IS THERE A "HAPPY FILTER" ON INSTAGRAM? THE ASSOCIATIONS BETWEEN

INSTAGRAM USE, SOCIAL COMPARISON, AND DEPRESSIVE SYMPTOMS

BY

ALICIA ANN ZIELENSKI

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ALICIA ANN ZIELENSKI

LE MOYNE COLLEGE, B.S. (2015)

ALFRED UNIVERSITY, M.S., C.A.S. (2018)

AUTHOR   Alicia Ann Zielenski, M.A., C.A.S.

APPROVED BY   Rachel Gardner, Ph.D.
          Committee Chairperson

          Andrea Burch, Psy.D.
          Committee Member

          Liz Shea, Psy. D.
          Committee Member

ACCEPTED BY   Bradford Daly, Ph.D.
          Program Director, School Psychology Doctoral Program

ACCEPTED BY   Kevin Curtin, Ph.D.
          Chair, Division of Counseling & School Psychology

ACCEPTED BY   John Cerio, Ph.D.
          Dean, School of Graduate and Continuing Studies

ACCEPTED BY   Beth Ann Dobie, Ph.D.
          Provost and Vice President for Academic Affairs

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Abstract

The current study sought to examine the psychological cohort effects of increased Instagram use in adolescents. Specifically, the associations between Instagram usage and depressive symptoms were examined. Furthermore, the construct of social comparison was measured and investigated as a mediating factor, or a variable that helped to explain the relationship between Instagram usage and depressive symptoms. Briefly, hypotheses included elevated Instagram consumption being associated with elevated levels of social comparison, Instagram usage being associated with elevated levels of depressive symptoms, and finally, Instagram usage being associated with elevated levels of depressive symptoms through social comparison. Results indicated that there is a significant relationship between using Instagram and engaging in more social comparisons while on Instagram. In contrast, there was not a significant relationship between Instagram usage and depressive symptoms directly or indirectly through social comparison.

Keywords: Instagram, social media, social networking, social comparison, depression

Chapter I: Introduction

Statement of the Problem

A cohort effect occurs when research is impacted due to the characteristics of the cohort, or age group, being studied. The increasing prevalence of social networking within the last decade or so is a shared experience, or a cohort effect, for today's adolescents and young adults. Social media is a medium that refers to internet based interactive technologies that facilitate the connecting and sharing of information between friends, families, communities, and strangers (Choi & Scott, 2013). This type of media has rapidly become a primary means of communication with a staggering number of people of all ages regularly and consistently active on social media platforms (Pew Research Center, 2018a). Usage among adolescent populations is equally as prevalent; however, the psychological effects of this abrupt increase in use are unclear.

Overall, some of the studies that have investigated the outcomes of social media use related to well-being are inconclusive. Specifically, there is evidence to suggest that social media use is associated with higher levels of socialization and provides opportunities to maintain interpersonal connectivity (Cheung, Chiu, & Lee, 2011), connect, share information and ideas, and acts as a source of entertainment (Xu, Ryan, Prybutok, & Wen, 2012). Furthermore, social media use allows for a level of anonymity that is sometimes preferred among individuals connecting with others based on shared stigmatized experiences such as health issues, drug/alcohol use, and mental health problems (Reid and Weigle, 2014). There have also been positive associations demonstrated between social media use and overall psychological well-being including increases in happiness and decreases in loneliness and depression (Pittman & Reich, 2016; Zhang's, 2017; Ziv & Kiassi, 2015).

In contrast, a significant number of studies examining the relationship between social media and well-being suggest an adverse relationship. To illustrate, higher levels of social media use have been associated with outcomes such as negative overall well-being, depressive symptoms (Pantic et. al., 2011; Salmela-Aro, Upadyaya, Hakkarainen, Lonka, & Alho, 2017), poor mental health, psychological distress (Sampasa-Kanyinga and Lewis, 2015), and higher levels of narcissism traits (Sheldon and Bryant, 2015).

One of the prominent explanations for these negative relationships is linked to the type of content generally posted and therefore, may be internalized by users. Specifically, users tend to post idealized images and news, inundating newsfeeds with unrealistic and overly positive portrayals of other people's lives (Fox & Moreland, 2015). People sometimes make comparisons of their lives to the way the lives of others are depicted on social media. This behavior is supported by the social comparison theory, by social psychologist Festinger (1954), that proposed that humans have a natural drive to evaluate their own abilities and opinions by comparing themselves to others, which was dubbed social comparison theory. Since his original theory, much of the research in this area has documented associations between certain types of comparison and affect. Specifically, upward comparisons (i.e., comparing against those more fortunate than us) are associated with negative affect and mood whilst downward comparisons (i.e., comparing against those less fortunate than us) are associated with more positive affect (Wills, 1981). Research and theory suggests that, since social media is a space that is flooded with positive content and is therefore perpetuating perceptions that other people's lives are superior, people are more likely to make upward comparisons, feel inferior, and therefore experience depressive symptoms (Chou and Edge, 2011; Lup, Trub, and Rosenthal, 2015; Sherlock and Wagstaff, 2018; Steers, Wickham, and Acitelli, 2014; Weinstein, 2017).

Overall, the current literature on social media use is limited in a few different ways. At this time, many of the studies conducted related to social media use have been among adult populations, despite adolescents being primary consumers of social media during an integral developmental life stage. Further, almost all of the research related to social media and depressive symptoms has been conducted examining Facebook usage; however, since the industry is changing so rapidly, some of the most popular platforms, such as Instagram, have not been included in the research as extensively (Pew Research Center, 2018b). Lastly, none of the studies to date have utilized an objective measure of social media use, instead relying on participants' self-report.

Purpose of the Study

The purpose of the study was to examine the relationships between Instagram use, social comparison, and depressive symptoms in adolescents. Previous research has identified some consistent associations between these three variables; however, the current study utilized a more objective measure of social media use. Specifically, Instagram has an embedded feature in the application that reports time spent on the application each day for the most recent week. Since social media is constantly accessible via pocket devices (i.e., cell phones), people tend to use it intermittently throughout the day, making it challenging to accurately assess how much total time is spent. This feature is critical to minimize measurement error associated with self-report in this area. Participants were asked to use this feature to access and report their Instagram usage. Furthermore, they completed inventories related to social comparison tendencies on Instagram as well as a scale measuring depressive symptoms. Scores on the three measurements were analyzed in terms of the direct relationships between social media use and social comparison, social media and depressive symptoms, and the indirect relationship between social media use

and depressive symptoms with social comparison as a mediating variable, or a variable that helped to explain the relationship.

Definition of Key Terms

Social Networking. Social networking is the process of connecting, sharing, interacting, and communicating with friends, family, communities, and strangers via an online platform specifically designed for this purpose (Choi & Scott, 2013).

Social Networking Site. A social networking site is any online platform designed specifically for communicating with friends, family, communities, and strangers via a platform specifically designed for this purpose (Choi & Scott, 2013). Social networking site is used interchangeably with "social media site/platform." Beyond accessing social networking sites on web browsers, many of these are also available on smart phones as applications or "apps."

Instagram. Instagram is a specific subtype of social media platform that has an emphasis on photo and video sharing between users (Instagram, 2018).

Social Comparison. Social comparison can be defined as evaluating one's own abilities, opinions, and worth in relation to others. It is a construct that fluctuates based on situational factors including mood, environment, relevance of comparison area, relationship to the person being compared. Degree of social comparison is evaluated on a spectrum using the Iowa-Netherlands Comparison Orientation Scale (INCOM; Gibbons & Buunk, 1999).

Upward Social Comparison. Upward social comparison is a specific type of social comparison that refers to comparing against those more fortunate than us (Festinger, 1954).

Downward Social Comparison. Downward social comparison is a specific type of social comparison that refers to comparing against those less fortunate than us (Wills, 1981).

Depressive Symptoms. Depressive symptoms include persistent feelings of sadness and hopelessness and loss of interest in activities once enjoyed. In addition to the emotional problems caused by depression, individuals can also present with physical symptoms such as chronic pain, loss of energy, or digestive issues (DSM-5). Depressive symptoms are evaluated on a spectrum using the Centre for Epidemiologic Studies Depression Scale (CES-D), which is based on criteria outlined in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5). Specific symptoms measured by the CES-D include depressed affect, somatic symptoms, and interpersonal symptoms (Radloff, 1977).

Research Questions

The current study aimed to address the following research questions:

1. Are higher levels of Instagram use associated with higher levels of social comparison in adolescents?

2. Are higher levels of Instagram use associated with depressive symptoms in adolescents?

3. Is higher Instagram use associated with more depressive symptoms in adolescents with social comparison as a mediating variable, or a variable that helps to explain the relationship?

Hypotheses

First, it was hypothesized that higher levels of Instagram use would be significantly correlated with higher levels of social comparison in adolescents. This hypothesis is consistent with literature suggesting that social media is a mass media platform flooded with personal images and posts that is particularly conducive to upward social comparisons (Fox & Moreland, 2015). Second, it was hypothesized that Instagram use would be significantly correlated with greater depressive symptoms. This hypothesis is consistent with an abundance of literature

documenting these negative effects that is outlined in the literature review in the following chapter. Lastly, it was hypothesized that there would be a significant, indirect relationship between Instagram use and depressive symptoms with social comparison acting as a mediating variable. This hypothesis is based on literature regarding Instagram acting as a "highlight reel" or a space consisting of overly positive portrayals as well as the documented affective outcomes of types of social comparison.

Importance of the Study to School Psychologists

The importance of studying the effects of social media in adolescent populations has been well documented in the literature, particularly for school psychologists. As key mental health providers in schools, school psychologists should be knowledgeable about social media use trends and help to educate others about responsible use of these technologies (Roth, Zielenski, & Daly, 2019). As social media use may influence or enhance internalizing symptoms in teens, school psychologists are often the first responders to these types of issues in schools, and therefore should be educated on these relationships. Overall, it is important for school psychologists to familiarize themselves with the themes and colloquialisms of social media, as well as the influence of social media on adolescent culture in order to effectively engage with users and improve their efficacy in providing services (Elmquist & McLaughlin, 2018). Furthermore, in order to prevent negative outcomes, this study can inform and justify a need for future research on potential media literacy programs and education regarding responsible use of social networking. Research in the field of psychology on social media is still in its infancy, leaving a vacuum for a multitude of directions for future research.

Chapter II: Review of the Literature

Social networking sites (SNSs) are internet-based websites or applications that provide a platform for sharing and communication between users. Some examples of the most prominent social networking sites include Facebook, Twitter, Instagram, Snapchat, YouTube, Pinterest, Tumblr, and LinkedIn, all of which promote interaction and sharing between users with their own individual nuances. For example, LinkedIn is used for promoting a professional identity and engaging in professional networking (LinkedIn, 2018). Facebook promotes a more general type of interaction including connecting with family, friends, and communities, and sharing updates and photos (Facebook, 2018a). Instagram and Snapchat are more visual based platforms in that shared content includes pictures and videos that others are able to interact with (Instagram, 2018; Snapchat, 2018).

SNSs are quickly becoming a primary platform for socialization for people of all ages; however, there seems to be a particular affinity for social media among adolescents. Certainly, adolescent development is innately dynamic and evolving in terms of psychosocial development, identity formation, biological changes, and increasing independence. Each of these complex processes is now exacerbated by social media. The following literature review explores the role of SNSs in adolescent development beginning with a broad overview of social media trends.

Social Media Trends

The use of this type of media has significantly increased in recent years. Specifically, the percentage of Americans using some sort of social media has increased from just 5% in 2005 to a staggering 69% at the beginning of 2018 (Pew Research Center, 2018a). The use of social media among adolescents is even more striking, with an estimated 95% of adolescents having access to a smart phone, and thus, constant access to the internet. These numbers are drastically different

from the 2014-2015 data, which indicated that 73% of teens had smart phone access. Furthermore, the percentage of teens indicating that they use the internet "almost constantly" nearly doubled from 2015 to 2018 from 24% to 45%, respectively. In addition to this, another 44% say they go online several times per day, meaning that a remarkable nine-in-ten teens go online multiple times per day.

Smart phone and internet use have become almost universal among teens across all major demographics such as gender, race, socio-economic status, and age. Regarding gender, 89% of males and 81% of females use YouTube, 69% of males and 75% of females use Instagram, and 67% of males and 72% of females use Snapchat. In terms of race, the majority of White, Black, and Hispanic teens use YouTube (86%, 79%, and 85%, respectively), Instagram (73%, 72%, and 72%, respectively), and Snapchat (72%, 77%, and 64%, respectively). With respect to age, 84% of teens 13-14 years use YouTube compared to 86% of teens 15-17 years. For Instagram, Snapchat and Facebook, usage across age groups varied a little more. Specifically, teens 15-17 years are 9-15% more likely to use Instagram and Snapchat than are younger teens. Lastly, between 93% and 97% of teens across gender, race, age, and socio-economic status have access to a smart phone with little variation across these demographics (Pew Research Center, 2018b).

SNS have been around since the early 2000's with the advent of the once popular site, Myspace. Since then, a slew of new SNSs have emerged. Today, Facebook, founded in 2004, is still the most popular social media platform overall with approximately 1.47 billion daily active users and 2.23 billion monthly active users worldwide (Facebook, 2018). Facebook primarily allows users to share multimedia content, interact with others' content publicly, and message each other privately (Facebook, 2018a). However, Facebook is no longer the leading platform in popularity among adolescents (Pew Research Center, 2018b; Roth, 2019, October). In fact,

roughly half of teens ages 13-17 say they use Facebook compared to the 69% who use Snapchat, 72% who use Instagram, and a remarkable 85% who use YouTube (Pew Research Center, 2018b). Perhaps these platforms, which will be further described below, have exceeded Facebook in popularity among teenagers due to them being visually based platforms as opposed to Facebook, which is arguably more versatile. Furthermore, each of these platforms is more conducive to allowing one-way connecting with, following, and being followed by strangers, socialites, social influencers, and celebrities, whereas Facebook is more conducive to mutual connections with people you personally know (Facebook, 2018a; Instagram, 2018; Snapchat, 2018; Youtube, 2018). Due to these differences, there is much more opportunity for people to receive feedback and have higher rates of interaction on platforms that do not require a mutual connection.

YouTube is currently the most popular social media platform among adolescents (Pew Research Center, 2018b). YouTube is a networking/sharing platform that allows users to upload videos, watch other users' videos, subscribe to particular "channels," and interact with videos via "likes" and "comments." YouTube contains a wide variety of content including educational videos, movies, music videos, video blogs, segments of television shows, news clips, sports clips, live streams, and much more (YouTube, 2019).

Snapchat is a picture and video sharing platform that is based on the premise of short-term sharing. Specifically, users can send pictures and videos to each other that are only visible to the receiver for brief periods of time before they disappear (although these "snaps" can be replayed). Users can also send messages to each other that also disappear after they are seen (although there is an option to manually save messages). Furthermore, Snapchat contains a

feature called "stories" that allow users to post content for all of their "friends" to view an unlimited number of times within a 24-hour period (Snapchat, 2018).

Instagram is particularly unique because it combines certain aspects of each of the other platforms. Instagram allows users to edit, upload, caption, and share photos and videos, "tag" other individuals in photos, as well as view, comment on, and like other people's photos. Instagram also contains a "story" feature similar to snapchat that allows users to upload content that disappears after 24 hours. It has also incorporated a messaging feature that allows users to directly message each other. Toward the end of 2018, Instagram added a feature that rivals YouTube called Instagram TV that allows users to upload longer videos (as opposed to the 60-second allowance that was originally permitted). Lastly, users can live stream content while interacting in real time with viewers (Instagram, 2018). Recent numbers indicate that Instagram has approximately 1 billion monthly active users, 500 million daily active users, and 50 billion photos shared to date (Aslam, 2018).

In just a few years, SNSs have become a major component for the vast majority of adolescents' social world. The prevalence of these types of online interactions and photo sharing and viewing provides the opportunity for a variety of implications, both positive and negative for users. The next section highlights the many benefits that users may experience with the use of SNSs.

Benefits of Social Media

Although this study primarily focused on negative aspects of social media, it is important to note the many positive reasons one might engage in social media use.

Social Capital. Research has demonstrated many benefits of social networking. Chief among these include creating and maintaining higher levels of social capital (i.e., the benefits

and resources gained through establishing and maintaining interpersonal relationships; Bourdieu

& Wacquant, 1992), allowing a space for users to maintain relationships with old friends

(Ellison, Steinfield, & Lampe, 2007), and providing opportunity to connect, share information

and ideas, and entertainment (Xu, Ryan, Prybutok, & Wen, 2012). Further, SNSs provide users

with instant communication and connection with their friends, the opportunity to maintain

interpersonal connectivity, and provide entertainment value (Cheung, Chiu, & Lee, 2011).

Exploring benefit of social capital deeper, Antheunis, Schouten, and Krahmer (2016)

examined the relationship between social capital and social media use in 3,068 adolescents

between the ages of 11 and 14 in the Netherlands. The study was conducted with the SNS

Hyves, which at the time, was the most popular SNS among Dutch adolescents. Hyves is very

similar to Facebook in that on both, members can create a profile, send friend requests, post

things on their wall, and "like," share, and comment on content. Participants responded to a

series of inventories measuring frequency and intensity of Hyves use, measures of social capital

domains, quality of friendship, social anxiety, and off-line interaction with friends. Overall,

social media use was significantly positively related all of the dependent variables, which the

exception of social anxiety which had a negative relationship (i.e., use increased, social anxiety

decreased). Specifically, frequency and intensity of SNS use was associated with higher quality

of friendship, bridging social capital, and bonding social capital. Bridging social capital refers to

the benefits of weak ties between individuals who may provide useful information but not

emotional support, while bonding social capital refers to the benefits from strong ties found

between individuals in emotionally close, high quality relationships.

Further exploring the benefit of social capital through the use of social media, Ryan,

Allen, Gray and McInerney (2017) conducted a literature review investigating these

relationships. Based on their research, it seems that social media use provides users with higher levels of social capital and social connectedness, but with an added caveat. Specifically, the direction of these outcomes is contingent on how the social media is used (i.e., typical vs. excessive across various SNS activities). Some examples of excessive social media use are having beyond 600 friends and posting more than 7 times per day. It appears that typical social media use enhances the benefits received from close relationships while excessive social media use may reduce these benefits because it may detract from beneficial offline social encounters. This is known as the displacement hypothesis (see Ahn & Shin, 2013).

Longitudinal research has uncovered further relationships between social networking, well-being, and certain individual traits (Kraut, Kiesler, Boneva, Cummings, Helgeson, & Crawford, 2002). Specifically, this research found that among extroverts, internet use was associated with increases in community involvement and self-esteem and decreases in loneliness; however, the opposite was true for introverts. These results support a "rich get richer" model of social support and internet use as opposed to the social compensation model, which would indicate that those who are introverted or lack social support in face-to-face interactions profit most from using the internet.

Further support for the "rich get richer" hypothesis was demonstrated by Weiqin, Campbell, Kimpton, Wozencroft, and Orel (2016). Specifically, those with many face-to-face friends were found to have many online friends, as opposed to introverts with fewer face-to-face friends as well as fewer online friends. The results also demonstrated that extroverts were more likely to gain bonding social capital (access support from strong ties with close family and friends) through online relationships; however, this was not true for bridging social capital (resources gained through weaker relationships with acquaintances).

Stigmatized experiences, anonymity, and community support. A literature review conducted by Reid and Weigle (2014) examined many of the benefits surrounding social media use among adolescents. Adolescence is a period of maintaining and developing meaningful interpersonal relationships, self-esteem, identity, and sexual development. Each of these tasks involves high levels of social interaction, self-presentation, self-disclosure, and feedback. Through social media, teens have a platform to learn and practice these skills. Teens also find it easier to stop and reflect on what they want to communicate before doing so, which provides an added level of comfort. Furthermore, there can sometimes be an element of anonymity on social media compared to face-to-face interactions, which is particularly appealing for teens who are shy or anxious. This benefit of anonymity applies to individuals who may want to connect with others who are having similar shameful or stigmatized experiences such as health problems, mental illness, weight issues, and drug/alcohol problems.

Elmquist and McLaughlin (2018) dove deeper into this concept of adolescents using social networking to relate to others who may have similar, potentially shameful experiences. Their research has suggested that the use of hashtags have perpetuated these connections. For example, a search of tags like #self-harm, #depression, or #sadness will yield thousands of posts and blogs related to depression. Some of these hashtags become public movements to create and increase awareness of certain issues. A recent example is the #metoo movement, which went viral and was used to demonstrate the widespread prevalence of sexual harassment. Similarly, various hashtags are used in concordance with certain national illness awareness months to spread awareness such as National Autism Awareness Month in April and National Breast Cancer Awareness Month in October.

Specifically, the site Tumblr has become an avenue for adolescents to talk anonymously with others about personal struggles. In a study conducted by Cavazos-Rehg et al. (2016), Tumblr posts related to depression and self-harm were examined and coded to determine what types of posts are prevalent. The researchers found that 8% of the posts were focused on providing comfort, support, and preventative advice. Almost half of the posts involving direct communication between users provided emotional support or reassuring messages, and over half represented seeking or providing advice. However, when the researchers looked specifically at the type of advice that was being offered, 25% provided harmful advice while only 13% suggested professional help or therapy to cope. Fortunately, in an effort to combat some of this harmful advice, many social networking platforms have created trigger and content warnings, as well as links to suicide hotlines and crisis intervention websites when certain topics are searched.

As adolescents express themselves on social media, communities begin to form through virtual empathic re-blogging, re-tweeting, liking posts, commenting, and messaging. Carrier, Spradlin, Bunce, and Rosen (2015) found that this virtual empathy is positively correlated with real-world empathy and both are positively related to social support; although, of note, real world empathy had a much stronger relationship with social support than virtual empathy. Overall, these virtual communities allow users to share and empathize with others who may share their suffering, sometimes even anonymously, to reduce shame that accompanies some stigmatized experiences such as mental illness or personal health information.

Many of these benefits of social media for adolescents were further endorsed by a systematic literature review conducted by Best, Manktelow and Taylor (2014). Their research revealed some positive outcomes of online communication in adolescents including increased social support, reduced social anxiety, increased self-esteem, reduced social isolation,

opportunity for identity experimentation, and increased feelings of belongingness. Furthermore, the review revealed that through increased anonymity and self-disclosure and reduced nonverbal inhibitors, help-seeking behaviors and perceptions of social support and community integration are increased.

Social media and well-being. Some of the literature surrounding social networking suggests benefits to certain aspects of overall well-being. For instance, Zhang's (2017) research examined the relationships between self-disclosure, stress, social support on Facebook, and overall well-being in young adults in Hong Kong. The researchers established that students in Hong Kong exhibit relatively higher levels of depression and lower life satisfaction due to their high stress curriculum and education system and a lack of mental health services. They found that stressful life events facilitate self-disclosure on Facebook, and intentionally sharing experiences and emotions on Facebook helps to decrease depressive symptoms in times of stress. In this case, the word "intent" refers to the level of self-awareness and self-consciousness of the individual's disclosure. Furthermore, more intimate and intentional disclosures were linked to increased life satisfaction and helped to obtain support from Facebook friends. In contrast, more honest disclosures (i.e., accurate and credible disclosures) had a detrimental effect. Perhaps speaking too candidly about oneself has a higher risk of revealing flaws or negative characteristics in oneself. This distinction highlights the significance of strategic, intentional disclosure on social media. Essentially, to get the most out of a social media disclosure, one must deliberately control what they disclose on Facebook to manage their image and reduce potential risk.

Indian and Grieve (2013) examined how 299 adults with varying levels of social anxiety perceive online social support on Facebook and the relationship between Facebook use in these

individuals and well-being. Results indicated that for high-anxiety individuals in particular,

Facebook social support helped to explain a significant amount of subjective well-being more so

than offline social support. In contrast, their results suggest that for low-anxiety individuals,

Facebook social support has limited contributions to well-being. These results indicate that

Facebook networking has a distinct role in overall well-being, particularly for highly anxious

individuals. Perhaps Facebook interactions help to facilitate improved well-being in socially

anxious individuals. An alternative explanation may be that socially anxious individuals are

more likely to turn to an online environment for social support while avoiding face-to-face social

interaction.

In a similar vein, Ziv and Kiassi (2015) investigated Facebook use and psychological

well-being for Israeli adolescents with differing levels of mental resilience. Their findings

supported research indicating that using Facebook can be positively related to psychological

well-being; however, this only applies when users engage in *meaningful* sharing of information

and online communication activities. In other words, engaging in Facebook activities in a

deeper, more active way, such as sharing information with others and commenting on others'

information, is associated with higher psychological well-being. This is particularly strong in

individuals with lower self-esteem and in individuals with low mental resilience who may face

difficulty in traditional social interactions. Essentially, these results support a compensation

hypothesis of social networking in that Facebook opens up new avenues for communication for

those who lack the skills and confidence to profit from face-to-face interactions.

In contrast to some of the many studies that have linked visually based social media use

to increased depressive symptoms (described in a later section), Pittman and Reich's (2016)

research suggests the opposite. When they examined 253 undergraduate participants and

measured their happiness, a positive relationship between image-based platforms, such as Instagram and Snapchat, and happiness was revealed. In contrast, a negative relationship with loneliness occurred. The authors theorize that seeing other people's photos helps to mitigate an undesirable psychological state because the images facilitate a social presence. In other words, since lonely people transmit feelings of loneliness to their friends, these same feelings of happiness and connectedness can be similarly transmitted through image-based networks.

School related outcomes. There is a small body of research on school related outcomes and social media use. For example, Moghavvemi, Sharabati, and Sulaiman (2018) explored the use of Facebook in an academic setting. They found that when students trust each other, they are more comfortable in sharing knowledge with each other, which is positively related to academic performance. Furthermore, creating an online community on Facebook increased the possibility of collaboration, knowledge sharing, and facilitated deeper levels of conversation. Some research has suggested that social media serves as a platform for students, particularly minority students, to express themselves, speak out against injustice, and heighten racial awareness in their community (Kelly, 2018). Further, social media can be utilized in the classroom for a richer learning experience. For example, studies have indicated the benefits from classroom social media use in immigrant, refugee, and English as a second-language populations. Specifically, the use of native language through social media in the classroom allowed for multimodal opportunities for engagement with course material to allow the class to move on to more complex discussions later in the course (Bigelow, Vanek, King, & Abdi, 2017). Overall, social media has also been shown to facilitate rich interactive learning experiences in these populations (Vanek, King, & Bigelow, 2018).

Overall, SNSs are conducive to convenient communication, socialization, connecting with similar others, entertainment, and may even have some educational benefits. It seems that the developmental tasks that teens are approaching in face-to-face interactions are supplemented and maybe even amplified on social media. Despite these identified benefits of social media, social media certainly has its fair share of adverse outcomes, which are discussed next.

Pitfalls of Social Media

Well-being. A systematic literature review by Best et. al. (2014) synthesized the empirical research on the topic of social media and mental well-being of adolescents. A variety of negative impacts on well-being were presented in the review suggesting that online communication is an inferior form of interaction in that it is associated with increased risk of depression and social isolation, low self-esteem, increased risk of cyber bullying, and overall lower well-being.

One study included in the review conducted by van den Eijnden, Meerkerk, Vermulst, Spijkerman, and Engels (2008) measured the relationships between online communication, depressive symptoms, feelings of loneliness, and compulsive internet use in adolescents. Measures used included the Depressive Mood List (Kandel & Davies, 1982), the Loneliness Scale (Russell, Peplau, and Cutrona, 1980), the Compulsive Internet Use Scale (Meerkerk et. al., 2009), and a self-report measure of internet use. Participants ($N = 663$) completed the inventories on two instances spaced six months apart. Significant positive correlations were found between instant messaging and depression at time 1 ($r = .16$, $p < .001$) and at time 2 ($r = .17$, $p < .001$), such that as depressive symptoms increased, so did instant messaging. In contrast, loneliness was slightly negatively correlated with online communication ($r = -.11$, $p < .01$), such that as loneliness increased, online communication decreased. Additionally, later compulsive

internet use was significantly, positively associated with time spent engaging in nearly all

Internet functions particularly with surfing, downloading, emailing, chatting, and instant

messaging as well as depression. Similar to other studies referenced thus far, this study also used

a self-report measure of internet use that may have allowed participants to over or under report

their usage.

Many of these studies imply negative effects of social media use; however, it is important

to compare the outcomes of social media use to the outcomes of direct face-to-face contact with

others. Kross and colleagues (2013) investigated the links between cognitive well-being (how

satisfied people are with their lives), affective well-being (how people feel moment-to-moment),

and Facebook use in comparison to direct contact with others. Measures included the

Satisfaction with Life Questionnaire (SWLS; Diener, Emmons, Larsen, 1985), the Beck

Depression Inventory (Beck, Steer, & Brown, 1996), the Rosenberg Self-Esteem Scale

(Rosenberg, 1965), the Social Provision Scale (Cutrona, 1989), and a measure assessing

participants' motivation for Facebook use. Participants included 82 adults who completed each

measure at the beginning of the study. Over the span of 14 days, participants were text-

messaged questions that measured affect, worry, loneliness, Facebook use, and direct contact

with friends. Results indicated that the more people used Facebook, the worse they subsequently

felt ($\beta = .08$, $\chi^2 = 28.90$, $p = .0001$); however, the reverse pathway was not significant, suggesting

that people do not use Facebook more or less depending on how they feel ($\beta = 2.005$, $\chi^2 = .05$, $p =$

.82). Similarly, the more people used Facebook, the more their cognitive well-being declined

over time ($B = -.012$, $\beta = -.124$, t (73) = -2.39, $p = .02$). In an effort to dispel the explanation that

any form of social interaction predicted lower well-being, the authors looked at how direct

interactions compared to Facebook use. Direct social interaction did not predict changes in

cognitive well-being, but *did* predict *increases* in affective well-being ($B = -.15$, $\chi^2 = 65.30$, p < .0001). Thus, while online socialization may hinder well-being, face-to-face socialization may actually boost well-being. Although significant associations were found between Facebook use and well-being, effect sizes were small. The authors note that this should not undermine the practical significance of the results because subjective well-being is a construct that is determined by a wide multitude of factors; therefore, it is unlikely that any one single factor will powerfully influence it. Furthermore, the authors of this study also used purely self-report measures for Facebook use that may include bias or inaccuracy.

A more recent construct being measured is The Fear of Missing Out, or FoMO, which may contribute to some of these identified negative outcomes of social media use. FoMO refers to the uneasiness that individuals feel when they are at risk of missing out on what their peers are doing. This feeling of FoMO has been shown to be more common in young people and is positively associated with social media use and negatively associated with mood and overall life satisfaction (Przybylski, Murayama, DeHaan, Gladwell, 2013). Baker, Krieger, and LeRoy (2016) further examined the consequences of FoMO in a correlational study with 386 college students. Variables measured include FoMO, time spent social networking, physical symptoms (headaches, shortness of breath, sore throat), depressive symptoms, and mindful attention. Notably, the direct correlation between depressive symptoms and social media use was not significant. In contrast, social networking time and FoMO were significantly, moderately related. Furthermore, Structural Equation Modeling revealed that FoMO was significantly associated with more physical symptoms, more depressive symptoms, and less mindful-attention. Overall, results indicate that social networking use is correlated with this Fear of Missing out which, in turn, is associated with increased depressive symptoms, physical symptoms, and less mindful

attention. Thus, there may be a mediating effect at play; FoMO is helping to explain this link between social media and decreases in well-being.

In a similar vein, the relationship between social media and mental health was explored in a literature review conducted by Pantic (2014). One theme that emerged from the review was the potential for online social networking to be an addiction disorder, although it is not recognized as a mental disorder in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5). Furthermore, some mixed conclusions were drawn about the relationships between social networking, self-esteem, and narcissism. Some research indicates that individuals with lower self-esteem tend to be more active on social networking sites and have more self-promotional content on their profiles, which may promote narcissistic behavior. Facebook may also be a tool used to enhance self-esteem. Specifically, having the ability to optimize one's self-presentation to others (being able to select and emphasize aspects of one's personality to share) may have a positive impact on self-esteem. In contrast, constantly having the opportunity for comparison, self-evaluation, and incorrectly perceiving others' characteristics could have negative effects on self-esteem. Lastly, a relationship between social media use and depressive symptoms was established, but as pointed out above, this relationship may be mediated by other variables, such as FoMO (Baker et al., 2016).

Many of the studies described thus far examine various outcomes of social media; however, it is important to look at how these outcomes differ from other types of media. Pantic was involved in another study in this field that investigated this by looking at the relationships between social networking, and depressive symptoms, and between television viewing and depressive symptoms in 160 young adults (Pantic et. al., 2011). Participants completed the Beck Depression Inventory II (BDI-II; Beck et. al., 1996) and provided data for their average daily

time spent on social networking sites and average time spent watching television. Results indicated statistically significant positive correlations between BDI-II scores and the time spent on social networking. In contrast, the correlations between television viewing and BDI-II scores were not significant, therefore indicating a more unique relationship between social media and depressive symptoms in comparison to other types of media.

Corroborating previous findings, a study by Sampasa-Kanyinga and Lewis (2015) explored the relationship between social networking sites and psychological functioning among children and adolescents (N = 753). Participants self-reported their estimated social networking usage, mental health status, unmet need for mental health support, suicidal ideation, and finally, their psychological distress. Using logistic regression analyses, statistically significant results indicated that students with poor mental health, psychological distress, suicidal ideation, and more unmet needs for mental health support are greater users (more than 2 hours per day) of SNSs.

Much of the research described so far has been conducted in the United States. However, similar relationships have been shown to exist across cultures, suggesting a level of universality in experiences. The Kid's Life and Times Survey is an annual survey that documents the opinions of children in Northern Ireland on a wide range of social issues that affect their lives. One of the domains measured in the 2009 data included psychological well-being, as measured by the KIDSCREEN-27 instrument (The KIDSCREEN Group Europe, 2006). Based on data from the 2009 Kid's Life and Times Survey, including 3,657 children ages 10-11 in Ireland, use of social networking sites and online games is related to poorer psychological well-being among females (t = 2.53; df = 1922; $p<0.05$). However, effect sizes were small (Cohen's $d = .01$)

indicating a weak relationship between online networking and psychological well-being

suggesting low clinical significance (Devine & Lloyd, 2012).

Further suggesting cross-cultural universality in these links, Khodarahimi and Fathi

(2017) investigated the relationships between social networking use and emotional functioning in

440 Iranian adolescents and young adults. The study used three different survey instruments to

measure dependent variables: anxiety (Beck Anxiety Inventory; Beck & Steer, 1990), depression

(Beck Depression Inventory II; Beck, Steer, & Brown, 1996), and stress (Perceived Stress Scale;

Cohen, Kamarck, & Mermelstein, 1983). Overall, results indicated that nonusers of social

networking sites such as Viber, WhatsApp, Line, Telegram, Instagram, and Facebook had

significantly lower levels of anxiety and depression compared to users. Overall, these results

further indicate that implications of social media use have consistencies across cultural groups.

This study investigated differences in emotional functioning between adolescent and young adult

social media users; however, it did not measure differences in social media usage between these

two age groups. Perhaps differences in frequency and duration of use is a contributing factor to

these results.

Much of the research in this field has been studied on a short-term basis; however, some

longitudinal research has been conducted with adolescents in the internet usage realm as well

(Salmela-Aro, Upadyaya, Hakkarainen, Lonka, & Alho, 2017). In two, two-wave, one-year long

studies, the relationship between internet use, school engagement, school burnout, and

depressive symptoms were explored. The first study was conducted with 1,702 students ages 12-

14 years old. Participants completed the School Work Engagement Inventory (EDA; Salmela-

Aro & Upadyaya, 2012), the School Burnout Inventory (SBI; Salmela-Aro et. al., 2009), and the

DEPS Depression Scale (Salokangas et. al., 1995). Finally, Excessive Internet Use was self-

reported. The second study used the same measures for a separate group of 1,636 students ages 16-18 years. In both groups, autoregressive cross-lagged path models revealed that compulsive, excessive internet use predicted later school burnout, which predicted later excessive internet use. In turn, school burnout predicted later depressive symptoms. These results are reminiscent of the poor get poorer model of social media use, which suggests that problematic behaviors can create a downward spiral. In this case, it was demonstrated that engaging in excessive internet use spiraled into school burnout, later excessive internet use, and in turn, depressive symptoms. Furthermore, as discussed above, some research has suggested the potential for social media use to be an addictive disorder; perhaps this study demonstrates some of the addictive nature of social networking. This research also demonstrates maintenance of these negative outcomes over a longer period of time.

Many of the studies summarized thus far suggest a bi-directional relationship between social media use and negative outcomes, such that they influence one another. For example, social media use may result in negative outcomes, and negative outcomes such as depression may also uniquely influence social media use. Further, if studies do demonstrate a direction, it generally depicts social media use predicting later symptoms. In contrast, a study conducted by Ehrenreich and Underwood (2016) investigated the notion that internalizing symptoms predict Facebook use in adolescents (N = 125). Participants completed the Child Behavior Checklist-Youth Self Report (Achenbach & Rescorla, 2001) that measured anxiety, depression, and somatic complaints. Facebook communication was objectively measured using a software application that captured all Facebook communication, which was eventually reviewed and coded for positive affect, negative affect, somatic complaints, eliciting support, offering support, and peer comment frequency. Using regression analysis, results revealed that, for girls,

internalizing symptoms positively predicted posts containing negative affect, somatic

complaints, and requests for support; however, this was not the case for boys. Furthermore,

girls' internalizing symptoms predicted receiving potentially reinforcing responses from peers

and offers of support. The authors note that expressing these feelings on Facebook could be

beneficial for girls in that they may be receiving support. On the other hand, it is possible that

this affirmation is reinforcing depressive communication that could further increase internalizing

symptoms.

Although many studies have demonstrated positive associations with social media use

and well-being, there is a plethora of contrasting research, which suggests that social media has

negative associations with well-being. Specifically, depression, low self-esteem, loneliness,

school burnout, negative affect, poorer mental health, and even suicidal ideation have all been

associated with increased social media use. Furthermore, studies across cultures have

demonstrated similar relationships among such variables. On a slightly different note, one area

that continues to be investigated within the social media literature is the relationship between

social media use and personality.

Personality. Much of the research in the area of personality and social media use has

been centered on narcissism characteristics. Narcissism is a personality trait that entails a person

having inflated self-views, a high level of self-importance, a sense of uniqueness, and a desire to

be admired (Buffardi & Campbell, 2008). Many studies have found evidence to suggest a link

between social media use and narcissistic personality traits. For example, Sheldon and Bryant

(2015) found a significant positive relationship between narcissism and using Instagram to

appear cool (e.g., using hashtags, spending time editing photos) and a *negative* relationship

between this and life satisfaction. Narcissism is also related to selfies and posting photographs

on Instagram (Weiser, 2015). These results were corroborated in other studies in various

countries that positively linked narcissism to selfie posting, frequent updating of profile pictures,

time spent in online social communities, posting more self-promotional content, and being more

likely to post profile pictures that accentuate attractiveness (Buffardi & Campbell, 2008;

Kapidzic, 2013; Moon, Lee, Lee, Choi, & Sung, 2016).

In sum, themes that consistently emerge from the literature suggest that social networking

has negative effects that far outweigh the benefits. It has been established that social media use

is highly associated with increased depressive symptoms and decreased overall well-being across

the board. One of the prominent theories that has been used to describe these relationships

involve the high levels of self-disclosure and opportunities to view others' personal content that

provide users with magnified, and potentially biased, social comparison opportunities. Social

comparison theory and implications of social comparison have been being researched for over 50

years beginning with Festinger in 1954. This theory is described in detail next.

Social Comparison

Festinger (1954) suggested that humans have a natural drive to evaluate their own

opinions and abilities, and since objective means are not always available, humans evaluate their

opinions and abilities by comparison with the opinions and abilities of others. This hypothesis

was further reinforced by Mussweiler, Ruter, and Epstude in 2006. Humans frequently engage

in social comparison when they are confronted with information about others. Furthermore,

whenever one tries to determine how they are or what they are capable of, they do so by

comparing their own characteristics, fortunes, and weaknesses to others. Both Mussweiler et al.

(2006) and Festinger (1954) maintained that people are more likely to engage in comparisons

with people who are more similar to themselves because comparisons with those who are

dissimilar lack value. The construct of social comparison was originally conceptualized by Festinger (1954) as a two-factor dimension comprised of ability-based comparisons (e.g., "how am I doing") and opinion-based comparisons (e.g., "what should I think and feel"). However, many of the studies that measure social comparison conceptualize it as a unidimensional construct. Overall, social comparison is a construct that is sensitive to situational factors and therefore fluctuates regularly based on things such as mood, environment, relevance of ability or opinion, and relationship to the person being compared. These setting events are described in more detail below.

There is some literature as to *why* humans engage in social comparison so frequently. According to Finkel and Baumeister (2010), individuals engage in social comparison to receive validation for their beliefs, actions, and attitudes. Specifically, their social validation rule for compliance states that "we should be more willing to comply with a request for behavior if it is consistent with what similar others are thinking or doing" (pp. 334-335). In other words, we tend to assume that an action is more correct if others are doing it. Mussweiler et. al. (2006) theorized that people engage in social comparison frequently because it is the most efficient way to evaluate their actions and beliefs. It is easier to evaluate oneself by comparing to someone else rather than consider all different aspects and information of a particular ability or belief. Social comparison allows us to focus on a subset of all the information that is potentially relevant for a given self-evaluation.

Since Festinger's (1954) theory on social comparison, researchers have expanded the literature on this topic to include types of social comparisons. Festinger proposed a "unidirectional drive upward" (p. 124) when it comes to abilities, or comparison to those more fortunate than oneself. Western culture places value on doing better, meaning that the higher the

level of performance, the more desirable it is. In contrast, Wills (1981) proposed a downward type of social comparison, characterized by comparing oneself to those less fortunate to enhance one's own subjective well-being.

Outcomes of social comparison. Research has been done on the consequences of types of social comparison. One of the more prominent theories in this area suggests that downward comparisons are associated with more positive affect and feeling good about oneself while upward comparisons are associated with negative affect. This is known as downward comparison theory (Wills, 1981). Gibbons' (1986) work supports this theory. In his research, he found that individuals who were feeling depressed chose to engage in downward comparison to increase their affect. Further, mood states of depressed individuals were shown to improve after engaging in the downward comparison of receiving information indicating that another person was experiencing negative affect. Consistent with these findings, a more recent experiment conducted by Haferkamp & Kramer (2011) found that after looking at attractive profile pictures, individuals had fewer positive emotions and were more dissatisfied with their own body image than individuals who looked at unattractive photos. This theory is consistently endorsed by other studies in the field (e.g., Aspinwall & Taylor, 1993; Gilbert, Allan, Brough, Melley, & Miles, 2002; Morse & Gergen, 1970; Wood, Taylor, & Lichtman, 1985). In a similar vein, Johnson and Knobloch-Westerwick (2014) looked at how mood affected one's tendency to engage in either upward or downward comparisons. While across positive and negative mood states, upward comparisons were preferred overall, SNS users in a negative mood spent significantly more time engaging in downward comparisons and less time making upward comparisons than those in a positive mood. The authors theorized that participants were motivated to repair their affective state and restore their mood through selecting downward comparisons. Thus, making upward

comparisons or seeing oneself as inferior to others is associated with negative outcomes such as greater depressive symptoms and lower self-esteem. Alternatively, viewing oneself as superior to others is associated with greater positive affect and higher self-esteem.

Tesser (1988) proposed a slightly different theory. When the comparison is competitive, or more relevant, in nature, there will be effects consistent with downward comparison theory (negative affect). However, when the comparison is noncompetitive or not as relevant, the relationship is reversed and one might feel more positively about another's experience. In other words, the relative importance of another's performance determines the comparison process.

Self-esteem also plays an important factor in the relationship between social comparison and affect. Specifically, Wills (1981) theorized that people with lower self-esteem are more likely to engage in downward social comparison because those with low self-esteem have greater motivation for self-enhancement. However, Crocker, McGraw, Thompson, and Ingerman's (1987) work suggested that individuals with high self-esteem are better able to make comparisons that are self-serving and therefore make downward comparisons for this purpose as a sort of self-protection strategy. Buunk, Collins, Taylor, VanYperen, and Dakof's (1990) research provides evidence that the overall affective consequences of comparison are not intrinsic to its direction and are partially dependent on self-esteem. Specifically, high self-esteem individuals are better able to make use of *either* upward or downward comparisons for self-enhancement than individuals with low self-esteem. On a similar note, research has also suggested that affective outcomes are independent of the type of social comparison and are more dependent on the *frequencies* of social comparisons (White, Langer, Yariv, & Welch, 2006).

Social comparison is a task that humans naturally engage in to evaluate and validate their own stance, actions, and beliefs. Although social comparison has been researched in terms of

traditional interactions (i.e., face-to-face), there is relatively limited information on how these theories apply to the social media world. However, since social media provides users with constant, personal, information about others and opportunities for automatic social comparison, in addition to the permeating nature of internet access in society, social media may be a modern day example of how these theories can be applied in today's world. In the context of social media, some of these theories are reflective of a "rich get richer" model of social media suggesting that those with strengths such as higher self-esteem will be able to make more self-serving social comparisons and maybe have more positive outcomes associated with their social media usage. In contrast, some of the research suggests that upward comparisons are more frequent overall and have more negative outcomes; perhaps this trend is consistent in the social media world. Since social media tends to contain positively skewed content, it seems that people are much more likely to engage in upward social comparisons. The next section reviews how upward comparisons exist in the social media world.

Highlight Reel

In her book *The Happiness Effect: How Social Media is Driving a Generation to Appear Perfect at Any Cost,* Freitas (2017) traveled to thirteen diverse colleges and universities to interview nearly 200 randomly sampled men and women. She also conducted an online survey of students who volunteered to share their opinions in a series of essays. Through her research, one central theme emerged as the most pressing social media issue that students face: appearing happy, blissful, enraptured, and inspiring. This pressure that students experience to appear happy and therefore, post happy things on social media, makes it so most of what people see on social media are happy things. As a result, individuals feel inferior because they are not *actually* happy *all* the time. Freitas coined this phenomenon as "the happiness effect" (p. 14). In fact,

when asked directly in the online survey to respond to the statement "I try always to appear positive/happy with anything attached to my real name," 73% responded "yes." The book contains several anecdotes by university students describing instances such going to social events and taking an estimated 200 photos with the intention to post later with careful attention to details such as hair and smiles. Some people admit to becoming obsessed with "likes," comparing the amount of "likes" to others, and "grading" themselves based on these numbers; others admit to deleting posts that do not get enough "likes." One student described social media as being a "performance of yourself in an effort to impress other people" (p. 21), while another referred to this competition as an effort to "one-up" other people and show "I'm doing better. I'm in a better place and I'm much happier than you are" (p. 24).

Although Freitas dubbed this process of posting happy things and feeling inferior due to seeing others' purely happy posts as "the happiness effect," other researchers have coined different terms for similar phenomena. For example, Steers (2014) and Weinstein (2017) use the term "highlight reel" to describe the positively skewed depictions of others' lives. Similarly, other individuals have described Facebook as "an arms race" or as "a race to try to get so many friends" (Fox & Moreland, 2015). Zhao, Grasmuck, and Martin (2008) describe people's profiles as depicting their "hoped-for possible selves." They found that individuals' Facebook projected "hoped-for selves" were not the same as the identities that are depicted on anonymous social media applications or the identities that people present in face-to-face interactions. The Facebook selves appeared to have highly socially desirable characteristics that individuals aspire to have offline, but have not been able to attain yet in their day-to-day real lives.

Social media users engage in a variety of activities online in order to self-promote, as well as gain attention, external validation, and popularity. Some measures of attention,

popularity, and validation include gaining a substantial amount of "likes" on posts and having a high number of followers or friends (Sheldon & Bryant, 2016). Dumas, Smith, Davis, and Giulietti (2017) explored this like-seeking behavior on Instagram, or the extent to which individuals engage in behaviors to increase the number of individuals who will click a button to indicate they "like" their posts. Participants 18-29 years old (N = 198) completed a variety of self-report measures including a measure of Instagram like-seeking behavior. Some of these behaviors include uploading photos at certain times of day, modifying photos to make them more attractive, using a hashtag, using a filter, or purchasing likes or followers from a secondary source. Analyses revealed a vast majority (over 90%) of the individuals in their study reportedly have engaged in at least one like-seeking behavior with the most common behaviors including taking/uploading pictures, and using hashtags and filters.

Some research suggests that some of these like-seeking behaviors have merit in increasing a perceived likability (Bradley, Roberts, & Bradley, 2017). Specifically, having more followers and likes, and higher perceived attractiveness were all positively associated with likability with having more followers and likes being a stronger indicator of perceived likability. Interestingly, when examining how the number of selfies posted impacts likability, the researchers found that the percentage of selfie photos had a significantly negative effect on likability.

Overall, literature suggests that users generally share only the most positive, sometimes even inaccurately positive, portrayals of their lives and engage in behaviors to sustain these portrayals. Social comparison research suggests that this increased opportunity for upward comparison may have negative emotional outcomes for users. The next section examines these

relationships, specifically, between social media use, social comparison, and depressive symptoms.

Social Media, Social Comparison, and Depressive Symptoms

Due to the high levels of user self-disclosure (e.g., status updates, photos, liking of statuses, public conversations) that are associated with SNSs, there is increased opportunity for social comparison; therefore, spending more time on Facebook is associated with comparing oneself to others more frequently (Fox & Moreland, 2015).

One area of concern that exists due to these increased comparisons is body image. A recent literature review revealed overwhelming evidence that social media use is associated with body image concerns and body dissatisfaction in high school and college aged males and females, particularly among users who engage in activities such as making appearance comparisons to others (Fardouly & Vartanian, 2016). Similar findings were endorsed among a plethora of other recent studies with adolescents as well as with adults. That is, there is substantial evidence indicating that greater use of highly visual social media platforms (e.g., Instagram), and high engagement in photo related activities on other platforms, are linked to greater body dissatisfaction, negative body image, tendencies to make social comparisons, and higher levels of internalizing symptoms such as depressive symptoms (Burnette, Kwitowski, & Mazzeo, 2017; Cohen, Newton-John, & Slater, 2017; Kleemans, Daalmans, Carbaat, & Anschutz, 2016; Marengo, Longobardi, Fabris, & Settani, 2017; Rodgers, McLean, & Paxton, 2015).

A two-part study by Steers, Wickham, and Acitelli (2014) examined the relationships between Facebook use, comparison, and depressive symptoms. The first component of their research (N = 180) examined whether non-directional social comparison (defined as asking

people whether or not they compare themselves to others rather than in which direction) mediated, or explained, a relationship between Facebook usage and depressive symptoms. Measures used include the Iowa Netherlands Comparison Orientation measure (INCOM; Gibbons & Buunk, 1999), the Epidemiological Studies Depression Scale (CES-D; Radloff, 1977), and a self-report measure of Facebook use. They concluded that spending more time on Facebook is positively associated with comparing oneself to others for both males (β = .51, $p <$ .01) and females (β = .22, $p < .05$). However, these comparison scores were only significantly related to depressive symptoms for males (β = .43, $p < .01$). Further, the mediating effect of non-directional comparisons on the relationship between Facebook and depressive symptoms was significant for only males (β = .219, $p < .05$). The authors of the study note a potential explanation for this is that far fewer men than women participated in the study, and the ones who did reported mild depressive symptoms on average suggesting that the gender differences may not be generalizable.

The second component of the study examined the different types of social comparison as mediators between Facebook usage and depressive symptom over a 14-day span. The authors adapted the INCOM to measure upward and downward social comparison to determine the type of social comparison at play; they also used a subset of questions from the CES-D and a self-report measure of Facebook use. Results indicated that individuals experience significantly more upward ($t(151) = 2.94$, $p < .01$) and non-directional comparisons ($t(151) = 6.12$, $p < .01$) and less downward comparisons ($t(151) = -4.27$, $p < .01$) on days that they spent more time on Facebook. Furthermore, each of these types of comparisons uniquely served as mediators between Facebook use and increased depressive symptoms, indicating that spending a great deal of time on Facebook is positively related to comparing oneself to others, which is associated with

increased depressive symptoms. The authors of this study offer a possible explanation for this trend; people often share their idealized, or best possible, news and photos on Facebook and many people do not often disclose their daily struggles. Therefore, frequently viewing these overly positive portrayals may induce or exacerbate other people's negative emotions and cognitions, thus contributing to depressive symptoms. In contrast to literature suggesting that downward comparisons elicit more positive affect, this study suggested that downward comparisons are also related to depressive symptoms. Perhaps individual differences (e.g., having low self-esteem) may be moderating the relationship between downward comparisons and negative affect.

Although Steers et. al.'s (2014) study comprehensively measured the relationships between Facebook use, social comparison, and depressive symptoms, there are some cited notable limitations including the self-report nature of the measures used. Specifically, participants' frequency of Facebook logins and time spent on Facebook may be inaccurate. Furthermore, this study was completed in 2014 with college students. Since then, social media use has increased among different populations and more popular platforms have emerged making further research necessary in this area.

In a sample of 425 graduate students, Chou and Edge's research (2011) suggested a similar explanation to why social media might be associated with depression symptoms. They demonstrated that the longer people have used Facebook, the stronger their perception was that others were happier than they are ($\beta = 0.11$, $p < 0.01$); this is an example of an upward social comparison. This feeling was stronger in individuals who had more Facebook friends who they did not personally know ($\beta = 0.16$, $p < 0.01$). Consistent results were found in a correlational study that examined the relationships between Facebook social comparison, rumination, and

depressive symptoms in adults (N = 268). Using the Social Comparison Rating Scale (SCR; Allan & Gilbert, 1995), the INCOM scale, and the CES-D, significant correlations were found between social comparison on Facebook and depressive symptoms (r = .38, *p* < .001; Feinstein et. al, 2013).

Similarly, Lee (2014) examined Facebook use and social comparison tendencies in relationship to self-esteem, self-consciousness, and negative feelings in 199 college students. Relevant measures used include a questionnaire measuring frequency of social comparison on Facebook, a questionnaire of frequency of having a negative feeling from comparison on Facebook, a Facebook use intensity questionnaire, a social comparison orientation scale (INCOM; Gibbons & Buunk, 1999), a self-concept scale (Campbell et. al., 1996), a self-esteem scale (Rosenburg, 1998), and a self-consciousness scale (Fenigstein et. al., 1975). Some conclusions that were drawn include that a person who is more inclined toward social comparison is more likely to compare themselves with others on Facebook. Furthermore, Facebook use intensity and social comparison frequency on Facebook have a significant positive relationship. Also, an individual's self-uncertainty is an important factor explaining a persons' social comparison frequency, in that people with higher self-uncertainty engage in more social comparison to enhance self-concept. Lastly, a significant, negative relationship was found between self-esteem and social comparison on Facebook and individuals experience more negative feelings from comparison on Facebook.

Nesi and Prinstein (2015) also examined social media use, social comparison and feedback seeking behaviors, and depressive symptoms while also looking at peer popularity in 619 eighth and ninth graders who use technology based social networking. The Electronic Interaction Scale for Time (EIS_T) was developed and used as a self-report measure of

technology and social media use. The Motivations for Electronic Interaction Scale (MEIS) was also developed and used in this study to measure social comparison and feedback-seeking behaviors in technology. Depression symptoms were measured by The Short Mood and Feelings Questionnaire (SMFQ; Angold et. al. 1995). Results indicated that technology based (specified as texting, Facebook, and other social media) social comparison feedback seeking (SCFS) was associated with depressive symptoms for males and females (B=0.21, p<0.001). The researchers offer several theories explaining this relationship, including that the online environment facilitates higher levels of SCFS by fostering idealized self-presentation and individuals are likely to make positive assumptions about others whom they have limited information about which intensifies the identity development process for adolescents.

Research has consistently established that social comparison is a prevalent part of human interaction and that social media provides a platform for increased opportunity for comparison, particularly upward comparisons. Furthermore, upward comparison has been shown to be associated with more negative affect. The research conducted thus far in the social media world has been primarily on Facebook with less focus on newer social media platforms. Arguably, Instagram, an all-encompassing, more visually based platform has similar effects. The following reviews the research that has already been conducted on these three variables: Instagram use, social comparison, and depressive symptoms.

Instagram, Social Comparison, and Depressive Symptoms

A correlational study conducted by Lup, Trub, and Rosenthal (2015) looked at the relationships between frequency of Instagram use, percentage of strangers followed, social comparison, and depressive symptoms in Instagram users 18-29 years old (N = 117). Measures used include the Social Comparison Rating Scale (Feinstein et. al., 2013), the Center for

Epidemiological Studies Depression Scale (Radloff, 1977), and a self-report measure for

Instagram use. The results suggest that social comparison helps to explain the relationship

between frequent Instagram use and depressive symptoms with the percentage of strangers

followed influencing the strength of the relationship. Specifically, at the highest levels of

strangers followed, frequent Instagram use had direct and indirect associations through social

comparison with depressive symptoms. This means that frequent Instagram use directly affected

depressive symptoms as well as had an effect on depressive symptoms *through* social

comparison. The results from this study also indicate that those who follow more strangers, or

people they do not know in real life, on Instagram are more likely to commit upward social

comparisons, and vice versa. Overall, these findings are similar to the results of Chou and

Edge's (2011) research that suggested people exhibit attribution error, or overemphasize certain

positive characteristics, that may lead to more upward social comparison when they are friends

with more strangers on Facebook. Perhaps when seeing photos and posts of friends and

acquaintances, this effect is balanced by knowing how those people actually live.

A more recent study that yielded similar findings by Sherlock and Wagstaff (2018)

examined the relationship between Instagram use, exposure to idealized images, and

psychological well-being in 129 women ages 18-35 years. This study also utilized the Center for

Epidemiological Studies Depression Scale (Radloff, 1977), the Iowa Netherlands Comparison

Orientation measure (INCOM; Gibbons & Buunk, 1999), as well as an anxiety inventory and a

variety of body image/physical attractiveness scales. Instagram use was measured using a self-

report scale yielding measures across domains (e.g., number of followers, number of accounts

following, time per day using Instagram). The first part of this study was correlational research,

which demonstrated that heavier Instagram use (as well as number of followers and people

followed) correlated positively with depressive symptoms, social comparison, anxiety, physical appearance anxiety, and body image disturbance, while correlating negatively with self-esteem. Results also showed a mediating effect of social comparison on the relationship between Instagram use and these aforementioned variables.

The second, experimental, portion of the study further supported the links between these variables. Specifically, participants were exposed to a range of idealized beauty, fitness, and travel Instagram images (or a control condition with no images). Brief exposure to images of beauty and fitness significantly decreased self-rated attractiveness, implying that participants engaged in a reevaluation of their attractiveness, a variable that was correlated with lower psychological well-being ($r = -.26$, $p < .01$). Overall, these results suggest that more frequent Instagram use is associated with a variety of lower psychological outcomes. Furthermore, based on results from brief exposure to idealized images, there is evidence to suggest that extensive, prolonged Instagram use causes reevaluations of physical attractiveness, implying increased upward social comparisons and decreases in psychological well-being.

Similar outcomes have been demonstrated with adolescents. A correlational, longitudinal study conducted by Frison and Eggermont (2017) confirmed the direct relationship between Instagram use and depressive symptoms in 12-19 year old youth ($N = 671$). Similar to other studies, depressive symptoms were measured using the Center for Epidemiological Studies Depression Scale (Radloff, 1977). The researchers examined the effects of type (i.e., browsing, liking, and posting) of Instagram use, as well as prolonged Instagram use, and mood among adolescents using a self-report Likert scale. Structural Equation Model (SEM) results indicated that time spent browsing positively predicted adolescents' depressed mood ($\beta = .16$, $B = .04$, $SE = .02$).

On a similar note, Weinstein (2017) conducted experimental research to examine social comparison on Instagram and affective well-being in ninth, tenth, and eleventh grade students (N = 507). Affect was measured by the Positive and Negative Affect Scales (PANAS; Watson, Clark & Tellegen, 1988) and social comparison was measured based on responses to two social comparison questions per Instagram feed (4 questions total; 5-point Likert scales: he/she has a better life than me, he/she is happier than me). Participants were split into three groups. One group browsed positive only versions of the Instagram feeds. The second group browsed the same feeds preceded by a message that reminded them of the highlight reel aspect of Instagram that stated "please remember that most people post only their best moments and most flattering pictures on social media. They have struggles and bad days, too." The third group browsed a more balanced version of the feed, which included non-positive content. Participants were surveyed on their affect based on their own personal Instagram use as well as on at baseline and post-browsing. Results from this study demonstrated that adolescents who engage in more negative comparison in response to browsing attractive Instagram posts have significantly less positive affect ($\beta = 0.07$, $t(500) = -3.22$, $p = 0.001$) and more negative affect ($\beta = 0.05$, $t(500) = 2.07$, $p = 0.039$) than peers who engage in less negative comparison. On a positive note, Weinstein's research provided some evidence that individuals who are aware of the "highlight reel" nature of social media and keep in mind that Instagram posts are often positively skewed are less susceptible to the negative impacts of social media browsing. Furthermore, this study reflected outcomes with a relatively low "dose" of Instagram browsing (30 minutes or less). Perhaps these effects are amplified for individuals who browse for hours or routinely for years.

Gender and Age

Overall, the literature exploring the relationships between social media usage, social comparison, and well-being with gender is limited; however, there is some information on how gender relates to each of these variables uniquely. Specifically, in terms of usage, females use Instagram more than males (Pew Research Center, 2018b). Furthermore, it is well documented that females report higher levels of depressive symptoms in comparison to males (Leach, Christensen, Mackinnon, Windsor, Butterworth, 2008). Research conducted by Guimond and Chatard (2014) explored the relationships between social comparison and gender and significant differences between how males and females engage in social comparison emerged. Although men are thought of as more competitive than women and therefore, perhaps more likely to engage in social comparison, women are more likely to engage in social comparison due to the tendency to be more interpersonal and have more of a communal or collectivist orientation. Furthermore, this social comparison variable has been shown to correlate with insecure self-construal as well as neuroticism, both of which women tend to score higher. In general, women are more likely to engage in higher rates of Instagram usage, higher rates of social comparison, and experience higher rates of depressive symptoms.

Similar to the discussion on gender, there is limited information on the age related outcomes within adolescence on social media usage, social comparison, and depressive symptoms. It has been documented that teens 15-17 years are 9-15% more likely to use Instagram than are younger teens (Pew Research Center, 2018b); therefore, it is more likely that this age group will have higher rates of social comparison, and therefore, depressive symptoms. The current study further explored the relationships between these variables and age differences within adolescence.

Summary of the Literature

This rapid increase in social media usage can be considered a cohort effect, or a shared experience that affects research, for current adolescents and young adults that can be associated with a variety of outcomes. Specifically, there are many documented benefits of social media use including increased social capital (or the benefits gained from maintaining interpersonal relationships), greater social support and senses of community, some cited increases in overall well-being, and even some educational benefits. Unfortunately, many negative aspects of social media use potentially outweigh the positives. Namely, an abundance of research suggests negative relationships between social media and overall well-being including increased depressive symptoms, loneliness, negative affect, and suicidal ideation, as well as lower self-esteem and narcissistic traits. Remarkably, many of the researchers and studies in this field have suggested that the inundation of idealized posts, images, and excessive positive portrayals on these social media platforms are increasing users' upward comparisons (i.e., comparing to those who are better than they are), and therefore increasing users' feelings of inferiority, which may be contributing to these negative effects.

Purpose of the Study

Although some of the literature in this area of research focuses on adolescents, the majority of it has been conducted with adults. Since social media use is most prevalent in adolescents, and since adolescents are naturally engaging in many imperative developmental tasks, it seems there is a gap in the literature regarding how social media affects users during this dynamic developmental period. Furthermore, in each of the above studies, SNSs usage was measured using self-report methods. There are many notable limitations of using self-report measures including lack of objectivity in one's perception of themselves, inaccurate reporting,

and lying in order to make behavior appear more socially acceptable, therefore making it a potentially flawed method of measurement. This may be particularly true for social media usage reports. Since browsing on social media is often done on cell phones that are generally accompanying users at all times and is often done during many, short intervals throughout the day, it is likely difficult to accurately estimate one's own level of social media usage. Recently, Instagram has implemented a feature that allows users to view how much time they spend on Instagram per day for the most recent seven days. Given this new feature, it is important to reexamine the relationship between Instagram, social comparison, and depressive symptoms with a more objective measurement of usage available. Furthermore, there is a substantial amount of literature investigating the outcomes associated with Facebook among adolescents; however, the same cannot be said for Instagram even though Instagram has surpassed Facebook in popularity within this population. The current study aimed to examine the relationship between Instagram use, social comparison, and depressive symptoms hypothesizing: (a) higher frequency of Instagram use would be associated with higher social comparison in adolescents; (b) higher frequency of Instagram use would be associated with the presence of depressive symptoms in adolescents; and (c) higher Instagram use would be associated with more depressive symptoms in adolescents with social comparison as a mediating variable, or a variable that helped to explain the relationship.

Chapter III: Methodology

The present study was a correlational design that explored the relationship between time spent on Instagram, social comparison tendencies, and depressive symptoms in adolescents. The study utilized two surveys: one measuring social comparison and one measuring depressive symptoms. The final measure was an indicator of Instagram use in the most recent seven days, which was measured primarily via self-report using guidance from the Instagram application (see measures for specifics regarding this measure).

Participants

Since Instagram use is highly prevalent among adolescents, all students ages 12-18 years were recruited from one middle/high school in rural upstate New York. The school used is relatively small with approximately 600 students in grades pre-k through 12. The student body is comprised of primarily White students with a minority enrollment of 10%. Furthermore, 37% of students are economically disadvantaged. Participation in the study was an opportunity for all students 12-18 regardless of if they used Instagram or not. The school from which students were recruited was chosen based on professional connections and convenience sampling. This school was recruited via a series of emails between the researcher and the superintendent of the school delineating and discussing the purpose of the study, bounds of consent, as well as Human Subjects Research Committee (HSRC) approval. This email exchange was ongoing in order to adapt to proposed changes due to the implications of the COVID-19 pandemic beginning in March, 2020.

Recruitment of student participants. Students who received parental consent were eligible to participate in the study. Letters were sent home to parents of all students ages 12-18 within the district, outlining the purpose of the study (Appendix B). The letter denoted the

bounds of passive consent, indicating that parents should respond if they did not wish for their children to partake in the study. If no parental response was provided, those students were eligible to participate. Informed assent was also obtained from each student participant to ensure voluntary participation (Appendix C). The goal of the current study was to have data from at least 50 participants in order to have adequate power, or a reasonable chance of rejecting a false null hypothesis (Keith 2019, p. 578). Each student who participated was offered a small snack such as candy or chocolate as compensation; they were also entered into drawing to win one of six $30.00 visa gift cards.

Measures

        Instagram Application. Instagram has embedded a measure of daily Instagram use for each user in their mobile application. In order to get the most precise indicator of Instagram use, participants were asked to report their Instagram usage using this measure as well as upload a picture depicting their average usage data in minutes for that week for documentation. Unfortunately, most participants reported their average usage but did not submit a picture depicting their usage statistics. For the few participants who did submit a photo, their reports were verified using the photo and each person accurately reported their usage. Although few participants actually uploaded a photo, based on the lack of round numbers submitted (e.g., 46, 23, 54 vs. 50, 60, 20), it is suspected that participants utilized the statistics embedded in the application to report their usage as opposed to estimating. Therefore, the self-reported Instagram usage statistics were used as a measure of Instagram usage and this self-report is believed to be an accurate proxy of the embedded measure of daily Instagram use.

        Iowa-Netherlands Comparison Orientation Scale. Social Comparison was measured using an adaptation of the Iowa-Netherlands Comparison Orientation Scale (INCOM; Gibbons &

Buunk, 1999), which consists of 11 self-report items measuring how frequently participants

engage in comparing themselves with others (Appendix D). Each item is measured on a 5-point

scale from 1 (strongly disagree) to 5 (agree strongly). The scale was adapted to fit the context of

social comparison through Instagram by preceding each item with "when I am using

Instagram…"

The INCOM scale has a normal distribution of scores across norm groups, the American

sample and the Dutch sample, and exhibits sound psychometric properties across age groups

including adolescents (Gibbons & Buunk, 1999). Specifically, the scale contains an internal

consistency of .83 and temporal stability ranging from .71 for a few weeks to .60 for one year.

This level of stability is acceptable because this construct is sensitive to situational factors, as

scores have been shown to change according to different situations and events (Gibbons &

Buunk, 1999). In order to assess external validity, the scale was administered along with other

scales that measured similar constructs. Moderately strong correlations were revealed between

the INCOM and public self-consciousness (.43), interpersonal orientation (.45), and Lennox and

Wolfe's (1984) Attention to Social Comparison Information Scale (r = .47 and .66).

Relationships between the INCOM and various dispositional factors that have been suggested as

correlates of social comparison were also measured. Specifically, the Center for Epidemiologic

Studies Depression Scale (Radloff, 1977), the other inventory being used in this study, was

moderately correlated with the INCOM (.25).

During factor analyses of the scale, two highly related factors emerged, ability-based

comparisons and opinion-based comparisons (Gibbons & Buunk, 1999). Each of these factors

was identified by Festinger (1954) as the two dimensions of the self-evaluation motive for social

comparison. An example of an ability-based comparison is "how am I doing" whereas an

example of an opinion-based comparison is "what should I think or feel." However, although

the factors were discriminable, the authors cautioned against using them independently because a

single factor structure fit the data fairly well and the two factors correlated highly with one

another (Gibbons & Buunk, 1999).

Center for Epidemiologic Studies Depression Scale. The 20-item Centre for

Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977) was used to measure

depressive symptoms (Appendix E). The scale consists of 20 self-report items asking about how

often the participants have felt certain ways in the past week. Items are rated on a 4-point scale

from 1 (rarely or none of the time) to 4 (most or all of the time). Examples of items include "I

did not feel like eating; my appetite was poor," "I felt hopeful about the future," and "I felt sad."

The scale was designed for use in the general population and contains major components

of depressive symptomology including depressed mood, psychomotor retardation, loss of

appetite, sleep disturbance, and feelings of guilt, helplessness, hopelessness, and worthlessness

(Radloff, 1977). The CES-D contains sound psychometric properties with an internal

consistency of .85 in the general population and .9 in a clinical population. The scale also has

adequate discriminant validity, as those who are psychiatric inpatients score substantially and

significantly higher than the average for the general population. The CES-D demonstrates

adequate generalizability across demographic subgroups (various ages, including adolescents;

sexes; races; and levels of education) with a coefficient alpha of at least .8 for all subgroups and

moderate test-re-test correlations of .40 or above in most of the groups. Furthermore, the

subgroups did not differ from each other or from the total population in factor structure. Lastly,

factor analyses of the CES-D supported four different factors that comprise the scale: depressed

affect, positive affect, somatic symptoms, and interpersonal symptoms. However, the high

internal consistency of the scale found in all groups argues against emphasis on separate factors as all items in the scale are symptoms of depression. Therefore, a total score on the CES-D is interpreted as an estimate of the degree of depressive symptomology (Radloff, 1977).

Demographic Information. Demographic information was also gathered from the participants including name, age, and gender to be used as control variables to identify any significant relationships between these variables (Appendix F).

Procedure

Approval by the Human Subjects Research Committee (HSRC) at the author's University was acquired prior to the start of the study on February 9, 2020. In March of 2020, the global pandemic of COVID-19 began in the United States which caused a plethora of unfortunate events including the indefinite requirement to socially distance and schools entering an extended period of remote education. Due to this, the HSRC approval was updated to reflect a change of collecting data electronically and was approved on November 3, 2020. Informed consents were required via passive consent procedures from each participant's guardian, as they were under the age of 18. Informed assent was also obtained from each participant to ensure voluntary participation. Passive consent forms were mailed to parents on November 23, 2020 and were due by December 11, 2020.

Data were collected via a secure online survey platform, namely surveymonkey.com, that was sent out to each eligible student by the principal of the school district on December 21, 2020; participants had three weeks to complete the survey before it closed. Participation in the study took approximately 15 minutes. Participants first completed the CES-D scale and then INCOM scale. They then reported their daily and weekly average Instagram use for the previous

week. Lastly, they completed the brief demographic questionnaire. This order of data collected was selected to minimize biases or priming effects from previous responses.

Data were kept anonymous to the researcher by each student labeling their responses with a given number that was associated with their name in a separate document; details to this procedure are outlined in the Ethical Considerations section. Once all of the data were collected, responses were transferred to two statistical software programs, SPSS and STATA, to conduct analyses.

Overview of Analyses

Data were transferred from the digital survey responses into statistical software programs, SPSS and STATA, in order to conduct appropriate statistical analyses. Prior to input into SPSS, the data were screened for systematic errors in participants' responding (e.g., unusual response patterns such as selecting the same response option for each item).

Several statistical analyses were performed in order to answer the research questions. First, descriptive statistics (i.e., mean, median, mode, standard deviation, variance) were calculated using SPSS to gain a general understanding of the data. Path Analysis is the primary analysis that was used in this study. Path Analysis is an extension of Multiple Regression and was used to examine the relationships between Instagram use, social comparison, and depressive symptoms with gender and age as exogenous, or control, variables. Specifically, Path Analysis estimated the magnitude and significance of each of the variables in their contributions to the outcome variable (i.e., depressive symptoms). The path analysis was completed by initially conducting a series of multiple regressions in SPSS and then conducting a full path analysis in STATA, a general-purpose statistical software package that is conducive to completing path analyses, to gain an indication of the statistical significance of the values.

The hypothesized model (*figure 1)* illustrates the relationships that were examined in this study while the STATA Path Analysis model can be seen in *figure 2* in the results section with path values included. Squares in the model denote measured variables based on participants' responses to the inventories and arrows represent direct effects in which one variable directly contributes to or affects the variable that the arrow is pointing to. Indirect effects can also be represented in the model in which case one variable contributes to another *through* a third, mediating variable. Total effects were calculated by combining the direct and indirect effects. In this model, gender and age are exogenous variables (i.e., independent or control variables) that were presumed to have an effect on the other variables in the model. Instagram use and the INCOM scale are considered endogenous variables that influence and can be influenced by other variables in the model. Finally, the dependent variable is depressive symptoms as measured by the CES-D. It was expected that this variable would be influenced by the endogenous and exogenous variables.

First, it was hypothesized that the exogenous variables, gender and age, would influence each of the endogenous and dependent variables. This was tested by analyzing the direct effects of gender and age on Instagram usage, social comparison, and depressive symptoms. Based on the research regarding gender, it was expected that effects between these variables would be stronger in females as females are more likely to use Instagram, engage in social comparison, and to report depressive symptoms.   In terms of age, it has been documented that teens 15-17 years old are 9-15% more likely to use Instagram than are younger teens (Pew Research Center, 2018b); therefore, it is more likely that this age group will have higher rates of social comparison and therefore, depressive symptoms. Furthermore, direct and indirect relationships were expected between Instagram usage, social comparison, and depressive symptoms. Specifically,

the relationship between Instagram use and social comparison was analyzed in a direct manner

indicating that Instagram use would directly, positively influence social comparison (i.e., as

Instagram use increases, social comparison increases). Similarly, the relationship between social

comparison and depressive symptoms was analyzed directly, and it was hypothesized that there

would be a direct, positive relationship between these two variables (i.e., as social comparison

increases, depressive symptoms increase). Lastly, the indirect relationship between Instagram

use and depressive symptoms was analyzed to determine the degree to which depressive

symptoms were mediated by social comparison.

Figure 1. The Proposed Model
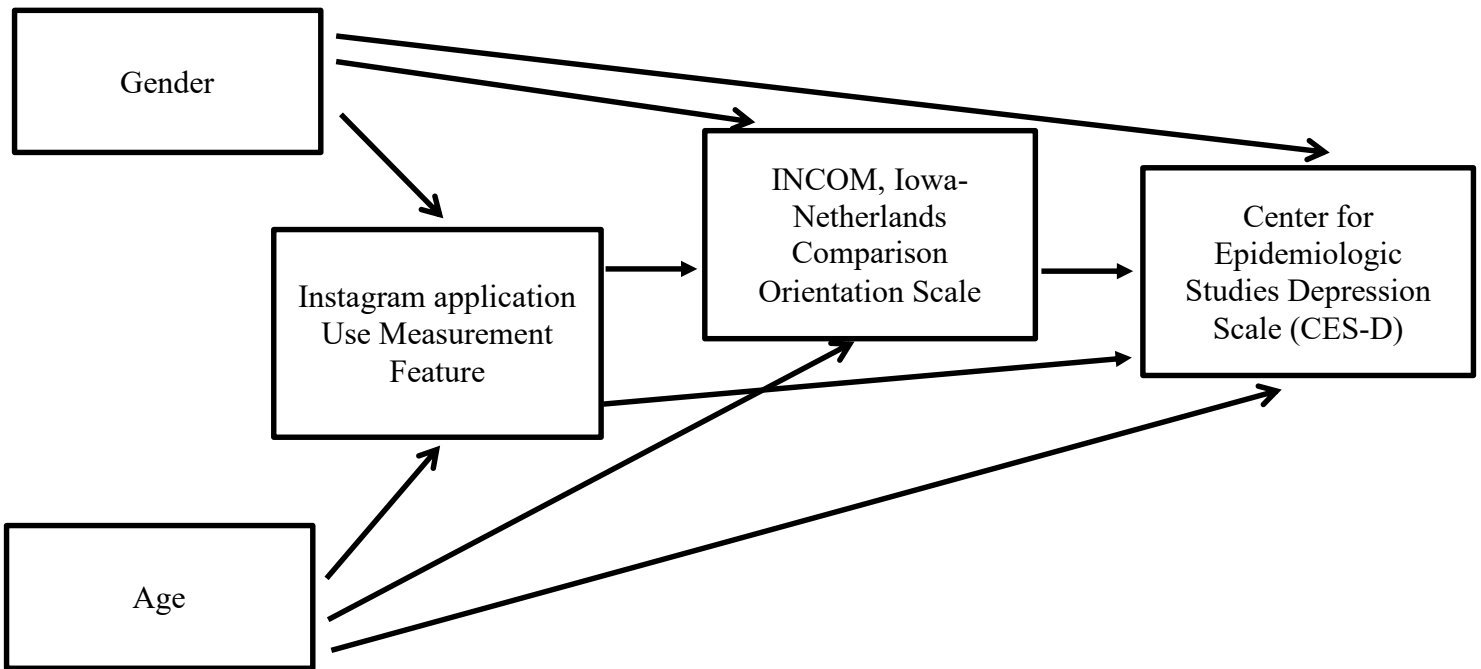
Ethical Considerations

Several steps were taken to ensure minimal risk associated with participation in this

study. Approval from both Alfred University's Human Subjects Research Committee (HSRC)

as well as the Board of Education from the participating school district was attained. Also,

passive parental consent was obtained for all students participating in the study. The passive

informed consent document outlined the purpose of the study, potential risks and benefits of participation, levels of anonymity, and contact information for the primary researcher in case there are questions or concerns. Parents who did not wish for their child to participate in the study were given the opportunity to return their signed form to the school. Further, after reading a description of informed assent including purpose of the study, bounds of confidentiality, involved risks, incentives to participate, and voluntary aspects to participation, students completed an assent form acknowledging this information in writing. Students were permitted to either elect to participate or opt out, and they were permitted to withdraw from the study without penalty at any time.

While students were required to provide their first and last names with their data, this information remained generally confidential. Specifically, the author is the only individual who had access to students' names, and this data was stored in a secure, password protected platform.

Although the surveys were extremely low risk to students, there was a possibility that due to the nature of the questions, depressive thoughts and feelings may have been triggered. In order to be proactive, the informed consent outlined these risks and included information about the school's mental health services. In the event that a student's score indicated something particularly concerning on any of the inventories, the student's name would have been identified and the school's mental health staff would have been notified. This would have been the only event in which a student's responses did not remain anonymous; fortunately, this did not happen. The specifics of this procedure were discussed and agreed upon in advance with administrators from the participating school district.

Chapter IV: Results

This chapter includes the results of the statistical analyses conducted to answer the three research questions in the current study. First, steps taken to screen the data and create variables are described. Next, a description of the sample is followed by preliminary analyses. Finally, the results of a path analysis are described as well as some follow-up analyses for further examination of the data and relationships between the variables.

Data were collected remotely via surveymonkey.com. There were three weeks available for participants to complete each of the inventories: The Center for Epidemiologic Studies Depression Scale (CES-D), the Scale for Social Comparison Orientation (INCOM, Iowa-Netherlands Comparison Orientation Scale), and a question asking participants to report their average Instagram usage for the week. Participants also provided demographic information including name, age, and gender. This chapter provides the results of the analyses that were conducted to answer the following research questions:

1. Are higher levels of Instagram use associated with higher levels of social comparison in adolescents?

2. Are higher levels of Instagram use associated with depressive symptoms in adolescents?

3. Is higher Instagram use associated with more depressive symptoms in adolescents with social comparison as a mediating variable, or a variable that helps to explain the relationship?

Data Screening

Data entry. Participants provided their responses online via survey monkey. Raw score data was then downloaded into Microsoft Excel. The data was then immediately entered into SPSS for data analysis by this author.

Missing data. Of a total 162 students, 52 students were eliminated from the study due to either incomplete responses or unusual responses. Unusual responses consisted of having the same exact minutes of Instagram usage per day for all seven days, having something other than a number indicating Instagram usage, or having the same response on the Likert scale for each of the survey questions. Incomplete responses consisted of entire sections missing with the exception of students not uploading proof of their usage statistics. In other words, participants' responses that responded fully with the exception of uploading a picture were still considered complete.

Variable Creation

To permit analyses between constructs (vs. individual items), composite scores were created to index participants' level depressive symptoms, social comparison, and average daily Instagram usage.

Participants' levels of depressive symptoms were calculated by summing the 20 questions and reverse scoring items 16, 12, 8, and 4 of the CES-D. Participants' levels of social comparison were calculated by summing the eleven items and reverse scoring items 6 and 10 on the INCOM. Finally, average daily Instagram usage was calculated by adding up all of the reported minutes of Instagram usage and dividing it by seven.

Sample Description

Overall, data from 110 participants were analyzed in this study (see Table 1). The age of the participants ranged from 12 to 18 years old with 30.9% of the sample being 12, 10.9% of the sample being thirteen, 6.4% of the sample being fourteen, 5.5% of the sample being fifteen, 23.6% of the sample being sixteen, 16.4% of the sample being seventeen, and finally, 6.4% of the sample being eighteen. The sample was comprised of 56.4% females, 42.7% males and .9%

other. Sixteen students returned letters signed by their parents to exempt them from participating

in the study. Students who did not have parental consent were not sent the link to the survey; the

survey was designed in such a way that it could be completed only using a direct link.

Table 1

Demographics Characteristics as a Percentage of the Sample (n=110)

Variable	Total (n=110) %
Gender	
Male	42.7
Female	56.4
Transgender	0
Other	.9
Age	
12	30.9
13	10.9
14	6.4
15	5.5
16	23.6
17	16.4
18	6.4

Preliminary Analyses

Preliminary analyses consisted of: (a) computing Cronbach's alphas for all of the multi-

item scales, (b) computing descriptive statistics (i.e., means, standard deviations, skewness,

kurtosis) for all variables of interest, and (c) examining correlations between key variables, and

(d) testing the assumptions of multiple regression. These calculations were conducted using the

software SSPSS.

Measure reliability. The internal consistency was examined for the CES-D and the

INCOM summarized in Table 2. For the CES-D scale, the internal consistency was .872 and

internal consistency for the INCOM scale was .792. Each of these scales had internal

consistencies within or above the good range which is consistent with reports in the literature

(Gibbons & Buunk, 1999; Radloff, 1977).

Table 2

Internal Consistency of Measures

Measure	α
CES-D	.872
INCOM	.792

Descriptive analyses. To assess normality issues, skewness and kurtosis of the outcome

variables, as well as other descriptive statistics (e.g., mean, standard deviation), analyses were

conducted using SPSS to gain a general understanding of the data (Table 3). For the CES-D

scale, the mean score was 15.6, the median score was 13, the standard deviation was 9.9, and the

variance was 98.51. The minimum score was 0 and the maximum score was 43. For the

INCOM scale, the mean score was 31.8, the median score was 33, the standard deviation was

7.8, and the variance was 61.2. The minimum score was 14 and the maximum score was 48.

The mean Instagram usage was 25.8 minutes per day, on average. The median Instagram usage

was 8.5 minutes per day, on average with a standard deviation of 39.1 The minimum usage

amount was 0 minutes per day and the maximum usage was 205 minutes of Instagram usage per

day, on average. Finally, both the Depressive Symptoms and Social Comparison variables had

approximate normal distributions (skew and kurtosis between -2.00 and +2.00). The Average

Instagram Usage variable had a skewness = 2.452 and kurtosis = 7.150. This means that this

data is highly positively skewed and asymmetrical. In other words, Average Instagram usage

was not normally distributed in that there were more people engaging in lower levels of

Instagram usage.

Table 3

Descriptive Statistics for Key Variables (n=110)

Variable	Minimum	Maximum	M	(SD)	Skew	Kurtosis
Depressive Symptoms	0	43	15.6	(9.9)	.674	-.254
Social Comparison	14	48	31.8	(7.8)	-.333	-.529
Average Instagram Usage	0	205	25.8	(39.1)	2.452	7.150

Correlational analyses. To permit examination of the bivariate relationships between all outcome variables, correlation matrices were constructed for the sample. Table 4 presents the correlations among variables. An alpha level of .05 was used to determine statistical significance.

Table 4

Correlation Matrix for Variables (n=110)

Measure	CES-D	INCOM	Average Instagram Usage
CES-D	1.00		
INCOM	.226*	1.00	
Average Instagram Usage	.143	.205*	1.00

*p < .05

Assumptions of multiple regression. Results from preliminary analyses confirmed that there were no violations of the assumptions of normality, homoscedasticity, and multi-collinearity. Specifically, the residuals, or the differences between the observed value of the dependent variable and the predicted variable follow a normal distribution. Linearity means that the predictor variables in the regression have a linear relationship with the outcome variable. Homoscedasticity indicates that the residuals are equally distributed across all levels of the independent variable and lastly, there are no issues with multi-collinearity indicating that the predictor variables are not highly correlated with each other.

Goodness of Fit Statistics

Goodness of fit statistics indicate how well a statistical model fits a data set. In other words, fit statistics summarize the discrepancy between the observed values and the expected values. For the model, the Chi-Square index, the Root Mean Squared Error of Approximation (RMSEA), the CFI and Tucker-Lewis index (TLI), the Root Mean Squared Residual (SRMR), and coefficient of determination (CD) were analyzed.

The norm guidelines that were utilized when analyzing the fit statistics for this model were as follows: a Chi-Square probability value where p-value > .05 indicates acceptable model fit, a CFI and/or TLI value close to 1.0 indicates a good fit (ideally > 0.90), a SRMR of 0 being a perfect fit and an SRMR of < 0.08 being a good fit, and lastly, a perfect fit for the CD (R^2) is 1 (stata.com, n.d.). It is important to note that goodness of fit statistics, specifically Chi-Square, can be sensitive to the sample size; this is relevant as this study included a modest sample size of 110 participants.

Results of these tests were mixed. Specifically, the Chi-Squared index was 19.546 (< .05), not indicating a good fit. In contrast, the CFI and TLI values were 1.0 indicating a good fit. The SRMR was 0 indicating a perfect fit and lastly, the CD was .068 indicating a less than perfect fit. STATA provides the opportunity for the researcher to re-specify the model to try to obtain a better fit; it does so by providing modification indices, which are proposed changes that would reflect improvement in the model fit by typically adding a previously omitted parameter. In this case, STATA reported that there were no modification indices to report, likely because the model is fully saturated or, all of the potential relationships are already being measured. Altogether, the results were mixed, but generally indicated a good fit when comparing the observed distribution to the expected distribution.

Path Analysis

Path Analysis estimated the magnitude and significance of each of the variables in their contributions to the outcome variable, depressive symptoms. Specifically, this study was designed to determine the influence of Instagram usage on depressive symptoms through social comparison. The results (i.e., paths) that follow can be seen in *Figure 2* as well as the tables embedded in this section. Path values are reported in standardized beta coefficients as these standardized values allow for the comparison of the effect of each independent variable on the dependent variable. In other words, the higher the absolute value of the beta coefficient, the stronger the effect. Direct effects are from one variable direct to another variable, whereas indirect effects from independent variables to dependent variables go through a mediating variable. Indirect effects are calculated by taking the product of the direct effects, or the standardized beta coefficients. Total effects are calculated by summing the direct and indirect effects.

Figure 2. STATA Path Analysis Model
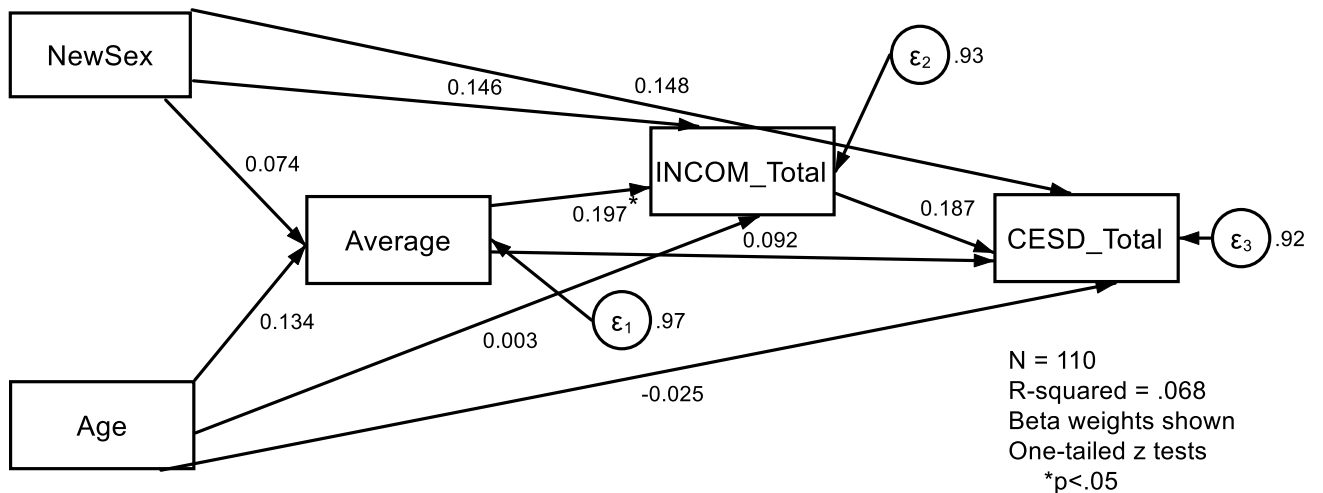
The first research question posited that Instagram usage would be associated with high levels of social comparison. Results from the path analysis supported this hypothesis. Specifically, Instagram usage was a significant predictor of social comparison on Instagram (direct path β = .194, p = .03). In other words, Instagram usage was associated with significantly higher levels of social comparison. See table 5 for direct, indirect, and total effects.

Table 5

Path Analysis Findings: direct, indirect, and total effects on Social Comparison

		Social Comparison	
Variable	Direct Effects (β)	Indirect Effects	Total Effects
Sex	.146	.014	.160
Age	.003	.026	.029
Average Instagram Usage	.197*	-	.197*

Note: *N = 110*, * p < .05

The second research question posited that higher frequency of Instagram use would be associated with depressive symptoms in adolescents. Results from the path analysis did not support this hypothesis. Specifically, Instagram usage was not significant predictor of depressive symptoms (direct path β = .092, p = .33). See table 6 for direct and indirect effects.

The final research question hypothesized that higher levels of Instagram use would be associated with more depressive symptoms in adolescents with social comparison as a mediating variable, or a variable that helped to explain the relationship. Results from the path analysis did not support this hypothesis. Specifically, Instagram usage did not predict depressive symptoms through social comparison (indirect path β = .037, p = .15). See table 6 for direct and indirect effects and *figure 2* for standardized direct effects.
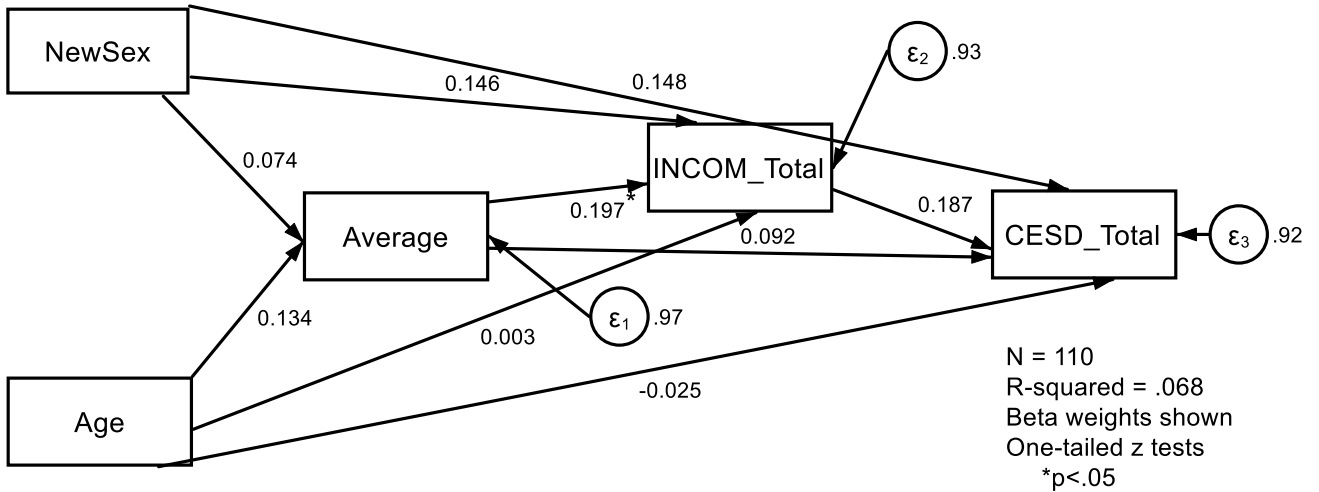
Table 6

Path Analysis Findings: direct, indirect, and total effects on Depressive Symptoms

Depressive Symptoms

Variable	Direct Effects (β)	Indirect Effects	Total Effects
Sex	.148	.037	.185
Age	-.025	.018	-.007
Average Instagram Usage	.092	.037	.129
Social Comparison	.187	-	.187

Note: *N = 110, * p < .05*

Figure 2. STATA Path Analysis Model

Follow-Up Analyses

Follow-up analyses were conducted to further examine some of the relationships between these variables. In terms of age, it has been documented that teens 15-17 years are 9-15% more likely to use Instagram than are younger teens (Pew Research Center, 2018b). In order to examine if there were any differences in Instagram usage between age groups, a one-way, between subject analysis of variance (ANOVA) was conducted to explore the relationship between age and Average Instagram Usage. In this analysis, age was the independent variable and average Instagram usage was the dependent variable. The ANOVA was not found to be significant, ($F(6,103) = 1.066$, $p = .388$; see Table 7). In other words, participants of various ages did not differ significantly in their Average Instagram Usage.

Table 7

Analysis of Variance between Age and Average Instagram Usage

		Average Instagram Usage	
Source	*df*	F	*p*
Between groups	6	1.066	.388
Within groups	103	-	-
Total	103	-	-

*Note. *N = 110*, *p < .05

Since almost a third of participants were 12 years old, the path analysis was re-conducted

after removing participants who were 12 years old to get a sense if there were any significant

predictive relationships with the absence of that age group. Thus, regardless of whether or not

younger students (i.e., 12 year olds) were included in the analyses, Instagram usage did not

predict depressive symptoms through social comparison (indirect path β = .014, *p* = .56). See

direct, indirect effects in Table 8.

Table 8

Path Analysis Findings: direct, indirect, and total effects on Depressive Symptoms Ages 13-18

	Depressive Symptoms		
Variable	Direct Effects (β)	Indirect Effects	Total Effects
Sex	.142	.037	.179
Age	.001	.039	.040
Average Instagram Usage	.103	.014	.118
Social Comparison	.202	-	.202

Since some research suggests that women are more likely to use Instagram (Pew

Research Center, 2018b), engage in social comparison (Guimond and Chatard, 2014), and

experience depressive symptoms (Leach, Christensen, Mackinnon, Windsor, Butterworth, 2008),

the relationships between Instagram usage, social comparison and depressive symptoms were

considered. The path analysis revealed that there was not a significant relationship between

gender and average Instagram usage (direct path β = .074, *p* = .433) Thus, the results from this

study did not indicate that gender predicts Instagram usage. See direct and indirect effects in

Table 9 and 10.

Lastly, an analysis was conducted to determine how accurate participants were in estimating how much they use Instagram per day. Average Instagram usage was compared to how much participants think they use Instagram per day. For this analysis, Average Instagram Usage was determined by the self-reported statistics since most participants did not upload photographic proof of usage via the embedded feature on Instagram. This was done because students were still instructed to utilize their usage statistics on the application instead of estimating their statistics. The following results were based on the assumption that the usage statistics were reported accurately based on these instructions. Interestingly, 75% of participants accurately estimated their usage compared to 25% who did not. For those who did not accurately estimate their usage, 24% estimated higher than actual usage whereas only .9% estimated lower than actual usage. Furthermore, 86% of the sample used had an Average Instagram usage of less than one hour per day. As a reference, the Likert scale measuring how often participants think that they use Instagram per day included broad categories to choose from (e.g., 0-1 hours per day as opposed to 0-15 minutes per day).

Chapter V: Discussion

The present study sought to explore the psychological cohort effects on social media usage among adolescents. Specifically, the relationships between Instagram usage and depressive symptoms were examined through the variable of social comparison in 110 students ages 12-18 from one middle/high school in rural upstate New York. This chapter summarizes the results of the current study and discusses the findings in the contexts of the existing literature. First, a discussion on the contributions of Instagram usage to social comparison is provided, followed by a discussion of the contributions of Instagram usage to depressive symptoms, as well as findings regarding social comparison as a mediating variable between Instagram usage and depressive symptoms. Implications to the field of school psychology, contributions to the overall literature base, limitations to the current study, and lastly, considerations for future research are discussed.

One of the intents of this study was to examine these relationships using an objective measure of Instagram usage. Unfortunately, many participants did not volunteer proof of their usage statistics; therefore, participants self-reported their usage based on instructions to use the data measured on their mobile application. This component of the study is unique in that prior studies did not have access to accurate Instagram usage statistics because it was not embedded into the application until the fall of 2018. Social comparison usage was measured by the Iowa-Netherlands Comparison Orientation Scale (INCOM) and Depressive Symptoms were measured by the Center for Epidemiologic Studies Depression Scale (CES-D).

Overall and Unique Contributions of Instagram Use to Social Comparison

The current study hypothesized that higher levels of Instagram use would be significantly correlated with higher levels of social comparison in adolescents. Results from the path analysis

revealed that sex, age, and average Instagram usage accounted for 6.5% of the variance in social

comparison. Specifically, sex and age were not significant predictors of social comparison. In

contrast, Instagram usage was a significant predictor of social comparison. Therefore, the first

hypothesis was supported by this study indicating a positive relationship between level of

Instagram usage and social comparison while using Instagram. In other words, as time spent

using Instagram increases, the level of social comparison also increases.

     This result was expected given the literature on social media and social comparison. In

terms of social comparison theory, Festinger (1954) originally theorized a "unidirectional drive

upward" (p. 124), or comparison to those more fortunate than oneself to satisfy a natural drive to

evaluate one's own abilities and opinions by comparing oneself to others. Since social media

provides users with constant, personal, information about others and opportunities for automatic

social comparison, in addition to the permeating nature of internet access in society, theories

around social comparison likely take similar form in the social media world. Research

consistently demonstrates that social media tends to contain positively skewed content, an

environment that is conducive to upward social comparisons. Specifically, Freitas (2017)

demonstrated the constant pressure that teens feel to appear happy on social media or to use

social media to impress other people. This idea that people post their "highlight reel," their

"hoped-for possible selves," or use filters on their photos to depict positively skewed content

consistently emerges from the literature (Dumas, Smith, Davis, and Giulietti, 2017; Steers, 2014;

Weinstein, 2017). People utilize social media in different ways than they navigate through real

life interactions. On social media, there is more opportunity to be more calculated and

intentional in one's actions, interactions, and in their depictions. Specifically, people have more

time to think about what they type and post before it is posted. For example, information can be

changed and deleted after already being posted, pictures can be taken multiple times until the perfect shot is attained and then they can in turn be filtered and edited. Because of this, Instagram is an environment of perfectly pre-conceived presentations of people's lives. Therefore, it is expected that people who use Instagram more frequently engage in more social comparisons, particularly upward comparisons, because the baseline of achievement and success is so much higher on Instagram.

Overall and Unique Contributions of Instagram Use to Depressive Symptoms

The second hypothesis of the current study was that Instagram use would be significantly associated with greater depressive symptoms. Results from the path analysis revealed that none of the independent variables measured (i.e., sex, age, Instagram usage, social comparison) were significant predictors of depressive symptoms. Therefore, this hypothesis was not supported by this study. Much of the research regarding social media and well-being is mixed; therefore, it is not completely out of line with the literature that social media usage was not associated with depressive symptoms based on results from the current study. For example, social media has been shown to facilitate higher levels of social capital (Ellison, Steinfield, & Lampe, 2007), relationship enhancement for users (Ryan, Allen, Gray and McInerney, 2017), as well as community support, feelings of belongingness, and connection for individuals navigating through stigmatizing or challenging experiences (Elmquist and McLaughlin, 2018; Reid and Weigle, 2014). Furthermore, social media has been associated with higher levels of psychological well-being (Zhang's, 2017), particularly for those who lack social skills in face-to-face interactions (Indian & Grieve, 2013; Ziv and Kiassi, 2015).

In contrast, an abundance of research has linked social media to higher levels of depressive symptoms (Best et. al., 2014; Pantic, 2014; Salmela-Aro, Upadyaya, Hakkarainen,

Lonka, & Alho, 2017; van den Eijnden, Meerkerk, Vermulst, Spijkerman, and Engels, 2008),

low self-esteem (Best et. al., 2014), lower overall wellbeing (Best et., al., 2014; Kross et. al.,

2013), and narcissistic personality traits (Sheldon & Bryant, 2015; Weiser, 2015). These

conclusions have been made among both adults and adolescents indicating that age is likely not a

controlling variable as to whether someone is likely to experience these symptoms or not.

Perhaps individual factors, or what someone brings to the table, is more impactful in

predicting one's symptoms as a result of using social media, supporting a "rich get richer" model

of social media usage (Kraut, Kiesler, Boneva, Cummings, Helgeson, & Crawford, 2002). In

other words, those who are more extroverted and have more social support in their face-to-face

friend groups are more likely to gain social capital from accessing social media whereas those

who have fewer face-to-face relationships are less likely to gain social capital from accessing

social media, whereas those who have fewer face-to-face relationships are less likely to gain

social capital online (Weiqin, Campbell, Kimpton, Wozencroft, and Orel, 2016). Perhaps this

model is extended to mental health symptoms in that those who are pre-disposed to mental health

challenges are more likely to experience depressive symptoms as a result of excessive social

media usage and those who are less pre-disposed to mental health challenges are more likely to

reap some of the benefits of social media.

Depressive symptoms and well-being are constructs that are determined by a wide

multitude of factors; therefore, it is unlikely that any one single factor will powerfully influence

it. In other words, well-being is determined by an infinite number of factors including genetics,

environment, education, race, socio-economic status. As such, it is difficult for one variable to

powerfully influence well-being in and of itself. Moving forward, it may be beneficial to include

more predictor variables in future research. For example, socio-economic status may be a

construct worth controlling for, considering adolescents from different backgrounds may have variable levels of susceptibility to mental health challenges. Also, individual experiences with social media might be a useful variable to include given that people engage in social media in different ways.

In terms of measurement, the CES-D scale (Radloff, 1977) that was used in this study to measure depressive symptoms was created in 1977, over 40 years ago; therefore, although the psychometric properties of the scale are sound, it was normed on participants in a different time period. Furthermore, perhaps depressive symptoms manifest differently today than they did in 1977. One source of evidence for this is that there have been multiple versions of the Diagnostic and Statistical Manual (DSM) published since this time indicating, at minimum, there are changes in the way that depression symptoms and mental health diagnoses are conceptualized in the field.

Interestingly, the Center for Epidemiologic Studies Depression Scale (Radloff, 1977) and the INCOM scale (Gibbons & Buunk, 1999) were demonstrated to be moderately correlated (.25) when originally assessed in 1977. Similarly, when the level of correlation was measured with this sample in the current study, the scales were demonstrated to be moderately correlated (.226). Based on available literature, it would seem that the relationship between these two scales or measuring tools would be more strongly related or correlated. Perhaps the INCOM (Gibbons & Buunk, 1999) Scale measuring a more general aspect of social comparison, rather than the type of social comparison (upward versus downward social comparison) is causing the correlation to be weaker. In a similar vein, it is possible that the specific depressive symptoms measured by the CES-D (Radloff, 1977) are not the same symptoms that are generally related to engaging in upward social comparisons.

Similar to how this study did not examine different types of social comparison, it also did not examine different ways in which people utilize social media. Specifically, the present study investigated the variable of overall Instagram usage measured by the amount of time one spends using the application. However, people utilize Instagram in many different ways; for example, browsing, posting, watching "reels" or "stories," looking at specific people's pictures, browsing through the "explore" page, editing photos. In other words, the time spent using Instagram can vary between many different activities. For example, Frison and Eggermont (2017) examined some different activities that take place on Instagram (e.g., browsing, liking, posting) and confirmed that that time spent browsing positively predicted adolescents' depressed mood. Similarly, Weinstein (2017) examined the effects of browsing different types of Instagram content on affect and confirmed a relationship between browsing more attractive Instagram posts and more negative affect. Similarly, there is some research to support that the type of social media friends one has contributes to outcomes associated with social media usage (Chou & Edge, 2011; Lup, Trub, & Rosenthal, 2015). Perhaps the various ways in which individuals are using Instagram has a stronger impact on depressive symptoms than total time spent using Instagram overall. In other words, it is possible that these various activities impact social comparison and depressive symptoms in different ways.

Lastly, another explanation for the lack of statistically significant results between these variables is that these measures were inconsistent with each other in terms of the context of the constructs being measured. Specifically, social comparison was measured "while using Instagram" as each of the items of the INCOM (Gibbons & Buunk, 1999) was preceded with this phrase. In contrast, depressive symptoms were measured using a more general, more stable measure across environments. For example, items on the CES-D (Radloff, 1977) were asked in a

more general context. Perhaps, people experience different levels of affect while using

Instagram and while engaging in these upward social comparisons and then, after using

Instagram, affect returns to baseline. Therefore, this measure of depressive symptoms did not

capture changes in affect that occur only while using Instagram. Perhaps social comparison on

Instagram does impact affect, but only for a temporary period of time while using the

application.

Social Comparison as a Mediator Between Instagram Use and Depressive Symptoms

The last hypothesis of the current study was that there would be a significant, indirect

relationship between Instagram use and depressive symptoms with social comparison acting as a

mediating variable. Since the direct relationship between Instagram usage and depressive

symptoms was not significant, it is unsurprising that there was not a significant indirect

relationship between Instagram usage and depressive symptoms through social comparison.

Similarly, there was not a significant relationship found between social comparison while

using Instagram and depressive symptoms. This finding presents as contrary to much of the

previous research literature. Specifically, it is well supported that Instagram is a space that is

conducive to upward social comparisons due to the highlight reel nature of visual social media.

In other words, users generally depict positively skewed depictions of their lives (Steers, 2014;

Weinstein, 2017; Zhao, Grasmuck, and Martin, 2008); therefore, upward social comparisons, or

comparisons to those more fortunate than oneself (Festinger, 1954), are likely to occur in excess

while using Instagram. Furthermore, research has demonstrated that upward social comparison

is associated with negative affect in traditional interactions (Gibbons, 1986; Haferkamp, &

Kramer, 2011; Wills, 1981); thus, it seemed likely that a similar dynamic occurs in the social

media world.

In terms of measurement, the scale used to measure social comparison, the INCOM scale (Gibbons & Buunk, 1999), measured the intensity of social comparison by asking participants to report their level of engagement in social comparison practices while using Instagram. As has been stated above, research supports the idea that users are likely to engage in upward social comparison due to the positive nature of social media content. However, some other studies examined the specific type of social comparison associated with Instagram usage (e.g., upward social comparison vs. downward social comparison) or the frequency of social comparison (e.g., how often it occurs). This discrepancy in measurement may have contributed to the lack of significant results in the present study.

Follow-up analyses were conducted to further explore the relationships between the variables in regard to gender and age. Since females are more likely to use Instagram (Pew Research Center, 2018b), engage in social comparison (Guimond and Chatard, 2014), and experience depressive symptoms (Leach, Christensen, Mackinnon, Windsor, Butterworth, 2008), the primary variables of Instagram usage, social comparison, and depressive symptoms were examined in relation to gender. Contrary to expectations, there were not any significant relationships between the variables within this group. Although it was expected that females would demonstrate higher levels of social media usage, and therefore experience depressive symptoms, significant results were not found. One potential explanation for this is, if females are already more likely to experience each of these constructs or variables in isolation, it is likely that confounding variables uncontrolled for in this study are the culprit for these elevated levels. In other words, the baseline may just be higher for females across the board which would not impact the relationships between these variables. Furthermore, previous research has suggested inconclusive results pertaining to gender differences amongst these variables. Specifically, one

study suggests similar associations across genders (Nesi and Prinstein, 2015), while one suggested that social comparison on social media is associated with depressive symptoms only for males (Steers, Wickham, and Acitelli, 2014). Most studies, however, did not control for or report out on distinctions among gender while examining these variables.

Further analyses were conducted to identify significant relationships among participants of different ages. Research suggests that teens 15-17 years are 9-15% more likely to use Instagram than are younger teens (Pew Research Center, 2018b). However, results from this study did not support the position that teens of different ages have significantly different tendencies of Instagram usage. In the current study, since almost a third of participants were 12 years old, the primary variables were re-examined just among the 13-18 year old participants. Similar to the original sample, there were no significant relationships between Instagram usage, social comparison, and depressive symptoms among this age group. Since this group of participants did not differ in their Instagram usage across age groups, it makes sense that social comparison and depressive symptoms also did not differ across age since it was hypothesized that each of these variables are related. The current study had a sample of 110 participants spread across seven ages. Since almost a third of participants were 12 years old, it is possible that the other age groups (13-18 years) did not have a large enough sample to provide an adequate amount of power to the analyses. Moreover, most prior research did not control for or report out on age; therefore, the research is inconclusive on if there are differences amongst these variables in regard to age.

Contributions to the Literature

Since the influx of social media happened rapidly within the last decade, the research regarding the psychological cohort effects of this new form of interaction has struggled to keep

pace. To date, most of the research in this realm has been on Facebook usage among adults with only a few studies examining the distinct impacts of image-based platforms (such as Instagram) among adolescents despite the fact that in 2018, 45% adolescents indicated that they use the internet almost constantly (Pew Research Center, 2018b), with the most popular platforms among this group being image-based platforms including YouTube, Instagram, and Snapchat (Pew Research Center, 2018b). The current study contributed to the overall literature base regarding Instagram usage among adolescents supporting the premise that Instagram usage is a significant predictor of social comparison. The study provides a basis for future research to continue examining the psychological impacts of this increase in social comparison due to social media usage.

Furthermore, previous studies utilized a measure of Instagram that consisted of participants indicating an estimate of their range of daily social media usage (e.g., 1-2 hours per day) because, prior to the latter part of 2018, an objective measure of Instagram usage was not accessible by users; therefore, measurement options were limited. This study instructed participants to locate the function embedded in their Instagram application to access their daily usage statistics in order to report their exact usage making it more likely that an accurate measure of Instagram usage was analyzed in this study in comparison to previous research.

Study Limitations

The current study was designed to minimize any threats to its reliability and validity; however, there are still limitations to be aware of. Primarily, there are concerns with population validity in regard to generalizability. While the researcher intended to elicit participation from schools in both rural and suburban environments, all were from Central New York State, which is geographically limiting. Due to the nature of convenience sampling rather than random

sampling, it is difficult to generalize results to the larger population. Specifically, all participants

from this study attended one middle/high school in rural upstate New York. The school was

relatively small (approximately 600 students in grades pre-k through 12) with a student body

primarily comprised of white students. Furthermore, approximately 37% of the school body is

considered economically disadvantaged. Therefore, this study's participants represent a small

segment of the overall population, and overall, may not be fully representative of the population

at large.

Furthermore, this study relied on self-report data for all of the variables. One way in

which self-report surveys are limiting is that there is potential for social desirability to drive the

participants' responding. Furthermore, the respondents' introspective ability may make it

difficult to assess themselves accurately. Another difficulty with self-report surveys is that

Likert scales are ordinal and the intervals between the positions on the scale are not well defined

which could lead to misrepresented responses. The intention of this study was to reduce the use

of self-report in the measurement of Instagram usage by the researcher verifying their usage by

looking at the statistics on participants' mobile devices. Unfortunately, this study took place

during the global pandemic of COVID-19; therefore, in-person interactions were limited for

safety reasons. In an attempt to still recruit data in the most objective way possible, participants

were asked to submit screenshots of their Instagram usage screen on their mobile application.

Unfortunately, few of the participants chose to do this resulting in the analysis of only self-report

data. Participants were still instructed how to access their usage statistics in order to retrieve

accurate information; however, no verification was provided.

COVID-19 Implications. Data collection for this study took place in the midst of the

COVID-19 pandemic. Implications of the pandemic were widespread and specific effects on the

mental health of adolescents is currently being studied. Preliminary research suggests that the

psychological impact of COVID-19 is substantial, as demonstrated by moderate to severe

anxiety and depressive symptoms (Cullen, Gulati, Kelly, 2020; Fitzpatrick, Harris, Drawve,

2020), as well as worry, fear, and trauma symptoms particularly among those with underlying

health issues or those vulnerable to psychological problems (Kontoangelos, Economu, and

Papageorgiou, 2020). According to the Pew Research Center (Keeter, 2021), about one fifth of

U.S. adults are experiencing high levels of psychological distress since the pandemic. While this

statistic is based on adults, one can deduce there may be similar trends among our nation's youth

as well. Fear and isolation seem to be the primary contributors to the surge of anxiety and

depression in the last year. The pandemic was associated with a multitude of lifestyle changes

for people of all ages. Specifically, people were instructed to socially distance for health

reasons, restaurants and places of social gatherings were closed and significantly limited in

capacity, schools and businesses entered a period of remote education and activities, finances

were in a period of hardship for some, millions of people became sick, and millions of deaths can

be attributed to COVID-19. Undoubtedly, this time in history was conducive to mental health

difficulties for everyone, including adolescents. Also, since social distancing was required, there

was likely a significant increase in the use of various social networking and digital interaction

platforms (e.g., Tik Tok, Zoom). The specific information about how these implications

impacted the results of this study are currently unknown; however, this context in which data

collection took place is important to note.

Implications for the Field of School Psychology

School psychologists are key mental health providers in schools; therefore, it is expected

and essential that they are knowledgeable about the implications of social media on youth (Roth,

Zielenski, & Daly, 2019). Although some of the specific hypotheses examined in this study were unfounded, the literature is clear that social media is prevalent and impactful on the daily lives of adolescents. For example, the percentage of teens indicating that they use the internet "almost constantly" nearly doubled from 2015 to 2018 from 24% to 45%, respectively. In addition to this, another 44% say they go online several times per day, meaning that an astonishing nine-in-ten teens go online multiple times per day (Pew Research Center, 2018a). Furthermore, roughly half of teens ages 13-17 say they use Facebook compared to the 69% who use Snapchat, 72% who use Instagram, and a remarkable 85% who use YouTube (Pew Research Center, 2018b). School psychologists may be responsible for educating students, parents, and other educators on the implications of this medium of communication and information exchange.

Specifically, the jury is out as to whether social media has more of a positive impact or negative impact on lives as there is an abundance of research supporting both sides of this coin. Specifically, social media facilitates higher levels of social capital (Ellison, Steinfield, & Lampe, 2007), provides a level of anonymity that sometimes leads the way to community support for some stigmatized experiences (Elmquist & McLaughlin, 2018), and has been associated with various facets of psychological well-being (Indian & Grieve, 2013; Pittman & Reich's, 2016; Ziv & Kiassi, 2015). Furthermore, social media has been linked to higher rates of social comparison (e.g., Chou & Edge, 2011; Nesi & Prinstein, 2015; Steers, Wickham, & Acitelli, 2014), a relationship that has been further endorsed by the results from the current study. In contrast, social media has its fair share of literature depicting negative outcomes associated with higher use. For example, Best et. al. (2014) synthesized the empirical research on the topic of social media and mental well-being of adolescents which suggested that social media is associated with increased risk of depression and social isolation, low self-esteem, increased risk of cyber

bullying, and overall lower well-being. These results, along with research suggesting associations with characteristics of personality disorders (Sheldon & Bryant, 2015), suggest negative outcomes of social media usage.

School psychologists have a responsibility to educate youth on both the positive aspects of social media as well as some potential negative side effects of usage. An example of how this could take place and the impact it could have is depicted in Weinstein's (2017) research which provided evidence that individuals who are aware of the "highlight reel" nature of social media and keep in mind that Instagram posts are often positively skewed are less susceptible to the negative impacts of social media browsing. Weinstein (2017) also demonstrated that spending a limited amount of time on social media can be helpful in becoming less susceptible to making upward social comparisons. Therefore, it is appropriate for school psychologists to educate youth and parents on the nature of social media content and setting reasonable and developmentally appropriate boundaries on social media usage.

Overall, this knowledge and research on social media usage can be helpful in school psychologists developing social media literacy programs across multiple tiers of service. Literacy programs may consist of education on the benefits and impacts of social media, the tendency for social media content to be skewed, and strategies to be intentional regarding their online presence at the universal level. Individually, school psychologists can speak to students who may be heavier users of social media and those involved in unsafe or unhealthy social media practices to provide knowledge of risk involving social media and strategies to have self-awareness while consuming and disseminating content.

Future Research

Results from this research demonstrated that there is a significant relationship between using social media and engaging in higher rates of social comparison. The scale used to measure social comparison in this study examined the intensity of social comparison by asking participants to report how strongly they engage in social comparison practices. Research supports the idea that users are likely to engage in upward social comparison due to the positive nature of social media content. However, future research may seek to confirm this by examining the specific type of social comparison associated with Instagram usage (e.g., upward social comparison vs. downward social comparison), as the current study did not differentiate the types of social comparison. In a similar vein, this study did not differentiate between the various types of activities one could participate in on Instagram (e.g., browsing, liking, editing, posting). Future research may also consider investigating whether social comparison or depressive symptoms depends on specific activities that one participates in on Instagram.

Since well-being and depressive symptoms are constructs that are determined by a wide multitude of factors; it is unlikely that one single variable will powerfully influence it. In other words, well-being is determined by an infinite number of factors in one's life (e.g., quality of relationships, socio-economic status, genetics, environment); therefore, the contribution of one individual factor is likely to have a small overall effect. Future research might consider including more independent variables such as socio-economic status and other risk factors for depressive symptoms to more carefully and accurately examine how the variables of social media and social comparison influence well-being constructs.

Furthermore, the measure used for depressive symptoms, the CES-D (Radloff, 1977) asked questions regarding depressive symptoms in a more general context. In contrast, the INCOM (Gibbons & Buunk, 1999) was adapted in this study to reflect social comparison levels

while using Instagram. Perhaps Instagram usage and social comparison does impact affect but only temporarily while using the application. Therefore, the measure of depressive symptoms in this study would not have captured or be sensitive to that change. Future research should consider measuring a more temporary aspect of affect while using Instagram.

Future research should also consider the development of systemized social media literacy programs for youth that includes education around social media impact, self-awareness while using social media, and boundaries regarding social media usage. Many of the social and developmental dynamics that exist among adolescents in traditional face-to-face contact also exist on social media with some extra nuances. Navigating this world will be made easier and more functional with a blueprint of what to expect as well as strategies to guard against risk.

Furthermore, with the exception of Weinstein (2017), all of the available research conducted in this area has been correlational research. In other words, a causal relationship cannot be implied between the variables unless one of the independent variables is manipulated. Future research should consider more experimental research to really study the causal relationships between these variables.

Lastly, one of the factors that was intended to make the current study unique was not able to be implemented due to the influence of the COVID-19 pandemic on in person interactions. Specifically, an objective measure of Instagram usage became available prior to the start of the study but it was not able to be utilized due the limitations on in person interactions during this time. Therefore, an objective measure of Instagram usage was not necessarily utilized. Since users generally access their social media accounts intermittently throughout the day, it is difficult to get an accurate measure of daily usage. Therefore, future research should take advantage of this embedded measurement system while researching the impacts of Instagram usage.

Summary

  The influx of social media platforms and the prevalence of usage among people of all ages has experienced a staggering increase within the last decade. Utilization of this medium of communication and information exchange has become an everyday, sometimes constant, event for people, particularly adolescents (Pew Research Center, 2018a). Therefore, establishing conclusions on the impact of various forms of social media usage on the psychological functioning and well-being of users is becoming urgent.

  The literature regarding outcomes of social media is rather inconclusive in that there are many different studies that suggest contrasting outcomes. Specifically, there a is a plethora of research supporting the position that social media facilitates higher levels of social capital (Ellison, Steinfield, & Lampe, 2007) and provides users a space to connect and share information and ideas (Xu, Ryan, Prybutok, & Wen, 2012). Furthermore, social media has been positively associated with a variety of well-being constructs including increased life satisfaction (Zhang's, 2017), increased self-esteem, increased feelings of belongingness (Best, Manktelow and Taylor, 2014), and a way for people with high social anxiety (Indian and Grieve, 2013) or low self-esteem (Ziv & Kiassi, 2015) to have healthy social interactions by opening up new avenues for communication. Moreover, social media sometimes has a level of anonymity built into it which has shown to be effective for people to connect with others about topics that are seen as shameful or stigmatized such as mental illness, weight issues, or drug/alcohol problems (Reid and Weigle, 2014). In contrast, an abundance of research has demonstrated a plethora of negative outcomes of social media usage including increased levels of depressive symptoms, low self-esteem, and lower overall well-being (Baker, Krieger, and LeRoy, 2016; Best et. al., 2014; Pantic et. al., 2011; Pantic, 2014; van den Eijnden, Meerkerk, Vermulst, Spijkerman, and Engels, 2008).

The premise for the current study is based on the research that social media is associated with increased depressive symptoms due to increased opportunities for upward social comparison when engaging with social media. Festinger (1954) originally suggested that humans have a natural drive to evaluate their own opinions and abilities, and therefore, they use comparison to others to do so. Upward social comparisons, or comparisons to those who are perceived as better than onself, are generally associated with more negative affect whereas downward social comparisons, or comparison to those less than fortunate than oneself, are associated with feeling good about oneself (Wills, 1981). Since social media is generally inundated with overly positive portrayals of people's lives (Freias, 2017; Steers, 2014; Weinstein, 2017), it makes sense for people to engage in more upward comparisons on social media, and therefore, they are likely to experience higher levels of depressive symptoms (Fox & Moreland, 2015).

The current study sought to examine this relationship between social media usage (specifically, Instagram usage), social comparison, and depressive symptoms among adolescents. Three research hypotheses were presented. First, it was hypothesized that higher levels of Instagram use would be significantly correlated with higher levels of social comparison in adolescents. Second, it was hypothesized that Instagram use would be significantly correlated with greater depressive symptoms. Lastly, it was hypothesized that there would be a significant, indirect relationship between Instagram use and depressive symptoms with social comparison acting as a mediating variable.

Results from the path analysis supported only the first hypothesis. Specifically, increased levels of Instagram usage predicted a significant increase in engaging in social comparisons. In contrast, results did not support the hypothesis that Instagram usage was associated with

depressive symptoms or that social comparison was a mediating variable between Instagram usage and depressive symptoms. Furthermore, follow-up analyses indicated that there were not significant differences within the relationships between the primary variables when examining different ages and genders.

Future research should continue exploring the implications of heavy social media use. Although research has been conducted on this topic, the literature base has not kept up with the rapid surge of social media within the last decade. The conclusions regarding the specific psychological impacts of this type of medium are still generally inconclusive; however, the fact that social media is having an impact on our functioning is well-established. Future research may choose to focus on drawing conclusions on specific impacts as well as how to educate adolescents on the influence of social media, how to be intentional of their time spent communicating online, and strategies to reduce risk of negative outcomes.

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Appendix B: Parent Consent Letter

Title of Project: _____ _____

Researcher(s): Alicia A. Zielenski and Dr. Rachel Gardner, Ph.D.

Your consent is being sought for your child's participation in this study. Please read the following information carefully before you decide whether or not you consent for them to participate.

Purpose of the research: The purpose of this study is to examine the relationships between social media use, specifically Instagram, social comparison tendencies, and depressive symptoms in adolescents.

Procedure to be followed: Your child will be asked to complete two different surveys; one of which is the Scale for Social Comparison Orientation (INCOM, Iowa-Netherlands Comparison Orientation Scale) which measures how often one compares themselves to others. The other scale is the Center for Epidemiologic Studies Depression Scale (CES-D) which measures depressive symptoms within the last week. Lastly, each participant will show evidence (using a feature on their Instagram application) indicating how much they have used the application within the last week. If students are not users of the application, they are welcome to participate and report no usage.

Discomforts/risks: Although the surveys are extremely low risk to students, there is a possibility that, due to the nature of the questions, depressive thoughts and feelings may be triggered. If a student feels they would like to process their thoughts and feelings post-participation, the school's mental health staff will be made available to them.

Incentives/benefits for participation: Participants will receive a small, sweet treat such as a candy bar in exchange for their participation. Furthermore, all participants have the opportunity to contribute to the greater field of psychology in the area of social psychology.

Time duration of participation: Participation in the study will not exceed 20 minutes.

Statement of confidentiality: Records will be kept confidential and will be available only to the researchers directly involved in the study. Completed surveys will remain locked up when not being analyzed and will be shredded at the completion of the study. If the results of this study are published, the data will be presented in group form and individual participants will not be identified. In the event that a student's score on any of the inventories indicates something particularly concerning, the student's name will be identified and the school's mental health staff will be notified. This is the only event in which a student's responses will not remain anonymous. The specifics of this procedure have been discussed and agreed upon with administrators from _____ school.

Voluntary participation: Your child's participation is voluntary. If you believe you have been in any way coerced into your child participating, please inform the researcher. Also, your child may choose not to answer any question(s) that makes them uncomfortable.

Termination of participation: Your child may choose to withdraw from the study at any time and still receive compensation.

Questions or concerns regarding participation in this research should be directed to:
Alicia Zielenski (az4@alfred.edu) or Dr. Rachel Gardner (gardner@alfred.edu). If you have questions about your child's rights as a person who is taking part in a research study, you may contact Danielle Gagne, Ph.D., Chair of the Human Subjects Committee at AU at (607) 871-2213 or email her gagne@alfred.edu. She may be reached via mail at 1 Saxon Drive, Alfred, NY 14802.

This research has been reviewed and approved by Alfred University's Human Subjects Research Committee (HSRC).

If you *do not* consent your child to participate, please sign and return the form to _____ school or Alicia Zielenski at az4@alfred.edu.

I have read all the information provided on this form, and do not consent to my child's participation in this study.

_____   _____
Name of child   *Grade Level of Child*

_____   _____
Signature   *Date*

_____
Please print your name here.

Appendix C: Informed Student Assent Form

Title of Project: _____
Researcher(s): Alicia A. Zielenski and Dr. Rachel Gardner, Ph.D.

Your assent, or agreement, is being sought for your participation in a research study to determine the relationships between social media use, specifically Instagram, social comparison tendencies, and depressive symptoms in adolescents. Your participation is being requested because you are a teenager in a local high school. Please know that your parent/guardian has granted permission for you to take part in this study.

To take part in this study, you will be asked to complete some different questionnaires that ask about your thoughts, behaviors, and attitudes toward life. Also, you will be asked to show the researcher evidence of your Instagram usage using a feature embedded in the Instagram application. Your answers will remain private unless your responses indicate that you are in danger; in this case, our priority is to keep you safe.

Please know if you choose to participate in this study, you have the right to change your mind at any time and stop your participation.

I understand what the person running this study is asking me to do. I have thought about this and agree to take part in this study.

_____   _____
Signature   *Grade Level*

_____   _____
Please print your name here.   *Date*

Researcher Use Only

_____   _____
Name of person providing information to child   *Date*

_____
Signature of person providing information to child

Appendix D: Scale for Social Comparison Orientation (INCOM, Iowa-Netherlands Comparison Orientation Scale)

Most people compare themselves from time to time with others. For example, they may compare the way they feel, their opinions, their abilities, and/or their situation with those of other people. There is nothing particularly 'good' or 'bad' about this type of comparison, and some people do it more than others. We would like to find out how often you compare yourself with other people on Instagram. To do that we would like to ask you to indicate how much you agree with each statement below.

	I disagree strongly	I disagree	I neither agree nor disagree	I agree	I agree strongly
1. When I am using Instagram, I often compare myself with others with respect to what I have accomplished in life.	☐	☐	☐	☐	☐
2. When I am using Instagram, if I want to learn more about something, I try to find out what others think about it.	☐	☐	☐	☐	☐
3. When I am using Instagram, I always pay a lot of attention to how I do things compared with how others do things.	☐	☐	☐	☐	☐
4. When I am using Instagram, I often compare how my loved ones (boy or girlfriend, family members, etc.) are doing with how others are doing.	☐	☐	☐	☐	☐
5. When I am using Instagram, I always like to know what others in a similar situation would do.	☐	☐	☐	☐	☐
6. When I am using Instagram, I am not the type of person who compares often with others.	☐	☐	☐	☐	☐
7. When I am using Instagram, if I want to find out how well I have done something, I compare what I have done with how others have done.	☐	☐	☐	☐	☐
8. When I am using Instagram, I often try to find out what others think who face similar problems as I face.	☐	☐	☐	☐	☐

9. When I am using Instagram, I often like to talk with others about mutual opinions and experiences.

☐   ☐   ☐   ☐   ☐

10. When I am using Instagram, I never consider my situation in life relative to that of other people.

☐   ☐   ☐   ☐   ☐

11. When I am using Instagram, I often compare how I am doing socially (e.g., social skills, popularity) with other people.

☐   ☐   ☐   ☐   ☐

Appendix E: Center for Epidemiologic Studies Depression Scale (CES-D)

Below is a list of the ways you might have felt or behaved. Please tell me how often you have felt this way during the past week.

During the Past Week

	Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	Most or all of the time (5-7 days)
1. I was bothered by things that usually do not bother me.	☐	☐	☐	☐
2. I did not feel like eating; my appetite was poor.	☐	☐	☐	☐
3. I felt that I could not shake off the blues even with help from my family or friends.	☐	☐	☐	☐
4. I felt I was just as good as other people.	☐	☐	☐	☐
5. I had trouble keeping my mind on what I was doing.	☐	☐	☐	☐
6. I felt depressed.	☐	☐	☐	☐
7. I felt that everything I did was an effort.	☐	☐	☐	☐
8. I felt hopeful about the future.	☐	☐	☐	☐
9. I thought my life had been a failure.	☐	☐	☐	☐
10. I felt fearful.	☐	☐	☐	☐
11. My sleep was restless.	☐	☐	☐	☐
12. I was happy.	☐	☐	☐	☐
13. I talked less than usual.	☐	☐	☐	☐
14. I felt lonely.	☐	☐	☐	☐
15. People were unfriendly.	☐	☐	☐	☐
16. I enjoyed life.	☐	☐	☐	☐
17. I had crying spells.	☐	☐	☐	☐
18. I felt sad.	☐	☐	☐	☐
19. I felt that people dislike me.	☐	☐	☐	☐
20. I could not get "going."	☐	☐	☐	☐

Appendix F: Demographics Questionnaire

Name: _____

Age:
- ☐ 12
- ☐ 13
- ☐ 14
- ☐ 15
- ☐ 16
- ☐ 17
- ☐ 18

I identify my gender as:
- ☐ Male
- ☐ Female
- ☐ Transgender
- ☐ Other

How much do you think you use Instagram per day, on average?
- ☐ Less than 1 hour per day
- ☐ 1-2 hours per day
- ☐ 2-3 hours per day
- ☐ 3-4 hours per day
- ☐ 4-5 hours per day
- ☐ Greater than 5 hours per day