2005), as well as the relationship between social anxiety and online sexual activities, including pornography use (Wery et al., 2020). It was hypothesized that social anxiety is positively related to pornography use.

The fourth research question asked if pornography use is related to loneliness. Previous research has shown that pornography use and loneliness have a bidirectional relationship (Butler et al., 2018), predicting one another; therefore, it was hypothesized that pornography use is positively related to loneliness. This question was important because it aimed to support the limited existing literature.

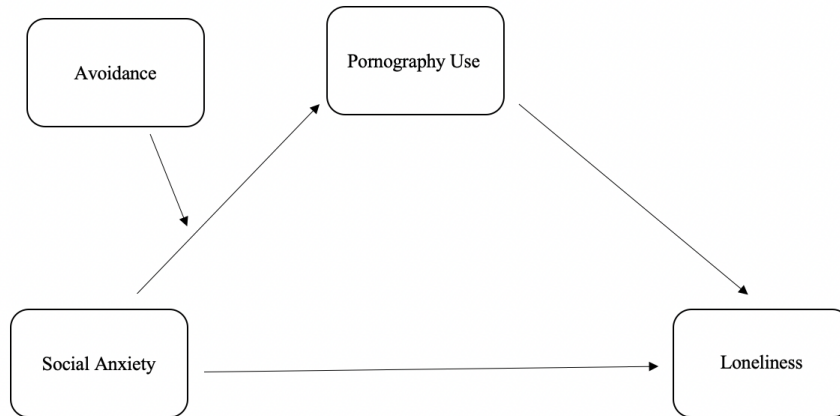
The fifth research question asked if pornography use mediates the relationship between social anxiety and loneliness. This question is similar to Research Question 2, as social anxiety and loneliness may be indirectly related when pornography use is considered. It was hypothesized that social anxiety is indirectly related to loneliness when assessing pornography use in the last month, specifically, that pornography use mediates the relationship between social anxiety and loneliness. This proposed theoretical model is shown in Figure 1.2.

Figure 1.2

Proposed Theoretical Model of Research Question 5



The sixth research question asked if avoidance moderates the relationship between social anxiety and pornography use. This question was based on previous research that shows that some people use pornography in an avoidant/escapist way (Baltazar et al., 2010; Fall & Howard, 2015; Seepersad, 2004; Short et al., 2016). It was hypothesized that avoidance of emotions and avoidance of social interaction moderated the relationship between social anxiety and pornography use. This theoretical model is shown in Figure 1.3.

Figure 1.3*Proposed Theoretical Model of Research Question 6***Assumptions and Limitations**

The current study had assumptions and limitations that may have constrained the research findings. The first assumption was that the use of Amazon’s Mechanical Turk (MTurk) would produce a broad sample that is representative of the general population as it relates to pornography users and those with social anxiety. Because social anxiety was included in the current study, it was desired for the sample to be representative of the prevalence rates indicated in the literature. Research has shown that samples from MTurk provide results consistent with prevalence rates in the general population (Shapiro et al., 2013).

The use of MTurk also presented a possible limitation to the study as the outcomes were from self-reported measures. It is possible that participants were not forthright or did not accurately depict the frequency of their pornography use due to values conflicts or social desirability. Additionally, participants may not have accurately depicted the frequency of their internet use due to social desirability.

Another limitation of the study may have been the method of collecting data on the participants' use of pornography and the internet in an avoidant/escapist way. While avoidance/escapism have been discussed in the literature, there is not an established assessment for measuring these constructs that fit this study, so the data were collected through the self-report of the participants using a subscale of another measurement. It is possible that the participants did not have the self-awareness or emotional intelligence to know whether they were using pornography or the internet out of avoidance or escapism, as their use could be a subconscious pattern. Equally, since four of the questions on the survey used to measure this construct were not evidence-based, it is possible for there to be low construct validity; therefore, the results may not be representative of the prevalence of avoidance/escapism as a motivation for pornography or internet use.

Definition of Terms

Pornography use is broadly defined in the literature. This study defined pornography as sexually explicit forms of media that are used for sexual purposes (Grubbs et al., 2019). Watson and Smith (2012) defined it this way: "pornography involves explicit erotic stimuli designed to produce sexual arousal" (p. 123). Similarly, Vaillancourt-Morel and colleagues (2016) defined it as "sexually explicit videos or images intended to sexually arouse the viewer" (p. 78).

Loneliness is defined as it is commonly defined in the literature using Perlman and Peplau's (1981) work, stating that "loneliness is a discrepancy between one's desired and achieved levels of social relations" (p. 32).

Social anxiety is the fear of how one is being perceived by others and worrying that social interactions will lead to embarrassment or shame (American Psychological Association [APA],

2013; Stein & Stein, 2008). While SAD is mentioned, for the purposes of this study, it was not assumed that someone with social anxiety met the criteria for the disorder (Fehm et al., 2008).

Avoidance and *escapism* are used together in the following chapters. For this study, *avoidance* is when a person foresees negative emotions arising and actively does something else to avoid the emotions, whereas *escapism* is when someone performs another behavior to distract from negative emotions that are actively being felt (Henning & Vorderer, 2001; Katz & Foulkes, 1962).

Significance of the Study

As the current pornography literature has not considered the construct of social anxiety, the current study sought to fill a gap in the existing literature pertaining to the relationship between social anxiety and pornography use, beginning a new arena for future research. This study also supports the existing literature and adds to the conceptual framework of variables that should be considered when researching pornography use and loneliness. Lastly, the study sought to add to the existing research on social anxiety and internet use as they relate to loneliness by assessing whether internet use mediated the relationship between social anxiety and loneliness.

The current study has significant clinical implications for counselors, as pornography use is becoming a more prevalent topic in counseling practices (Brand et al., 2019). Uncovering the directionality of any relationship between pornography use and another construct would give clinicians a list of symptoms by which to assess their clients and possible direction for beginning treatment. For example, if social anxiety is shown to predict pornography use, a clinician can assess for social anxiety and treat the root of the problem (social anxiety) rather than the symptom (pornography use), which then changes the probability of the client experiencing significant loneliness. Similarly, if the research shows a significant relationship between

pornography use and loneliness, counselors can target pornography use as the root issue to treat the symptoms of loneliness. Another clinical implication of this study is if a client is using pornography in an avoidant way, then counselors can help them establish healthier coping skills rather than avoiding negative emotions, which has been shown to lead to problematic pornography use (Wetterneck et al., 2012).

Theoretical and Conceptual Framework

Social anxiety is understood by cognitive-behavioral theorists as an experience that is first activated by the cognitions of the person, which then trigger negative physical and psychological symptoms, initiating behaviors that the person then performs in an effort to cope with the symptoms and extinguish the anxiety (Clark & Wells, 1995; Hofmann & DiBartolo, 2014; McManus et al., 2008; Rapee & Heimberg, 1997). Unfortunately, most people who suffer from social anxiety cope in negative ways or by using safety behaviors, which have been shown to perpetuate the anxiety rather than alleviate the symptoms (McManus et al., 2008; Salkovskis et al., 1999).

The current study hypothesized what has already been shown in the literature, that social anxiety causes some people to use the internet as a means to cope with the symptoms of their anxiety, which leads to higher levels of loneliness. Similarly, it also hypothesized, as an extension to the existing literature, that social anxiety causes some people to use pornography as a means to cope with the symptoms of anxiety, which leads to higher levels of loneliness. While the internet and pornography are used to avoid the symptoms of social anxiety, they are, in actuality, perpetuating the problem because the person is not learning how to healthily combat the cognitions that are causing the emotional or psychological symptoms (Hofmann & DiBartolo, 2014).

Organization of the Remaining Chapters

The following chapter will extensively review the literature on pornography use, loneliness, internet use, and social anxiety. An analysis of pornography use and the outcomes of use will be presented, including how people use pornography to avoid negative emotions and social interactions. Next, loneliness will be described, including the theoretical conceptualization of loneliness, followed by the current literature on loneliness and pornography use. Third, internet use will be presented as it relates to pornography use as well as how it relates to loneliness while introducing social anxiety as a confounding variable in the relationship between internet use and loneliness, presenting the need for social anxiety as a construct in the current study. Next, social anxiety will be described, including how it is experienced by those who suffer from it as well as the theoretical understanding of social anxiety. The literature on the relationships between social anxiety and internet use and between social anxiety and loneliness will then be presented. Since a relationship between social anxiety and pornography use has not been established in the literature, a rationale for researching the relationship between these constructs will be presented at the end of Chapter Two.

The third chapter will present the methodology for the current study, including the selection of the participants, instrumentation, research procedures, and data processing and analysis. The fourth chapter will present the results from the current study. Lastly, Chapter Five will comprise a summary of the study with the conclusions drawn from the results as well as recommendations for future research.

Chapter Summary

This chapter provided a broad introduction to pornography use, loneliness, social anxiety, and internet use. The background of the problem was detailed and gaps in the research between

social anxiety and pornography use were identified. Additionally, this chapter showed how the proposed study would extend the literature on the relationship between pornography use and loneliness as well as between social anxiety and internet use as they relate to loneliness. Since social anxiety and internet use have been established in the literature, the theoretical relationship between social anxiety and pornography use is likely to exist. The purpose of the current study is to determine whether these theoretical relationships exist to support and extend the existing literature. Theoretically proposed models were displayed to help the reader understand the hypotheses. Although there are limitations to the current study, the significance of the results has implications for future research as well as clinical implications for those seeking help for problematic pornography use, problematic internet use, social anxiety, and/or loneliness.

CHAPTER TWO: REVIEW OF THE LITERATURE

This chapter will present the literature of four variables, beginning with a review of pornography use, its outcomes, and the use of pornography as strategy for avoiding both negative emotions and social interactions. Next, an overview of loneliness will be presented, including an evidence-based theoretical conceptualization of loneliness and its relationship to pornography use. Internet use will be summarized as it relates to pornography use and how it relates to loneliness. Lastly, social anxiety will be introduced as a confounding variable in the relationships between problematic internet use and loneliness and between pornography use and loneliness. Social anxiety's theoretical conceptualization will be discussed, as well as how it relates to pornography use, internet use, and loneliness.

Pornography Use

The following section details the existing literature on the gender differences in pornography use and the negative outcomes of pornography use, including the psychological effects of using pornography. Additionally, this section will explain how some people use sexually explicit material in an avoidant way to escape negative emotions and social interactions. This section will provide direction for the literature presented for loneliness, internet use, and social anxiety. Pornography use as it relates to loneliness, internet use, and social anxiety will be detailed within the respective sections.

Gender Differences

Over the past few decades, research has shown that gender differences in regard to sexual behavior are shrinking (Short et al., 2012; Sprecher et al., 2013). While there once was a significant gap in genders regarding sexual behaviors such as casual sex or first sexual experience (Sprecher et al., 2013), the gap is less substantial in recent years, as both males and

females now equally engage in these behaviors. However, one gender gap that has remained across the decades concerns the use of pornography (Short et al., 2012). Although the percentage of individuals who use pornography has risen for both genders over time, the prevalence of pornography use is still significantly different between men and women, with 69% of men aged 18–39 and 31%–33% of women aged 18–39 using pornography (Regnerus et al., 2016; Wright et al., 2013). In regard to the frequency of use, differences continue to separate men and women users, as almost half of men and only 16% of women report using pornography on a weekly basis (Carroll et al., 2008; Regnerus et al., 2016).

The differences in gender concerning pornography use do not end with viewing pornography, but persist in the acceptance of pornography use. Research shows that approximately half of women believe that viewing pornography is intolerable, viewing it as a form of infidelity (Carroll et al., 2017), but only 34% of men hold similar beliefs (Carroll et al., 2008). Further, Carroll and colleagues (2008) found an interesting pattern: approximately 20% of men in their study used pornography despite believing that pornography use is unacceptable, yet 20% of females believed that pornography was acceptable but did not personally use it. Further, in their sample of 21,555 adults, Carroll and colleagues (2017) found a very large difference in gender: 50% of casually dating men individually used pornography, compared to the mere 1% of casually dating women who used pornography. They also found that as romantic relationships became more committed, the use of pornography decreased, but the gender gap persisted, with men in romantic relationships viewing pornography more frequently than women in romantic relationships (Carroll et al., 2017).

The reasons for pornography use are also historically and consistently different between men and women. Research shows that women more often use pornography with romantic

partners within committed relationships (Emmers-Sommer, 2018; Weber et al., 2018), whereas men typically use pornography for sexual arousal in conjunction with masturbation (Emmers-Sommer, 2018; Paul & Shim, 2008). Carroll and colleagues (2017) found that men were 75% more likely to only use pornography solitarily, whereas women were 75% more likely to use pornography primarily with a romantic partner.

Pornography Use Outcomes

Pornography use comes with a myriad of outcomes, both negative and positive (Cooper et al., 2002; Gola et al., 2016; Grubbs et al., 2019; Hald & Malamuth, 2008; Harkness et al., 2015; Kraus et al., 2016; Lewczuk et al., 2017; Ross et al., 2012; Twohig et al., 2009; Vaillancourt-Morel et al., 2016; Watson & Smith, 2012). Cooper and colleagues (2002) indicated that pornographic material on the internet has redefined the arenas for sexual expression, and 78% of participants in their study reported using pornographic material to take a break from their normal routine. They also found that pornography was used by 35% of their respondents as a way to educate themselves about sexual activities (Cooper et al., 2002). Watson and Smith (2012) examined the positive effects of pornography in their commentary, which included the educational, medical, and clinical uses of pornography for some populations. Although they were proponents of pornography use for these reasons, they also acknowledged that pornography is not beneficial to all users (Watson & Smith, 2012). Comparably, Hald and Malamuth (2008) found that pornography had both positive and negative effects on their 688 Danish participants; specifically, their results showed that male pornography users reported more positive attitudes toward sex. They also found that increased pornography consumption increased users' perception of positive effects from pornography use and masturbation frequency; however, they found that pornography use could also have a negative effect on the ways that male pornography

users perceived females, specifically in an objectifying manner (Hald & Malamuth, 2008). Similarly, Vaillancourt-Morel and colleagues (2016) found mixed outcomes in their study of 1,329 pornography users. They found that those who were recreational pornography users had positive sexual outcomes from their pornography use, whereas users who were emotionally distressed reported more sexual dysfunction related to their pornography use.

Although many users find that viewing pornography does not negatively affect them and may even have some positive outcomes, there are negative outcomes often associated with pornography use (Gola et al., 2016; Grubbs et al., 2019; Harkness et al., 2015; Kraus et al., 2016; Lewczuk et al., 2017; Ross et al., 2012; Twohig et al., 2009; Vaillancourt-Morel et al., 2016), including diminished sexual satisfaction, especially among male users (Brown, Carroll et al., 2017; Carvalheira et al., 2015; Morgan, 2011; Schnieder, 2000), fear of job loss and diminished productivity (Twohig et al., 2009), feelings of guilt and shame due to the moral incongruence between pornography use and spiritual beliefs (Grubbs et al., 2018), low self-esteem (Borgogna et al., 2020; Brown, Durtschi, et al., 2017; Wery et al., 2020), and conflict and mistrust in romantic relationships (Carroll et al., 2017; Ford et al., 2012; Willoughby et al., 2016; Zitzman & Butler, 2009). Additionally, a small percentage of pornography users develop problematic pornography use, which is characterized by loss of control and compulsive-like symptoms (Kuzma & Black, 2008). Although a difference in prevalence exists, both men and women are susceptible to developing problematic pornography use, with approximately 5% of men (Kuzma & Black, 2008) and 3% of women reporting problematic use (Baranowski et al., 2019).

Pornography use has also been shown to have psychological effects, including being significantly related to depression and anxiety (Grubbs et al., 2015; Levin et al., 2012; Nelson et al., 2010; Schneider, 2000; Weaver et al., 2011; Ybarra & Mitchell, 2005). Rissel and colleagues

(2017) found a strong correlation between pornography use and self-reports of psychological distress, specifically depression and anxiety, in their sample of 4,015 men and 4,409 women. Their results showed that 91% of the men who had ever viewed pornography and 79% of the men who had viewed pornography in the last year reported significant levels of psychological distress in the last month. Although not as strong, significant correlations were also found among female participants, with 62% of women ever viewing pornography and 46.7% of women viewing pornography in the last year reporting experiencing psychological distress in the last month (Rissel et al., 2017).

One study of Swedish high school males found that 6.8% reported becoming depressed after watching pornography (Svedin et al., 2011). The same study also indicated that 19.5% of daily pornography users scored lower on the mental health scale than those who viewed pornography less often (Svedin et al., 2011). Similarly, in a qualitative study of 55 participants, when asked about the effects of their pornography use, some participants perceived being addicted to pornography, and many reported negative effects, including depression, guilt, shame, anxiety, and diminished sexual satisfaction (Schneider, 2000). More recently, Grubbs and colleagues (2015) found in their study of 1,047 adults that those who perceived they were addicted to pornography reported higher levels of depression, anxiety, and overall psychological distress compared to those who did not perceive they were addicted to pornography.

Grubbs and colleagues (2018) posited that there are two pathways leading to distress from pornography use. They speculated that one pathway to distress is the moral incongruence between pornography use and the user's beliefs or values, that is, when a person views pornography despite believing that it was wrong. The other pathway is dysregulation, which may include characteristics such as impulsivity, low self-control, emotional dysregulation, and coping

deficits (Grubbs et al., 2018). When an individual experiences emotional dysregulation without possessing the coping skills needed to address the dysregulation, escaping or trying to avoid the emotions becomes a natural way to attempt to avoid the discomfort associated with the negative emotions (Henning & Vorderer, 2001; Katz & Foulkes, 1962). Research has shown that a significant portion of individuals use media, including pornography, as a form of escape or as a mechanism for coping with the emotional dysregulation that Grubbs and colleagues (2018) described in their study (Baltazar et al., 2010; Fall & Howard, 2015; Short et al., 2016; Weber et al., 2018; Wood, 2011).

Pornography Use to Avoid Negative Emotions

Using general media, such as television, as a means of escaping psychological distress dates back to the early 1960s. Katz and Foulkes (1962) found in their study that dysfunction, whether social, relational, or psychological, drives people to escape into media to avoid uncomfortable emotions that arise within them. They enter a fantasyland to take an emotional or mental break from reality. Decades later, Henning and Vorderer (2001) found that people watch television to escape or forget something distressing. Similarly, with the accessibility of the internet, research has shown that, like television, the internet has provided an outlet for people to avoid their negative thoughts or emotions (D. J. Kim et al., 2017). D. J. Kim and colleagues (2017) found in their sample that those who experienced depression were more likely to use internet gaming as a form of escape than those who were not depressed. Kwon and colleagues (2011) similarly found that negative emotions were highly correlated with escapism through internet gaming.

Research shows that, for some users, viewing pornography serves as a similar strategy for avoidance of negative emotions (Fall & Howard, 2015) such as stress (Young, 2008), anxiety,

and depression (Wood, 2011). In earlier work, Young (1999) conceptualized that using pornography (defined in the article as sexually explicit material) provides security to the user, thus allowing the user to escape negative feelings as a means of experiential avoidance. Elaborating on this concept, Wood (2011) stated that pornography is a conduit for sexual arousal, which temporarily acts as a natural antidepressant; therefore, using pornography when feelings of depression or inadequacy arise is a utility for escaping negative feelings. Wetterneck and colleagues (2012) used the title “experiential avoidance” (p. 3) when describing this same emotional escape. Their study found that experiential avoidance was highly correlated with increased sexual impulses and related to negative outcomes from pornography use. They also found that those who scored high in experiential avoidance more frequently reported problematic pornography use, whether that use caused harm to a relationship or conflict at work (Wetterneck et al., 2012).

Paul and Shim (2008) found, as a part of their exploratory factor analysis, that some users’ motivation for use is to improve their mood, specifically when bored or stressed. Their study also showed that males were significantly more likely than females to use pornography as mood management. Similarly, Cooper and colleagues (2002) found in their study of 7,035 participants that 78% of the total sample reported using pornography as a distraction, and 29.4% reported using it as a way to cope with stress. In the same study, 60% of males and 36.5% of females reported distraction as the primary reason to use pornography. The difference between genders was statistically significant, with males using pornography for distraction and as a coping mechanism for stress more frequently than females. In contrast, females were more likely to report using pornography for sexual education (Cooper et al., 2002). In more recent literature, Borgogna and colleagues (2018) also found significant relationships between viewing

pornography and negative emotions, specifically depression, guilt, and anxiety. They also found that depression was a strong indicator of use of pornography in an escapist way (Borgogna et al., 2018). Similarly, in their sample of German women, Baranowski and colleagues (2019) found emotional avoidance was the leading motive for pornography use.

Short and colleagues (2016) surveyed mental health providers working with pornography users about their perceptions of the causation of their clients' pornography use. They found that 50% of clinicians perceived their clients' pornography use to be a result of self-esteem issues, 30.3% perceived a cause to be depression, 59.4% perceived a cause to be social ineptness, and 62.2% perceived relationship problems to be the main cause for the use of pornography (Short et al., 2016). When these respondents stated that they perceived these issues to be the main causes of pornography use, in essence, they were stating that pornography use is a coping mechanism for these problems, further showing evidence of pornography use as a form of escape from difficulties.

Researchers have made several inferences in regard to escapism from negative emotions. Specifically, Borgogna and colleagues (2019) found in their study of 779 males that restrictive emotionality is a key marker for traditional masculinity ideology. Their results showed significant and strong relationships between restrictive emotionality and control difficulties, as well as relationships between restrictive emotionality and avoidance of negative emotions while using pornography (Borgogna et al., 2019). They inferred that emotional restriction and avoidance could also lead to problematic pornography use. Similarly, in their research among college males, Levin and colleagues (2012) found that viewing pornography as a means of escaping negative emotions may increase the frequency of pornography use and lead to problematic viewing due to the user neglecting to address their emotions. While some users view

pornography to avoid negative emotions, others use it to avoid social interactions that could potentially activate negative emotions.

Pornography Use to Avoid Social Interaction

In their research on television viewers, Henning and Vorderer (2001) identified two different types of escapist: those who use media to escape from psychological distress or negative emotions, a finding also shown in the pornography literature above, and those who use media to escape from social interactions. Internet gaming research has also found evidence that individuals use media to escape interpersonal interaction. Specifically, Kwon and colleagues (2011) found that those who perceived having poor interpersonal relationships used the internet more and were at an increased risk of developing internet addiction.

The internet as well as pornography may be used by some individuals as a substitute for interacting relationally and sexually with another human being. Wood (2011) posited that the sexual arousal associated with pornography use produces excitement and a feeling of control of a situation without the need to consider another person's thoughts or feelings (Wood, 2011), which could induce feelings of anxiety and self-consciousness; therefore, people may use pornography to avoid the anxiety that could arise from interacting sexually with another human. Similarly, Fall and Howard's (2015) study described pornography users' preference for the easy accessibility and low commitment of pornographic material over the complexities involved in a sexual relationship. Short and colleagues (2016) concluded from their research that many pornography users view pornography to cope with negative emotions, including anxiety, depression, or emotions related to interpersonal conflict, whereas sexual involvement with another human can invoke more negative emotions such as anxiety. In another study, Baltazar and colleagues (2010) found that pornography use was due to avoidance of both negative

emotions and social interactions in their results; specifically, they found that 17% of male respondents and 5% of female respondents used pornography as a their outlet of choice rather than interacting with people. They also found that 23% of male respondents and 4% of female respondents used pornography as a coping skill for dealing with negative emotions such as anger, stress, loneliness, depression, or boredom. Additionally, 8% of males and 5% of females used pornography to avoid feelings of low self-esteem. A portion of respondents also used pornography as a coping mechanism for interpersonal conflict, with 7% of males reporting using pornography when feeling rejected in a romantic relationship, 3% using it after conflict with others, and 2% using pornography to cope with emotions following poor work situations or poor school performance (Baltazar et al., 2010).

Similarly, the research of Weber and colleagues (2018) shows evidence that males use pornography (titled “sexually explicit internet material” in their article) in a way to escape from low life satisfaction, lack of romantic relationship, and loneliness. However, they found this results only to be true of males, as females did not use pornography as a form of escapism (Weber et al., 2018). The researchers interpreted these gender differences based on earlier research from Hunter and colleagues (2004) and Rickwood and Braithwaite (1994), which showed that women tend to use their friends and social interactions, rather than media, as a way to experience relief from negative emotions, and that media is generally only used as an escape by women who lack close friendships. Conversely, men are more likely to use media, including pornography, to solitarily avoid negative emotions (Weber et al., 2018).

The use of pornography as a strategy for avoidance of social interactions and negative emotions has raised questions among pornography researchers, causing them to look at factors that may predict pornography use. One such factor that is beginning to be evaluated is loneliness.

Loneliness

Loneliness has been described in the historical literature as a phenomenon of which everyone has knowledge (Rokach, 1989). Everyone has experienced a level of loneliness no matter their age, race, gender, or socioeconomic status. Loneliness has been shown to be more prevalent in individualistic societies, while collectivistic societies typically experience lower levels of loneliness (Barreto et al., 2021). Many people would describe loneliness as a tormenting pain or helpless feeling experienced as they long for connection with others (Rokach, 2004). Loneliness is not only an excruciating feeling for those who suffer from it, but it also has historically been shown to have negative effects on those who experience it, including higher rates of depression and anxiety and lower mental well-being, resilience, and life satisfaction (Cacioppo & Cacioppo, 2014; Ernst & Cacioppo, 1999; E. E. Lee et al., 2019; Mellor et al., 2008). Therefore, it is a topic that researchers have sought to understand due to its clinical significance.

Theoretical Conceptualization of Loneliness

Historically, Weiss (1973) conceptualized that loneliness originates from a void in relationships and can take two forms: social loneliness and emotional loneliness. Research has supported the existence of these two types of loneliness (DiTommaso & Spinner, 1997; Heinrich & Gullone, 2006; Russell et al., 1984). Social loneliness occurs when individuals lack friendships with those who have similar interests or hobbies, and it is commonly experienced after a transition such as moving to a new city, starting a new job, or enrolling at a new school or college (Russell et al., 1984). In contrast, emotional loneliness occurs when individuals have friends, yet their friendships or relationships lack intimacy or a deep emotional bond. Emotional loneliness is often experienced after a romantic breakup, after the death of a close loved one, or

in the absence of close friendships (Russell et al., 1984). While social loneliness is the literal void of relationships, emotional loneliness is the void of emotional connectedness regardless of the presence of relationships. Further, the two types of loneliness can also be understood in terms of quantity (social loneliness) versus quality (emotional loneliness). Russell and colleagues (1984) found that those struggling with emotional loneliness were more motivated to change their circumstances to form new relationships in an effort to fill the emotional void, while those struggling with social loneliness were less likely to change their circumstances to remedy their loneliness. Bucher et al. (2019) described the trend in recent years of avoidance of committed romantic relationships (termed “mingled” relationships, where two people share an intimate, yet uncommitted relationship), which research has shown to heighten emotional loneliness. They suggested avoiding mingled relationships as a means of resolving loneliness (Bucher et al., 2019).

Due to its high prevalence, researchers have sought to understand the predictors of loneliness. In a study on the antecedents of loneliness, Rokach (1989) identified three clusters of origins of loneliness. These clusters were relational deficits (including social estrangement, scant social support system, and distressed relationships), traumatic or change events (including moving from a present environment to a new one, loss or death, and catastrophes), and character traits (such as personal shortcomings and developmental deficits; Rokach, 1989). In summary of more recent research on loneliness, Knox and colleagues (2007) found in their study of 377 college students that 25% of men and 16% of women reported feeling a deep sense of loneliness. Additionally, the men in this study were less likely to be in a romantic relationship than the women, and men reported more difficulties in forming new relationships (Knox et al., 2007). Similarly, Barreto and colleagues (2021) found in their study of 46,054 participants that men

reported more loneliness than women. They also found that individualistic cultures reported more loneliness and that younger people experience loneliness more frequently than older individuals (Barreto et al., 2021).

Ways of coping with loneliness has also been an area of interest among researchers. Rokach (1990) found that people coped with loneliness through what she categorized as addictive behavior (including problematic sexual activities), self-injurious behavior, crime, and avoidance. Schoenmakers and colleagues (2012) found that individuals with available resources coped better with loneliness and those without resources coped more negatively through avoidance; however, the types of avoidant behaviors were not specified in the study. Similar to what was found in pornography research regarding the use of pornography to avoid negative emotions and social interactions, it is likely that people would use pornography as a way to escape feelings of social and emotional loneliness.

Loneliness and Pornography Use

The research on loneliness and pornography use is in its beginning stages; therefore, it is sparse. However, the literature that is published to date is compelling enough to warrant more study. The earliest known study evaluating the relationship between internet pornography and loneliness was published in 2005, but a 13-year gap in the literature followed that study. The study in 2005 noted that adolescents ages 12–17 were the largest age group viewing pornography. On the instrument used in this study, males scored significantly higher than females in loneliness and higher than females in pornography use (Yoder et al., 2005). The strongest relationship found in the study existed between internet pornography use and loneliness, followed by the relationship between loneliness and non-pornographic internet use (Yoder et al., 2005). More recently, in a study specifically examining Israeli adolescents, Efrati

and Amichai-Hamburger (2019) hypothesized that loneliness and pornography use would be correlated but that the correlation would be dependent on attachment style. Results showed that those with anxious attachments had higher pornography usage regardless of loneliness; however, for those who were low in anxiety, especially those who scored high in avoidance, loneliness was a predictor of online pornography use (Efrati & Amichai-Hamburger, 2019). Although the studies by Yoder and colleagues (2005) and Efrati and Amichai-Hamburger (2019) show evidence that loneliness and pornography are related, their research targeted adolescents, potentially making age an important confounder to consider and solidifying the need to research the relationship between pornography use and loneliness among adults.

Loneliness was related to pornography use in Weber and colleagues' (2018) study of adults, which indicated that loneliness positively predicted the frequency of pornography use. This study also showed that men use more pornography when they are not in a romantic relationship and that the predictive power of loneliness on pornography use was significantly higher for men than women, although loneliness also predicted pornography use for some women (Weber et al., 2018).

Tian and colleagues (2018) studied the mediating effects of loneliness and depression on specific internet activities (social media, online gaming, online shopping, and internet pornography) and life satisfaction in a large Chinese sample ($N = 5,215$). The results of this study found that pornography use explained 5% of the variance in loneliness and that loneliness fully mediated the relationship between the internet activities and life satisfaction (Tian et al., 2018). Since the study focused on internet activities in general rather than specifically on pornography use, it is necessary to further study the specific relationship between loneliness and pornography use.

Another study (Butler et al., 2018) evaluated the relationship between pornography use and loneliness and found that these constructs were significantly positively correlated with one another. The results of this study showed that pornography use and loneliness were cyclical in their relationship, indicating that pornography use increased loneliness and loneliness increased pornography use. These results were confirmed in the population sample, as those who were married reported significantly less pornography use (Butler et al., 2018), which is logical as they would assumedly be less lonely than non-married individuals, although there are likely more variables to consider.

The final and most recently published study (Wery et al., 2020) evaluated problematic online sexual activities as they relate to self-esteem, loneliness, and social anxiety. Online sexual activities included searches for online and offline sexual contacts, the use of sex webcams, searches for sexual information, searches for sexual advice, and other sexual activities, including pornography viewing. This study found that pornography was most frequent type of sexual activity performed among the participants ($N = 209$). Additionally, social anxiety was related to loneliness, which predicted higher levels of problematic online sexual activities (Wery et al., 2020). This study was the first to link social anxiety, online sexual activities, and loneliness, indicating the need for further research to understand these relationships.

The research on the link between pornography use and loneliness is relatively new; however, the limited quantity of published studies necessitates further research to more fully explicate the relationship and other related factors. The internet is the main avenue of use for most pornography users (Cooper, 1998; Cooper et al., 2000), and internet use and pornography use are similar in many ways, including the ways in which individuals use both the internet and pornography to escape reality (Fall & Howard, 2015; Levin et al., 2012; Odaci & Kalkan, 2010;

Paul & Shim, 2008; Seepersad, 2004; Shepherd & Edelman, 2005; Wetterneck et al., 2012).

The extant literature on internet use and loneliness informs the direction of and possibilities for further research on pornography use and loneliness.

Internet Use

Since its beginning, the internet has grown to be more accessible to humans around the world. According to the Internet Telecommunications Union (n.d.), the number of internet users has grown from 16.8 billion users in 2005 to 53.6 billion users in 2019. Greenwood and colleagues (2016) conducted a study through Pew Research and found that nearly eight out of 10 internet users also use social media. Internet use frequency is more difficult to measure with the ubiquity smartphones, where online and offline environments are less distinguishable. However, social media use is distinguishable to most internet users and is not likely to overlap with their occupational or personal use.

With the growing number of consumers of the internet comes growing concern of problematic internet use and the effects of the internet on individuals' psychological well-being (Aboujaoude, 2013; Spada, 2014). Ways the internet can be used problematically include online gambling, shopping, and gaming; additionally, consuming it for sexual purposes is becoming more problematic for many users (Aboujaoude, 2013; Ang et al., 2012; Caplan, 2007; Fineberg et al., 2018; Young et al., 2000). This section will summarize the relationship between internet use and pornography use, followed by the relationship between internet use and loneliness as indicated by the history of research and the rationale of current research for incorporating social anxiety into the current study.

Internet Use and Pornography Use

The relationship between internet use and pornography is obvious, as the internet introduced overwhelming accessibility to pornography for people of all ages (Cooper, 1998). What was previously only available for purchase and had limited availability became widely available at little or no cost to anyone who knew how to use the internet. Cooper (1998) named the internet's accessibility to pornography the "Triple-A Engine" (p. 187), referring to pornography's accessibility, affordability, and anonymity due to the availability of the internet in everyone's homes. Previously, pornography was accessible only in adult stores or from behind the counter at the convenience store, which deterred many from using it due to the lack of convenience and potential embarrassment associated with either entering the stores or verbally requesting the material from the convenience store clerk. Additionally, minors could not legally enter such stores or purchase pornography, making it less accessible for young consumers. The advent of the internet and smartphones removed all such deterrents, making pornography accessible and affordable for anyone to use while also providing the opportunity to view the sexually explicit material privately (Cooper, 1998; Cooper et al., 2000).

Early in the era of the internet's accessibility in people's homes, Young and colleagues (2000) surveyed mental health professionals on their perceptions of their clients' use of the internet. Young and colleagues (2000) categorized internet addiction in five subtypes: cyber-sexual addiction, cyber-relationship addiction, net compulsions, information overload, and computer addiction. Over 85% of the clinicians in this study believed that their clients appeared "addicted" to the internet. While their results did not specify the categories in which the clients appeared addicted, sexual uses of the internet, including pornography use, were combined in the results, showing evidence of the relationship between internet use and pornography use (Young

et al., 2000). Based on the results of their study and influenced by Cooper's (1998) Triple-A conceptualization, Young and colleagues (2000) developed the ACE model, suggesting that the internet's anonymity, convenience, and ability to provide escape motivated internet use. The escape portion of their model opens a pathway to problematic internet use, which includes pornography use (Fineberg et al., 2018; Griffiths, 2012). These same motivators for using the internet make it easy for those who find themselves in a state of loneliness to get lost on the internet and spend hours consumed by it without recognizing where the time has gone (J. Kim et al., 2009; Murali & George, 2007).

Internet Use and Loneliness

Similar to the research on using pornography as a way of escape from negative emotions, other studies have shown that internet use, more broadly, has been used to avoid negative emotions. For example, Rose and Dhandayudham (2014) found that those with low self-esteem and negative emotional states, such as anxiety and stress, were more likely to impulsively shop online and have online shopping addictions. Laier and colleagues (2018) also found that people use online gaming to avoid negative or uncomfortable emotions such as insecurity, anxiety, and intimacy. Similarly, research has shown that people use the internet to avoid feelings of loneliness (Jung et al., 2019; J. Kim et al., 2009; Seepersad, 2004; Tan et al., 2013). Tian et al. (2018) found that loneliness fully mediated the relationships between life satisfaction and internet activities such as online shopping, pornography use, and internet gaming.

Researchers have also sought to understand the relationship between internet use and loneliness. In their summary of the historical literature, Morahan-Martin (1999) made hypotheses about the relationship between internet use and loneliness, suggesting that internet use causes loneliness. Those struggling with loneliness are compelled to use the internet, especially its

social aspects. Morahan-Martin and Schumacher (2003) later published research on these hypotheses. They found that lonely people were more likely to use the internet even though internet use negatively affected those who were lonely, often leading to problematic internet use.

Affirmatively, Ceyhan and Ceyhan (2008) found in their sample of 529 college students that loneliness was the strongest predictor of problematic internet use, making up 21.8% of the variance in problematic internet use . Other recent literature has shown similar results. Panicker and Sachdev (2014) found a significant relationship between problematic internet use and loneliness, depression, stress, and anxiety. J. Kim and colleagues (2009) also found that loneliness was linked with problematic internet use, but their results also indicated that lonely people have a difficult time regulating their internet use and struggle to engage with others due to social skill deficits. Similarly, Hebecci and Shelley (2018) also found that excessive internet use negatively affected loneliness. Comparably, smartphone use has been viewed as similar to internet use since a smartphone is essentially a handheld internet device for most mobile phone users. This convenience provides easy access to social media and the internet; research on smartphone use has elicited similar results, showing that as smartphone use increased among participants, loneliness increased as well (Dikec et al., 2017).

Conversely, research has shown that a relationship exists between social support and internet use. Specifically, Jung and colleagues (2019) found that social support acts as a protective measure against problematic internet use. They found that when their participants perceived having quality social support that their tendency toward using the internet in a problematic way decreased (Jung et al., 2019). This research further supports the literature on internet use and loneliness. However, those who had social support had lower rates of internet

use compared to those who were lonely, but without social support, problematic internet use increased.

Other research has shown mixed results, some more positive toward internet use for some who are lonely, and some more negative. Nowland and colleagues (2018) found that the internet can enhance existing relationships, thus reducing loneliness, but that there is also a bidirectional relationship between social internet use and increased loneliness because social internet use can decrease in-person relationships. Similarly, Primack and colleagues (2017) showed in their sample of 1,787 young adults (aged 19–32) that those who used social media more were twice as likely to have perceived social isolation than those who reported lower levels of social media use. What causes positive versus negative outcomes for some social media users remains unknown; therefore, this field of research merits further examination and study.

Internet Use and Social Anxiety

In his research of problematic internet use and loneliness, and similar to the literature discussed above, Caplan (2005) also found that loneliness and problematic internet use were related and sought to understand individuals who prefer online social interaction to in-person interaction. He found that social skills deficits were predictive of POSI, introducing the notion that social anxiety may be a variable in the relationship between problematic internet use and loneliness. Caplan (2005) summarized his speculation that people do not prefer the internet over face-to-face interaction merely due to loneliness, even though the literature had historically shown a relationship between POSI and loneliness. He hypothesized that social anxiety, rather than loneliness, draws people to the internet, suggesting that social anxiety may be a confounding variable in previous research. Researching his earlier speculation, Caplan (2007) studied 343 undergraduate students ages 18–28, measuring their levels of loneliness and social

anxiety, POSI, and negative outcomes of internet use. He found that loneliness predicted POSI but that when social anxiety was measured, loneliness was no longer predictive of POSI, evidencing that social anxiety is a confounding variable in the relationship between loneliness and problematic internet use. Further, the researcher found that social anxiety was a predictor of POSI, explaining 19% of the variance in POSI scores (Caplan, 2007). This research was significant in clarifying the relationship between loneliness and internet use, changing the course of research. Later, Jin and Park (2012) found among their 374 participants that there was significant avoidance of face-to-face communication and mobile voice calls among those who scored higher in loneliness and had higher social skills deficits (possibly indicative of social anxiety). This research suggests that social anxiety may play a role in the relationship between loneliness and pornography use.

Social Anxiety

Social anxiety is often characterized by overt shyness, withdrawal from social settings, and intense emotion and possibly physical symptoms of anxiety, such as trembling, sweating, upset stomach, blushing, increased heart rate, rapid breathing, weakness, and fatigue (Stein & Stein, 2008). While terms like *shyness*, and especially *avoidance*, may be used to describe someone with social anxiety, they do not encompass the deep and painful experience of social anxiety (Heiser et al., 2009; Stein & Stein, 2008; Westenberg, 1998). Social anxiety has further been described as existing on a continuum of social deficits or comfortability, with shyness being on the lowest end of the spectrum, avoidant personality disorder being on the highest end, and social anxiety lying somewhere in the middle (Rapee & Heimberg, 1997). Heiser and colleagues (2009) further delineated the difference between shyness and social anxiety in their study, finding that those with social anxiety had a significant number of other negative experiences,

including cognitive distortions, fears, avoidance symptoms, and physical symptoms. In contrast, the shy group did not have these same experiences; rather, those who reported shyness were more reserved but were not fearful in social situations, unlike those with social anxiety. Further, those who were shy had more social skills. In contrast, those who had social anxiety had more deficits in their social skills (Heiser et al., 2009), which, along with the other symptoms, may have been indicative of a specific anxiety disorder in a moderate population of people.

Social Anxiety Disorder and Prevalence

SAD was previously referred to as social phobia before the publication of the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders (DSM-5; APA, 2013)*. Its name was changed from social phobia because clinical professionals agreed that SAD implied a significant and pervasive impairment from which people suffer rather than a specific phobia (Liebowitz et al., 2000). SAD is diagnosed when an individual meets the following criteria: (a) fear about situations in which the individual will be evaluated by others, (b) fear that the individual's anxious symptoms or demeanor will cause them to be negatively evaluated, (c) these symptoms almost always cause anxiety, (d) the individual tries to avoid social situations or endures them with severe anxiety, (e) the anxiety is out of proportion to the risk of the situation, (f) the anxiety has lasted for six months or more, (g) the anxiety causes significant distress and is not attributable to substance use, another mental disorder, or a medical condition (APA, 2013). SAD is the most common of anxiety disorders classified in the *DSM-5* (APA, 2013), with approximately an 8% yearly prevalence rate and 12% lifetime prevalence (Crome et al., 2015; Stein & Stein, 2008). Kessler and colleagues (2012) reported that the lifetime prevalence rate of SAD is 14.2% for women ages 18 to 64 and 11.8% for men of the same age range. Caballo and colleagues (2014) found that social anxiety was consistently represented across 18 countries.

Additionally, there was a small yet significant difference between women's and men's prevalence of SAD.

Culturally, SAD has been shown to have the highest prevalence rates among individuals in the United States and Russia and lowest rates in Asian countries (Hofmann et al., 2010), although Asian countries have a cultural-specific syndrome similar to SAD called *Taijin kyofusho* (TKS). TKS is similar to SAD because it is a social embarrassment or conscientiousness where the individual avoids social situations to prevent doing or saying the wrong thing or being perceived as offensive to others. Despite their similarities, TKS and SAD are different from one another, as an individual with TKS is focused on offending or embarrassing the other person, whereas an individual with SAD is focused on embarrassing oneself (Hofmann et al., 2010).

SAD has an early onset of age 11 in 50% of cases and is present by age 20 in 80% of cases (Stein & Stein, 2008), yet females and those who are 25 to 64 years old have the highest prevalence rates of social anxiety (Crome et al., 2015; Kessler et al., 2012). As is the case with other mental health disorders, it is possible to experience significant symptoms of social anxiety without meeting the full criteria for the disorder (Caballo et al., 2014). Fehm et al. (2008) found that many people experienced impairments from their social anxiety symptoms without meeting the full criteria for SAD.

Theoretical Conceptualization of Social Anxiety

Rapee and Heimberg (1997) presented a theoretical understanding of social anxiety from a cognitive-behavioral perspective, specifying that those with social anxiety imagine how others judge them, whether by their appearance or performance. These perceptions cause them to have conflictual beliefs between how they think they are being perceived versus how they believe

others expect to perceive them. This perception then evolves into an assumption that they are negatively evaluated by others around them, causing behavioral, cognitive, and physical symptoms of anxiety. Consequently, the anxiety causes a negative cycle, as the person further worries about how their anxiety is now being perceived, leading to more anxiety, as previously described (Rapee & Heimberg, 1997). Weeks and colleagues (2005) distinguished the fear of evaluation from social anxiety by explaining that although they are closely related, some people can dread negative evaluation from others, but those with social anxiety have affective reactions to the fear of negative evaluation. Clark and Wells (1995) formulated a similar cognitive model of social anxiety that begins with a social situation activating assumptions in the person, causing them to perceive social danger, leading to the behavioral, physical, and cognitive symptoms of anxiety, which starts the sequence over again. As an example of this model of social anxiety, a woman may assume that her competence is not perceived well at work, causing her to sense social danger when she is called into a meeting with her boss where she will be required to give a presentation of her work. Her anxiety symptoms may then lead to her sweating, shaking, blushing, and fumbling over her words during her presentation, which then restarts the sequence as she assumes that she is not being regarded as competent due to her anxiety symptoms. To explain it even more simply, the observable social anxiety symptoms exacerbate the anxiety, beginning a vicious self-focused cycle that is often difficult for individuals to derail on their own (Clark & Wells, 1995).

Those with social anxiety often develop safety behaviors in order to conceal their anxiety from those around them. Safety behaviors may include practicing speech to avoid stuttering or to increase conciseness, talking more or talking less, avoiding eye contact, and tensing muscles to avoid visible shaking (McManus et al., 2008). While safety behaviors are adopted to cope with

social anxiety, research shows that they adversely perpetuate the anxiety (McManus et al., 2008; Salkovskis et al., 1999). For example, a person may squeeze a glass in their hand to prevent visible trembling, but the focus on preventing the symptom, in actuality, exacerbates the symptom. McManus and colleagues (2008) investigated and affirmed the cognitive model of social anxiety. They found that those with social anxiety perceive themselves to be negatively evaluated by others, leading to further fear of evaluation from others. They highly overestimate the level to which those around them notice their anxiety and frequently use safety behaviors despite the behaviors perpetuating the anxiety (McManus et al., 2008).

Those who suffer from social anxiety cope with their social anxiety in multiple ways. A common coping strategy, which is also a hazardous one, is using alcohol in social settings to dampen anxiety (Ham et al., 2009). Other common coping strategies include avoiding situations that would cause social anxiety (APA, 2013), opting to use the internet for social interactions rather than meeting in person (Caplan, 2007; Odaci & Kalkan, 2010), and using distraction as a coping skill after the anxiety has already incurred (Hofmann & DiBartolo, 2014).

Social Anxiety and Internet Use

Evidence for using the internet as an escape from social anxiety was exhibited in Shepherd and Edelman's (2005) study, which showed that those who had social anxiety used the internet to cope with or regulate their anxiety. Similarly, Gross and colleagues (2002) found in their research among adolescents that those who reported having social anxiety were more likely to chat with strangers online than those who did not have social anxiety. This research could indicate that individuals use the internet as a way to escape the adverse feelings associated with social anxiety while still connecting with others. Similarly, Odaci and Kalkan (2010) found that those who had social anxiety more frequently sought online dating relationships. As

previously discussed, Caplan's (2007) study found that those with social anxiety often prefer online social interaction. These studies' evidence for preferring to interact through the internet to cope with social anxiety is logical, as the socially anxious person can mask their anxiety, removing some of the fear of being negatively evaluated by appearance or performance while interacting with others online. There is also a level of control, as one can easily escape the interaction by simply turning off the computer. While this could seem like a positive way for the socially anxious to have an interpersonal connection, research has shown that when the internet is being used in an avoidant manner, specifically to avoid negative emotions, problematic internet use can develop (Huan, Ang, Chong, & Chye, 2014; B. W. Lee & Stapinski, 2012). B. W. Lee and Stapinski (2012) found that social anxiety was a significant predictor of problematic internet use, even when controlling for anxiety, stress, and depression. Further, Hofmann and DiBartolo (2014) noted that in their research, any coping strategies that involve avoidance of social anxiety did not have positive outcomes; rather, those struggling with social anxiety need to challenge their cognitive assumptions and make behavioral modifications.

The effects of social anxiety are widespread and have been thoroughly measured in research. Evidence has been uncovered for effects such as low workplace function and absences, poor performance levels, low life satisfaction, a high prevalence for major depression, proneness to substance abuse, and increased levels of loneliness (Darcin et al., 2016; Gilbert, 2000; Ham et al., 2009; Hofmann & DiBartolo, 2014; Huan, Ang, & Chye, 2014; Stein & Stein, 2008).

Social Anxiety and Loneliness

The relationship between social anxiety and loneliness is logical given the avoidance aspect of social anxiety. Avoiding social interactions out of fear of being negatively evaluated leads to isolation, resulting in loneliness for those suffering from social anxiety. Darcin and

colleagues (2016) found in their study on problematic smartphone use that social anxiety and loneliness were significantly correlated with one another as well as with problematic smartphone use. Similarly, Huan, Ang and Chye (2014) found that loneliness and social anxiety were significantly and positively correlated with problematic internet use. Their study showed that social anxiety acts as a mediator between loneliness and shyness as predictors of problematic internet use. Interestingly, there were no direct effects between loneliness and problematic internet use; however, loneliness directly affected social anxiety, and social anxiety had a direct effect on problematic internet use (Huan, Ang, & Chye, 2014).

Historically, research has indicated that higher levels of loneliness are associated with higher social skills deficits (DiTommaso et al., 2003; Jones et al., 1981, 1982; Knox et al., 2007; Solano & Koester, 1989). Some of the authors of those studies suggested further research on social anxiety since social skills deficits could be indicative of social anxiety. Subsequently, research has shown that social anxiety and loneliness are strongly correlated (Lim et al., 2016; Reid & Reid, 2007). Although loneliness and social anxiety are similar in some of their traits, research has shown that they are characteristically different, supporting the use of both traits in research (Fung et al., 2017). Furthermore, researchers have asserted the importance of including social anxiety in loneliness research as it has shown to confound results. For example, Lim and colleagues (2016) measured the relationships between loneliness and mental health symptoms such as social anxiety, paranoia, and depression. They found that loneliness, when experienced earlier in life, significantly predicted increased paranoia, depression, and social anxiety later in life; however, they found that social anxiety experienced earlier in life was the only trait that significantly predicted later experiences of loneliness (Lim et al., 2016). The researchers noted the importance of including social anxiety in their constructs because without the social anxiety

variable, it would have appeared in their results that depression causes loneliness, whereas when social anxiety was included, depression was no longer a predictor of loneliness. They speculated that social anxiety should be included in most studies examining loneliness because it has shown to be a logical connector in the experience of loneliness (Lim et al., 2016).

Social Anxiety and Pornography Use

The relationship between social anxiety and pornography use remains unknown. Merely one study (Wery et al., 2020) has examined social anxiety, pornography use, and loneliness; however, it assessed problematic online sexual activities, which included far more than pornography use. Further, the study's focus was on self-esteem as an independent variable rather than on an evaluation of social anxiety's relationship to online sexual activities. Comparably, Caplan's (2007) research showed that social anxiety was a significant confounding variable between loneliness and problematic internet use, including a level of pornography use; however, pornography use was combined with many other variables rather than the focus of the study.

Additionally, research has indicated a relationship between loneliness and pornography use (Butler et al., 2018; Efrati & Amichai-Hamburger, 2019; Tian et al., 2018; Weber et al., 2018; Wery et al., 2020; Yoder et al., 2005); however, the limited studies have not included other variables that could confound the results, such as social anxiety. Interestingly, Huan, Ang, and Chye (2014) research showed that loneliness did not have a direct effect on problematic internet use, making the case that another variable (possibly social anxiety) confounds the relationship. Theoretically, since social anxiety was a confounder in the internet use and loneliness studies (Caplan, 2007; Jin & Park, 2012), it is possible that it also confounds loneliness and pornography use.

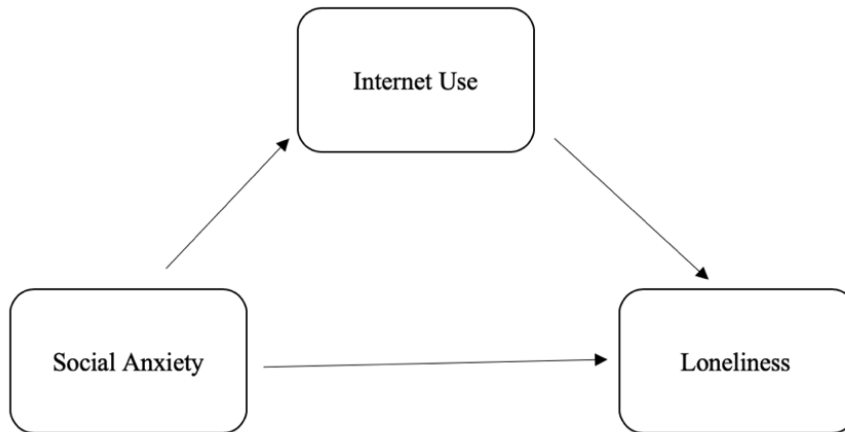
Research Conceptualization, Hypotheses, and Theoretical Model

The existing research examining pornography use and loneliness is limited, suggesting that further research that includes an assessment factors that may influence that relationship would help to explain the mechanisms that result in loneliness. The internet is often used similarly to pornography, specifically, to avoid negative emotions (Fall & Howard, 2015; Levin et al., 2012; Odaci & Kalkan, 2010; Paul & Shim, 2008; Seepersad, 2004; Shepherd & Edelman, 2005; Wetterneck et al., 2012). Therefore, the extant research regarding the relationship between internet use and loneliness (Ceyhan & Ceyhan, 2008; Laier et al., 2018; Morahan-Martin & Shumacher, 2003; Rose & Dhandayudham, 2014) is the foundation for consideration of other variables in the relationship between pornography use and loneliness. Accordingly, some research shows that social anxiety confounds the relationship between internet use and loneliness (Caplan, 2007; Jin & Park, 2012), making it a viable variable to consider in the relationship between pornography use and loneliness. Further, social anxiety and pornography use have essentially not been researched to date, yet their theoretical relationship is logical, so researchers need to pursue these topics.

Based on this theoretical conceptualization, research hypotheses were developed. The first hypothesis was that there would be a positive correlation between social anxiety and internet use. The second hypothesis was that internet use would mediate the relationship between social anxiety and loneliness. Figure 2.1 provides a diagram of this proposed model. The rationale for this model comes from the existing literature that supports that social anxiety, loneliness, and internet use are related.

Figure 2.1

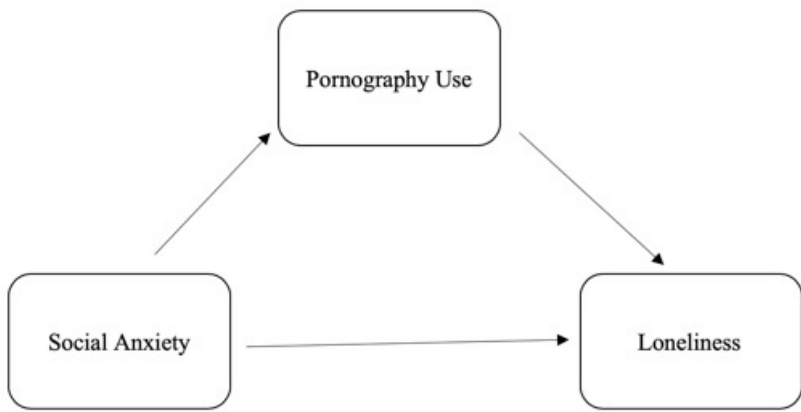
Proposed Theoretical Model of Research Question 2



Third, it was hypothesized that social anxiety and pornography use would be positively related, and the fourth hypothesis was that pornography use and loneliness would be positively related, supporting the existing literature. Fifth, it was hypothesized that pornography use would mediate the relationship between social anxiety and loneliness. Figure 2.2 provides a diagram of the proposed model, and the rationale for this model is informed by the literature on internet use, loneliness, and social anxiety.

Figure 2.2

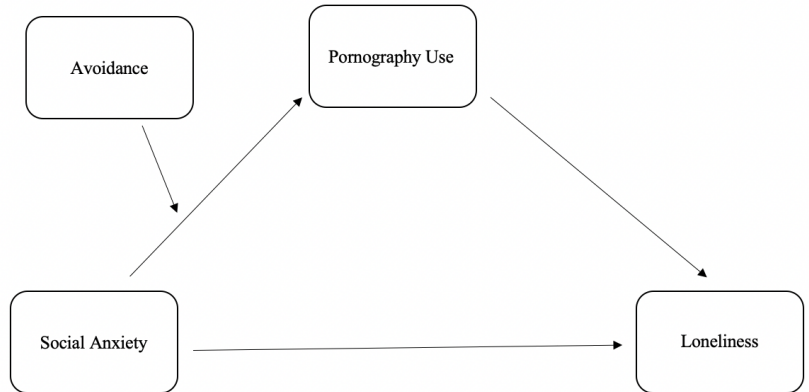
Proposed Theoretical Model of Research Question 5



Lastly, it was hypothesized that avoidance of emotions and avoidance of social interaction would moderate the relationship between social anxiety and pornography use. Figure 2.3 provides a diagram of the proposed model. The rationale for the last hypothesis is that people use pornography in an avoidant manner to escape negative emotions; therefore, pornography may be an escape for people who have social anxiety.

Figure 2.3

Proposed Theoretical Model of Research Question 6



Chapter Summary

This chapter began with an overview of pornography use, including a brief review of positive outcomes, but focused on the negative outcomes. The interrelatedness of all of the variables was reviewed and summarized except for pornography use and social anxiety. Drawing from the relationships between problematic internet use and social anxiety, a case was made for social anxiety to be included in the current study as a possible confounding variable between pornography use and loneliness.

Across the constructs, there was a common theme that those who experience negative emotions, including loneliness and social anxiety, often cope in avoidant manners rather than positively or healthily. Similarly, the literature showed that pornography use and internet use on their own were not problematic, but when people use pornography and the internet in an avoidant way or to escape from negative emotions or social interactions, problematic use often follows.

This current study seeks to extend the existing literature on pornography use and loneliness by adding the social anxiety component. This research is important for clinicians to have a better ability to assess the motivations behind their clients' pornography use and possibly intervene at the root issue (e.g., treat the social anxiety) rather than focusing on the symptoms (e.g., viewing pornography). To date, research has not studied the relationship between pornography use and social anxiety; therefore, this study seeks to understand this relationship as it relates to loneliness.

CHAPTER THREE: METHODS

The following chapter describes the methods that were used to measure the relationships between social anxiety and loneliness, whether pornography use and internet use mediates this relationship, and whether avoidance moderates the relationships between social anxiety and pornography use. This study assessed the relationship between social anxiety and pornography use to fill the gap in the current literature and extend the existing literature on pornography use and loneliness. This chapter briefly describes the research purpose, provides the research questions and hypotheses, and explains the research design, selection of participants, and the instrumentation that was used, as well as the research procedures and data processing that took place during and after the research was conducted.

Research Purpose

The purpose of this research is to understand the relationship between social anxiety and pornography use, as there is no known research to date on this relationship. Additionally, the relationship between social anxiety and loneliness was assessed, including whether pornography use and internet use mediates this existing relationship. This study extends the current literature on pornography use and loneliness by including the social anxiety variable. Lastly, avoidance of emotions and avoidance of social interaction were tested to assess whether they moderate the relationship between social anxiety and pornography use. This study may aid in clinicians' assessment and treatment of those who desire to understand, change, or discontinue their pornography use.

Research Questions and Hypotheses

Research Question 1: What is the relationship between social anxiety and internet use?

Hypothesis 1: There is a positive correlation between social anxiety and internet use.

Null Hypothesis 1: There is no relationship between social anxiety and internet use.

Research Question 2: Is the relationship between social anxiety and loneliness mediated by internet use?

Hypothesis 2: Internet use mediates the relationship between social anxiety and loneliness.

Null Hypothesis 2: Internet use has no effect on the relationship between social anxiety and loneliness.

Research Question 3: What is the relationship between social anxiety and pornography use?

Hypothesis 3: There is a positive correlation between social anxiety and pornography use.

Null Hypothesis 3: There is no relationship between social anxiety and pornography use.

Research Question 4: What is the relationship between pornography use and loneliness?

Hypothesis 4: There is a positive correlation between pornography use and loneliness.

Null Hypothesis 4: There is no relationship between pornography use and loneliness.

Research Question 5: Is the relationship between social anxiety and loneliness mediated by pornography use?

Hypothesis 5: Pornography use mediates the relationship between social anxiety and loneliness.

Null Hypothesis 5: Pornography use has no effect on the relationship between social anxiety and loneliness.

Research Question 6: Is the relationship between social anxiety and pornography use moderated by avoidance?

Hypothesis 6: Avoidance of emotions and avoidance of social interaction moderate the relationship between social anxiety and pornography use

Null Hypothesis 6: Avoidance of emotions and social interaction have no effect on the relationship between social anxiety and pornography use.

Research Question 7: Exploratory analysis of social anxiety will be conducted using the BFNE-II.

Research Question 8: Does the gender of participants impact the results?

Research Question 9: Does the age of the participants impact the results?

Research Design

This study was nonexperimental since an intervention or treatment was not implemented and no variables were manipulated. The study used a cross-sectional between-subjects design to measure the relationships between variables. A longitudinal study was not implemented; therefore, it is important to interpret all results with caution regarding any correlations or causal relationships.

MTurk, Amazon's crowdsourcing marketplace, was used to recruit participants for the study. Numerous advantages of using MTurk exist, including its allowance for quick collection of data. Additionally, MTurk collects data from a broad population, increasing the diversity of the sample. It was expected that the participants recruited through MTurk would be more representative of the general population than participants used in a typical convenience sample, such as undergraduate students (Shapiro et al., 2013), which increases the generalizability of the results. Lastly, MTurk protects the identity of the participants (Shapiro et al., 2013), which may have provided a greater ability for participants to be transparent on sensitive topics such as pornography use.

The participants were asked to provide informed consent for the study. The informed consent statement, which the participants read, is presented in Appendix A. Those who gave their consent proceeded in the study, and their demographic information was collected. The participants were given several measures, which included items that measured their internet use, items that measured their frequency of pornography use, the Liebowitz Social Anxiety Scale (LSAS; Heimberg et al., 1999), the Brief Fear of Negative Evaluation Scale-Revised (BFNE-II, Carleton et al., 2006), the revised UCLA Loneliness Scale (Russell et al., 1980), the Pornography Use Motivations Scale (PUMS; Bóthe et al., 2020), and items that measured avoidance of both emotions and social interactions. The data from these measures were downloaded into IBM SPSS Statistics Version 27.

Selection of Participants

Participants included both men and women 18 years of age and older. Participants were included in the study regardless of relationship status. Additionally, participants with all sexual orientations were included in the study. Those that were excluded from the study included those who had not used pornography in the last month, those who exclusively used pornography mutually with a partner, minors under the age of 18, and those who did not provide consent for participation. The target number of participants was 500 in order to obtain sufficient variability in participants' pornography use and social anxiety levels. Additionally, this target number created margin for attrition—if a portion of participants did not complete the survey, there would still be ample participants included in the study.

Instrumentation

Demographic Information

Participants were asked standard demographic questions related to their gender, age, sexual orientation, relationship status, race, level of education, employment status, annual income, sexual activity in the past six months, relationship history, and religious affiliation.

Internet Use

In the age of smartphones and use of apps connected to the internet, as well as use of the internet as a part of many jobs, internet use, by itself, is difficult to measure on its own; therefore, the participants' social media use was assessed. Of the total sample, the data indicated how many participants used social media platforms as well as how many hours per day were spent on social media.

Pornography Use

Participants indicated whether they intentionally used pornography for sexual gratification. They also indicated how many times they had used pornography in the last 30 days. Lastly, participants indicated the percentage of the time they viewed pornography solitarily and the percentage of the time they viewed pornography with a partner. Those who primarily used pornography solitarily were included in the study. Other items related to pornography use were measured but were not included due to lack of relevance to the current study.

Social Anxiety

Social anxiety was measured using the LSAS. This scale describes 24 situations that are commonly perceived as anxiety-provoking for those who have social anxiety. The scale measures both the fear that the situation evokes and how often the person avoids such a situation (Mennin et al., 2002). Scores ranging from 0-29 indicate no social anxiety, 30-49 indicate mild

social anxiety, 50-64 indicate moderate social anxiety, 65-79 indicate marked social anxiety, 80-95 indicate severe social anxiety, and a score higher than 95 indicates very severe social anxiety (National Social Anxiety Center, 2016). Example items from the LSAS include “going to a party” and “trying to make someone’s acquaintance for the purpose of a romantic/sexual relationship” (Heimberg et al., 1999). The LSAS has been shown to have excellent internal consistency, high convergent validity, and high discriminant validity, and historical reliability (Heimberg et al., 1999).

The BFNE-II (Carleton et al., 2006) was also administered to the participants to assess aspects of social anxiety. The BFNE-II is a 12-item scale assessing the fear that people have of being evaluated negatively by others. This scale is often used in conjunction with the LSAS (Jain & Sudhir, 2010; Schmertz et al., 2012), since the fear of negative evaluation is a key component of social anxiety for many people (APA, 2013; Clark & Wells, 1995; Rapee & Heimberg, 1997; Rodebaugh et al., 2011). The BFNE-II is related to the LSAS, but the two scales are distinct from one another, as the LSAS focuses on situational fear (mainly surrounding events) and avoidance, while the BFNE-II focuses specifically on the fear of being negatively evaluated by others (Weeks et al., 2005). Examples from the BFNE-II include “I often worry that I will say or do the wrong things” and “I am afraid that others will not approve of me” (Carleton et al., 2006). The BFNE-II has shown to have excellent internal consistency ($\alpha = .95$) compared to the original BFNE measure ($\alpha = .89$), which has acceptable internal consistency (Carleton et al., 2006; Weeks et al., 2005). The BFNE-II has also been shown to have historical reliability with item-total correlations ranging from .72 to .82 (Carleton et al., 2006, 2007; Duke et al., 2006). Convergent validity is high, as the BFNE-II is significantly correlated with other social anxiety measures (Weeks et al., 2005).

Loneliness

The participants were given the revised UCLA Loneliness Scale, which consists of eight items assessing one's satisfaction with their social relationships. Specifically, it assesses the emotional loneliness with items such as "people are around but not with me" (Russell et al., 1980). The revised UCLA Loneliness Scale is widely used to assess loneliness (Ang et al., 2012; Butler et al., 2018; Darcin et al., 2016; Huan, Ang, Chong, & Chye, 2014; Jones et al., 1981; E. Lee et al., 2019; Lim et al., 2016; Yoder et al., 2005), and has been shown to have high internal consistency and historical reliability, as well as having concurrent validity and discriminant validity (Russell et al., 1980).

Avoidance

Avoidance, as it relates to pornography use, was measured in two ways: First, the PUMS (Bóthe et al., 2020) was used to assess several common motivations for using pornography, including boredom avoidance, stress reduction, and emotional distraction or suppression. All of these motivations for pornography use may signify avoidance. The participants were also asked four questions, two of which pertained to using pornography to avoid emotions and two that pertained to using pornography as avoidance of social interactions.

Research Procedures

Approval was obtained from the Institutional Review Board (IRB) prior to data collection, and data were collected using MTurk. Next, the survey was pilot tested and a request for participants was submitted. Participants were required to read the informed consent document that explained the current nonexperimental research study. Participants were told that the survey would assess their pornography use, internet use, social anxiety, loneliness, and avoidance. The participants were informed that information and the data collected are anonymous, privately

stored, and only available to the researchers of the study. They were also informed that there were no known benefits from completing the survey and that the known risk for completion was low and limited to any possible breaches of the data. Participants were notified that their involvement in the study was voluntary and that they could exit the survey at any time.

Data Processing and Analysis

The researcher downloaded the data into IBM SPSS Version 27 with the PROCESS macro for SPSS (Hayes, 2017). The data were screened for inattentive responses, and missing data were excluded from the final analysis. Preliminary data screening determined if the scores were normally distributed, and the data were screened for outliers. Furthermore, responses that were provided randomly were excluded from the final analysis.

Pearson's correlation coefficients were used to test Hypotheses 1, 3, and 4. To assess the remaining hypotheses, mediation and moderated mediation models were tested using PROCESS (Hayes, 2017), a macro for SPSS that allows for testing of conditional process models. Bootstrapping was also used as a method of resampling (Hayes, 2017). A mediation analysis (Model 4; Hayes, 2017) was conducted for Hypotheses 2 and 5. A moderated mediation analysis (Model 7; Hayes, 2017) was conducted for the sixth research question.

Ethical Considerations

The regulations and guidelines from the IRB and the American Counseling Association's (2014) ethical guidelines for research were followed throughout the study. Due to the sensitive nature of some of the questions (e.g., frequency of pornography use), the study was designed to protect the data collected and ensure the anonymity of participants. Although the researcher paid the participants upon their completion of the survey, the payments were made through MTurk, which kept the identity of the participants anonymous to the researcher. The demographic items

did not include identifying information, nor did the researcher ask for identifying information from the participants.

It is not probable that participants experienced any unfavorable risks or harm from participating in this research; however, it is possible that some of the sensitive questions pertaining to personal information, specifically about pornography use, may have produced emotional outcomes such as embarrassment or shame. Participants were provided with an online counseling resource in the informed consent in the event that they experienced any negative symptoms from completing the survey.

Chapter Summary

This chapter gave a brief description of the purpose of the study, followed by a list of the research questions and hypotheses. Next, the research design was detailed, including the participants and instruments used. Lastly, the research procedures were described, and ethical considerations were presented.

CHAPTER FOUR: RESULTS

The purpose of this study was to examine the relationships between social anxiety, internet use, and loneliness, including whether internet use mediates the relationship between social anxiety and loneliness. Second, the study examined the relationships between social anxiety, pornography use, and loneliness, including whether pornography use mediates the relationship between social anxiety and loneliness. Lastly, the study assessed the moderating effects of avoidance (of emotions and social interactions) on the relationship between social anxiety and pornography use. The first model proposed that internet use would mediate the relationship between social anxiety and loneliness. Similarly, the second model proposed that pornography use would mediate the relationship between social anxiety and loneliness. Lastly, the third model proposed that avoidance of emotions and social interactions would moderate the relationship between social anxiety and pornography use.

This study used a sample of 901 participants who had used pornography in the last month. Participants answered demographic questions as well as questions about their internet use (measured by their social media use) and their pornography use. Participants also completed measures that assessed their levels of social anxiety and loneliness and answered questions about whether they used pornography in a manner that would indicate avoidance of emotions and social interactions. This chapter describes the data analysis that was used to examine whether the hypotheses were supported by the data and includes a summary of the results.

Data Screening

The data were gathered from 901 participants. Eliminated from the study were surveys that had missing cases in any variable and surveys with missing demographic information.

Additionally, those under the age of 18, those who did not provide informed consent, and those who did not indicate using pornography in the last 30 days were excluded from the study.

Participant Demographics

The age range of the 901 participants was 20 to 76 years, with a mean age of 37 years.

See Table 4.1 for full demographic information.

Table 4.1

Participant Demographics

	<i>N</i>	<i>%</i>
Gender		
Male	542	60.2
Female	356	39.5
Other	3	0.3
Ethnicity		
Caucasian/White	668	74.1
African American	144	16.0
Asian	42	4.7
Hispanic, Latino, or of Spanish origin	27	3.0
American Indian or Alaska Native	12	1.3
Other	8	0.9
Attraction/sexual preference		
Men only	331	36.7
Women only	473	52.5
Men and women	92	10.2
Neither men nor women	1	0.1
Missing	4	0.4
Religious affiliation		
Protestant	109	12.1
Catholic	456	50.6
Christian (nondenominational)	142	15.8
Mormon	2	0.2
Jehovah's Witness	2	0.2
Muslim	10	1.1
Hindu	17	1.9
Jewish	5	0.6
Buddhist	13	1.4
New Age Wiccan	6	0.7
None	121	13.4
Other	18	2.0
Relationship status		
Single - never in a relationship	54	6.0

Single - not currently in a relationship	89	9.9
Non-committed dating relationship	19	2.1
Monogamous dating relationship	67	7.4
Married/life partner	631	70.0
Legally separated	15	1.7
Divorced	23	2.6
Widowed	3	0.3
Sexual activity in the last 6 months		
No	113	12.5
Yes	698	77.5
I do not have a current romantic partner	90	10.0

Sample Means

The minimum score, maximum score, means, and standard deviations were calculated for all measures used in the study. The results are shown in Table 4.2.

Table 4.2

Descriptive Statistics for Model Variables

Variable	<i>N</i>	Range	Minimum	Maximum	Mean	<i>SD</i>
LSAS	901	79.00	12.50	91.50	57.26	14.921
BFNE-II	901	4.00	1.00	5.00	3.244	0.981
Social Media	901	100.00	0.00	100.00	3.493	5.095
Pornography Use	901	4.00	1.00	5.00	2.950	1.233
Loneliness	901	9.00	1.00	10.00	5.442	1.873
Boredom Avoidance	901	6.00	1.00	7.00	5.076	1.577
Emotional Distraction	901	6.00	1.00	7.00	3.911	1.694
Stress Reduction	901	6.00	1.00	7.00	4.335	1.508
Pornography Avoidance	901	9.00	1.00	10.00	5.395	2.677
Age	901	56.00	20.00	76.00	37.350	10.789

Note. LSAS = Liebowitz Social Anxiety Scale; BFNE-II = Brief Fear of Negative Evaluation Scale-II.

Data Analysis

Data analysis was performed using IBM SPSS Statistics Version 27 with the PROCESS macro for SPSS (Hayes, 2017). Responses from participants who did not complete all the items for each measure were excluded from the analysis. Bivariate correlations were conducted between social anxiety (LSAS and BFNE-II) and loneliness (UCLA Loneliness Scale), as well as

between social anxiety and pornography use and social anxiety and internet use (social media). Additionally, bivariate correlations were also conducted between pornography use and loneliness and between internet use (social media) and loneliness. Two mediation models (PROCESS Model 4; Hayes, 2017) and one moderated mediation model (PROCESS Model 7; Hayes, 2017) were tested. For exploratory purposes, the models were also used to analyze any differences in results among participants of different genders and ages. The remainder of this chapter will present the results from these analyses.

Correlations

Social Anxiety and Loneliness

A Pearson's r correlation test was conducted to test the relationship between social anxiety and loneliness. As expected and consistent with the literature, social anxiety as measured by the LSAS was found to be significantly positively correlated with loneliness ($r = .516, p < .001$). Similarly, social anxiety as measured by the BFNE-II also was found to be significantly positively correlated with loneliness ($r = .582, p < .001$). These findings suggest that higher levels of social anxiety and fear of negative evaluation are associated with increased loneliness.

Social Anxiety and Internet Use

A Pearson's r correlation test was conducted to test the relationship between social anxiety and internet use (as measured by social media use). Consistent with the hypothesis and current literature, social anxiety as measured by the LSAS was found to be significantly positively correlated with internet use (as measured by social media use; $r = .105, p < .001$). Similarly, the social anxiety as measured by the BFNE-II was also found to be significantly positively correlated with internet use (measured by social media use; $r = .110, p < .001$). These

findings suggest that higher levels of social anxiety and fear of negative evaluation are associated with increased internet use.

Social Anxiety and Pornography Use

A Pearson's r correlation test was conducted to test the relationship between social anxiety and pornography use. Consistent with the hypothesis, social anxiety as measured by the LSAS was found to be significantly positively correlated with frequency of pornography use ($r = .082, p < .05$). Similarly, the social anxiety as measured by the BFNE-II was also found to be significantly correlated with frequency of pornography use ($r = .072, p < .05$). These findings suggest that higher levels of social anxiety and fear of negative evaluation are associated with increased pornography use. The results are significant and suggest a small, positive correlation.

Internet Use and Loneliness

A Pearson's r correlation test was conducted to test the relationship between internet use (as measured by social media use) and loneliness. Consistent with the hypothesis, internet use was found to be significantly positively correlated with loneliness ($r = .104, p < .001$). This finding suggests that increased internet use is associated with increased loneliness.

Pornography Use and Loneliness

A Pearson's r correlation test was conducted to test the relationship between frequency of pornography use and loneliness. Consistent with the hypothesis, pornography use was significantly positively correlated with loneliness ($r = .142, p < .001$). This finding suggests that increased pornography use is associated with increased loneliness.

Gender and Age as Covariates

Pearson's r correlation tests were conducted to test the covariates (gender and age) in each of the model tests as an exploratory analysis. The results showed that gender was

significantly negatively correlated with pornography use ($r = -.197, p < .001$) and age was significantly negatively correlated with social anxiety ($r = -.161, p < .001$), fear of negative evaluation ($r = -.257, p < .001$), and loneliness ($r = -.231, p < .001$). These findings suggest that males use pornography more frequently. They also suggest that as age increases, social anxiety, fear of negative evaluation, and loneliness decrease.

Pornography Use and Avoidance-Based Moderators

Pearson's r correlation tests were conducted to test the relationship between pornography use and the avoidance-based moderators. As expected, pornography use was significantly positively correlated with each of the avoidance-based moderators (boredom avoidance, emotional distraction, stress reduction, and pornography avoidance). See Table 4.3 for a summary of the correlations.

Table 4.3

Pearson's r, Means, and Standard Deviations

	1	2	3	4	5	6	7	8	9	10	11
(1) LSAS	1										
(2) BFNE-II	.557**	1									
(3) Social media	.105**	.110**	1								
(4) Pornography use	.082*	.072*	.024	1							
(5) Loneliness	.516**	.582**	.104**	.142**	1						
(6) Boredom avoidance	.411**	.426**	.027	.305**	.428**	1					
(7) Emotional distraction	.477**	.467**	.107**	.266**	.527**	.768**	1				
(8) Stress reduction	.384**	.354**	.062	.313**	.399**	.689**	.787**	1			
(9) Pornography avoidance	.514**	.473**	.081*	.252**	.579**	.685**	.782**	.708**	1		
(10) Gender	.023	.055	-.007	-.197**	-.012	-.184**	-.146**	-.174**	-.134**	1	
(11) Age	-.161**	-.257**	-.039	-.047	-.231**	-.164**	-.183**	-.144**	-.163**	-.026	1
Mean	57.255	3.244	3.493	2.950	5.441	4.076	3.911	4.335	5.394	1.400	37.350

<i>SD</i>	14.921	.981	5.095	1.233	1.873	1.577	1.694	1.508	2.677	.497	10.789
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*Correlation is significant at the .05 level (2-tailed).

**Correlation is significant at the .01 level (2-tailed).

Testing Model 1

The first model was associated with Hypotheses 1 and 2. Hypothesis one was that social anxiety would have a significant positive relationship with internet use, as indicated by social media use. Findings revealed that social anxiety (as measured by the LSAS) had a small, significant positive effect on internet use ($b = .035$, $SE = .011$, $CI [.012, .057]$), indicating that as social anxiety increased, internet use also increased. The second research question asked whether internet use mediates the relationship between social anxiety and loneliness. To test the mediation model (Model 4), Hayes's (2017) conditional process analysis PROCESS macro for SPSS was used. This mediation model used social anxiety (as measured by the LSAS) as the predictor variable and loneliness as the outcome variable. The proposed mediator for this model was internet use, indicated by participants' social media use, while controlling for age and gender. A pictorial representation of the theoretical model is presented in Figure 4.1. The statistical model is presented in Figure 4.2.

Figure 4.1

Hypothesized Theoretical Model 1

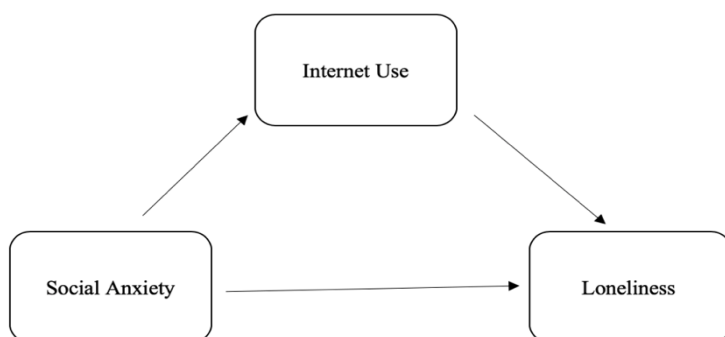
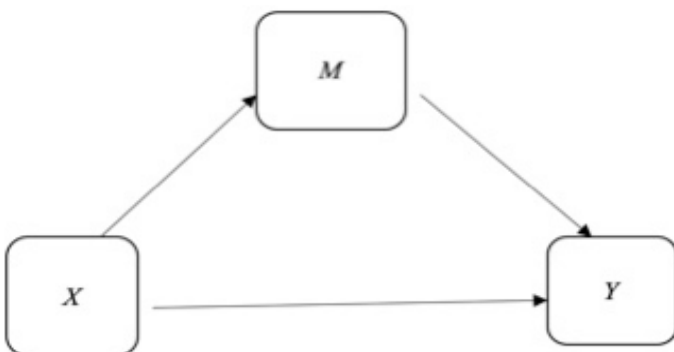
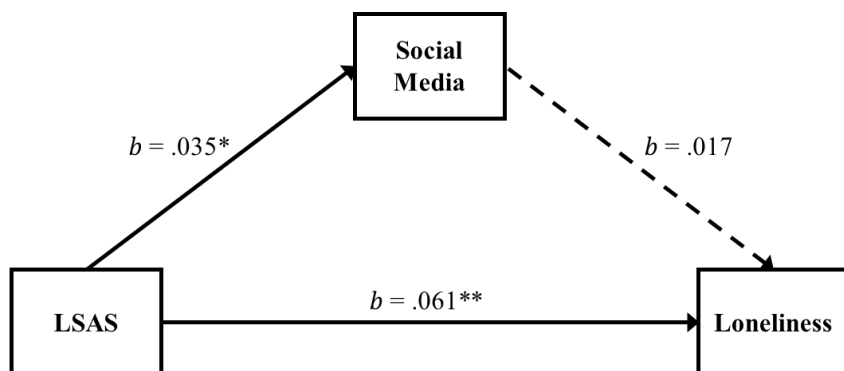


Figure 4.2*Hypothesized Statistical Model 1*

The results also showed that social anxiety had a significant positive direct effect on loneliness ($b = .061$, $SE = .004$, $CI [.054, .068]$), indicating that as social anxiety increased, levels of loneliness also increased. Internet use was not found to have a significant effect on loneliness ($b = .017$, $SE = .010$, $CI [-.003, .037]$). Gender was not found to be significantly associated with internet use or loneliness. Age was also not associated with internet use but was negatively associated with loneliness ($b = -.026$, $SE = .005$, $CI [-.036, -.017]$), indicating that as age increased, levels of loneliness decreased. See Figure 4.3 and Table 4.4 for Model 1 results.

Figure 4.3*Model 1: Simple Mediation Model for Social Anxiety and Internet Use (Social Media)*

Hypothesis 2 proposed that internet use would mediate the relationship between social anxiety and loneliness. While social anxiety had a significant positive effect on loneliness ($b = .062$, $SE = .004$, $CI [.055, .069]$), findings did not support Hypothesis 2 due to the lack of evidence for a significant effect of social anxiety on loneliness through internet use ($b = .001$, $SE = .001$, $CI [-.001, .001]$). Though findings supported that social anxiety was significantly related to increased internet use and loneliness, the data did not support that internet use was related to loneliness, nor did it provide evidence for partial or full mediation.

Table 4.4

Social Anxiety and Loneliness Mediated by Social Media

<i>Source</i>	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>	95% CI	
					<i>LL</i>	<i>UL</i>
Social Media: $R = .108$, $R^2 = .012$, $MSE = 25.745$, $F(3, 897) = 3.533$, $p < .05$						
Social anxiety	.035	.011	3.028	<.050	.012	.057
Age	-.011	.016	-0.677	.498	-.042	.020
Gender	-.100	.340	-0.294	.769	-.768	.568
Loneliness: $R = .540$, $R^2 = .292$, $MSE = 2.495$, $F(4, 896) = 92.362$, $p = <.001$						
Social anxiety	.061	.004	17.031	<.001	.054	.068
Social media	.017	.010	1.630	.103	-.003	.037
Age	-.026	.005	-5.333	<.001	-.036	-.017
Gender	-.100	.106	-0.941	.347	-.308	.108

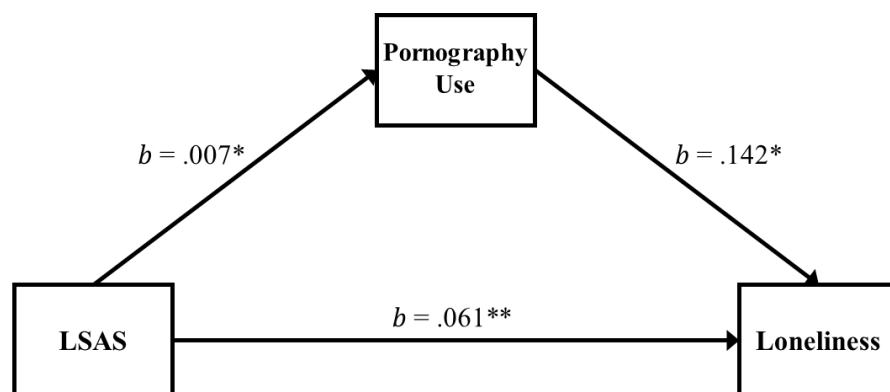
Testing Model 2

Model 2 is associated with Hypotheses 3, 4, and 5. Hypothesis 3 proposed that there would be a positive association between social anxiety (as measured by the LSAS) and pornography use. This hypothesis was supported in the data, as social anxiety was found to have a small significant positive effect on pornography use ($b = .007$, $SE = .003$, $CI [.001, .012]$), indicating that as levels of social anxiety increased, frequency of pornography use also increased. Social anxiety also had a significant positive direct effect on loneliness ($b = .061$, $SE = .004$, $CI [.054, .068]$), indicating that as levels of social anxiety increased, levels of loneliness also

increased. Supporting Hypothesis 4, pornography use was found to significantly positively affect loneliness ($b = .142$, $SE = .044$, $CI [.057, .228]$), indicating that as the frequency of pornography use increased, levels of loneliness also increased. Lastly, Hypothesis 5 proposed that pornography use would mediate the relationship between social anxiety and loneliness while controlling for age and gender. Findings supported Hypothesis 5 with a small but significant indirect effect of social anxiety on loneliness through pornography use ($b = .001$, $SE = .001$, $CI [.000, .001]$), indicating that pornography use mediated the relationship between social anxiety and loneliness. The completely standardized indirect effect were $b = .008$, $SE = .004$, $CI [.001, .018]$). Although mediation was found for Model 2, it is important to note the small effect. See Figure 4.4 and Table 4.5 for Model 2 results.

Figure 4.4

Model 2: Simple Mediation Model for Social Anxiety and Pornography Use



Gender was found to be strongly significantly associated with pornography use ($b = -.495$, $SE = .081$, $CI [-.654, -.336]$), and while age was not found to be significantly associated with pornography use, it was found to be significantly negatively associated with loneliness ($b = -.026$, $SE = .005$, $CI [-.036, -.016]$). As age increased, levels of loneliness decreased.

Table 4.5*Social Anxiety and Loneliness Mediated by Pornography*

<i>Source</i>	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>	95% CI	
					<i>LL</i>	<i>UL</i>
Pornography: $R = .218$, $R^2 = .048$, $MSE = 1.453$, $F(3, 897) = 14.986$, $p < .001$						
Social anxiety	.007	.003	2.437	<.05	.001	.012
Age	-.005	.004	-1.204	.229	-.012	.003
Gender	-.495	.081	-6.120	.000	-.654	-.336
Loneliness: $R = .546$, $R^2 = .298$, $MSE = 2.473$, $F(4, 896) = 95.182$, $p = <.001$						
Social anxiety	.061	.004	17.037	<.001	.054	.068
Pornography	.142	.044	3.266	<.05	.057	.228
Age	-.026	.005	-5.259	<.001	-.036	-.016
Gender	-.031	.108	-0.288	.774	-.242	.180

Testing Models 3 Through 6

Hypothesis 6 proposed that avoidance of emotions and avoidance of social interaction would moderate the relationship between social anxiety and pornography use. The avoidance variable consisted of three avoidance motivations from the PUMS (Böthe et al., 2020): boredom avoidance, stress reduction, and emotional distraction. Additionally, avoidance of emotions and social interactions (titled Pornography Avoidance in the data collection) were assessed. Models 3 through 6 assessed each of these motivations to test Hypothesis 6. A pictorial representation of theoretical Models 3 through 6 are shown in Figure 4.5. The statistical model (Model 7; Hayes, 2017) is shown in Figure 4.6.

Figure 4.5

Hypothesized Theoretical Models 3 Through 6

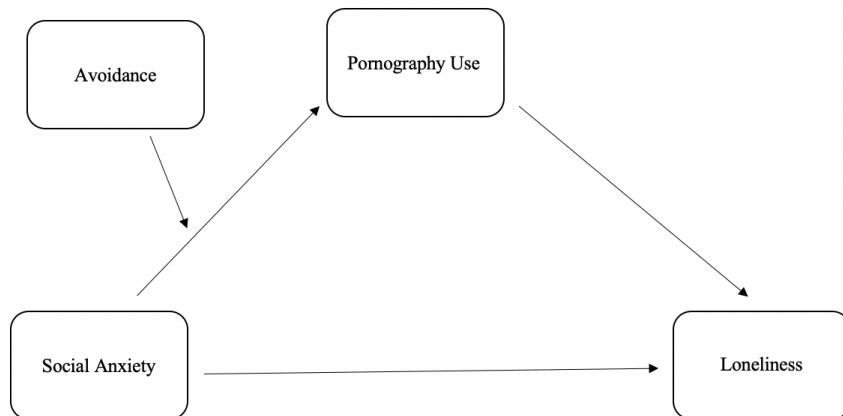
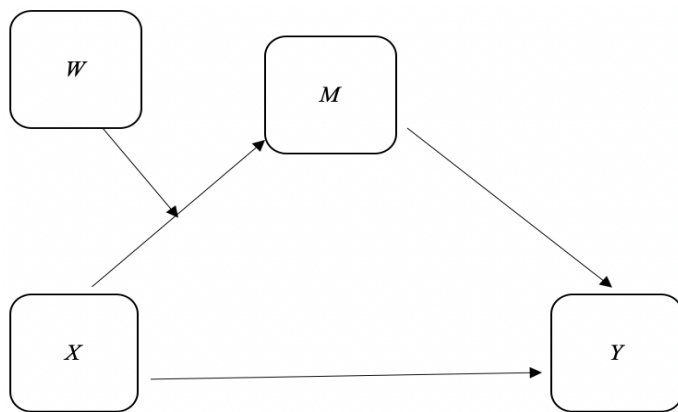


Figure 4.6

Hypothesized Statistical Models 3 Through 6

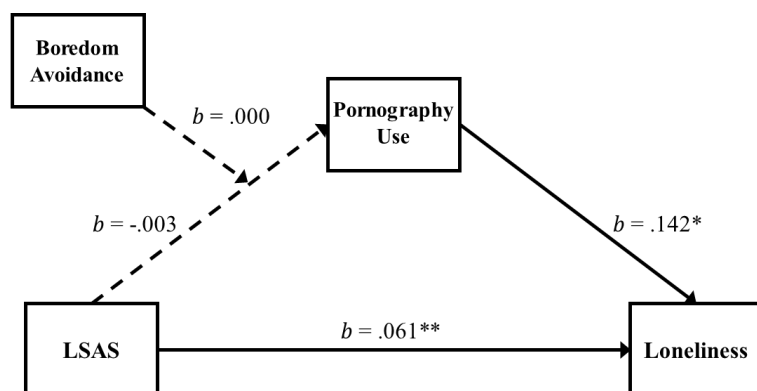


Model 3

Model 3 used a moderated mediation model to test whether boredom avoidance moderated the indirect effect of social anxiety on loneliness through pornography use while controlling for age and gender. See Figure 4.7 and Table 4.6 for results from Model 3.

Figure 4.7

Model 3: Social Anxiety Mediation Model Moderated by Boredom Avoidance

**Table 4.6**

Social Anxiety-Pornography Use-Loneliness Moderated by Boredom Avoidance

Source	b	SE	t	p	95% CI	
					LL	UL
Pornography: $R = .339$, $R^2 = .115$, $MSE = 1.354$, $F(5, 895) = 23.210$, $p < .001$						
Social anxiety (SA)	-.003	.003	-1.044	.297	-.009	.003
Boredom avoidance (BA)	.229	.028	8.145	<.001	.174	.285
SA x BA	.000	.002	0.104	.917	-.003	.003
Age	-.001	.004	-0.288	.774	-.008	.006
Gender	-.352	.080	-4.388	<.001	-.509	-.194
Loneliness: $R = .546$, $R^2 = .298$, $MSE = 2.473$, $F(4, 896) = 95.182$, $p < .001$						
Social anxiety	.061	.004	17.037	<.001	.054	.068
Pornography	.142	.044	3.266	<.05	.057	.228
Age	-.026	.005	-5.259	<.001	-.036	-.016
Gender	-.031	.108	-0.288	.774	-.242	.180

Boredom avoidance had a significant positive effect on pornography use ($b = .229$, $SE = .028$, $CI [.174, .285]$), indicating that as levels of boredom avoidance increased, pornography use also increased. The simple effects of Model 3 showed that when boredom avoidance was included in the model, the simple effect of social anxiety on pornography was no longer significant; however, pornography use and social anxiety still showed evidence of transmitting a significant positive effect on loneliness.

It was hypothesized that the interaction of social anxiety and boredom avoidance would transmit a significant positive effect on pornography use. Contrary to expectations, the interaction between social anxiety and boredom avoidance was not significant ($b = .000$, $SE = .002$, $CI [-.003, .003]$), indicating no evidence that boredom avoidance moderates the relationship between social anxiety and pornography use. Consequently, there was no evidence of a moderated mediation in Model 3.

Model 4

Model 4 replaced boredom avoidance with emotional distraction as the hypothesized moderator for Hypothesis 6. To test Model 4, a moderated mediation model assessed whether an indirect effect of social anxiety on loneliness through pornography use would be moderated by emotional distraction while controlling for age and gender. See Figure 4.8 and Table 4.7 for the results of Model 4.

Figure 4.8

Model 4: Social Anxiety Mediation Model Moderated by Emotional Distraction

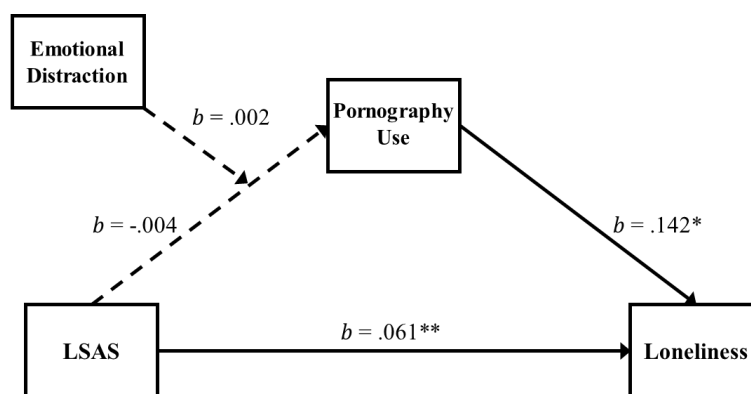


Table 4.7*Social Anxiety-Pornography Use-Loneliness Moderated by Emotional Distraction*

<i>Source</i>	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>	95% CI	
					<i>LL</i>	<i>UL</i>
Pornography: $R = .315$, $R^2 = .099$, $MSE = 1.378$, $F(5, 895) = 19.746$, $p < .001$						
Social anxiety (SA)	-.004	.003	-1.258	.209	-.010	.002
Emotion distraction (ED)	.197	.027	7.162	<.001	.143	.250
SA x ED	.002	.002	1.455	.146	-.001	.005
Age	-.002	.004	-0.436	.663	-.009	.006
Gender	-.378	.081	-4.680	<.001	-.536	-.219
Loneliness: $R = .546$, $R^2 = .298$, $MSE = 2.473$, $F(4, 896) = 95.182$, $p = <.001$						
Social anxiety	.061	.004	17.037	<.001	.054	.068
Pornography	.142	.044	3.266	<.05	.057	.228
Age	-.026	.005	-5.259	<.001	-.036	-.016
Gender	-.031	.108	-0.288	.774	-.242	.180

As expected, and similar to Model 3, emotional distraction significantly affected pornography use ($b = .197$, $SE = .027$, CI [.143, .250]), indicating that increased levels of emotional distraction were associated with increased pornography use. Also similar to Model 3, when emotional distraction was included as the moderator, the simple effect of social anxiety on pornography use was no longer significant; however, pornography use and social anxiety still showed evidence of transmitting a significant positive effect on loneliness. Contrary to expectations, but similar to the results of Model 3, the interaction of social anxiety and emotional distraction was not statistically significant ($b = .002$, $SE = .002$, CI [-.001, .005]), indicating no evidence that emotional distraction moderates the relationship between social anxiety and pornography use.

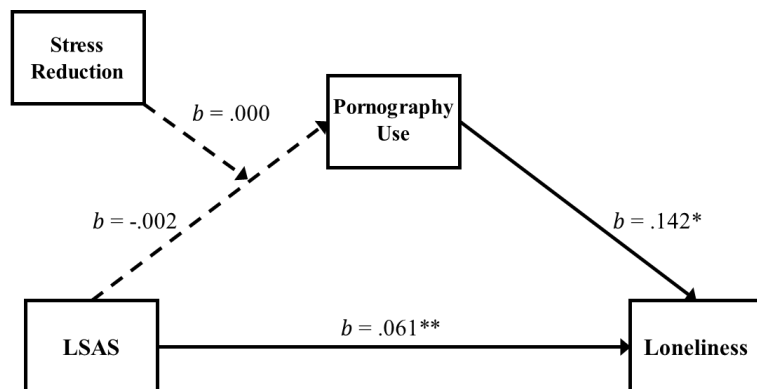
Model 5

Model 5 used stress reduction as the hypothesized moderator for Hypothesis 6. Again, to test Model 5, a moderated mediation model was used to assess the hypothesis that there would be

an indirect effect of social anxiety on loneliness through pornography use that would be moderated by stress reduction while controlling for age and gender. See Figure 4.9 and Table 4.8 for Model 5 results.

Figure 4.9

Model 5: Social Anxiety Mediation Model Moderated by Stress Reduction



Consistent with Models 3 and 4, Model 5 showed evidence that stress reduction was associated with increased pornography use ($b = .242$, $SE = .029$, $CI [.184, .299]$), indicating that as stress reduction levels increased, pornography use increased as well. Also consistent with Models 3 and 4, the simple effects of Model 5 indicated that when stress reduction was included in the model as a moderator, the simple effect of social anxiety on pornography use was no longer significant; however, pornography use and social anxiety were both still found to transmit a significant positive effect on loneliness.

Table 4.8*Social Anxiety-Pornography Use-Loneliness Moderated by Stress Reduction*

<i>Source</i>	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>	95% CI	
					<i>LL</i>	<i>UL</i>
Pornography: $R = .346$, $R^2 = .120$, $MSE = 1.346$, $F(5, 895) = 24.365$, $p < .001$						
Social anxiety (SA)	-.002	.003	-0.827	.409	-.008	.003
Stress reduction (SR)	.242	.029	8.259	<.001	.184	.299
SA x SR	.000	.002	-0.293	.770	-.004	.003
Age	-.001	.004	-0.398	.691	-.009	.006
Gender	-.361	.080	-4.514	<.001	-.518	-.204
Loneliness: $R = .546$, $R^2 = .298$, $MSE = 2.473$, $F(4, 896) = 95.182$, $p = <.001$						
Social anxiety	.061	.004	17.037	<.001	.054	.068
Pornography	.142	.044	3.266	<.05	.057	.228
Age	-.026	.005	-5.259	<.001	-.036	-.016
Gender	-.031	.108	-0.288	.774	-.242	.180

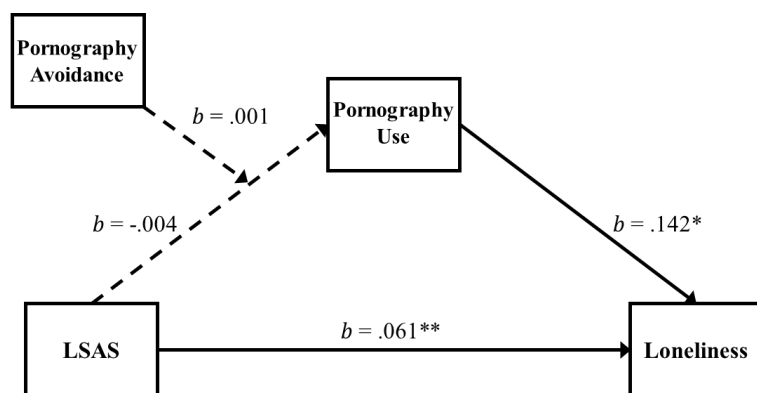
Contrary to expectations, yet similar to Models 3 and 4, results indicated that the interaction between social anxiety and stress reduction was not statistically significant ($b = .000$, $SE = .002$, CI [-.004, .003]). Again, these results indicate that there was no evidence of a significant conditional indirect effect, and findings did not support the moderated mediation hypothesis.

Model 6

The last model of Hypothesis 6 assessed avoidance of emotions and avoidance of social interactions through four questions. This avoidance variable is titled “pornography avoidance” in the data results. Again, to test Model 6, a moderated mediation model was used to assess the hypothesis that there would be an indirect effect of social anxiety on loneliness through pornography use that would be moderated by pornography avoidance while controlling for age and gender. See Figure 4.10 and Table 4.9 for Model 6 results.

Figure 4.10

Model 6: Social Anxiety Mediation Model Moderated by Pornography Avoidance

**Table 4.9**

Social Anxiety-Pornography Use-Loneliness Moderated by Pornography Avoidance

Source	b	SE	t	p	95% CI	
					LL	UL
Pornography: $R = .305$, $R^2 = .093$, $MSE = 1.387$, $F(5, 895) = 18.370$, $p < .001$						
Social anxiety (SA)	-.004	.003	-1.276	.202	-.010	.002
Pornography avoidance (PA)	.117	.017	6.676	<.001	.082	.151
SA x PA	.001	.001	0.953	.341	-.001	.003
Age	-.002	.004	-0.648	.517	-.010	.005
Gender	-.394	.081	-4.884	<.001	-.553	-.236
Loneliness: $R = .546$, $R^2 = .298$, $MSE = 2.473$, $F(4, 896) = 95.182$, $p = <.001$						
Social anxiety	.061	.004	17.037	<.001	.054	.068
Pornography	.142	.044	3.266	<.050	.057	.228
Age	-.026	.005	-5.259	<.001	-.036	-.016
Gender	-.031	.108	-0.288	.774	-.242	.180

Again, consistent with Models 3 through 5, Model 6 showed evidence that pornography avoidance, on its own, had a significant positive effect on pornography use ($b = .117$, $SE = .017$, $CI [.082, .151]$), indicating that as pornography avoidance increased, pornography use increased as well. Also consistent with Models 3 through 5, the simple effects of Model 6 indicated that when pornography avoidance was included in the model as a moderator, the simple effect of

social anxiety on pornography use was no longer significant; however, pornography use and social anxiety were both still found to transmit a significant positive effect on loneliness.

Again contrary to expectations, the interaction between social anxiety and pornography avoidance was not statistically significant ($b = .001$, $SE = .001$, $CI [-.001, .003]$), indicating that there was no evidence to support the hypothesis that pornography avoidance would moderate the relationship between social anxiety and pornography use. Consequently, there was no evidence indicating the existence of the moderated mediation model.

Exploration of Data Analysis for Mediation Models of BFNE-II

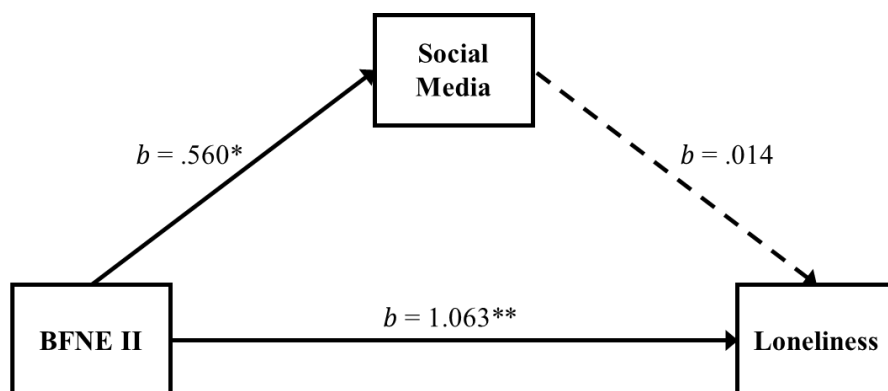
Research Question 7 stated that an exploratory analysis of social anxiety would be conducted using the BFNE-II. In order to exhaustively explore this research question, six models were created, including two mediation models and four moderated mediation models, adding to the existing six models in which social anxiety was researched using the LSAS. As previously discussed, the BFNE-II explores individuals' level of fear of negative evaluation. Fear of negative evaluation is a component of social anxiety, yet the items of the LSAS do not explicitly measure this component; therefore, the BFNE-II can yield different results than the LSAS. Analysis of the BFNE-II began with Model 7.

Model 7

Model 7 is a simple mediation model that, like Model 1, proposed that internet use (as measured by social media use) would mediate the relationship between social anxiety (as measured by the BFNE-II) and internet use (as measured by social media use) when controlling for age and gender. See Figure 4.11 and Table 4.10 for results.

Figure 4.11

Model 7: Simple Mediation Model for BFNE-II and Internet Use (Social Media)

**Table 4.10**

BFNE-II and Loneliness Mediated by Social Media

<i>Source</i>	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>	95% CI	
					<i>LL</i>	<i>UL</i>
Social Media: $R = .111$, $R^2 = .012$, $MSE = 25.726$, $F(3, 897) = 3.757$, $p < .05$						
BFNE-II	.560	.178	3.137	<.050	0.210	0.910
Age	-.005	.016	-0.336	.737	-0.037	0.026
Gender	-.134	.341	-0.393	.695	-0.802	-0.535
Loneliness: $R = .591$, $R^2 = .349$, $MSE = 2.294$, $F(4, 896) = 120.017$, $p = <.001$						
BFNE-II	1.063	.054	19.842	<.001	0.958	1.169
Social media	.014	.010	1.418	.157	-0.005	0.034
Age	-.015	.005	-3.153	<.050	-0.025	-0.006
Gender	-.166	.102	-1.635	.102	-0.366	0.033

Consistent with expectations, fear of negative evaluation (as measured by the BFNE-II) was found to have a significant positive relationship with internet use (as measured by social media use; $b = .560$, $SE = .178$, CI [.210, .910]), indicating that as fear of negative evaluation increased, internet use (as measured by social media) increased as well. The results also showed that fear of negative evaluation (as measured by the BFNE-II) had a strong significant positive direct relationship to loneliness ($b = 1.063$, $SE = .054$, CI [.958, 1.169]), indicating that as fear of

negative evaluation increased, levels of loneliness also increased. The total effect of social anxiety on loneliness were $b = 1.071$, $SE = .053$, $CI [.967, 1.176]$. These results are similar to those of Model 1, yet the BFNE-II showed a stronger relationship to both internet use (as measured by social media use) and loneliness compared to the LSAS measurement of social anxiety.

Contrary to expectations, but also similar to Model 1 results, internet use (as measured by social media use) was found to not have a significant relationship with loneliness ($b = .014$, $SE = .010$, $CI [-.005, .034]$). The results of an analysis of the age and gender covariates indicated that gender was significantly negatively associated with internet use (as measured by social media use; $b = -.134$, $SE = .341$, $CI [-.802, -.525]$), and age was not found to be significantly associated with internet use. However, it was found to be significantly negatively associated with loneliness ($b = -.015$, $SE = .005$, $CI [-.025, -.006]$). These results indicate the age did not determine participants' internet use, but that as age increased, levels of loneliness decreased, a finding that was also similar to Model 1 results.

The results of an analysis of whether internet use (as measured by social media use) mediated the relationship between fear of negative evaluation (as measured by the BFNE-II) and loneliness indicated that the indirect effect of fear of negative evaluation (as measured by the BFNE-II) on loneliness through internet use (as measured by social media use) was not significant ($b = .008$, $SE = .006$, $CI [-.003, .022]$), indicating no evidence for either partial or full mediation. The completely standardized indirect effect was $b = .004$, $SE = .003$, $CI [-.002, .011]$.

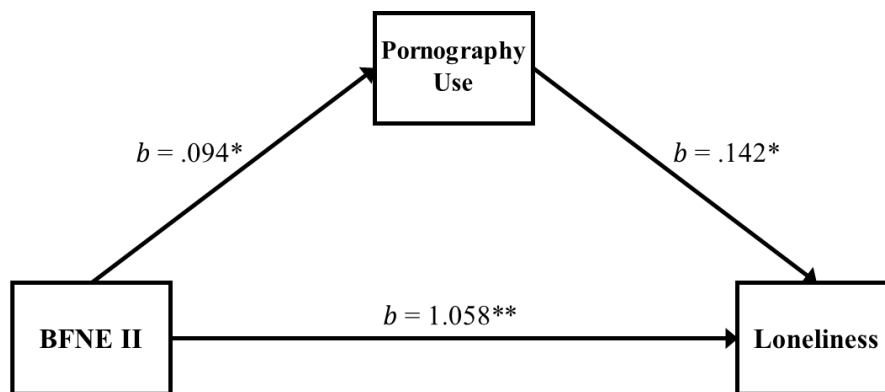
Model 8

Like Model 2, Model 8 explored the relationships between fear of negative evaluation (as measured by the BFNE-II), pornography use, and loneliness. A simple mediation model was

tested with the expectation that pornography use would mediate the relationship between fear of negative evaluation (as measured by the BFNE-II) and loneliness when controlling for age and gender. See Figure 4.12 and Table 4.11 for Model 8 results.

Figure 4.12

Model 8: Simple Mediation Model for BFNE-II and Pornography Use



Similar to Model 2, results showed evidence of fear of negative evaluation (as measured by the BFNE-II) transmitting a significant positive effect on pornography use ($b = .094$, $SE = .042$, $CI [.010, .177]$), indicating that as fear of negative evaluation increased, frequency of pornography use also increased. Results also showed that fear of negative evaluation (as measured by the BFNE-II) had a strong significant positive direct effect on loneliness ($b = 1.058$, $SE = .053$, $CI [.954, 1.162]$), indicating that as fear of negative evaluation increased, levels of loneliness also increased. Pornography use was also found to have a significant positive relationship with loneliness in Model 8 ($b = .142$, $SE = .042$, $CI [.060, .223]$), indicating that as frequency of pornography use increased, levels of loneliness also increased.

Table 4.11*BFNE-II and Loneliness Mediated by Pornography*

<i>Source</i>	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>	95% CI	
					<i>LL</i>	<i>UL</i>
Pornography $R = .216$, $R^2 = .047$, $MSE = 1.455$, $F(3, 897) = 3.757$, $p < .001$						
BFNE-II	0.094	.042	2.204	<.050	.010	0.177
Age	-0.004	.004	-0.996	.319	-.011	0.004
Gender	-0.500	.081	-6.173	<.001	-.659	-0.341
Loneliness: $R = .596$, $R^2 = .356$, $MSE = 2.270$, $F(4, 896) = 123.658$, $p = <.001$						
BFNE-II	1.058	.053	19.902	<.001	.954	1.162
Pornography	0.142	.042	3.393	<.050	.060	0.223
Age	-0.015	.005	-3.072	<.050	-.024	-0.005
Gender	-0.097	.103	-0.943	.346	-.300	0.105

Results of an analysis of Model 8 of whether pornography use mediates the relationship between fear of negative evaluation (as measured by the BFNE-II) and loneliness provided support for a weak, significant, positive indirect effect of fear of negative evaluation (as measured by the BFNE-II) on loneliness through pornography use ($b = .013$, $SE = .008$, CI [.001, .031]), indicating evidence for mediation. The completely standardized indirect effect was $b = .007$, $SE = .004$, CI [.000, .016]. A comparison of these results to the results of Model 2 (which used the LSAS to measure social anxiety) reveal that the results are similar; however, the BFNE-II indicated a stronger relationship than the LSAS. Although there is evidence for mediation, the weak effect should be noted.

Exploration of Data Analysis for Moderated Mediation Models of BFNE-II

Similar to Models 3 through 6, the exploratory analysis of the BFNE-II an exploration of avoidance as a moderator between fear of negative evaluation (as measured by the BFNE-II) and pornography use. Comparable to Models 3 through 6, the subsequent four models included the following moderators: boredom avoidance, stress reduction, emotional distraction, and

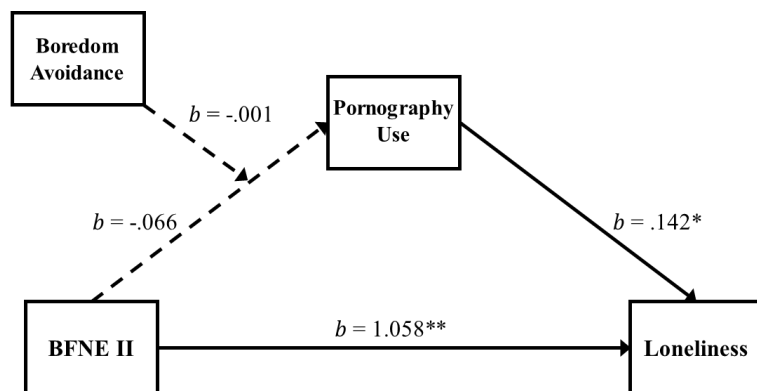
pornography avoidance. The following four models followed the same trend as Models 3 through 6, including that the motivations (boredom avoidance, stress reduction, emotional distraction, and pornography avoidance) had significant positive effects on the frequency of pornography use but did not moderate the indirect effect. Additionally, the effects of fear of negative evaluation (as measured by the BFNE-II) on loneliness remained the same. The only new additions worth noting are the insignificant and significant effects of the pornography use motivations on the frequency of pornography use. Accordingly, the information for Models 9 through 12 will not be repeated; only new information will be discussed.

Model 9

Model 9 began with boredom avoidance as the hypothesized moderator. Consistent with expectations, results showed that boredom avoidance had a significant positive effect on the frequency of pornography use ($b = .234$, $SE = .028$, $CI [.179, .289]$), indicating that the moderator was associated with increased frequency of pornography use. However, contrary to expectations and similar to Model 3, the interaction of boredom avoidance on the relationship between fear of negative evaluation (as measured by the BFNE-II) and pornography use was not statistically significant, indicating no evidence that boredom avoidance moderated this relationship. See Figure 4.13 and Table 4.12 for Model 9 results.

Figure 4.13

Model 9: BFNE-II Mediation Model Moderated by Boredom Avoidance

**Table 4.12**

BFNE-II-Pornography-Loneliness Moderated by Boredom Avoidance

Source	b	SE	t	p	95% CI	
					LL	UL
Pornography $R = .340$, $R^2 = .116$, $MSE = 1.353$, $F(5, 895) = 23.435$, $p < .001$						
BFNE-II	-0.066	.047	-1.405	.160	-.158	0.026
Boredom Avoidance (BA)	0.234	.028	8.340	<.001	.179	0.289
BFNE-II x BA	-0.001	.022	-0.047	.963	-.045	0.043
Age	-0.002	.004	-0.464	.643	-.009	0.006
Gender	-0.345	.080	-4.295	<.001	-.503	-0.187
Loneliness: $R = .596$, $R^2 = .356$, $MSE = 2.270$, $F(4, 896) = 123.658$, $p = <.001$						
BFNE-II	1.058	.053	19.902	<.001	.954	1.162
Pornography	0.142	.042	3.393	<.050	.060	0.223
Age	-0.015	.005	-3.072	<.050	-.024	-0.005
Gender	-0.097	.103	-0.943	.346	-.300	0.105

Model 10

Model 10 replaced the hypothesized moderator with emotional distraction. Consistent with expectations, results showed that emotional distraction significantly affected the frequency of pornography use ($b = .189$, $SE = .027$, $CI [.136, .242]$), indicating that the moderator was associated with increased frequency of pornography use. However, contrary to expectations and

similar to Model 4, the interaction of emotional distraction on the relationship between fear of negative evaluation (as measured by the BFNE-II) and pornography use was not statistically significant, indicating no evidence that emotional distraction moderated this relationship. See Figure 4.14 and Table 4.13 for Model 10 results.

Figure 4.14

Model 10: BFNE-II Mediation Model Moderated by Emotional Distraction

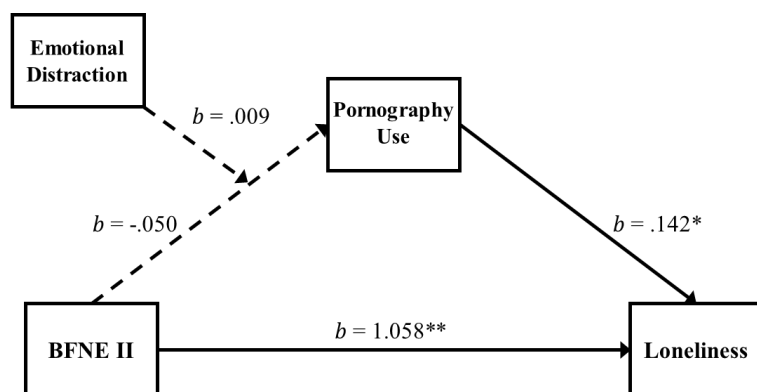


Table 4.13

BFNE-II-Pornography-Loneliness Moderated by Emotional Distraction

Source	b	SE	t	p	95% CI	
					LL	UL
Pornography $R = .313$, $R^2 = .098$, $MSE = 1.380$, $F(5, 895) = 19.393$, $p < .001$						
BFNE-II	-0.050	.049	-1.025	.305	-.147	0.046
Emotion distraction (ED)	0.189	.027	7.021	<.001	.136	0.242
BFNE-II x ED	0.009	.022	0.433	.665	-.034	0.053
Age	-0.002	.004	-0.506	.613	-.009	0.006
Gender	-0.385	.081	-4.761	<.001	-.543	-0.226
Loneliness: $R = .596$, $R^2 = .356$, $MSE = 2.270$, $F(4, 896) = 123.658$, $p = <.001$						
BFNE-II	1.058	.053	19.902	<.001	.954	1.162
Pornography	0.142	.042	3.393	<.050	.060	0.223
Age	-0.015	.005	-3.072	<.050	-.024	-0.005
Gender	-0.097	.103	-0.943	.346	-.300	0.105

Model 11

Model 11 replaced the hypothesized moderator with stress reduction. Again, consistent with expectations, results showed that stress reduction significantly affected the frequency of pornography use ($b = .244$, $SE = .028$, $CI [.188, .299]$), indicating that the moderator was associated with increased frequency of pornography use. However, contrary to expectations and similar to Model 5, the interaction of stress reduction on the relationship between fear of negative evaluation (as measured by the BFNE-II) and pornography use was not statistically significant, indicating no evidence that stress reduction moderated this relationship. See Figure 4.15 and Table 4.14 for Model 11 results.

Figure 4.15

Model 11: BFNE-II Mediation Model Moderated by Stress Reduction

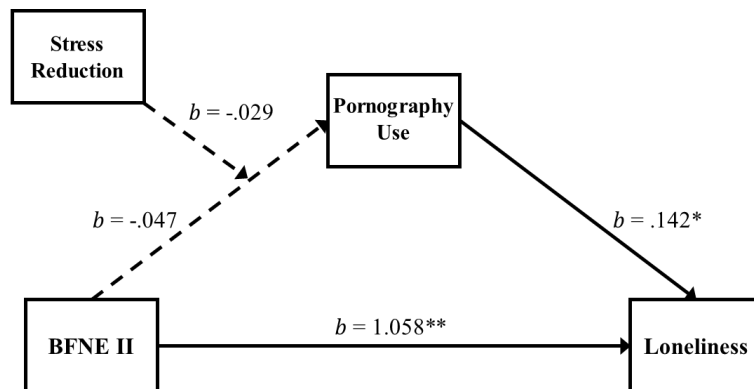


Table 4.14*BFNE-II-Pornography-Loneliness Moderated by Stress Reduction*

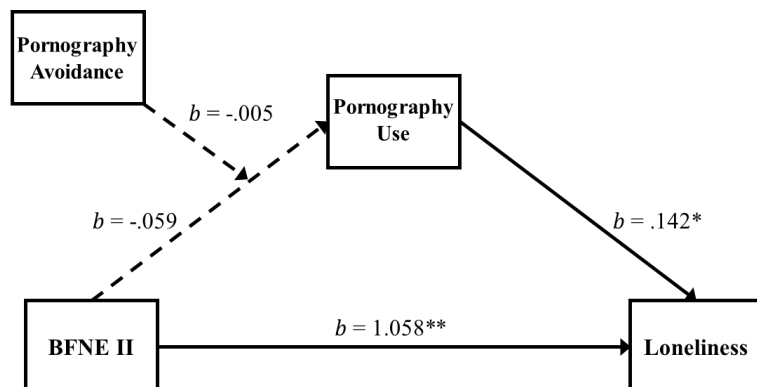
<i>Source</i>	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>	95% CI	
					<i>LL</i>	<i>UL</i>
Pornography $R = .348$, $R^2 = .121$, $MSE = 1.344$, $F(5, 895) = 24.704$, $p < .001$						
BFNE-II	-0.047	.044	-1.057	.291	-.133	0.040
Stress reduction (SR)	0.244	.028	8.673	<.001	.188	0.299
BFNE-II x SR	-0.029	.022	-1.295	.196	-.073	0.015
Age	-0.002	.004	-0.423	.673	-.009	0.006
Gender	-0.366	.080	-4.579	<.001	-.522	-0.209
Loneliness: $R = .596$, $R^2 = .356$, $MSE = 2.270$, $F(4, 896) = 123.658$, $p = <.001$						
BFNE-II	1.058	.053	19.902	<.001	.954	1.162
Pornography	0.142	.042	3.393	<.050	.060	0.223
Age	-0.015	.005	-3.072	<.050	-.024	-0.005
Gender	-0.097	.103	-0.943	.346	-.300	0.105

Model 12

Model 12 replaced the hypothesized moderator with pornography avoidance. Again, consistent with expectations, results showed that stress reduction significantly affected the frequency of pornography use ($b = .115$, $SE = .018$, $CI [.080, .149]$), indicating that the moderator was associated with increased frequency of pornography use. However, contrary to expectations and similar to Model 5, the interaction of pornography avoidance on the relationship between fear of negative evaluation (as measured by the BFNE-II) and pornography use was not statistically significant, indicating no evidence that pornography avoidance moderated this relationship. See Figure 4.16 and Table 4.15 for Model 11 results.

Figure 4.16

Model 12: BFNE-II Mediation Model Moderated by Pornography Avoidance

**Table 4.15**

BFNE-II-Pornography-Loneliness Moderated by Pornography Avoidance

Source	b	SE	t	p	95% CI	
					LL	UL
Pornography $R = .303$, $R^2 = .092$, $MSE = 1.389$, $F(5, 895) = 18.136$, $p < .001$						
BFNE-II	-0.059	.051	-1.140	.255	-.159	0.042
Pornography avoidance (PA)	0.115	.018	6.551	<.001	.080	0.149
BFNE-II x PA	-0.005	.015	-0.321	.748	-.035	0.025
Age	-0.002	.004	-0.638	.524	-.010	0.005
Gender	-0.405	.081	-5.000	<.001	-.564	-0.246
Loneliness: $R = .596$, $R^2 = .356$, $MSE = 2.270$, $F(4, 896) = 123.658$, $p < .001$						
BFNE-II	1.058	.053	19.902	<.001	.954	1.162
Pornography	0.142	.042	3.393	<.050	.060	0.223
Age	-0.015	.005	-3.072	<.050	-.024	-0.005
Gender	-0.097	.103	-0.943	.346	-.300	0.105

Although each moderator in Models 9 through 12 was associated with the frequency of pornography use, the expectations that these motivations would moderate the relationship between fear of negative evaluation (as measured by the BFNE-II) and pornography use were not

supported. There was no evidence of moderated mediation found in each of the moderated mediation models using the BFNE-II.

Chapter Summary

A sample of 901 adult participants who had used pornography in the last month was used in this study. Bivariate correlations were conducted to answer the first research question: What is the relationship between social anxiety and internet use? The first hypothesis was supported, as results indicated a positive correlation between social anxiety and internet use. Findings also supported a direct association between social anxiety and loneliness. However, contrary to Hypothesis 2, findings did not support that internet use was associated with loneliness. Results do not indicate any evidence of internet use mediating the relationship between social anxiety and loneliness.

Bivariate correlations were also conducted to answer the third research question: What is the relationship between social anxiety and pornography use? The third hypothesis was supported, as results indicated a positive correlation between social anxiety and pornography use. The fourth hypothesis was similarly supported, indicating a positive correlation between pornography use and loneliness. A mediation analysis was conducted to answer Research Question 5: Is the relationship between social anxiety and loneliness mediated by pornography use? The results supported this hypothesis; however, the mediation model should be carefully considered when deriving meaning due to the markedly small effect that was found.

The moderated mediation models proposed in this study were not supported; specifically, there were no interactions between any of the avoidance variables on the relationship between social anxiety and pornography use. Additionally, when the moderators were introduced to the

existing mediation models, the relationship between social anxiety and pornography use was no longer statistically significant.

The exploratory analyses conducted in this study were similar to the analyses of Hypotheses 1 through 5. Specifically, the BFNE-II showed similar, if not higher, associations with internet use, pornography use, and loneliness. Additionally, the mediation model between social anxiety (measured by the BFNE-II), pornography use, and loneliness was also statistically significant. The exploratory analyses of moderated mediation models, using the BFNE-II, were not statistically significant.

Gender and age were measured as covariates in each of the models. Consistent with expectations, gender was found to be significantly negatively correlated with pornography use. Gender was not found to be significantly associated with internet use when measuring the models that used the LSAS; however, gender was found to be significantly negatively associated with internet use in the exploratory analysis using the BFNE-II. Gender was not found to be significantly associated with any other variable. Age was significantly negatively associated with social anxiety (measured by both the LSAS and BFNE-II) and loneliness but was not associated with internet use or pornography use. These results will be discussed in greater detail in Chapter Five.

CHAPTER FIVE: SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This study is based on several premises that are supported in the current literature. First, research suggests that pornography use is associated with loneliness (Butler et al., 2018; Efrati & Amichai-Hamburger, 2019; Tian et al., 2018; Weber et al., 2018; Wery et al., 2020; Yoder et al., 2005). Second, unlike the small number of studies on the relationship between pornography use and loneliness, the association between internet use and loneliness is well-established in the literature, suggesting that loneliness is related to increased internet use (Ceyhan & Ceyhan, 2008; Laier et al., 2018; Morahan-Martin & Shumacher, 2003; Rose & Dhandayudham, 2014). Third, some literature suggests that social anxiety acts as a confounding variable in the relationship between internet use and loneliness (Caplan, 2007; Jin & Park, 2012). Moreover, the literature supports that people use both the internet and pornography as coping mechanisms to avoid uncomfortable situations and emotions, such as loneliness and social anxiety (Fall & Howard, 2015; Levin et al., 2012; Odaci & Kalkan, 2010; Paul & Shim, 2008; Seepersad, 2004; Shepherd & Edelman, 2005; Wetterneck et al., 2012).

The current study was conducted to examine the relationships between social anxiety, internet use, and loneliness to support the existing literature. Specifically, the first research question assessed the relationship between social anxiety and internet use. The second research question asked whether internet use would mediate the relationship between social anxiety and loneliness. The third research question assessed the relationship between social anxiety and pornography use. Fourth, to support the scant existing literature, this study hypothesized that pornography use would be positively associated with loneliness. The fifth research question asked whether pornography use would mediate the relationship between social anxiety and loneliness. The sixth research question assessed whether avoidance of emotions and social

interaction moderated the relationship between social anxiety and pornography use. The final research questions were exploratory, specifically analyzing social anxiety using the BFNE-II and analyzing whether gender and age impacted the results.

The previous chapter detailed the data analysis and results; the current chapter discusses the significance of this study's findings. The results from Research Questions 1 through 6 will be discussed, as well as the results from Exploratory Questions 7 through 9. This chapter will also consider the implications, limitations, and suggestions for future research. Lastly, clinical implications for counselors and counselor educators will be presented.

Summary of Findings and Implications

The participants in this study were recruited through Amazon's MTurk. After data screening, 901 participants who had completed demographic questions and nine measurements remained in the study and were included in the final data analysis. The participants were between the ages of 20 and 76 ($M = 37.35$) and 60.2% male. The largest percentages of participants were Caucasian (74.1%), attracted to women only (52.5%), either married or with a life partner (70.0%), and sexually active (77.5%). The most-represented religion was Catholicism (50.6%). The only participants included in the study were those who had indicated that they used pornography at least once in the last month. The mean score for the frequency of pornography use indicated most participants used pornography between four to six times in the last month.

Each research question will be discussed along with the correlations and models associated with each question. It is important to note that correlation does not imply causation; therefore, it cannot be assumed that one construct caused a change in another construct. However, what can be assumed is that the values indicate the strength of a linear relationship. Accordingly, some correlations that will be discussed were particularly small, indicating in such

cases that other variables may be important to consider. Additionally, the data were collected at a single point in time using a nonexperimental research design.

Social Anxiety, Loneliness, and Internet Use

The first research question inquired about the relationship between social anxiety and internet use. This question was included in the study to support the existing literature (Darcin et al., 2016; Fung et al., 2017; Huan, Ang, & Chye, 2014; Lim et al., 2016). Research Question 2 assessed whether internet use would mediate the relationship between social anxiety and loneliness. This question was included to extend the current literature since the model's time-order was different from existing studies.

Correlation Between Social Anxiety and Loneliness

Social anxiety was measured using the LSAS, and loneliness was measured using the UCLA Loneliness Scale. Social anxiety and loneliness were expected to be highly positively correlated, as suggested in the existing literature (Darcin et al., 2016; Fung et al., 2017; Huan, Ang & Chye, 2014; Lim et al., 2016). Findings showed that social anxiety and loneliness were strongly positively significantly correlated with one another ($r = .516, p < .001$), suggesting that as social anxiety increased, levels of loneliness also increased. Consistent with the existing literature, these results suggested that those who suffer from social anxiety symptoms would experience higher levels of loneliness since their anxious symptoms often lead them to withdraw from social situations (Huan, Ang, & Chye, 2014; Lim et al., 2016).

Correlation Between Social Anxiety and Internet Use

Based on the existing research, it was hypothesized that social anxiety and internet use would be strongly positively correlated (Caplan, 2007; Hofmann & DiBartolo, 2014; B. W. Lee & Stapinski, 2012; Odaci & Kalkan, 2010). Social anxiety was measured using the LSAS, and

internet use was measured using participants' frequency of social media use. The hypothesis was supported, with findings displaying that social anxiety (as measured by the LSAS) and internet use (as measured by social media use) were significantly positively correlated. Social anxiety as measured by the LSAS had a small significant positive correlation with internet use ($r = .105, p < .001$). These results are consistent with existing literature (Caplan, 2007; Hofmann & DiBartolo, 2014; B. W. Lee & Stapinski, 2012; Odaci & Kalkan, 2010), indicating that as social anxiety increased, internet use also increased. It is possible that those who have social anxiety use the internet more often than those who do not have social anxiety because the internet provides a buffer (being behind a screen rather than in person) for social interaction. The small correlation may be indicative of a measurement issue since internet use was measured using the participants' frequency of social media use.

Correlation Between Internet Use and Loneliness

Consistent with expectations and the existing literature (Ceyhan & Ceyhan, 2008; Hebebcı & Shelley, 2018; J. Kim et al., 2009; Panicker & Sachdev, 2014), internet use (measured by frequency of social media use) was found to be significantly positively correlated with loneliness ($r = .104, p < .001$). It was expected that high levels of internet use would be associated with increased levels of loneliness as the use of the internet can be isolating to individuals, lowering the need to interact with others face-to-face. The result's effect size is small, which was not expected. These results may be due to a measurement issue, specifically in the assessment of the frequency of social media use as a measurement of internet use.

Mediation Model for Social Anxiety and Internet Use

It was hypothesized that internet use would mediate the relationship between social anxiety and loneliness when controlling for age and gender. Consistent with expectations, social

anxiety was found to transmit a small, significant positive effect on internet use ($b = .035$, $SE = .011$, $CI [.012, .057]$). Although this direct effect was statistically significant, the effect was so small that care should be taken when deriving meaning from these results. Further, in contrast to expectations, internet use was not found to have a significant effect on loneliness ($b = .017$, $SE = .010$, $CI [-.003, .037]$), nor did the results show any evidence to support that internet use mediated the relationship between social anxiety and loneliness ($b = .001$, $SE = .001$, $CI [-.001, .001]$); therefore, Hypothesis 2 was not supported. It is possible that the measurement used for internet use altered the results of this study. Specifically, it is logical that social media use and loneliness may not be positively correlated since social media is a way for individuals to connect, possibly lowering levels of loneliness.

Social Anxiety, Loneliness, and Pornography Use

The third research question inquired about the relationship between social anxiety and pornography. This question was intended to extend the literature, as this association has not been studied in the existing literature. Research Question 4 inquired about the relationship between pornography and loneliness. Question 4 is included to support the existing literature, as only six known published articles assess the relationship between pornography use and loneliness (Butler et al., 2018; Efrati & Amichai-Hamburger, 2019; Tian et al., 2018; Weber et al., 2018; Wery et al., 2020; Yoder et al., 2005). Lastly, as another extension to the literature, Question 5 investigated whether the relationship between social anxiety and loneliness would be mediated by pornography use.

Correlation Between Social Anxiety and Pornography Use

The correlation test found that social anxiety (as measured by the LSAS) was significantly positively correlated with the frequency of pornography use; however, the strength

of significance was markedly small ($r = .082, p < .05$), so care should be taken when deriving meaning from these results. It was hypothesized that pornography use and social anxiety would be positively correlated. The results were consistent with the hypothesis, indicating that as social anxiety increased, the frequency of pornography use also increased. This association was theoretically expected, as social anxiety may lead individuals to replace face-to-face sexual intimacy with alternative forms of sexual activities that do not involve direct human contact, which could intensify anxiety symptoms. The markedly small association may be due to a sample issue, as 70% of the participants were married or had a life partner. Theoretically, it could be argued that those who are married may not use pornography due to social anxiety but may use pornography for other reasons (Emmers-Sommer, 2018; Paul & Shim, 2008); on the other hand, theoretically, those who have symptoms of social anxiety and are single (have never had a serious relationship) may be more likely to use pornography as a surrogate for sexual activity.

Correlation Between Pornography Use and Loneliness

Consistent with Hypothesis 4 and the existing literature (Butler et al., 2018; Efrati & Amichai-Hamburger, 2019; Tian et al., 2018; Weber et al., 2018; Wery et al., 2020; Yoder et al., 2005), pornography use and loneliness were moderately significantly positively correlated ($r = .142, p = < .01$). This association supports the current literature, indicating that as pornography use increases, the levels of loneliness also increase. Butler and colleagues (2018) also found that this relationship was bidirectional, suggesting, in addition to the current study's results, that as loneliness increases, pornography use also increases.

Mediation Model for Social Anxiety and Pornography Use

Research Question 5 investigated whether the relationship between social anxiety and loneliness would be mediated by pornography use when controlling for age and gender.

Consistent with the hypothesis, social anxiety was found to transmit a small significant positive effect on pornography use ($b = .007$, $SE = .003$, $CI [.001, .012]$), indicating that as social anxiety increased, pornography use also increased. Additionally, the results showed that social anxiety transmitted a significant positive direct effect on loneliness ($b = .061$, $SE = .004$, $CI [.054, .068]$), demonstrating that as social anxiety increased, levels of loneliness also increased. The last direct effect showed that pornography use had a significant positive effect on loneliness ($b = .142$, $SE = .044$, $CI [.057, .228]$), indicating that as pornography use increased, loneliness also increased.

The indirect effect of this model was consistent with expectations, specifically, that pornography use would mediate the relationship between social anxiety and loneliness. The results supported Hypothesis 5, indicating evidence for a markedly small but significant indirect effect of social anxiety on loneliness through pornography use ($b = .001$, $SE = .001$, $CI [.000, .001]$). The results of this mediation model are undeniably small; therefore, it is necessary to be cautious when deriving meaning from these results.

Some possible explanations for these small results include that this was the first known study to assess these relationships; therefore, it may be necessary to adapt the time-order of these relationships. The rationale for the time-order in this study was that social anxiety drives pornography use rather than pornography use driving social anxiety; however, it is possible that another unknown variable is confounding these results, such as sexual shame.

Avoidance as a Moderator between Social Anxiety and Pornography Use

The sixth research question asked whether avoidance of emotions and avoidance of social interaction would moderate the relationship between social anxiety and pornography use. This hypothesis was derived from the literature that supports the idea that people use pornography in an avoidant way (Fall & Howard, 2015; Levin et al., 2012; Paul & Shim, 2008; Wetterneck et al., 2012) and that they use the internet in an avoidant way to specifically escape feelings associated with social anxiety (Odaci & Kalkan, 2010; Shepherd & Edelman, 2005). The correlation results showed that pornography use was significantly positively correlated with each of the avoidance-based moderators (boredom avoidance [$r = .305, p < .01$], emotional distraction [$r = .266, p < .01$], stress reduction [$r = .313, p < .01$], and pornography avoidance [$r = .252, p < .01$]); however, when analyzed in the moderated mediation model, none of the avoidance-based moderators were statistically significant. Additionally, when the avoidance moderators were included in the model, social anxiety no longer transmitted a statistically significant effect on pornography use. These results indicated that the avoidance moderators had a stronger relationship with social anxiety and pornography use than the direct relationship between social anxiety and pornography use. These results may suggest that avoidance could mediate the relationship between social anxiety and pornography use.

Exploratory Fear of Negative Evaluation, Gender, and Age

Research Questions 7 through 9 were exploratory. Research Question 7 stated that an exploratory analysis of social anxiety would be conducted using the BFNE-II. The BFNE-II was necessary to include in the analysis since the LSAS does not fully account for the symptoms of social anxiety, including preoccupation with fear of negative evaluation. Research Question 8

asked whether the gender of participants impacted the results, and Question 9 asked whether age of the participants impacted the results.

Comparison Between LSAS and BFNE-II Using Model 4 With Internet Use

For exploratory purposes, the LSAS was replaced in each model with BFNE-II. The results of the correlation test, show that the LSAS and BFNE-II are strongly significantly positively associated with one another ($r = .557, p = < .01$); however, they assess different aspects of social anxiety, as the items of each measure are different (Weeks et al., 2005). It was expected that the BFNE-II would provide more significant results than the LSAS as it related to internet use since people may choose to use the internet rather than interact with people face-to-face out of fear of being negatively evaluated. The results of the correlation test showed that the BFNE-II had a small, significant positive correlation with internet use ($r = .110, p < .001$), and that it was slightly more significant than the correlation between LSAS and internet use ($r = .105, p < .001$).

When the LSAS was replaced with the BFNE-II, the BFNE-II transmitted a significant positive effect on internet use ($b = .560, SE = .178, CI [.210, .910]$). Regardless of the simple effect, the mediation model was not significant, indicating that internet use did not mediate the relationship between LSAS and loneliness, nor did internet use mediate the relationship between BFNE-II and loneliness.

Comparison Between LSAS and BFNE-II Using Model 4 With Pornography Use

It was also expected that BFNE-II would have more significant results relating to pornography use when compared to the LSAS since the BFNE-II measures fear of negative evaluation, a symptom of social anxiety that would be expected to be significantly associated with pornography use since those with social anxiety may use pornography as a replacement for

sexual intimacy with another human being to avoid the fear of being negatively evaluated during sexual activities. The results of the correlation test showed that the BFNE-II had a small, significant positive correlation with pornography use ($r = .072, p < .05$). These results were stronger than those of the correlation test between the LSAS and pornography use ($r = .082, p < .05$); however, both were small correlations. Additionally, in Model 4, which assessed the BFNE-II with pornography use, the results showed that the BFNE-II transmitted a significant positive effect on pornography use ($b = .094, SE = .042, CI [.010, .177]$). In the mediation model, the results showed support for a weak, significant positive indirect effect of the BFNE-II on loneliness through pornography use ($b = .013, SE = .008, CI [.001, .031]$).

Comparison Between LSAS and BFNE-II Using Model 7

In the moderated mediation model analysis using the BFNE-II with the pornography motivations, none of the results were statistically significant and were not different compared to the patterns in Model 7 that used the LSAS.

Comparison Between Genders

Each of the models was analyzed while controlling for gender. Gender was significantly negatively correlated with pornography use ($r = -.197, p < .001$). Although not a part of the original data analysis, a *t* test was conducted and found that gender affected pornography scores, indicating that men had higher scores in pornography use than women. Conversely, gender was not found to be significantly associated with internet use (as measured by social media use) when analyzing the LSAS; however, gender was found to be significantly negatively associated with internet use (as measured by social media use) when analyzing the BFNE-II ($b = -.134, SE = .341, CI [-.802, -.525]$). Gender was not found to be associated with loneliness or social anxiety. These results were interesting, as it was expected that females would experience more social

anxiety symptoms (Crome et al., 2015; Kessler et al., 2012). Further research would need to be conducted to thoroughly understand these differences.

Comparison Among Ages

Each of the models was also analyzed while controlling for age. Age was found to be significantly negatively correlated with social anxiety ($r = -.161, p < .001$), fear of negative evaluation ($r = -.257, p < .001$), and loneliness ($r = -.231, p < .001$), indicating that as age increases, social anxiety, fear of negative evaluation, and loneliness decrease. These results were interesting since literature has indicated that social anxiety symptoms are most prevalent among females ages 25–64 (Crome et al., 2015; Kessler et al., 2012), so the results of the current study were not consistent with the literature. It is possible that these differences are due to the population sample not meeting the criteria for SAD. Further research would need to be conducted to thoroughly understand these differences.

Overall Findings From the Models

The findings from this study seem consistent with previous literature in terms of population, measurements, research design, and methods used (Butler et al., 2018; Shepherd & Edelmann, 2005; Tian et al., 2018; Wery et al., 2020). Existing literature indicates that social anxiety and internet use are positively related to one another (Odaci & Kalkan, 2010; Shepherd & Edelmann, 2005). Existing literature also indicates that internet use and loneliness are positively correlated (Jung et al., 2019; J. Kim et al., 2009; Seepersad, 2004; Tan et al., 2013). This study sought to support the current literature while also incorporating a mediation model. While the mediation model was not statistically significant, the relationship between social anxiety and internet use was significant, indicating that those with social anxiety use the internet more than those who do not have symptoms of social anxiety. Alternatively, the results between

internet use and loneliness could be due to a measurement issue. Specifically, social media use as a measurement for internet use may have confounded the results, since social media is an aspect of the internet but does not account for other uses of the internet. Additionally, social media may not have a direct effect on loneliness due to the social and connective aspects of social media.

Existing literature assessing the relationship between pornography use and loneliness is limited, and the relationship is just beginning to be studied. This study sought to support the existing literature, and the results showed that pornography use and loneliness are significantly related, indicating that people who use pornography frequently are more lonely than those who do not use pornography as frequently. This study also sought to understand whether social anxiety plays a role in the relationship between pornography use and loneliness. While the results from the mediation model are markedly small in significance ($p < .05$), it is possible that social anxiety confounds the relationship between pornography use and loneliness; however, this inference cannot be confidently made without further research.

Additionally, this study sought to begin research on a new topic, the relationship between pornography use and social anxiety. Only one article is known to be published on this topic (Wery et al., 2020), yet the researchers of that article were not specifically evaluating the relationship between pornography use and social anxiety, further eliciting the need for this current study to assess this relationship. Again, although the relationship between pornography use and social anxiety is small, the case can be made from this study's results that this relationship does exist, that social anxiety transmitted an effect on pornography use, and that social anxiety may play an important role in the relationship between pornography use and loneliness. These results suggest that people who have social anxiety may use pornography as a means to avoid intimate relationships with other people. Another possible inference to make

from these results is that people who are socially anxious may use pornography as a coping strategy for their anxiety. Further research is needed to advance the understanding of these relationships.

Finally, the exploratory findings from the BFNE-II were particularly interesting. Since the research questions were exploratory, no formal hypotheses were developed; however, it was expected that fear of negative evaluation would be more related with frequency of pornography use than the results of the LSAS. The results suggested that those who fear negative evaluation use pornography more frequently than those who do not fear negative evaluation and that the fear of negative evaluation has a larger effect than social anxiety on pornography use. These results may be indicative of people fearing negative evaluation specifically during sexual activity; therefore, they may avoid sexual activity with other humans by using pornography. Again, further research is needed to understand these relationships.

Limitations of the Study

One limitation to this study was the length of the original survey that participants completed. The data collected from this study were a part of a data sample from a larger study. The survey was expected to take approximately 20 to 45 minutes for participants to complete. It is possible that the length of the survey caused some participants to experience survey fatigue, leading them to spend minimal time or give little attention to answering the questions.

Another limitation to this study may be the measurement that was used to assess internet use. The correlation between social anxiety and internet use was statistically significant but small. Internet use was measured using social media use, and it is likely that this method of measuring internet use altered the results, especially since it could be argued that social media

connects people, so it would make sense that the models involving social media did not yield the results that were expected relating to internet use.

Another possible limitation to this study was the population sample. Of the sample of 901 participants, 70% were married or had a life partner. This high percentage of married participants could have confounded the expected results that people use pornography due to social anxiety. It would not be expected that married individuals would use pornography due to symptoms of social anxiety since they are likely a part of the population that was sexually active (77.5%). Additionally, the couples in this sample may have confounded the results of the moderated mediation analysis.

Further, while gender was controlled for in all the analyses of this study, the results for each gender were not delineated throughout the study; therefore, it is possible that differences in gender and how each gender uses pornography could have provided more understanding throughout the study. After the data analysis of this study, a *t* test was conducted to find the gender effect on pornography scores, which indicated that men had higher scores. This delineation may have been helpful in understanding other results in the study. For instance, knowing which gender had higher internet use, levels of loneliness, and symptoms of social anxiety would have been helpful in analyzing the results and creating discussion for further research.

An additional limitation to this study was the originality of the research between social anxiety and pornography use. Since there is almost no existing research, this original study made inferences to begin this research topic. It is likely that future research will have clearer direction of the time-order of the models once more literature has been published on this relationship.

Further, it is possible that participants in this study were dissimilar to pornography users in general. MTurk users appear to have lower extraversion, lower emotional stability, and lower self-esteem compared to other samples (Goodman et al., 2013); therefore, these differences and other potential differences may affect the generalizability of the results. MTurk samples also tend to be younger than the average U.S. population and internet users in general and also have higher education levels and lower income than the U.S. population (Paolacci & Chandler, 2014). These differences may mean that the data collected may not be representative of the general population.

Another limitation to the study was the use of self-report measures. It is possible that participants' responses were not accurate due to their possible inability to provide objective reports about themselves. Also, the measures may not have accurately assessed the constructs that they asserted to measure. For example, social media use may not have accurately assessed participants' internet use. Alternatively, these measures may have provided false positives in terms of social anxiety and loneliness symptoms.

Lastly, since this study assessed sensitive subjects that are potentially embarrassing or shameful to some people, it is possible that social desirability impacted participants' responses (Osborne, 2012). A measure of social desirability was not included in the survey, so it was not possible to determine the level to which this occurred in this sample.

Suggestions for Future Research

Future research should consider using a different assessment to measure internet use rather than using social media frequency. As previously discussed, since social media can be a connective tool for some people (Nowland et al., 2018), it is possible that levels of loneliness would not increase with social media use. Additionally, social media does not fully indicate

individuals' internet use since the internet encompasses much more than social media.

Consequently, future studies should not use social media as the measurement for internet use.

Future research should also continue exploring the relationship between social anxiety and pornography use. Although the mediation model was small, it introduced these topics to the research field for more studies to be conducted. Future research should separate married participants from nonmarried participants to delineate whether the results are different as they relate to the use of pornography due to symptoms of social anxiety. Specifically, this study could be replicated while changing the population to single males who have never been in a committed relationship to determine whether this change alters the results. Additionally, the study could be replicated to include both males and females currently single and determine whether the results are different from the current study. Previous research has shown that men use pornography more when they are not in a romantic relationship and that they also report higher levels of loneliness (Weber et al., 2018). It could be argued that never having been in a committed relationship may increase the use of pornography to cope with social anxiety, but it is also plausible that currently single people may have experienced negative feedback from past relationships, increasing their fear of negative evaluation for future relationships; therefore, currently single people (previously in a committed relationship) may be a logical population to include in future studies.

Additionally, it is possible that social anxiety could be moderating rather than mediating the relationship between pornography use and loneliness, which may explain their weak yet significant relationship. Future studies should continue to focus on these three variables yet consider changing the mediation model to a moderation model. It makes sense that this

relationship may not be a time-order relationship; rather, social anxiety may change the relationship between pornography use and loneliness.

It is also possible that there is another variable that is confounding the results of this study. For example, the argument could be made that sexual shame could be moderating the A, B, or C paths (or all three) between the indirect relationship of social anxiety and loneliness through pornography use. Pornography use is related to sexual shame among some populations (Volk et al., 2016), and research has shown that feelings of shame are often related to sadness, fear, and feeling judged by others (Gilliland et al., 2011; Lichtenberg, 2007; Morrison & Ferris, 2009), which would theoretically lead to higher levels of loneliness. Therefore, sexual shame is a logical variable to consider in future research with pornography use, social anxiety, and loneliness.

Future studies may also consider changing the time-order of the mediation model by assessing the direct effect of pornography use on loneliness and the possibility of sexual shame, social anxiety, or other variables mediating this effect. Since pornography use and loneliness have continued to show a direct effect, it is plausible to begin placing them as the independent variable (pornography use) and dependent variable (loneliness) while studying other possible confounders in this relationship.

Another aspect for future research is in Model 7 of this study, where avoidance is measured. Theoretically, avoidance should impact a population that is socially anxious and using pornography; however, the results of this study may have been confounded by the high married population or by gender. Future studies should continue to evaluate the role that avoidance plays in the relationships between social anxiety, pornography use, and loneliness since the literature shows that people use pornography to avoid such emotions and mental health symptoms

(Borgogna et al., 2018; Fall & Howard, 2015; Paul & Shim, 2008; Wetterneck et al., 2012; Wood, 2011; Young, 2008).

Lastly, qualitative research may be useful to explore the relationships between social anxiety, loneliness, and pornography use, particularly among single individuals. A qualitative study may also examine the role that sexual shame has in these relationships. For example, identifying an individual's environmental triggers to use pornography and also assessing their automatic thoughts and distortions before using pornography may help researchers better understand the relationship between these variables. Additionally, qualitative research would help clinicians better understand individuals who seek counseling for these presenting problems. Qualitative items would also provide the opportunity for participants to share their perceived reasons for using pornography and provide further insight into their lived experiences.

Clinical Implications

For Counselors

The first implication that this study has for counselors is the education it provides regarding clients who enter counseling reporting pornography use as their presenting problem. Research has shown that most mental health professionals do not feel competent in treating individuals with perceived problematic pornography use or sex addiction (Bloom et al., 2016; Hecker et al., 1995; Short et al., 2016). This study highlights the underlying issues surrounding individuals' pornography use, which can aid in informing counselors and increasing their competence to treat those who present with pornography use. Theoretically, if counselors can understand pornography use and have read literature regarding use, then they may feel more competent in treating it.

This study also provides counselors with increased knowledge to ensure that they are carefully assessing clients who present with pornography use for other issues that could be driving or surrounding their use, such as social anxiety or loneliness. Counselors may use the UCLA Loneliness Scale, LSAS, and/or BFNE-II to identify symptoms that may be present alongside pornography use and determine if those other states or traits are driving use, ultimately enhancing the counselor's case conceptualization. Counselors who have a comprehensive case conceptualization can then create a more comprehensive and specific treatment plan, which will help the counselor remain ethical and efficient in their counseling practice (Sperry & Sperry, 2012).

Research shows that many clinicians, particularly those who are religious, have negative beliefs about pornography, which could impact their focus on addressing pornography use (Hinman, 2013) rather than thoroughly assessing all the variables involved in order to identify and treat the root problem (e.g., social anxiety, loneliness, or another factor). Additional to social anxiety and loneliness, this study highlights that pornography use may be a symptom of a larger underlying problem for many clients who seek counseling for their pornography use. When counselors adopt the practice of first bracketing their personal beliefs and values (Remley & Herlihy, 2020), then thoroughly assessing their clients from a biopsychosocial perspective (Meyer & Melchert, 2011), they will discover what is motivating the client's symptoms (i.e., pornography use) and be able to effectively treat the source rather than target symptom-reduction, potentially leading to more lasting change for the client.

Similarly, when clients enter counseling reporting social anxiety and/or loneliness, this study may remind the counselor to also assess for pornography use since it could be related. Research shows that pornography use can lead to negative outcomes for some populations (Gola

et al., 2016; Grubbs et al., 2019; Harkness et al., 2015; Kraus et al., 2016; Lewczuk et al., 2017; Ross et al., 2012; Twohig et al., 2009; Vaillancourt-Morel et al., 2016); therefore, assessing whether the client uses pornography and identifying whether the use is perceived as a problem to the client will help the counselor be thorough in assessment and treatment interventions.

For Counselor Educators and Supervisors

This study also has implications for counselor educators and supervisors. Regarding counselor's perceived incompetence in treating pornography use, one study indicated that nearly half of clinicians did not receive any graduate-level training on how to address and/or treat pornography use with their clients (Ayres & Haddock, 2009). Additionally, although most clinicians identify that about three quarters of their clients present with pornography issues, 79% reported not feeling prepared to work with this population. These alarming findings indicate the need for training regarding conceptualization and treatment of pornography-related issues at the graduate level.

Counselor educators have an incredible responsibility to train their students to provide ethical and unbiased care to their clients. Similar to the previous discussion for counselors, if counselor educators are religious, they could be biased to train their students to focus on aspects of the client's issues that oppose their own values. This study indirectly highlights the need for counselor educators to train their students to approach their clients objectively, ethically, and without bias, exhaustively assessing them using a biopsychosocial approach to create a comprehensive case conceptualization from which to understand the presenting problems of their clients.

Lastly, this study can similarly challenge counseling supervisors to help their supervisees approach their clientele, specifically those who are using pornography, ethically and

comprehensively. Research shows that many religious individuals believe pornography to be morally wrong yet still view it regularly (Barna Group, 2016; Nelson et al., 2010), creating moral incongruence in the individual (Grubbs et al., 2019). When a client seeks help from a counselor who lacks education and understanding of pornography use, it would be easy for the counselor to agree with the client that the pornography use is the original problem and solely treat the use; however, this study can aid supervisors in helping new counselors be more objective and assess what other states or traits could be driving their use.

Chapter Summary

This chapter presented a summary of the findings, limitations of the study, recommendations for future research, and clinical implications. There were three main findings. First, pornography use and loneliness were moderately positively correlated, and pornography use was found to transmit a positive effect on loneliness, adding to the limited existing research. Future research should continue exploring this relationship and other potential variables. Second, social anxiety was positively correlated with the frequency of pornography use, and social anxiety transmitted a significant effect on pornography use. Although these results were weak, they were statistically significant. Third, the mediation Model 4 showed that pornography use mediated the relationship between social anxiety and loneliness. Again, this indirect effect was markedly weak; however, it was statistically significant. Future research is recommended due to some of the limitations of the study. Specifically, the internet use models used social media as a measurement, so there is a need for further examination using alternative measures for internet use. Additionally, further research should be conducted using single participants since it is more logical that single individuals may use pornography due to social anxiety more frequently than the large married population in the present study. Lastly, researchers should consider

implementing other variables, such as sexual shame, into the models to potentially increase the proportion of explained variance. The implications of this study inform counseling professionals to appropriately treat individuals who present to counseling with pornography use by thoroughly assessing the motives behind the use and treating the root issue rather than merely aiding in symptom reduction.

Summary of the Study

Previous research suggests that pornography use and loneliness are related, although the literature is significantly limited (Butler et al., 2018; Efrati & Amichai-Hamburger, 2019; Tian et al., 2018; Weber et al., 2018; Wery et al., 2020; Yoder et al., 2005). To further understand this relationship, the more exhaustive research on internet use and loneliness (Ceyhan & Ceyhan, 2008; Laier et al., 2018; Morahan-Martin & Shumacher, 2003; Rose & Dhandayudham, 2014) was studied to inform the research on pornography use and loneliness. Through an examination of the relationship between internet use and loneliness in the literature, social anxiety was found to play a significant confounding role (Caplan, 2007; Jin & Park, 2012), raising the question of whether social anxiety also confounded the relationship between pornography use and loneliness. Social anxiety and pornography use have not been studied to date, although their theoretical relationship seems logical when considering that people use the internet and pornography in order to avoid negative emotions and traits such as social anxiety and loneliness (Fall & Howard, 2015; Levin et al., 2012; Odaci & Kalkan, 2010; Paul & Shim, 2008; Seepersad, 2004; Shepherd & Edelman, 2005; Wetterneck et al., 2012).

A total of 1,306 participants were recruited for this study through Amazon's MTurk. After multiple stages of data screening, 901 participants (60% male, 40% female) who reported using pornography in the last month were included in the study. The participants completed

demographic information, questions regarding their internet use (social media), pornography use frequency, and the UCLA Loneliness Scale, LSAS, BFNE-II, and PUMS subscales related to avoidance. Social anxiety was positively related to internet use (as measured by social media use) and transmitted a small significant positive effect on internet use in the mediation model. Similarly, internet use (as measured by social media use) was significantly correlated with loneliness in the correlation test; however, internet use (as measured by social media use) was not found to significantly affect loneliness in the mediation model. When internet use was replaced with pornography use, social anxiety was positively related to pornography use and was found to transmit a small significant positive effect on pornography use. These results were markedly small, indicating the need for future research, as other variables should be considered. The study also supported the limited existing literature, as pornography use and loneliness were significantly positively correlated, and pornography use transmitted a significant positive effect on loneliness. Lastly, the avoidance motivations were not found to affect the relationship between social anxiety and pornography use. This study's significant results have important clinical implications for counselors and counselor educators alike when they work with those who seek counseling for pornography use, social anxiety, and loneliness.

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APPENDIX A: INFORMED CONSENT

Informed Consent

You are invited to be in a research survey which is a study about the Impact of Family-of-Origin Experience, Spirituality, Sexual Behavior, Sexual Attitudes, Relationships, and attitudes about pornography. As compensation, one dollar will be made available to participants who complete it. We ask that you read this form and ask any questions you may have before agreeing to participate in the survey. You have received the opportunity to participate in this survey through your arrangement with Amazon Mechanical Turk.

Confidentiality

The records of this study will be kept private and anonymous. We are asking for your honest response to all the questions. Research records will be stored securely and only researchers will have access to the records. Publications from this research study will only report on statistical information as no personal information will be requested from you.

Contacts and questions

The researcher conducting this study is Fred Volk. Please feel free to send the questions you may have at any time during the course of this study by email: [REDACTED]. If you have questions later, you are encouraged to contact him via email. If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher(s), then you are encouraged to contact the Institutional Review Board, 1971 University Blvd, Green Hall Suite 1887, Lynchburg, VA 24515 or email at irb@liberty.edu. In case you may need to talk to a counselor after taking the survey, though this is not an endorsement of the following free online counseling service, you may contact <http://www.onlinecounseling4u.com/>. Again, this is only a suggested resource to assist you just in case you need counseling assistance after completing the

survey.

Risks and Benefits

There is no direct benefit to you from your participation in this survey. Risk is mostly limited to social impact should an individual's responses be released; therefore, the responses will be collected anonymously with no identifying information. You will receive \$1.25 (U.S.) for completing this survey. The findings from this study have important implications for counselors and counseling services.

Procedures

If you agree to be in this study, we would ask you to complete the questionnaire. As part of this survey, you will be asked several questions about yourself, as well as questions about your family-of-origin, your beliefs, your attitudes, and your behavior. This survey will take between 20 and 45 minutes to complete.

Compensation

As compensation, one U.S. Dollar (\$1.25) will be made available to participants who complete it.

Voluntary Nature of The Study

Thank you for your interest in participating in this survey. Your participation is voluntary, and you can quit at any time. Your decision whether or not to participate will not affect your current or future relations with Liberty University. Researchers reserve the right to refuse compensation if you do not indicate that you have willingly agreed to participate in this survey.

Statement of Consent

Please click "yes" if you agree with the following statement: "I have read the above

information and I consent to participate in the study and for my data to be analyzed for the purposes of the study.” All information you provide in this survey is completely anonymous. By answering yes to the question below, you are agreeing to participate in this study.