Associations Between Media Use, Mental Health, and Risky Sexual Behaviors in Adolescence

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Associations Between Media Use, Mental Health, and Risky Sexual Behaviors in Adolescence

A thesis submitted in partial fulfillment
of the requirements for the degree of
Master of Science in Human Environmental Sciences

by

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University of Arkansas
Bachelor of Science in Education, 2016

May 2018
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This thesis is approved for recommendation to the Graduate Council.

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ABSTRACT

Guided by the ecological “technosystem,” researchers examined data from 10,930 adolescents completing the CDC’s 2015 Youth Risk Behavior Surveillance System (YRBSS) looking for associations between television, social media, depressive symptoms, suicidality, and sexual risk behaviors. Regression results indicate media use is an important factor in adolescents’ internalizing and externalizing problems. Social media use was associated with significantly poorer mental health, while hours spent watching television was linked with significantly higher sexual risks. Findings from this research are important for multi-systemic prevention and intervention efforts aimed at promoting adolescent resiliency, particularly among vulnerable youth who are most susceptible to media influences.
ACKNOWLEDGMENTS

In this life, an immense collection of memories, experiences, and opportunities are established along the way. During my two-year journey of completing this thesis, I was given the opportunity to use my strengths and abilities to put forth prodigious work in making a contribution to the research field, based upon an area of inquiry that I felt would continue to be an important area of growth due to the increasing availability of technology and how it is affecting behaviors, in turn affecting the way of life. This quote became my mission: “You are here in order to enable the world to live more amply, with greater vision, with a finer spirit of hope and achievement. You are here to enrich the world” -Woodrow Wilson. This mission is one with high inspirations that I hope will be showered among many who make impactful contributions within the field of research, for what is done today will affect the generations tomorrow.

First, I would like to express my appreciation and thanks to my committee chair, Dr. Amanda Williams, whose expertise and guidance helped me to achieve success in completing my thesis, my committee members, Dr. Zola Moon and Dr. Kristin Higgins, for their concise feedback and support that contributed to my growth as a professional.

In gratitude, I would like to thank and acknowledge my family for their unwavering love and support throughout my academic endeavors. Because of you, I was able to achieve my dreams and make an impactful contribution.

Lastly, I would like to thank the Centers for Disease Control and Prevention for developing the YRBSS survey that made this study possible.
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CHAPTER 1: INTRODUCTION

This study examined cross-sectional associations between media use, mental health, suicidality, and risky sexual behaviors among a nationally representative sample of youth. The purpose was to understand the role of media use in the development of internalizing and externalizing problems during adolescence. Specifically, this study focused on depression, suicidality, as well as motivations to engage and actual engagement in risky sexual behaviors. Mental health and risk behavior correlates of media use, particularly among teenagers, is a growing area of study (Liu, Zhu, Yu, Rasin, & Young, 2017). The current work used a large, diverse, and nationally representative sample to identify meaningful and generalizable points of intervention, policy work, and future study.

Media can be thought of as the new addiction of the 21st century. The creation of new social media platforms provides immediate connection, convenience, and availability. This innovation is within a repetitive cycle of new improvements that influence young peoples’ usage from the aspect of technology being an essential component of everyday societal functions (communication methods being the primary reason for its use). All age groups are increasingly using technology, including social media platforms. The type of usage varies based on age, reason for usage, convenience, and influences from others to engage in social media actions. Adolescents and emerging adults comprise the largest percentage of technology usage in comparison to other age groups (Pew Research Center, 2017). Cell phones and/or smartphones are accessible by 88% of adolescents and 90% of teens use this device for text exchanges (Lenhart, 2015). A Nielsen study found that adolescents send or receive almost 112 texts per day (3,339 per month) and text messaging is the driving factor in them getting a mobile device to begin with (Nielsen, 2010). Girls are more prone to using social media platforms in comparison
to boys who are more likely to engage with video games (Lenhart, 2015). Both media types are easily accessible to users, now being purchased via online or at no costs. The most popular social media outlet among teenagers is Instagram (76%), followed closely by Snapchat (75%), Facebook (66%), Twitter (47%), and other less common platforms (30%) (NORC, 2017). Seventy-one percent of young people use more than one social media option (Lenhart, 2015). Among American adolescents, 95% use the internet, 25% use their mobiles to access the internet, and spend an average of eight hours a month watching videos via smartphone technology (Fobian, Avis, and Schwebel, 2016). However, there is limited research regarding the array of media options and potential associations with both mental health and risk behaviors during adolescence.

The importance of understanding mental health factors that affect developmental transitions is most notably described by the research that has investigated adolescent electronic media use and public health issues that occur from sleep deprivation. The types of media use within the study by Touitou, Touitou, and Reinberg (2016) consisted of computer, internet, television viewing, electronic gaming, and mobile/smartphones. Due to “blue light exposure,” which can be found in all types of electronic media “such as computers, mobile phones, tablets, televisions, internet and electronic gaming consoles” (Touitou et al., 2016, p. 6), desynchronization occurs when technology use takes place prior to adolescent sleep, overall affecting circadian system functions, resulting in a decrease in melatonin secretion (Chang, Aeschback, Duffy, Czeisler, 2015). Symptoms that result from these changes include: “persistent fatigue, poor appetite, and sleep disorders (“if persistent, may lead to chronic insomnia, and mood disorders that can cause depression;” Touitou, Touitou, & Reinberg, 2016, p. 2). Also, Vernon, Modecki, and Barber (2017) found that outcomes in externalizing behaviors, deprived
self-esteem, and lack of coping mechanisms were associated with the increased use of mobile phones at night. Therefore, beyond what youth are doing with technology, its mere presence can impact youth well-being.

Adolescence is a very important period of development due to rapid advancements in identity and autonomy development. According to the Centers for Disease Control and Prevention (CDC, 2017a, 2017b), adolescence is categorized into two separate age cohorts, being young teens (ages 12-14) and teenagers (ages 15-17). Adolescents, in comparison to children and adults, are more prone to engage in reward-seeking and risk behaviors. Eckstrand et al. (2017) detailed how sexual risk behaviors emerge during adolescence and include “early sexual debut, higher number of partners, or unprotected intercourse” and are described as being “highly rewarding experiences” (p. 1; see also, Abma, Martinez, & Copen 2010; Kann, McManus, Harris, et al. 2015). Young people may experience unintended health outcomes due to the engagement in these sexual risk-taking behaviors that may include unplanned pregnancies, sexually transmitted diseases (STDs), and HIV. According to the Center for Disease Control and Prevention CDC, (2015d), in the United States, 22% of all new HIV diagnoses are among young people between the ages of 13-24; young people (ages 15-24) were among those diagnosed with “half of nearly 20 million new STDs”, and among teenage girls (ages 15-19), 230,000 total newborns were reported in 2015. Unintended health consequences may result in depression due to the inability to reverse the outcome of the behavior that was seen as rewarding initially.

Depression is known to peak during adolescence and can be considered a normal phenomenon (Ge et al. 1994; Wickrama et al. 2008). Adolescent depressive symptoms, according to the Center for Disease Control and Prevention (CDC, 2017c), include feelings of sadness, hopelessness, having an irritable demeanor, changes seen in sleep/eating patterns,
changes in energy, difficulty paying attention, feelings of worthlessness, guilt, and self-injurious and destructive behaviors. Because teenagers have limited skills in communicating their current feelings and needs, they often internalize their emotions. Instead, adolescents might display external behaviors that are not correctly perceived by an adult figure (e.g., labeling the adolescent as troubled or lazy). Depression and suicide risk is most prevalent in adolescents due to the combining factors of current biological functioning - depression as a normal phenomenon in adolescence and becoming more regulated into young adulthood (Ge et al. 1994; Wickrama et al. 2008) - with the interceptions that occur from media use. “Blue light” from media devices further complicates the natural human mechanisms of environmental adaptation. Depression can result in suicidal ideation, attempts, and completion and is the leading cause of death for youth between the ages of 10-24 (CDC, 2017c). The emotional, psychosocial, and physical attributes depression as described by Williams and Merten (2014), are important public health issues for adolescents.

**Definition of Key Terms**

*Media use.* The engagement with or consuming of television, gaming, information, and various types of interactive media. (Strasburger, Jordan, & Donnerstein, 2010).

*Depressive symptoms.* involves feelings of guilt, worthlessness, hopelessness, a state of helplessness, depressed moods, sleep disturbances, loss of appetite and psychomotor retardation (e.g., CES-D, Radloff, 1977).

*Suicidality.* Threats and actions towards oneself that lead to harm and/or death. Behaviors that display risk include: lack of life’s purpose, hopelessness, anxiety, anger/agitation, lack or persistent sleep, feelings of entrapment, participating in risky behaviors, withdrawal from close friends/family, dramatic mood changes, alcohol/drug use, and giving away high-valued
possessions (American Association of Suicidology, 2017). Additionally suicidal ideation, which involves contemplating suicide, with frequency of thoughts leading to heightened risks.

*Sexual risk behaviors.* Engaging in high risk sexual behaviors, such as unprotected sex with multiple partners or with an individual outside of a long-term, monogamous relationship that increases the risk of unplanned pregnancies and contracting STDs (Dir, Coskunpinar, & Cyders, 2014).

The current study aims to inform parents, educators, and researchers about adolescent media usage, depressive symptoms, suicide risk, and sexual risk behaviors. This thesis follows a manuscript format with a general introduction to the topic, followed by a stand-alone journal-formatted manuscript, and concludes with an extended discussion and application of findings.
CHAPTER 2: MANUSCRIPT

Associations between media use, mental health, and risky sexual behaviors in adolescence

This study examined cross-sectional associations between media use, mental health, suicidality, and sexual risk behaviors among a nationally representative sample of youth. The purpose was to understand the role of adolescent media use in the development of internalizing and externalizing problems. Specifically, this study focused on depression, suicide ideation, as well as motivations to engage and actual engagement in risky sexual behaviors. Mental health and risk behavior correlates of media use, particularly among teenagers, is a growing area of study (Liu, Zhu, Yu, Rasin, & Young, 2017). The current work used a large, diverse, and nationally representative sample to identify meaningful and generalizable points of intervention, policy work, and future study.

Media Use

There are various forms of media easily accessible to adolescents and emerging adults and the most common reasons for using them include entertainment, creativity, distraction, and seeking social connections (Radovic et al., 2017). The use of technology is seen with an increasing frequency among all age cohorts, including social media platforms, though adolescents and emerging adults comprise the largest percentage of technology use in comparison to other age cohorts (Pew Research Center, 2017). The type of use varies based upon age, reason for the usage, convenience, and influences from others to engage in social media actions. Social media has become a largely mobile activity through the use of smartphone technologies to access the internet, web-based applications, social networking sites (e.g., Snapchat, Facebook, Twitter, Instagram, etc.), and more standard types of media (i.e., streaming music and video). The most popular social media outlet among teenagers is Instagram (76%),
followed closely by Snapchat (75%), Facebook (66%), Twitter (47%), and other less common platforms (30%) (NORC, 2017). Seventy-one percent of young people use more than one social media option (Lenhart, 2015).

Video games continue to be popular among teens, with 81% of adolescents (ages 13-17) owning or have access to a video game console such as Xbox, Playstation or Wii (Lenhart, 2015). Gender differences are also distinct based on ownership and usage statistics, with 91% of boys owning their own game console and 70% of girls either owning or having access to a game console. Social media platforms are mostly used by girls and in-comparison, boys are most likely to engage in video gaming (Lenhart, 2015).

Although access to and quality of media has improved in recent years (booming in the early 2000s and rapidly evolving ever since), the general concept of media consumption and emerging social technologies is relatively unchanged from the mid-1990s when providers like AOL emerged (Digital Trends, 2016). For the most part, advancements in mobile technologies have simply allowed for greater access to traditional media such as television, videos, and electronic games, with cellphone and smartphones being accessible by 88% of adolescents and 90% using the device for text exchanges (Lenhart, 2015). A Nielsen study found that adolescents send or receive almost 112 texts per day (3,339 per month) and text messaging is the driving factor in them getting a mobile device to begin with (Nielsen, 2010). Even though we are in an advanced age of mobile devices, dynamic social interactions and “always on” internet connections (Williams & Merten, 2011), these advancements simply reflect easier and more pervasive access to traditional media formats. Strasburger, Jordan, and Donnerstein (2010) report that media access is everywhere, including bedrooms, and that youth are spending almost an entire “work day” (seven hours) engaged with or consuming television, gaming, information, and
interactive media, which is beyond the recommended time limit set by the American Academy of Pediatrics of two hours (Kenney & Gortmaker, 2017). However, it is unknown how time spent with these different types of media during the formative teenage years contributes to mental health and risk behaviors during adolescence. Previous studies suggest potentially meaningful links between media use and youth well-being.

Media through the use of social networking has components that affect psychological wellbeing and actions. Radovic et al. (2017) found three specific triggers from social media that were linked with psychological outcomes when used as a basis for improving one’s current state of mind: trigger posts, stress posts, and oversharing of information. Social learning theory (Bandura, 1971) provides a basis for understanding behaviors and possible causal reasons as to why specific behaviors result. This theory explains how behaviors are imitated through direct observations, particularly when modeled by an important or valuable person. Other researchers have called media a “superpeer” providing consistent messaging and modeling of different attitudes and behaviors (Strasburger et al., 2010, p. 760). Therefore, media exposure may influence adolescents’ behaviors as actions (including internalizing problems and risk behaviors) are modeled and/or reinforced for the viewing audience (Bandura, 2001).

Studies based upon the effects of media usage have found an association between type of media exposure and risk-taking behaviors. O’Hara, Gibbons, Li. Gerrard, and Sargent (2013) studied movie exposure that involved both sex and alcohol themes. Their findings suggest that exposure to both types of content predicted risk behavior later in development. In fact, movies in particular “appear to have a stronger influence than other forms of media on adolescents’ beliefs and perceived norms related to risk taking” (O’Hara et al., 2013, p. 200). The amount of technology used among adolescents has been associated with poorer health status and
heightened engagement in risky behaviors in previous research. Adolescents that engage in “hyper-networking,” using online social media for three or more hours in a given day and “hyper-texting,” sending or receiving 120 or more text messages in a given day were more likely to engage in unhealthy behaviors detailed as sending/receiving inappropriate photos (75.8% texters, 72% Social networkers), using media at night (60%), and networking with others in efforts to meet without parental supervision to engage in risky behaviors such as drinking (41.5%) and hook ups (27.4%), with negative consequences resulting, including cyberbullying (Frank, 2013). Frank (2013) also found that teens without a father figure, having a minority status, and/or parents lacking education had a greater likelihood of participating in hyper-networking and hyper-texting that places them at a heightened risk of the adverse health consequences and mental health conditions.

A meta-analysis by Fischer et al. (2011) concurs that “risk-glorifying media content for both individuals and society” have adverse outcomes and showed an association with increased “real-life risk-taking behaviors, risk-positive cognitions and attitudes, and risk-promoting emotions” (p. 385). Author E. B. White (as cited in Strasburger & Donnerstein, 1999, p. 129) said, “I believe television is going to be the test of the modern world, and that in this new opportunity to see beyond the range of our vision we shall discover either a new and unbearable disturbance of the general peace or a saving radiance in the sky. We shall stand or fall by television.”

Ecological Systems Theory and the Techno Sub-System

Johnson and Puplampu (2008) proposed the techno sub-system as a component of the microsystem in Bronfenbrenner’s ecological framework for human development (Bronfenbrenner, 1977). The techno-subsystem, as embedded within the microsystem, is one of
the most proximal environments for individuals. The technology focus of this sub-system adds
the idea that systems interactions also involve the transmission of communication and
information via digital channels that influence developmental outcomes based upon the differing
levels of exposure and experiences. Examples include peer groups and technology types
(computers, internet, cell phone, television, portable audio/video devices and telephone) within
one’s immediate environments.

Bronfenbrenner (1977) defined the ecology of human development as “the scientific
study of the progressive, mutual accommodation, throughout the lifespan, between a growing
human organism and the changing environments in which it lives…” (p. 514). Bronfenbrenner’s
ecological theory includes the microsystem, mesosystem, exosystem, macrosystem, and
chronosystem. Structures throughout each system are arranged in sequential order based upon
the context of the environment and social relations built upon and within each structure that may
directly and indirectly effect individual and family functioning. The microsystem consists of the
immediate environment of the developing person, where a current role and function is received.
Mesosystem describes how the relational aspects are extended within the major settings that the
individual is exposed through on a daily basis. Examples include work, school, and other
community components within the context that can be thought of as a connection beyond the
primary family unit. Exosystem, the indirect influences that operate directly within how society
functions (examples: government, workforce, communities, mass media) and the macrosystem,
aspects of cultural values and societal influences that affect their functions (examples: regulation,
laws, and rules seen to affect the current economic conditions). The chronosystem involves life
transitions, with emphasis on time and its effects.
Although Johnson and Puplampu (2008) modeled the techno sub-system as an element of the microsystem, it is arguably more appropriate as its own cross-cutting system, much like the chronosystem (as shown in Figure 1). Technology is seen as an area of consistent change and enhancement that is used by individuals, directly and indirectly connects the different spheres of a person’s life, has implications for policy, society, and culture, and is interwoven with the advancement of time. The “technosystem” addresses how information is filtered and passed through society, how that information is communicated and perceived, how it impacts relationships, and, ultimately, how it impacts human development over time.

INTERNALIZING PROBLEMS

During adolescence, problems are usually hidden and not verbally expressed, but are shown in externalizing ways instead; with the intensity of teens’ emotions becoming easily altered (Dahl, 2001). Emotion dysregulation contributes to adolescent internalizing problems (McLaughlin, Hatzenbuehler, Mennin, & Nolen-Hoeksema, 2011). Emotion dysregulation is the inability to cope or understand feelings that are persistent and range in depth, type, and time. Increases in anxiety along with depression is prevalent in mid-adolescence, with girls being more prone of internalizing their problems throughout this developmental period in comparison to boys (Van Oort, Greaves-Lord, Verhulst, Ormel, & Huizink, 2009). A prior study found that adolescents who lack emotion regulation strategies or resources lead to increases in levels of internalization (Lougheed & Hollenstein, 2012). See externalizing problems for further details.
that relate internalizing problems with co-ruminating methods of communication as a basis for coping.

During adolescence, friendships fulfill attachment functions (e.g., “intimacy, security, trust, instrumental aid”) previously only fulfilled by caregivers (Rubin, Bukoski & Parker, 2007). Sustaining those friendships are an important priority in adolescence. Well reknown theories most accurately describe the actions of attachment and internalizing functions and outcomes. Cooley (1902) detailed how the feedback received from significant others provides individuals with the ability to derive a sense of self-worth. Attachment theory (Salter Ainsworth, 1989) also provides a basis for detailing how individuals view themselves (family foundational unit, peer groups in adolescence). Different media platforms may provide that relationship sustainability through easily accessible community and ongoing shaping of personal identity (Williams & Merten, 2008). The use of media, particularly interactive medias such as Snapchat, Instagram, and Facebook, in addition to other applications available, may provide activities that improve one’s ability to regulate their sense of emotions through the accessibility of expression and immediate feedback from their social connections.

To further explain, individuals that use media technology for connection and/or maintaining relationships with peers are prone to strive for acceptance by what they post and how they communicate with others within their peer group. The feedback received may alter a sense of self to relay a different persona to receive the desirable outcome from one’s peer group, with temperament factoring into the behavior displayed. This communication cycle can become more complex by the use of technology as a primary means to communicate within one’s social group, with the primary question indicating what is the intention of the message sent and received? This process can be referred to as “miscommunication theory” where individuals
receive the message, but how they perceive it may differ from the initial intended response due
to the lack of facial expression and recognition of tone that would otherwise be displayed within
face-to-face communication.

The psychology of responding can be seen through a cycle of thought processes that
involves the action of a current emotion and how one currently views the individual in which the
conversation is directed to. Thought processes include one’s current feelings (may be
unconsciously perceived), how one views the situation, how one views the individual and self
(group inclusion versus exclusion). Viewing the self is interpreting how others will view him or
her within their social network and initially responding in accordance to the combining factors.
This process can be compared to the study of group matching behaviors by Blocker and
McIntosh (2017) with emphasis placed on nonverbal communication. Three specific concepts
were introduced: “affiliation, attention, and emotion” (Blocker & McIntosh, p. 409). These
concepts are related to primary group components, such as actions seen as competitive
behaviors, stereotypical identifiers, and overall attitudes (both positive or negative). All these
concepts are indicators to differing outcomes. Matching behaviors are most relevant within
group settings. Individuals that are identified as outmembers are less likely to receive matching
responses. Prolonged effects from negativity perceptions may lead to heightened risk of mental
health risk factors and outcomes.

**Depressive Symptoms.** Depression is considered a serious mood disorder with
symptoms that impair daily functioning. However, individuals can experience varying levels of
depressive symptoms below a clinical level. In fact, there is a common developmental curve of
depressive symptoms, peaking during adolescence, and then stabilizing in early adulthood (Ge et
al. 1994; Wickrama et al. 2008). Adolescent depressive symptoms may include feelings of
sadness, hopelessness, having an irritable demeanor, changes seen in sleep/eating patterns, changes in energy, difficulty paying attention, feelings of worthlessness, guilt, and self-injurious and destructive behaviors (CDC, 2017c). The adolescent may display external behaviors that are not correctly perceived by an adult figure, such as labeling. The adolescent may show a lazy or effortless demeanor, engage in actions that define antisocial characteristics or be perceived as difficult. This is due to the lack of communicating their current feelings and needs, internalizing their emotions.

Depression and suicide risk is most prevalent in adolescents due to the combining factors of the current biological functioning - depression as a normal phenomenon in adolescence and becoming more regulated into young adulthood (Ge et al. 1994; Wickrama et al. 2008) with the interceptions that occur from media use- “blue light,” further complicating the natural human mechanisms of environmental adaptation. Depression can result in suicidal ideation, attempts, and completion and is the leading cause of death for youth between the ages of 10-24 (CDC, 2017c). The emotional, psychosocial, and physical attributes, as described by Williams and Merten (2014), are important public health issues for adolescents and emerging adults.

Previous studies have found that there is an association between depressive symptoms and media use. Primack et al. (2009) studied 4,142 adolescents who currently were not identified as depressed and analyzed depressive states within a seven-year follow-up period. They found that media exposure during adolescence was positively associated with depressive symptoms in young adulthood. Though the study emphasized television exposure amongst other media use during an earlier period of time (e.g., videocassettes, computer games, and radio), media advancements in modern times are comparable and can be related to the reasons for engagement and how adolescents use media within their lives, internalizing versus externalizing behaviors.
Adolescents today who have internalized their emotions often use social media as an outlet to relay information to an audience that is perceived to encourage a more desirable state. A negative outcome may result depending on the type of information that is posted, leading to a further depressive state from the lack of approval within one’s social network, with lower self-esteem and distress resulting. Confirming that frequency of social media usage is not a causation to depression but how individuals choose to use social media leads to the risk (Shensa et al., 2017).

Lindsey, Briggs, Barry, Sidoti, and Reiter (2017) used self-reported data from parents with adolescents to determine the effect of social media use and psychosocial adjustment. Adolescents’ activity level of social media, which includes the total number of social media platforms used and the frequency of their usage, was related to feelings of loneliness, fear of missing out, impulsivity/hyperactivity, depression, and anxiety (p.8). Further suggestion includes that “social media activity appears to be most specifically tied to internalizing problems among youth who are preoccupied with being excluded” (Lindsey et al., 2017, p.9). Internalizing problems associated with media consumption also include sleep problems, lower self-esteem, and anxiety (Ehrenreich & Underwood, 2016).

Teens preoccupied with the fear of being excluded (i.e., FOMO or “fear of missing out” in pop culture; Urban Dictionary, 2018) repeatedly engage in online activities and make social comparisons that deteriorate their emotional well-being and overall social media experience (Ophir, 2017). The act of social comparison in an increasing frequency has been associated with increased risky behaviors (Gibbons & Buunk, 1999) and the actions of social comparison using social media is also associated with depressive symptoms (Nesi & Prinstein, 2015). Distress from the fear of perceived and/or actual rejection and victimization are normal occurrences in
adolescents (Ophir, 2017) and there is moderate significant relationships with depression in prior research studies, with an association among “loneliness, stress and self-esteem” (Yaacob, Juhari, Talib, & Uba, 2017, p. 85).

Stress is a leading predictor of depression in adolescents (Yaacob et al., 2017). Ophir (2017) looked at the effect of social networking sites and detecting distress in adolescents. The action of social rejection predicted sharing their distress on social media among adolescents identified as heavy social media users. Emphasizing the importance of quantity of media use, adolescents with fewer social media accounts, who also have heightened fear of being left out, show fewer internalizing problems than adolescents with similar fears, but more online accounts (Ophir, 2017). Specifically, more limited social media use may be associated with a lower risk of developing depression and anxiety, despite increased distress (Lindsey et al., 2017). However, attachment to technology may also interfere with limitations within repetitive actions of its daily use, as Lindsey et al. 2017 described, “heightened distress” may be an outcome from restricted use. More research is needed regarding media use and depressive symptoms, particularly in terms of individual characteristics and patterns of usage that could be associated with poorer outcomes.

Suicidality. Prolonged depressive symptoms can lead to suicide ideation and potentially suicide completion. According to the Center for Disease Control and Prevention (CDC, 2015c) suicide is the second leading cause of death in the United States amongst individuals ages 15-34, most prevalent in males, and suicide rates have increased at 24% within the past fifteen years. Rates continue to increase. Curtin and colleagues (2016) found that between 1999-2014, rates of suicide increased for both genders and for all ages (10-74), but tripled among early adolescent girls (although they make up a small proportion of total suicide completions). There are
considerably more suicide attempts than suicide completions and this difference, as well as differences in suicide rates between males and females, is largely due to method used. In 2014, males were more prone to use firearms to commit the act of suicide while females were more likely to use some form of poison (Curtin et al., 2016).

Netflix, which has become a binge-TV phenomenon (i.e., binge-watching numerous subsequent episodes of a television series) recently popularized the issue of adolescent suicide with a series titled, *13 Reasons Why*. The series focuses on the suicide of the main character and circumstances that lead to her outcome via a series of recordings she left behind. This set off a wave of concern among parents and mental health providers. Organizations such as the American Foundation for Suicide Prevention publicized “how to” guides for parents to co-watch the series with their teens or talk with them about suicide. Studies have already linked suicide with new types of media releases geared toward adolescents (Ayers et al., 2017). O'brien, Knight, & Harris, (2017) says “the immersion into the story and images may have particularly strong effects on adolescents, whose brains are still developing the ability to inhibit certain emotions, desires, and actions” (p. E1. see also Casey & Caudle, 2013). Gould et al. (2003) described the “Werther effect” that explains an increase in suicide rates from exposure to and glorification of current reports of suicide found within television and newspaper avenues. Media portrayals of difficult adolescent issues are nothing new and each generation has its own cult classic of teenage angst, but the amount of media that is consumed by youth may have a direct association with their emotional and behavioral well-being.

**Externalizing Behaviors**

During adolescence, externalizing behaviors consists of behaviors displayed in one’s actions (e.g., risky behaviors). The regulation of emotions may be displayed by externalizing
behaviors (communication and/or actions). Co-rumination processes have been regarded to mental health outcomes, being associated with internalizing problems and emotional distress (Guassi Moreira, Miernicki, & Telzer, 2016) which links internalizing and externalizing behaviors to how adolescents use media communication methods, that in turn may affect outcomes of depression and self-esteem. Co-rumination is defined as the “excessive focus on problems in close dyadic relationships with peers” (Zalk & Tillfors, 2017, p. 1). Adolescents who engage in co-rumination discuss problems repetitively with an emphasis placed on the negative emotions and perception of the current problem, reflecting solutions and applying peer feedback to their situation (Zalk & Tillfors, 2017). There are both positive and negative aspects to co-rumination and adolescent friendships. Prior literature provides descriptions of a pathway to depressive symptoms, but ceasing the path if co-rumination is seen as persistent across time in high quality relationships. Guassi et al. (2016) found an association between co-rumination and high quality relationships showing no significance to depressive symptoms, however, low relationship quality resulted in depressive symptoms.

Co-rumination can affect the quality of adolescent friendships in positive ways (emotional connection and interpersonal support) despite the negative aspects that may also result (Zalk & Tillfors, 2017, p. 1). In-reflection, adolescents are at the stage of development that involve the interest in romantic relationships, risky behaviors that are regarded as highly rewarded experiences, and peer group acceptance. The actions of co-rumination can be thought of as a normal phenomenon in development within the context, due to the various situations that allow adolescents to communicate their negative feelings that, with the ability to relate with others, provides a reverse effect to the first perceived feeling. In-addition, co-rumination may be seen using various media types (social media, smartphones, and videogames) used by both
adolescents and emerging adults. High quality relationships and ruminating through these means can be considered a type of coping mechanism that may reflect positive outcomes, a decrease in depressive symptoms. The opposite is true for low quality relationships. Engaging in other risky behaviors reflects components to coping mechanisms adolescents may use as a means of an alternative, when communication and regulation of emotions are not achieved.

**Sexual Risk Behaviors.** Adolescent sexuality develops within biological, social, and interpersonal contexts (Bongardt, Reitz, Sandfort, & Dekovic, 2015, p. 203). During the developmental stage of late adolescence to early adulthood, engaging in risky sexual behaviors are most prevalent (Crandall, Magnusson, Novilla, Novilla, & Dyer, 2017). Due to sexual behaviors being a normal occurrence in development, engaging in risky sexual behaviors can be expected and is considered to be important in research studies due to the adverse health effects. Media exposes both adolescents and emerging adults to sex content through a wide array of avenues: television, movies, magazines, radio, and video games, naming a few. The research question entails: do these media influences affect adolescent and emerging adult motivations to engage in sexual behaviors?

Ferguson, Nielsen, and Markey (2017) conducted a meta-analysis that reflected that with the “family environment and peer influences controlled, evidence for an association between media and sexual behavior is minimal” (p. 355). Ferguson et al. (2017) further detailed that sexuality is “genetically and maturationally hard-wired” (p. 355-356) and parents and peers play an important role on adolescent moral values that provide a foundation of sexuality. If these relations are lacking within their direction of morals, media may become the avenue for information about sexuality. Gender differences are seen in parental input about sexual behavior specifically in boys, with the overall impact lacking (Ferguson et al., 2017). Discussing the
importance of the relational aspects to sexual behavior choices directs the topic to understanding the process of media use. Brown (2000) developed the media practice model that suggests “adolescents select and react to sexual media diets that speak to an emerging sense of themselves as sexual human beings” (p. 35). The model was developed to understand the process of adolescent media use. The process simply described involves the selection of a specific media type and subject matter, evaluating what is viewed and then the process of applying or rejecting. Brown (2000) describes adolescents “current and emerging sense of self or identity is a compelling component as decisions are made about which media will be selected, interacted with, and applied in everyday life” (p. 35). The importance of identity and self-esteem therefore is an indicator of how media may affect risky sexual behaviors.

Risky sexual behaviors involve unprotected sex, sex with multiple partners and/or with an individual outside of a long-term, monogamous relationship that increases the risk of unplanned pregnancies and contracting STDs (Dir, Coskunpinar, & Cyders, 2014). Early sexual debut leads to a heightened risk for adolescence and emerging adulthood mental and physical health problems. The national average of early sexual debut is approximated at age 17 (Finer & Philbin, 2014). Authors Lowry, Dunville, Robin, and Kann, (2017) studied early sexual debut happening prior to age 13 years being associated with “every sexual risk behavior, every category of substance use, forced sexual intercourse, suicidal thoughts and attempts, and being threatened at school” (p. 380). Risky sex now is also seen in adolescents and emerging adults by means of technology use in sending and/or receiving sexually explicit text messages referred to as “sexting.” Though sexting may be seen as protective against sexually transmitted diseases, areas of inquiry include: mental health, relational problems, and risk of victimization from engaging in risky sex. Important statistics in the United States currently show that risky sexual
behaviors are an ongoing occurrence, with high-risk health issues. Data from the Center for Disease Control and Prevention (2015b) show that 22% of all new HIV diagnoses are among young people between the ages of 13-24; “half of nearly 20 million new STDs” were diagnosed among young people (ages 15-24), and 230,000 total newborns were reported among teenage girls, ages 15-19. Unintended health consequences may result in depression due to the inability to reverse the outcome of the behavior that was seen as rewarded initially.

Sexual content in music and sexual cognitions and risk have been a focus in current research to determine if a correlation/relationship existed. Wright and Rubin (2017) found an association between being exposed to music containing sexual content and risky sexual behaviors. Music is a popular outlet for adolescents to express themselves and to identify with a specific role model (i.e., celebrity), as adolescence is a period of identity exploration and the exposure to different types of personalities and characters provides opportunities of relation and exploration. Music that comprises of sexual content, creates “expectations regarding sexual activity, liberal attitudes towards sexual behavior, and engagement in risky sexual behavior, such as casual sex or ‘hook ups’, multiple partners, using substances prior to a sexual encounter and not practicing safer sex” (Wright & Rubin, 2017, p. 41). Young people in the United States listen to music on an average of four hours daily (Wright & Rubin, 2017) and adolescents and emerging adult repetitive actions of listening to music daily may lead to new perceptions from the repeated exposure that may not be consciously seen. It should be acknowledged that not all genres of music would support these findings and adolescents who participate in these behaviors are more prone to engage in risky behaviors by their daily exposure, this would highly depend on the type of reinforcements one is exposed to and the frequency of both concepts.
Recent studies have specifically looked at sexual behavior happening through media usage. (i.e., the sending and receiving of sexually explicit content or “sexting”). Kimberly et al. (2017) were able to link media use and enjoyment with sexting and sexual behaviors. Participant sexting was unrelated to general social media use; however, the following social media behaviors were positively associated with sexting behaviors: “enjoyment of social media, using the phone to access social media, sending private online messages, searching for places online to meet potential partners, flirting with someone online, having an online blog, and using the internet for long distance romantic relationships” (Kimberly et al., 2017, p. 4). Those who participated in sexting also participated in other online activities more frequently and were currently and/or previously sexually active. Mobile technology was considered the primary method of communication and the internet was a source of that connection in the effort of finding a potential romantic partner and maintaining the relationship (Kimberly et al., 2017).

Risky sexual behaviors can lead to adverse consequences that can not only affect health but overall mental well-being. Peer victimization is likely to be common in the presence of risky sexual behaviors, specifically when engagements in activities are glorified and/or devalued. Motivations to use social media primarily for romantic relationships is associated with a greater likelihood of online aggression experiences (Young, Len-Rios, & Young, 2017). Victimization resulting from posting personal information, comments, and pictures can induce stress from the type of responses received by peers. Stress can be expressed in various ways, such as aggression or avoidance, leading to a potentially depressive state from the action of exclusion and judgment from valued others. Moon et al. (2015) studied aggression, substance use, and risky sexual behavior pertaining to suicide risk and found that “aggression and substance use, but not risky sexual behavior, mediated the risk of suicide” (p. 257); therefore, the importance of
understanding the negative effects of risk actions is seen to be a factor to suicide risk and
inability to cope, displaying an increase in mental health problems.

Current Study

It is clear that adolescents are the heaviest media users and there are indications
throughout the literature that media use and exposure can shape a person’s well-being. In
particularly, multiple studies have linked use and proximity of technology with internalizing
problems such as depression and anxiety. Additionally, the content and often interactive nature
of media has been linked with heightened risk for sexual behaviors that increase chances of
STDs and unintended pregnancies. The purpose of the proposed study was to identify how
adolescents’ use of media shaped mental health and sexual risk behaviors. Specifically, the
following research questions and hypotheses were proposed:

RQ 1: Is frequency of adolescent media use associated with current internalizing
problems?

H1: Adolescent media use will be positively associated with poorer mental health.

RQ 2: Is frequency of media use during adolescence associated with sexual risk?

H2: Adolescent media use will be positively associated with sexual risk behaviors.

RQ 3: Are internalizing problems associated with sexual risk behaviors?

H3: Adolescent mental health problems will be positively associated with adolescent
risky sexual behaviors.

Figure 2 models the hypothesized pathways linking adolescent media use with mental health
(depressive symptoms, suicidality) and risky sexual behaviors.
Method

Sample

Data were derived from the 2015 Youth Risk Behavior Surveillance System (YRBSS), a nationally representative sample selected to provide a generalizable analysis. The YRBSS is a survey by the Centers for Disease Control and Prevention (2015a) that is administered yearly and contains six separate categories that measure health risk behaviors in adolescence. Categories measured within this dataset include the following: sexual behaviors that may lead to unintended pregnancies, STD’s, and HIV, behaviors that lead to violence and/or unintended injuries, unhealthy diet contributors, the use of alcohol and/or drug use, tobacco use, mental health, and physical activity limitations (CDC, 2015b). The full sample includes students attending either public and private school districts within grades 9-12 throughout the United States, with a total of 15,713 participants. The current sample was reduced to 10,930 participants with complete data for study variables. Analysis focused on sexual behaviors were limited to the 4,038 participants who reported ever having sex. IRB approval was granted through the CDC. Further information about this data can be found at https://www.cdc.gov/healthyyouth/data/yrbs/overview.htm.

Measures

Adolescent media use. Adolescent media use was measured using the following two items to determine the usage and frequency of various types of media currently available to participants: “On an average school day, how many hours do you watch TV?” and “On an average school day, how many hours do you play video or computer games or use a computer for
something that is not school work? (Count time spent on things such as Xbox, Playstation, an iPod, an iPad or other tablet, a smartphone, YouTube, Facebook or other social networking tools, and the Internet).” Response choices were I do not watch TV or play computer or video games on an average school day (0), Less than 1 hour per day (1), 1 hour per day (2), 2 hours per day (3), 3 hours per day (4), 4 hours per day (5), 5 or more hours per day (6).

**Poorer mental health.** *Depressive symptoms* were measured as a single item extracted from the questionnaire. Participants were asked, during the past 12 months: “Did you ever feel so sad or hopeless almost every day for two weeks or more in a row that you stopped doing some usual activities?” (yes=1, no=0). The assessment of *suicidality* was measured using three items. Participants were asked, during the past 12 months, to answer questions based upon suicide ideation and attempt. Two items measured suicide ideation: “Did you ever seriously consider attempting suicide? (yes=1, no=0) and “Did you make a plan about how you would attempt suicide?” (yes=1, no=0). Suicide attempt was measured by: “How many times did you actually attempt suicide?” (response choices: 0 times, 1 time, 2 or 3 times, 4 or 5 times, 6 or more times). Responses were combined to form a cumulative measure of suicidality ranging from 0 (no ideation) to 3 (high suicidality: considered attempting, made a plan, and attempted).

Depressive symptoms and suicidality responses were summed to create a cumulative measure of poorer mental health ranging from 0 (no reported mental health problems) to 4 (highest degree of mental health problems). The combined measure had good reliability (Cronbach’s alpha = .77).

**Sleep.** The question pertaining to the hours of sleep on a typical school night was included as a control variable, due to its applicability as detailed within the literature review (response choices ranged from 1-7 representing 4-10 hours of sleep).
**Risky sexual behaviors.** Sexually active participants (n=4,038) were asked how many of the following five risky sexual behaviors they had engaged in: Age of first sexual intercourse was recoded to indicate whether they had an early sexual debut (before age 15, which is younger than the national average; Finer & Philbin, 2014). Responses were recoded as 0 (no early sex) or 1 (early sexual debut). Having multiple sexual partners (i.e., “During the past 3 months, with how many people did you have sexual intercourse?”) was coded as 0 (1 or fewer partners) or 1 (multiple partners) based on the following: I have never had sexual intercourse, I have had sexual intercourse, but not during the past 3 months, 1 person, 2 people, 3 people, 4 people, 5 people, 6 or more people. Two items assessed safer sex behaviors, which were reverse-coded so that a higher number indicated higher risk: “The last time you had sexual intercourse, did you or your partner use a condom?” (recoded as yes = 0, no = 1) and “The last time you had sexual intercourse, what one method did you or your partner use to prevent pregnancy? (recoded response choices: no method or withdrawal was used to prevent pregnancy (1), any of the following selected (0): birth control pills, condoms, An IUD (such as Mirena or ParaGard) or implant (such as Implanon or Nexplanon), a shot (such as Depo-Provera), patch (such as Ortho Evra), or birth control ring (such as NuvaRing). Finally, participants were asked if they had used alcohol or drugs before last sexual intercourse (yes=1, no=0).

**Age.** Participants self-reported their age within the following range: 12 years old or younger, 13 years old, 14 years old, 15 years old, 16 years old, 17 years old, 18 years old or older.

**Gender.** Participants self-reported their gender as male or female.

**Race/Ethnicity.** Race/ethnicity was reported as American Indian or Alaska Native, Asian, Black or African American, Native Hawaiian or Other Pacific Islander, or White. An
additional question pertained to having a Hispanic or Latino ethnicity (response choices: yes, no).

Analytic Approach

First, univariate descriptive information about the sample (Table 1) and bivariate correlations among all study variables were examined (Table 2). Then, multiple regression analysis was used (Table 3) to examine associations between media, mental health, and sexual risk behaviors. The analysis controlled for demographic characteristics and typical hours of sleep on a school night.

Results

The analysis included 10,930 adolescents (mean age=16 years old). Detailed descriptives are shown in Table 1. Most participants in the sample (90.4%) were 15 years or older. Half the sample was female (51.2%). Outputs for each race are indicated: White (44.5%), Hispanic (16.8%), Black (9.4%), Asian (3.9%), American Indian (1.0%), Native Hawaiian (.5%), Multiple Hispanic (18.9%), and Multiple Non-Hispanic (5.0%). The majority of adolescents (73.7%) received between 6-8 hours of sleep on a typical school night. Media consuming behaviors included two measures, which involved the total amount of time spent using social media or viewing television. Adolescents spent approximately one-two hours per day viewing television (M=2.36, SD=1.79), while consuming approximately three-four hours per day, on average, of social media (M=3.09, SD=2.14). However, 21% of the sample reported five or more hours engaged with social media.

INSERT TABLE 1 AND FIGURE 3 HERE
Results indicate the sample had relatively low mental health problems (M=.75, SD=1.20). Frequencies are detailed to reflect the percentage of adolescents who showed current depressive symptomology and/or suicidality: depressive symptoms (31.8%), suicide ideation (18.1%), suicide plan (15.6%), and suicide attempt (8.9%). Results indicate a moderate level of sexual risk within the sexually active youth sample (M=1.87, SD=1.37), with the following percentages indicating current sexual behaviors: sexual intercourse before age 15 (41.3%), multiple sex partners (58.8%), alcohol and drug usage prior to sexual engagement (18.9%), no condom use prior to sexual engagement (40.4%) and ineffective types of contraception methods (28.6%).

Table 2 presents zero-order bivariate correlations among study variables. Adolescent social media use was significantly and positively correlated with overall television consumption (r=.14, p<.01) and race/ethnicity (r=.04, p<.01). Social media was negatively correlated with age (r=-.07, p<.01) and sleep (r=-.09, p<.01). Television consumption was significantly correlated with race/ethnicity (r=.03, p<.01) and the total amount of sleep on a typical school night (r=.03, p<.01). Heightened risk of engaging in risky sexual practices was correlated with television consumption (r=.10, p<.01) and social media use (r=.05, p<.01). Mental health was positively correlated with gender (r=.21, p<.01), race (r=.04, p<.01), and social media use (r=.11, p<.01). Mental health was significantly and negatively correlated with age (r=-.03, p<.01) and sleep (r=-.21, p<.01). As expected, internalizing problems were significantly correlated with risky sex behaviors (r=.15, p<.01). Risky sex behaviors were negatively correlated at significance with age (r=-.08, p<.01), gender (r=-.04, p<.01), and sleep (r=-.11, p<.01).

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INSERT TABLE 2 HERE

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Results from linear multiple regression analysis suggest that media is an important contributor to both mental health and risky sexual behaviors (See Figure 4). The initial research questions looked specifically at media consumption and its association with internalizing problems and risky sexual behaviors. Findings suggest that adolescent social media use was associated with significantly poorer mental health ($b=.05$, $p<.001$). Hours spent watching TV were associated with significantly higher engagement in risky sexual behaviors ($b=.07$, $p<.001$). There was no significant association between TV and mental health. There was a relatively small association with race/ethnicity and overall poorer mental health ($b=.02$, $p<.001$), however there was a positive association with race/ethnicity factoring into risky sexual behaviors ($b=.04$, $p<.001$), suggesting non-White adolescents engage in riskier sex behaviors. Being Female was associated with overall poorer mental health ($b=.46$, $p<.001$), while males engaged in significantly more risky sexual behaviors ($b=-.21$, $p<.001$). Older age was associated with significantly fewer depressive symptoms ($b=-.03$, $p<.001$) and fewer risky sexual behavior outcomes ($b=-.08$, $p<.001$). Getting more hours of sleep was associated with fewer depressive symptoms and suicidality ($b=-.17$, $p<.001$) and fewer risky sexual behaviors ($b=-.09$, $p<.001$).

Discussion

This study examined links between media use, depressive symptoms, suicidality, and sexual risk behaviors among a nationally representative sample of youth between the ages of 12-18. Findings from this study show that there are clearly linear associations between media use, mental health, and risky sexual behaviors, which make an essential contribution to the current
literature. Social media consumption was associated with significantly poorer mental health, supporting Hypothesis 1, with no significant association between TV and mental health. This could be due to the fact that social media platforms are interactive and involve self-reflection and social comparison. Prior studies show consistency with these findings (e.g., Lindsey, Briggs, Barry, Sidoti, & Reiter, 2017; Primack, Swanier, Georgiopoulou, Land, & Fine, 2009; Primack et al., 2017), further indicating that the amount of media consumption has a direct association with adolescents’ emotional well-being.

Adolescents and emerging adults are the most prolific media consumers (Pew Research Center, 2017) and mental health and risk behavior correlates of youth media use are growing areas of research (Liu, Zhu, Yu, Rasi, & Young, 2017). Radovic et al. (2017) identified key reasons young people use media: for entertainment, creativity, distraction, and connection. However, youth are spending almost an entire “work day” engaged with or consuming media (Strasburger, Jordan, & Donnerstein, 2010). Given the amount of time and energy youth invest in content and social media, Strasburger et al. refer media as a “superpeer” that provides consistent messaging and modeling of different attitudes and behaviors (p. 760). This messaging includes “risk-glorifying media content” that can have adverse consequences and has been linked with “real-life risk-taking behaviors, risk-positive cognitions and attitudes, and risk-promoting emotions” (Fischer et al., 2011, p. 385). Due to the fact that the use of technology can be thought of as part of one’s being (Deuze, 2011), it is essential to understand the effects of adolescents’ current use of media and to question whether this usage in fact is affecting internalizing and externalizing behaviors. Multiple studies have linked media exposure with depressive symptoms (O’Brien, Knight, & Harris, 2017; Primack et al., 2009) and increases in suicide rates have been credited to the glorification of incidences of suicide in the media (Gould, Jamieson, & Romer,
Sexualized media content is also readily available across almost all digital mediums and the “Media Practice Model” suggests that young people engage with sexualized media as a part of their sexual development (Brown, 2000, p. 35). However, there are mixed findings on whether high levels of media use are associated with engagement in higher-risk sexual activity. In sum, the present study aimed to determine whether media exposure was associated with adolescents’ internalizing problems and risk behaviors, as thoughts and actions are modeled and/or reinforced through digital content and online interactions.

Parents may not realize how their teen’s media consumption (both social media and television viewing) is impacting their mental health and influencing risky sexual behaviors. Due to limited knowledge about these new technologies, many parents may not be given the appropriate resources for understanding the content that is being consumed through these devices and reasoning for its use. In a 2015 Pew survey, only 33% of parents had questions or were concerned about media use among their children (Pew Research Center, 2015). Therefore, enhancing school-based parent connection technology services by providing essential parenting resources and improved communication methods in efforts of educating parents about effective media mediation methods and building healthy relationships with their children is highly important. Social media had a marginal, but non-significant association to risky sexual behaviors, while hours spent watching TV was associated with significantly higher engagement in risky sexual behaviors. This finding partially supported Hypothesis 2, due to differences found in the type of media used and higher sexual risk outcomes. Results indicate consistency with prior studies (e.g., Ferguson, Nielsen & Markey, 2017; Fischer, Greitemeyer, Kastenmüller, Vogrinec & Sauer, 2011; O’Hara, Gibbons, Li, Gerrard, & Sargent, 2013; Wright & Rubin, 2017), with O’Hara et al. (2013) finding that movies have a stronger influence on risk-taking
behavior norms perceived by adolescents. Adolescents who engaged in risky sexual behaviors also reported overall poorer mental health, supporting Hypothesis 3 as well as results from previous studies (e.g., Averett & Wang 2012; Hallfors, Waller, Bauer, Ford, & Halpern, 2005; Heger, Brunner, Parzer, Fischer, Resch, & Kaess, 2014; Lowry, Dunville, Robin, & Kann, 2017). This is especially concerning given the moderately high rates of current and early sexual debut in the sample. Educating students about safer sex practices is integral for their psychosocial well-being, based on study findings. Due to the differing views within communities, it is also important that sexual risk prevention efforts entail reaching out to parents and providing research-based resources and knowledge about the risk factors. Providing access to interactive risky sex prevention programs through digital means is an innovative approach that incorporates media as a prevention tool that can be easily accessed by parents.

**Study Strengths and Limitations**

This study used a large, diverse, and nationally representative sample that provides some degree of generalizability of research findings. The YRBSS survey is given to 9-12th grade students in the United States every two years, which provides an overview of developmental factors pertaining to health and well-being during a specific point in time, indicating the information analyzed provides an accurate view of adolescent media use and current internalizing and externalizing measures in 2015. Though the strengths of this study provide clear associations, there were several limitations that warrant consideration. First, the study focused on adolescents using a cross-sectional approach for analysis. Developing a longitudinal study in an effort to distinguish more specific measures during adolescence into young adulthood will provide a more developmental understanding of media use, depressive symptomology, suicidality, and sexual risk behaviors over time. Additional factors that should be considered
include peer and romantic relationships, family characteristics, and youth self-esteem because of
the importance of possible associations. The YRBSS dataset did not provide measures for
analyzing these additional areas of inquiry. Third, media use was presented as a cumulative
measure, with one question pertaining to television viewing. Due to this reason, the analysis was
able to only distinguish the difference between TV and media use in general. Future studies
should focus on measuring separate media types (content included) to determine how specific
media consumption (platform and nature of content) is related to internalizing and externalizing
problems and behaviors. Lastly, incorporating smartphone research methods is recommended.
Smartphone technologies are becoming a popular avenue for research focused on mental health
(Aung, Matthews, & Choudhury, 2017). Due to the transition of new research methods becoming
available, these methods provide an unobtrusive collection of real-time patterns, behaviors, and
actions in human behaviors that can confirm validity within the data analysis process, with
limited bias. Smartphone-based research methods may be the most efficient approach in a time
of technology advancement, enriching research substantially over time.

Implications for Theory, Research, and Practice

Theoretical implications. Techno sub-system (Johnson & Puplampu, 2008) is described
as a proximal component of the microsystem in Bronfenbrenner’s ecological framework for
human development (Bronfenbrenner, 1977). A revised model was proposed to emphasize the
importance of placing techno sub-system within the chronosystem due from technology being
seen as an area of constant change that directly and indirectly shapes individual development,
connects multiple spheres of a person’s life, and is interwoven with the advancement of time.
The proposed “technosystem” defines how technology has become an instrumental factor to the
way of living and addresses how information is filtered and passed through society, how that
information is communicated and perceived, how it impacts relationships, and how it impacts human development over time. Technosystem describes media as becoming accommodated (normalized) within daily life. Through the process of reinforcement and availability, acceptance and use is inevitable throughout all functions of society.

How media is used influencing both internalizing and externalizing behaviors may be represented by a series of cognitive processes displayed by adolescents, which may involve one’s current thoughts/ideas, goals/interests, emotions/self-esteem, perceptions of others/self, current situation/affiliation, and the context of communication/information. This is comparable to the Blocker and McIntosh (2017) study of group matching behaviors.

Miscommunication theory explains possible outcomes from media use in adolescence during peer-to-peer communication through digital communication means. The theory describes actions of misinterpretation likely resulting due to one’s current emotions affecting interpretation processes primarily seen in technology use. Luxton, June, and Fairall (2012) provide a comparable overview of how misinterpretation can result from various forms of media usage. When emotions are internalized, social media may be used as an outlet for coping and reaching out within one’s social circle seeking expression, encouragement, and acceptance in various ways (music, poems, pictures/selfies, posts etc.). Increased risk of depression and suicide ideation may result depending on the type of content viewed and responses received, with one’s current emotions and possible misconceptions further complicating communication processes (frequency of content and responses as indicators to an increased risk). Suggesting that the frequency of social media use alone may not cause depression, but choice of use leads to increased risk (Shensa, 2017).
Social comparison and fear of being excluded are prominent in adolescent media use behaviors (Gibbons & Buunk, 1999; Lindsey, Briggs, Barry, Sidoti, & Reiter, 2017) and when communication is primarily used in technology, attachment to the technology is an outcome due to the effect of sending and receiving messages directly through the device. This process can be comparable to operant conditioning, due from the reinforcement of sending and receiving. “Through operant conditioning, new responses could be strengthened (“reinforced”) by events which immediately followed them” (Skinner, 1981, p. 501). The action of sending and receiving can be seen as positive reinforcement, for this influences the frequency of its use. Attachment and reliance can lead to distress and anxiety by the responses received. This distress can also be due from the initial action displayed using media in general, with multiple platforms increasing the risk (Primack et al., 2017). Lindsey et al. (2017) discuss establishing limits on social media use to lower risk in the development of depression and anxiety, verifying the importance of parental mediation practices.

Co-rumination is also an important contributor to behavioral outcomes (Guassi Moreira, Miernicki, & Telzer, 2016) and should be described as being a normal phenomenon in adolescence due the current interests in romantic relationships, risky behaviors seen as highly rewarded experiences, and peer group acceptance. The action of co-rumination allows adolescents to communicate and learn to cope with their negative feelings due from various situations by the feedback provided by valued others (peers), progressing to achieving emotion regulation (Guassi Moreira, Miernicki, & Telzer, 2016). The opposite is true for low quality relationships and co-rumination actions (Guassi Moreira, Miernicki, & Telzer, 2016). It could be a causal factor that adolescents who show current low quality relationships are more prone to increased risk factors, such as depression or engaging in risky behaviors as an act of coping.
Adolescence is period of development that focuses on identity development, but during this process a reflection of who they are, who they strive to become, and what they feel capable of achieving are experienced by how they perceive others and the feedback received about themselves (Cooley, 1902). Throughout this process of reflection, media use may consists of actions of miscommunication, social comparison, fear of being excluded, and co-rumination processes (Gibbons & Buunk, 1999; Guassi Moreira, Miernicki, & Telzer, 2016; Lindsey, Briggs, Barry, Sidoti, & Reiter, 2017; Luxton, June, & Fairall, 2012). During these processes, adolescents begin to reflect how meaning is seen in their life. Schnell (2009) proposed two dimensions describing the meaning of life: meaningfulness and crisis of meaning. Where meaningfulness involves achieving meaning and belongingness. Crisis of meaning being a reflection of life as lacking meaning and frustration occurring from the emptiness felt. It can be proposed that three dimensions be included, representing a midpoint “medial of meaning.” For emotional processes and experiences can lead from one meaning to another based upon the experiences that vary across the lifespan and how they are perceived. In most situations, meaning of life can be interpreted within the medial of meaning reflecting both positive and negative aspects or within meaningfulness and crisis of meaning. This process creates a foundation for mental health programs, understanding how our experiences, feelings, and meaning in life all indicate how internalizing and externalizing behaviors are displayed.

Stigmas in society also affect the individual, family unit, and community contexts, with media now playing an important role. For example, achievements may be indicated as boastful or a basis of failure if not achieved (Pekrun, 2017). Internalizing problems in this context can lead to externalizing risk. Therefore, youth programming should address stigma and approaches to change. Using an ecological systems approach reaches students in their immediate environments,
the school system. Understanding how family systems function and the overall context of the community provides a blueprint for preventative actions and this approach has been confirmed in research to be more effective and lasting in-regards to risky behaviors (Schinke, Brounstein, & Gardner, 2002). Future policy initiatives should consider the importance of mental health and wellbeing of high school students, and particularly the role of media in internalizing problems, by creating consistent curricular (or extra-curricular) standards across U.S. school systems, focused on media use, media diets, and technology-mediated social relationships. For example, implementing a peer-to-peer community leadership program as a milestone toward graduation can provide students with enhanced awareness, skills, and social support for internalizing symptoms, while also serving to reduce stigma surrounding mental health issues. Such programs create opportunities for adolescents to fulfill leadership roles based upon their interests, goals, or hobbies, while also promoting healthy peer relationships and creating a sense of community within high schools that exists both on- and off-line.

Adolescents and media use in association to depressive symptoms and suicidality was confirmed within this study with the engagement in risky behaviors also indicating a risk of developing depression, therefore mental health will continue to affect this age group into young adulthood unless preventative actions are addressed. The program improves mental health by placing adolescents in positions of leadership roles that involves components of creation, responsibility, enrichment, and social connection. When individuals are given a role that is seen to have purpose, this places value on the individual, improving self-concept and meaning in life (Schnell, 2009). The role of initiating a task, responsibility of fulfilling the task, and initially, how it impacts others, provides adolescence with the ability to view how others are impacted, placing less emphasis on themselves. This is very important to the fact that media has been noted
to influence narcissistic personalities (Andreasen, Pallesen, & Griffiths, 2017) resulting in viewing the self and not accounting for others. In addition, the most important component is the development of relationships within the setting the role takes place. Social relationships allow adolescents to communicate their experiences and relate with others in healthy ways, for technology has been described to lead to actions of miscommunication due to the lack of facial expression and current emotions affecting responses, ultimately affecting behaviors (Luxton, June, & Fairall, 2012).

**Research implications.** The direction of associations may not be fully captured due to the study being cross-sectional. However, this study indicates that internalizing and externalizing behaviors are likely associated with media consumption and future longitudinal research could identify the role of media content that is primarily being consumed by adolescents, in terms of their emotions, specific self-esteem, how it is applied to their lives, and the overall time spent consuming different content as a type of reinforcement that is then essentially seen as an expectation (either consciously or unconsciously processed), leading to acts of imitation (behaviors and feelings) based upon the current view of self at a specific point in time. The proposed technosystem, as a cross-cutting domain within Bronfenbrenner’s (1977) ecological framework, provides a plausible explanation for the study findings. This theoretical innovation creates a foundation for further studies as the processes and details described are important contributors for media use in general, as well as associated internalizing problems and externalizing risk.

**Prevention and policy implications.** Themes represented across this study show that peers, parents, school systems, and the community context have an essential role in prevention and policy initiatives. Preventative and policy recommendations include future efforts of creating
standards that require prevention programs to be incorporated within the educational setting that are consistent across districts in the United States. Due to the reason that consistency is an important indicator for prevention to be most effective, the same standards and procedures should be applied. Programs essentially should include the following components: application, interaction, reflection, and contribution. Suicide prevention program efforts should focus on a peer-to-peer approach, including enhanced focus on social media. Involving education and awareness, peer-to-peer communication strategies, emotion regulation strategies, and progressing to changing the stigma on the topic. Developing interactive prevention programs via digital means is also an impactful idea to be easily updated and accessible to all school districts within the U.S. The creation of mental health and guidance programs, such as high school community leadership programs, provides an avenue of opportunity of improving the mental health crisis within the U.S., for the program collaborates within community settings. And lastly, school-based parent connection technology services would be enhanced by providing essential parenting resources and improved communication methods to inform parents about effective media mediation methods and building healthy relationships with their children. These implications provide important targets for family life educators as well as community and school-based prevention efforts aimed at improving adolescent mental health and reducing riskier sexual practices.

**Conclusion**

Technology innovations will continue to affect the developmental period of adolescence into emerging adulthood in psychosocial and behavioral ways. Thus, it is important to examine links between media use, mental health, and risk behaviors using a nationally representative sample studied within adolescence to examine the current effects thereof. Findings would likely
only be pronounced if media use were assessed among today’s youth while tracking their mental and behavioral well-being over time. Preventative and policy recommendations, based upon the study findings with a theoretical application, could support overall family dynamics (media mediation, parental connectedness), mental health (depression and suicidality), and educate adolescents on sexual risk (health and overall well-being).
CHAPTER 3: CONCLUSION

Media will continue to be an impactful contributor to mental health and risk behaviors throughout the lifespan. New innovations of technology are becoming increasingly accessible and within reach in all avenues of daily function. Technology can be seen in the future as being fully consuming by the user, with all aspects of society functioning becoming digitalized. As a slow progression is currently seen in its development. Therefore, the importance of researching media and internalizing and externalizing behaviors is essential for the well-being of the individual. Adolescents and emerging adults were identified as being the most prolific media consumers (Pew Research Center, 2017) and due to this reason, this stage of development was chosen for inquiry.

Ecological Implications

From Techno Sub-System to Cross-Cutting Technosystem

Chapter 2 emphasized the significant role of adolescent media use and peer group interactions with regard to internalizing and externalizing behaviors. The ecological technosystem framework is used to conclude this discussion by detailing the importance of the family unit, education system, and community networks in efforts to improve youth mental health and reduce sexual risks through suggested prevention and policy initiatives. The technosystem framework, with regard to prevention of internalizing and externalizing problems, describes how teens receive support, their immediate environmental influences, and how media may become a primary mean or alternative action if support or mediation is not received. The ecological framework first proposed by Bronfenbrenner is still relatable to the aspects of adolescent media consumption. The addition of a techno-subsystem, described by Johnson and Puplampu (2008), addresses how societal changes from the advances of technology shape youth
development and well-being. It is presently argued that the techno-subsystem is best described as part of or parallel to the chronosystem, given how media evolves through innovative creation and design and is then passed on within society with intent of mass usage and behavior change. The technosystem provides a framework that captures and explains technology in terms of multilevel influences on current behaviors and how future efforts at preventing technology-related problems can be best approached.

**Microsystem/Mesosystem Implications**

**Family Microsystem.** Adolescents are most likely affected by media in various settings, with their immediate environments reflecting how media is consumed. A primary source of youth media engagement occurs in the home or family environment. Much of the information youth and families access at home is via technology, such as television, social media, and internet searches. Media has a component of both information and misinformation. Due to the misconceptions that occur, risk of how media is used becomes a focal point of interest. How is media affecting cognitive thought processes about a specific topic? (Clark, 2012) How are parents perceiving/responding to this information? How are adolescents perceiving/responding to this information? How the content is viewed contribute to both internalizing and externalizing behaviors. Frequency and presentation of content can be processed differently, with family socioeconomic status affecting interpretation processes and how it is applied to one’s life (Clark, 2012). Therefore, family functioning and support structures are likely to affect both internalizing and externalizing behaviors (Clark, 2012).

Family dynamics vary based upon race/ethnicity, economic status, parent/caregiver compositions (being married, divorced, single), current career/work responsibilities, moral values, and neighborhood settings (Clark, 2012). Clark (2012) examined differences among
upper versus lower-income families based upon media consuming behaviors and described two patterns that became prevalent in their communication methods. Families with higher incomes use the ethic of expressive empowerment, which involves the encouragement to use media for educational purposes and overall development of self; forming connections for a specific goal and outcome (Clark, 2012). Lower income families use the ethic of respectful connectedness, with the intention of media use primarily in a family context being based on compliance and respectfulness (Clark, 2012). Both concepts in combination entail what Clark (2012) describes as good parenting characteristics. Relationships within extended family networks also reflect the strength and support of families. Strengths in relationship connectedness (family size and frequency of contact) also provide a strong foundation for support in various circumstances (economic hardship, current health status, parenting assistance, and support in general), while also comprising of a potential for conflicting viewpoints based upon media content/consumption behaviors among members of the family unit, with generational factors contributing to this effect. Future research should focus on the overall family dynamic, with emphasis placed on diversity and generational factors contributing to media consumption. Specific research questions should focus on how generational characteristics of family members affect media use in general, current views of media, and essentially, how media is accommodated or an inclusion to family life, with communication and support emphasis measured across time.

Media has become a new way of communicating within the family. How parents and teens view media may differ, with “identity, privacy, credibility, authorship, ownership, and participation” (Clark, 2012, p. 76) as areas of concern. Ethical concerns among teens are comprised of how it affects themselves versus others (Clark, 2012). This is primarily due from norms in the U.S. culture for young people indicating that respect is received through actions of
achievement and expression (Clark, 2012). Younger adolescents seek acceptance from peers by how they present themselves through social media that can easily be altered to receive desirable feedback from within their valued peer group, while older adolescents seek social media for communication and connection (Clark, 2012). Adolescents desire a need to be accepted even if their behaviors do not show an indication. Actions of immediate responses through use of media represent group inclusion and connection (Clark, 2012).

The media living space provides opportunities for parents to discuss with their adolescent’s specific components displayed through media, providing opportunities of self-reflection and critical thinking. Prior studies have looked specifically at the multimedia living room (D’heer & Courtois, 2016). How families are in the presence of one another but interacting alone due from the various media options available (D’heer & Courtois, 2016). Contentment of oneself becomes priority within this environment, with media being an outlet to conflict avoidance, inhibiting interactions due from the alternative option (D’heer & Courtois, 2016). Also, throughout the living space interactions are no longer consistent, if a member finds a topic not applicable to oneself, or has the inability to relate, media becomes an outlet of escape from the conversation (D’heer & Courtois, 2016). Parents specifically may see media as a method of escape from the stress of responsibilities. When adolescents (also applicable to children) are preoccupied with their media devices, parents are able to focus or rest their attention on other duties without any disruption. However, parents may also see technology as a way of connecting with their adolescent, for teens interests are usually on a new fad among their peer group, like the new version of the iPhone becoming available or a new social networking or gaming app and parents understand the need for peer belongingness (Clark, 2012) and for this reason purchase the desirable media for their teens (Clark, 2012). Though with increased accessibility to these
media options, such as apps being at a low or primarily no costs to the user, parental support is no longer needed for adolescents to receive access. Further indicating that parents may not know what their adolescents are using unless current media mediation is adopted within the family context.

Parents may not realize how their teen’s media consumption is impacting their mental health and influencing risky sexual behaviors. Due to limited knowledge about these new technologies, many parents may not be given the appropriate resources for understanding the content that is being consumed through these devices and reasoning for its use. Though the internet now provides extensive resources for parents, including apps and blogs for media use and limit setting (Clark, 2012), how many parents are making use of these resources, and which resources are being used primarily are unknown. In a 2015 Pew survey, only 33% of parents had questions or were concerned about media use among their children, with gender of the parent showing no differences (Pew Research Center, 2015). Asking their children questions about these new devices/fads provides outlets of conversation that may lead to more personal thoughts or feelings that teens need to relay for affirmation and further guidance. Media promotes many risky behaviors, violence, and actions of suicidal tendencies represented in specific content, such as news media, music, TV/movies, and gaming. Parents may not know what their teens are consuming, leading to further risks (depression, engaging in risk behaviors, suicidality) due to the frequency and reasons for using specific media. Frequency of use may also be unknown, with media use “blue light”, further complicating the natural human mechanisms and sleep patterns that are important indicators to increased depression, among other risk factors in association (Touitou, Touitou, & Reinberg, 2017). Parental media mediation is important for these various reasons.
The importance of family guidance and support is essential for adolescent development. In risk behaviors, teens may not cognitively process the associations of risk outcomes, looking only at the positive aspects instead of focusing on the potential risks that may follow (Clark, 2012). Media mediation is essential as results from the present study indicate that an increasing risk of engaging in risky sexual behaviors, developing depression, and/or suicidality through media use is affecting adolescents. Parent-child connectedness is highly regarded with efforts of prevention. Kuramoto-Crawford, Ali, and Wilcox (2016;2017) found within both dual and single parent households, higher parent-connectedness, was associated with lower risk of suicidality in adolescents into adulthood. Parenting practices supported by research as most effective involves “warm and expressive relationships through ongoing conversations about what both parents and children think and what they value” (Clark, 2012, p.158), promoting the use of restrictive mediation (Clark, 2012), which consists of limit setting on media engagement, with a focus on rules and/or values being acknowledged within the family setting that leads to actions of internalizing those values, leading to applying them within adolescent media use behaviors and actions. Padilla-Walker, Coyne, Kroff, and Memmott-Elison (2018) also studied parental media monitoring to distinguish the most effective method that decreased overall media consumption and resulted in a protective factor against the negative influences and behaviors. Finding that parents who used active monitoring in combination with co-use, which involved using media with their children in an effort of forming a social connection, was most effective. Indicating that by educating parents about effective media mediation methods and building healthy relationships with their children can be an effective avenue for prevention.

**School Microsystem.** How success is defined within the education system and workforce conditions indicate a stigmatized norm within society that reflects how academic and sporting
achievement is viewed. This view is upheld with high regards and expectations, leading to an increased risk due from stress leading to potential mental health problems when these expectations are unmet (Ross, Kõlves, & De Leo, 2016). Stress has also been a known leading predictor to depression in adolescents (Yaacob et al. 2017). With regard to mental health and risky behaviors, policy and prevention initiatives must consider how stigmas in society affect the individual, family unit, and community contexts. Media now playing an important role, as achievements are indicated as boastful or a basis of failure if not achieved (Pekrun, 2017). Internalizing problems in this context may lead to externalizing risk. Therefore, programs aimed at supporting students’ psychosocial well-being should address stress, stigma, and the role of media in magnifying or perpetuating these negative experiences.

Outside the family system, schools are a second primary environment for adolescents and this environment includes social groups, teaching professionals (whom meet with students daily often for longer periods of time than parents), and the idea of relational attachments being formed provides a foundation for prevention efforts. Recommendations to prevent or diminish harmful effects from media use through school programming first entail creating consistent program standards, across U.S. school districts, that require prevention programs to be incorporated within the educational setting. Consistency is an important indicator for prevention to be most effective across diverse populations of high school students, therefore it is helpful if all U.S. school districts abide by the same standards and procedures. These prevention programs may consist of mental health and wellbeing guidance, suicide prevention, media literacy, and sex education. The positive aspect of creating standards for requiring prevention programs provides future opportunities to apply specific programs that best benefit students within the context of their immediate environments and needs. Ideally, programs would include the following
components: application of information, interaction among students and educators, self-reflection, and student contribution. Using an ecological systems approach reaches students in their immediate school environment. However, the connection between school and family (i.e., mesosystem) is an important consideration. Understanding how family systems function and the overall context of the community provides a blueprint for preventative actions and this approach has been confirmed in research to be more effective and lasting in-regards to risky behaviors (Schinke, Brounstein, & Gardner, 2002).

Most schools currently have an academic parent connection system, where parents can view their child’s grades. This technology-based application could be enhanced by including resources, contacts, and information about parenting and workshops, monthly newsletters incorporating current research regarding the age of their child, and recommendations for effective parenting practices. Such an expansion could benefit parents’ media literacy skills, in addition to promoting the importance of parent-child and parent-school connectedness (Kuramoto-Crawford, Ali, & Wilcox, 2016;2017), therefore, decreasing adolescent risk behaviors and benefiting overall family function. Additionally, prevention programs can be designed specifically for delivery via interactive media platforms. Lastly, graduation requirements could build in elements, such as community leadership, as an effort to incorporate peer-based support and well-being programs in schools.

Exosystem/Macrosystem Implications

**Mental Health & Well-being Programs.** Adolescence is period of development that focuses on identity development, but during this process a reflection of who they are, who they strive to become, and what they feel capable of achieving are experienced by how they perceive others and the feedback received about themselves (Cooley, 1902). During this process,
adolescents begin to reflect how meaning is seen in their life. Schnell (2009) proposed two dimensions describing the meaning of life: meaningfulness and crisis of meaning. Where meaningfulness involves achieving meaning and belongingness. Crisis of meaning being a reflection of life as lacking meaning and frustration occurring from the emptiness felt. It can be proposed that three dimensions be included, representing a midpoint “medial of meaning.” For emotional processes and experiences can lead from one meaning to another based upon the experiences that vary across the lifespan and how they are perceived. In most situations, meaning of life can be interpreted within the medial of meaning reflecting both positive and negative aspects or within meaningfulness and crisis of meaning. This process creates a foundation for mental health programs, understanding how our experiences, feelings, and meaning in life all indicate how internalizing and externalizing behaviors are displayed.

Future policy initiatives should take into account the importance of mental health and well-being of high school students by creating consistent school standards that emphasize psychosocial development and peer-to-peer support mechanisms, such as community leadership. Efforts are currently taking place at the government level for policy implementation. For example, the recently proposed School Safety and Mental Health Services Improvement Act of 2018 (S. 2513, 2018) emphasizes mental health and illness, violence prevention, and crisis intervention and proposes to provide funding to support school infrastructure that focuses on these issues. Community leadership initiatives are recommended as one such approach to a proactive and student-engaged promotion of mental health and peer relationships. Such a program would create opportunities for adolescents to fulfill leadership roles with a group of participants that can be based upon career interests or hobbies that make impactful contributions within a community. Media was identified in the current study as playing a meaningful role in
adolescent depressive symptomology and suicidality, with a close relationship to externalizing risk behaviors. Combined with the widespread use of media by adolescents (Pew Research Center, 2017), mental health will continue to be a major concern for youth into young adulthood unless preventative actions are addressed during adolescence.

Placing adolescents in leadership roles that involve aspects of creation, responsibility, enrichment, and social connection may directly and indirectly benefit the psychosocial well-being of students. When individuals are given a role that is seen to have purpose, this places value on the individual, improving self-concept and meaning in life (Schnell, 2009). The role of initiating a task, responsibility of fulfilling the task, and initially, how it impacts others, provides adolescence with the ability to view how others are impacted, placing less emphasis on themselves. This is very important to the fact that media has been noted to influence narcissistic personalities (Andreasen, Pallesen, & Griffiths, 2017) resulting in viewing the self and not accounting for others. In addition, the most important component is the development of relationships within the setting the role takes place. Social relationships allow adolescents to communicate their experiences and relate with others in healthy ways, for technology has been described to lead to actions of isolation and miscommunication due from the lack of facial expression and current emotions affecting responses, ultimately affecting behaviors (internalizing and externalizing problems; Luxton, June, & Fairall, 2012). Programs that involve youth in planning and implementation have great potential, particularly in terms of promoting positive uses of media through program planning, activities, events, and general communication.

The following examples provide an overview of where teens can take on these leadership roles that result not only in their own wellbeing, but benefiting individuals within a community setting as well: Community organizations (homeless shelters, veteran services, hospitals,
women’s shelters, children’s shelters, animal shelters, community libraries etc.) School based after school activities (sports, afterschool programs, boys and girls clubs etc.) Childcare facilities (children can benefit from volunteers reading and providing enrichment activities) Nursing home facilities (elderly most likely live in solitary conditions, lacking social connection and activities) and Religious organizations (community pantries, service related programs, children programs etc.) Programs can easily be accommodated by each district and community environment that would reflect the types of opportunities that are available in efforts of fulfilling leader role responsibilities. School connections among these organizations would be vital in the efforts of creating these programs.

**Suicide Prevention.** Previous efforts have been made to make suicide prevention a priority in teacher trainings and school-based programs. These efforts consist of laws mandating trainings for school personnel, with currently 27 states represented (Suicide Prevention Resource Center, 2018). Bill H.R. 3552 (2017-2018) proposes youth suicide awareness and prevention with emphasis toward school personnel. However, due to inconsistencies, improvements should be recommended/acknowledged within this system.

First, reviewing professional development in suicide prevention provides an overview of what teaching professionals are being offered and the benefits from the content covered. Upon reviewing the trainings currently offered to teaching professionals, through Internet Delivered Education For Arkansas Schools (IDEAS), the focus tends to provide teachers with the training and tools for understanding what to do in the situation of a student professing that they have suicide ideation, and the most effective communication and procedures the professional should follow. Components also include peer programs that have been developed, however it is not a requirement within school districts to use, resources are linked and provided only. In the
situation that a student had committed suicide, these programs were emphasized and details were
given on when the program should be used within the district, due to the avoidance of glorifying
the incidence (Gould et al. 2003; Ross, Kõlves, & De Leo, 2016). It is recommended that future
studies should focus throughout the United States on current professional development trainings,
teacher perspectives of how well he or she knows their students, how many suicides, attempts,
ideations occurred within a district, what type of programs have been used and the frequency of
its usage, student feedback regarding suicide amongst peers, frequency, and relation to that
student. In addition, based on present research findings, healthy vs. harmful student media use
should be a key component of these trainings. Studying teacher preparation programs will
provide a more accurate overview of the effectiveness of suicide prevention and programs
currently in place and how they can be improved to better assist students who may face suicide
ideation and/or attempt, in turn, reducing and/or eliminating incidence of suicide.

The Signs of Suicide (SOS) program reports overall reduction in suicide attempts among
youth participants (Singer, 2017). This program provides awareness about depression and
suicide. A component is presented to students for peer-to-peer communication called “ACT-
acknowledgment, care, and tell” (Singer, 2017) and components of awareness and peer-to-peer
communication can be seen as most effective. It could clearly be an indirect factor that peer
relationships can protect against suicide risk. Programs should focus on peer-to-peer
relationships (e.g., previously mentioned community leadership programs) due to the strengths
and likelihood that adolescents are more prone to speak with peers about their feelings vs. a
parent or school official (Ross, Kõlves, & De Leo, 2016). Prevention targeting adolescents
should provide resources that include an introduction to depression and suicide (emotions and
feelings), strategies for healthy coping, improving self-esteem through interactives, strategies for
peer-to-peer communication, and acknowledgment through actions of care and relatability (Ross, Kõlves, & De Leo, 2016).

It is important that programs consider how suicide is currently viewed and the stigma and judgments toward the topic. It is further concluded that suicide prevention programs should focus on educating youth about depression and suicide (awareness), peer-to-peer effective communication strategies (peer relationship emphasis), how students can cope with their feelings and/or thoughts (emotion regulation), and, essentially, challenge stigma toward depression and suicide. Teaching about emotions and healthy coping mechanisms is especially important given research showing depressive symptomology is a normal phenomenon in adolescence (Ge et al. 1994; Wickrama et al. 2008). Creating environments that allow for relatable and valued peer relationships and that acknowledge and care for students is recommended as a best practice for suicide prevention. Professionals within the school system can reach students by forming valued respectful relationships and understanding (Yeager, Dahl, & Dweck, 2018). School nurses can also have an integral role in prevention due to their unique position within the helping profession (Byrne, Vessey, & Pfeifer, 2018) and the differences seen with their connection to students, in turn, assisting with mental health resources and health services.

Preventing Sexual Risk Behaviors. A study by Kantor and Levitz (2017) representing parents’ views on sex education show a valued importance for middle and high school students. Topics that were detailed as parent-approved involved educating students on puberty, healthy relationships, practicing abstinence, contraceptive use, and STD’s. Feedback received from regional Family and Consumer Science secondary teachers indicate that school districts determine the extent of the content presented in sex education programs based on their current community setting (conservative versus liberal environments), with a requirement for
administration approval and parent consent due to the sensitivity of the topic (Family and Consumer Science Teachers Private Facebook Group, personal communication, March 23, 2018). Reasons for the inconsistencies in program efforts tended to be based upon how parents view these programs and essentially how school administrators view the content (Family and Consumer Science Teachers Private Facebook Group, personal communication, March 23, 2018).

Some parents view sex education as a private matter, while others acknowledge its importance in the school setting. Adolescents from the current study had an increased likelihood of engaging in risky sexual behaviors when combined with greater television viewing. The type of content adolescents are exposed to through television has been linked with risk behaviors. Sex content particularly seen through television predicts adolescents engagement in actual sexual behaviors, with context contributing to how behaviors are displayed (Bersamin, Bourdeau, Fisher, & Grube, 2010; Collins et al. 2004). YouTube is a popular avenue for today’s adolescents and can be described as being a possible preference regarding television viewing, as media specific content can now be searched and accessed with limited effort and availability. Therefore, adolescent viewing sexual content through media leads to an increased risk of engaging in actual sexual behaviors (Bersamin et al. 2010; Collins et al. 2004). Showing consistency with social learning theory (Bandura, 1971), which explains how behaviors are imitated through observing behaviors that are modeled by an important or valuable person. In-discussion, the actions of imitation may also occur from observing behaviors that can be related to an idealized self based upon the current situation and emotion, with social comparison and relationship norms factoring into the behaviors displayed (Brown, 2000). In the sample used in the present study, just under half of sexually active youth reported early sexual debut
(intercourse prior to age 15). Educating students about safer sex practices is important based upon these findings, as youth spend an average of seven-plus hours each day consuming media content (Strasburger, Jordan, & Donnerstein, 2010). From an ecological perspective, the most effective approaches to reducing risky sexual behavior likely involves education and guidance in multiple settings, including home and school environments. Such approaches provide standardized sexual health information, while also accounting for differing family and community values. However, many parents may benefit from information, support, and guidance from schools in providing this type of education to their children. This is where access to school-based programs through interactive and technology-based prevention programs can be instrumental. Creating consistent policies and practices, including those focused on digital media/technology, that benefit youth in multiple contexts is a key future direction.

**Study Strengths and Limitations**

Future research should focus on developing longitudinal studies to accurately capture and evaluate media use, depressive symptomology, suicidality, and sexual risk behaviors across adolescence and young adulthood. Additional factors, such as peer and romantic relationships, family characteristics, and youth self-esteem are also important future considerations. Aung, Matthews, and Choudhury (2017) introduced approaches of mental health research using smartphone technologies to adequately depict human behavior through sensing capabilities to collect and analyze data. This approach would be recommended for an accurate view of patterns, behaviors, and actions. Though the current study did identify meaningful links between media use, mental health, and risky sexual behaviors, following participants across time will provide more information about specific processes and mechanisms facilitating these significant associations. There were no measures to account for self-esteem within the YRBS 2015 dataset,
but self-esteem is an important consideration in the link between media and internalizing and externalizing behaviors. There are various aspects to self-esteem during adolescence and emerging adulthood. When using social media, adolescents with lower self-esteem may interpret messages differently than someone with a higher self-esteem and how he or she chooses to act and/or respond would likely be similar to the initial perception of self. Prior studies have confirmed associations with self-esteem and media use (e.g., Andreassen, Pallesen, & Griffiths, 2017; Burrow, & Rainone, 2017) however, no study has looked at specific stigmas and self-esteem associations with media use, depression, suicide, romantic relationships, and risky sexual behaviors.

Further questions should include what specific type of media are adolescents using, with the specific details of how they are using it, how long they are using it, and how adolescents are internalizing and externalizing their problems through the use. The YRBSS measure of media use reflected all types of media consumed by adolescents, as a cumulative measure, but did not disentangle specific types of media or purpose and enjoyment of use. The inclusion of a smartphone research method (Aung, Matthews, & Choudhury, 2017) would accurately address these questions. Studying the outcomes from the proposed prevention programs is also an area of inquiry for future studies, to ensure its effectiveness on overall mental health and risk behaviors.

Conclusion

The purpose of this study was to understand the role of adolescent media use in the development of internalizing and externalizing problems, with a primary focus on television, social media, depressive symptoms, suicidality, and sexual risk behaviors. Guided by the ecological technosystem (Bronfenbrenner, 1977; Johnson & Puplampu, 2008), researchers examined data from 10,930 adolescents completing the CDC’s 2015 Youth Risk Behavior
Surveillance System (YRBSS; CDC, 2015a). Regression results indicated that media was an important factor in internalizing and externalizing problems during adolescence. Findings suggesting that social media use was associated with significantly poorer mental health, while time spent watching television was linked with significantly higher sexual risks.

Young people are prolific media users and meaningful links have been connected with both internalizing and externalizing problems and behaviors. Because the school system is a primary environment for adolescents, it is an important context for multi-systemic prevention and intervention efforts to promote adolescent resiliency, particularly among youth who are most susceptible to media influences. Policy initiatives would be enhanced by the understanding that technology cuts across different systems that directly and indirectly affect youth internalizing and externalizing outcomes (i.e., technosubsystem influences). The technosystem framework describes, in a prevention context, how support is received, the immediate environmental influences, and how media may become a primary mean or alternative action if support or mediation is not received. Evidenced-based policies addressing adolescent social media use is an important future direction to address adolescent depression and suicidality. Today’s adolescents, many of whom have been raised with easy access to technology and social media, will transition into the next stage of development with potentially significant internalizing problems and a high level of risk behaviors (and related consequences). Based on this study, these challenges can be, at least partially, accounted for by media engagement. It is important that solutions are created to maximize the benefits of media technology, while minimizing potential harms.
Table 1. Descriptive statistics for all study variables (n=10,930).

<table>
<thead>
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<th>%</th>
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<th>Possible Range</th>
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<tr>
<td>Race – Ethnicity</td>
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<tr>
<td>Black</td>
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<tr>
<td>Hispanic</td>
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<tr>
<td>Asian</td>
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<tr>
<td>American Indian/Alaska Native</td>
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<td>Native Hawaiian/Pacific-Isl.</td>
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<tr>
<td>Multiple Hispanic</td>
<td>18.9</td>
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</tr>
<tr>
<td>Multiple Non-Hispanic</td>
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<tr>
<td>Hours of Sleep/Day</td>
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<tr>
<td>4 or less hours</td>
<td>7.3</td>
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<tr>
<td>5 hours</td>
<td>12.4</td>
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<tr>
<td>6 hours</td>
<td>23.8</td>
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<tr>
<td>7 hours</td>
<td>29.3</td>
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<tr>
<td>8 hours</td>
<td>20.6</td>
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<tr>
<td>9 hours</td>
<td>5.1</td>
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<tr>
<td>10 or more hours</td>
<td>1.4</td>
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<tr>
<td>Television Use</td>
<td>2.36</td>
<td>1.79</td>
<td>0-6</td>
<td></td>
</tr>
<tr>
<td>Social Media Use</td>
<td>3.09</td>
<td>2.14</td>
<td>0-6</td>
<td></td>
</tr>
<tr>
<td>Depressive Symptoms &amp; Suicidality</td>
<td>.75</td>
<td>1.20</td>
<td>0-4</td>
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<tr>
<td>Risky Sexual Behaviors</td>
<td>1.87</td>
<td>1.37</td>
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Table 2. Bivariate correlations among study variables (n=10,930).

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<th>Variables</th>
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<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
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<tbody>
<tr>
<td>1. Age</td>
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<tr>
<td>2. Sex</td>
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<tr>
<td>3. Race/Ethnicity</td>
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<td>-.01</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>4. Sleep</td>
<td>-.11**</td>
<td>-.09**</td>
<td>-.04**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Television</td>
<td>-.01</td>
<td>-.00</td>
<td>.03**</td>
<td>.03**</td>
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<td></td>
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</tr>
<tr>
<td>6. Social Media</td>
<td>-.07**</td>
<td>-.02</td>
<td>.04**</td>
<td>-.09**</td>
<td>.14**</td>
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<tr>
<td>7. Mental Health</td>
<td>-.03**</td>
<td>.21**</td>
<td>.04**</td>
<td>-.21**</td>
<td>.01</td>
<td>.11**</td>
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<tr>
<td>8. Risky Sex (RSB)</td>
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<td>-.04**</td>
<td>.01</td>
<td>-.11**</td>
<td>.10**</td>
<td>.05**</td>
<td>.15**</td>
<td>----</td>
</tr>
</tbody>
</table>

*p<.05, **p<.01, ***p<.001
Table 3. Unstandardized (and standardized) regression coefficients and standard errors for associations between demographic characteristics, sleep, television and social media use, and poorer mental health and risky sexual behaviors.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Poorer Mental Health $^a$ (n=10,930)</th>
<th>Risky Sexual Behaviors $^{b,c}$ (n=4,038)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>b(β)</td>
<td>SE</td>
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<tr>
<td>Age</td>
<td>-.03(-.03)*** .01</td>
<td>-.08(-.06)*** .02</td>
</tr>
<tr>
<td>Female</td>
<td>.46(.19)*** .02</td>
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<tr>
<td>Race/Ethnicity</td>
<td>.02(.03)*** .00</td>
<td>.04(.07)*** .01</td>
</tr>
<tr>
<td>Sleep</td>
<td>-.17(-.19)*** .01</td>
<td>-.09(-.09)*** .02</td>
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<tr>
<td>Television</td>
<td>-.00(-.00) .01</td>
<td>.07(.09)*** .01</td>
</tr>
<tr>
<td>Social Media</td>
<td>.05(.10)*** .01</td>
<td>.00(.01) .01</td>
</tr>
<tr>
<td>$R^2$</td>
<td>.09</td>
<td>.05</td>
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</tbody>
</table>

* $p<.05$, ** $p<.01$, *** $p<.001$

$^a$ Model was examined with and without risky sex as control variable with no differences. Full sample results are reported in table.

$^b$ Sample reduced to 4,038 sexually active youth.

$^c$ Model controlled for poorer mental health.
Figure 1. Revised modeling of a cross-cutting technosystem.
Figure 2. Conceptual model.
Figure 3. Sample Media Use
Figure 4. Unstandardized regression coefficients for significant associations between social media use (SM), hours watching television (TV), mental health problems (MH) and risky sexual behaviors (RSB).
References


Internet Delivered Education For Arkansas Schools. (n.d.) IDEAS. Retrieved from http://ideas.aetn.org/homepage


NORC at the University of Chicago. (2017, April). Instagram and Snapchat are most popular social networks for teens; Black teens are most active on social media, messaging apps. [Issue Brief]. Retrieved from, http://www.apnorc.org/PDFs/Teen%20Social%20Media%20Messaging/APNORC_Teens_SocialMedia_Messaging_2017_FINAL.pdf


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