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Predictors for Depressive Symptoms Among Women Instagram Users

Rochelle Henry
Walden University

Walden University

College of Social and Behavioral Sciences

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Rochelle Henry

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Review Committee
Dr. Matthew Fearrington, Committee Chairperson, Psychology Faculty
Dr. Steven Little, Committee Member, Psychology Faculty
Dr. Stephen Rice, University Reviewer, Psychology Faculty

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Sue Subocz, Ph.D.

Walden University
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Abstract

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MS, Walden University, 2013

BA, State University of New York Institute of Technology, 2005

Dissertation Submitted in Partial Fulfillment

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Abstract

As social networking sites have become a typical daily activity, there is a need to better understand the outcomes of online behaviors on other life functions. Prior researchers have found that social comparison and social networking behaviors can negatively affect adolescents' and young adults' self-esteem, however the potential threats for women who evaluate themselves based on comparisons to others has not been examined. The purpose of this study was to examine the effects on health and well-being for older adult women using the image-sharing site Instagram who share selfies. The theoretical framework for this study was the social comparison theory. Participants ($N = 117$) completed the Rosenberg Self-Esteem Scale and Iowa-Netherlands Social Comparison Orientation and answered questions about their selfie-sharing behaviors. Data were analyzed using multiple linear regression to determine the best predictors for depressive symptoms. The study revealed a significant model for the correlation between the variables, although only self-esteem and social comparison contributed to any meaningful significance. Selfie-sharing behaviors had no predictive qualities in this study. The correlations suggest that low self-esteem and high social comparison are associated with increased depressive symptoms. Social networking sites could provide awareness of the impacts of excessive social comparisons and issue warnings to users. In their work with clients, mental health practitioners could use the study's findings of relationships between the variables to explain how social comparisons impact well-being and offer healthier ways of overcoming the negative emotions, such as self-compassion and mindfulness, that can be brought on by the comparison leading to positive social change.

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Chapter 1: Introduction to the Study

Introduction

Instagram is one of the many social networking sites that have been scrutinized for causing negative effects to users' health and well-being (Hernandez & Smouse, 2017; Lin et al., 2016; Lup, Trub, & Rosenthal, 2015; Royal Society for Public Health [RSPH], 2017; Sherlock & Wagstaff, 2018). The purpose of this study was to examine if adult women sharing selfies on Instagram are as much at risk of experiencing depressive symptoms as previously studied younger populations. As social networking sites have become a typical daily activity for so many people, it is important to better understand the outcomes of online behaviors on other life functions. Determining if potential threats to health and well-being exist for adult women sharing selfies as a means for self-evaluations could identify problem areas for practitioners to address in counseling and bring awareness to the patient. In this chapter, I provide background information on the factors that motivated this study and the problems that led to the research question (RQ) and hypotheses. I discuss the purpose of this study and its significance, describe the nature of the study including the theoretical framework, and provide operational definitions before addressing the assumptions, scope and delimitations, and limitations of the study.

Background

The way people perceive themselves through comparisons has taken on a new form with the evolution of social networking sites. The readily available contacts and information easily accessible from any mobile device has become a common pastime for

idle times (Whiting & Williams, 2013). As a source of entertainment, some people

benefit from the social interactions, opportunities for self-expression, and creativity.

Instagram, originally launched in 2010, has been one of the worst-rated social networking

sites for health and well-being (RSPH, 2017). In Chapter 2, I will discuss the negative

impacts of Instagram on users' well-being identified by researchers (Donnelly & Kuss,

2016; Feinstein, Hershenberg, Bhatia, Latack, Meuwly, & Davila, 2013; Manago,

Graham, Greenfield, & Salimkhan, 2008; Nesi & Prinstein, 2015; Valkenburg, Peter, &

Schouten, 2006). Much of the existing literature I found has focused on adolescents and

emerging adults, with very little attention given to the effects on older adults. The

established relationships between social networking sites and health and well-being

needed to be expanded to include this population.

The photo-based social networking site Instagram exposes users to thousands of

pictures taken and shared by the site's 1 billion active monthly users (Statista, 2019). As

of December 2016, Instagram reported that over 282 million of the pictures posted were

selfies (Wordstream, 2017). Users who are engaging in upward social comparisons by

judging themselves in relation to others they perceive to be superior may minimize their

own successes and view themselves as failures. Repeated comparisons to seemingly

unattainable successes, along with negative attitudes about the self, can be a recipe for

depressive symptoms (Bäzner, Brömer, Hammelstein, & Meyer, 2006; Lup et al., 2015;

Vogel, Rose, Roberts, & Eckles, 2014). Additional consequences of social comparisons

extend to self-esteem domains including insecurity, negative health consequences, and

self-harm (Chua & Chang, 2016), negative affect (Cramer, Song, & Drent, 2016), high

self-uncertainty and self-consciousness (Lee, 2014), and life envy and jealousy (Chou & Edge, 2012). Relying on feedback or validation of their posts has been found to negatively affect self-esteem (Martino, 2014; Valkenburg et al., 2006; Walker, 2013). Individuals who depend on social acceptance of their selfies as standards of beauty and who are emotionally invested in the need for approval are susceptible to negative outcomes (Bloomfield Neira & Barber, 2014; Mascheroni, Vincent, & Jimenez, 2015).

Low self-esteem has been a strong predictor for users' depressed mood (Cheng & Furnham, 2003). Consider persons with lowered self-esteem who attempt to use social networking to improve their self-evaluation only to experience the opposite when comparing themselves to others or not receiving the desired feedback. It becomes a vicious cycle of behaviors where one feeds off the other. Certain behaviors have been associated with increased depressive symptoms in the current literature with younger populations, for example, time spent on social networking sites (Huang, 2017). The longer users engage, the more social comparisons they make, leading to an increased number of depressive symptoms (Donnelly & Kuss, 2016; Feinstein et al., 2013, Hernandez & Smouse, 2017; Lin et al., 2016).

Researchers have found connections between self-esteem, social comparison, selfie-sharing behaviors, and depressive symptoms (e.g., Nesi & Prinstein, 2015; Sherlock & Wagstaff, 2018); however, their research thus far has only involved young adult participants. I found no existing literature that concerns these connections among adult women who remain a largely underrepresented population in the study of social networking site impacts on health and well-being. Social networking sites, in particular

Instagram, are becoming increasingly popular with adult populations. Veroff, Reuman, and Feld (1984) suggested that older adults have less need to make social comparisons with peers, but this concept has not been explored in relation to social networking and depressive symptoms, according to my review of the literature. If Veroff et al.'s findings remain true, adult women on Instagram may not experience similar outcomes as their younger counterparts. Investigating self-esteem, social comparison, and selfie-sharing behaviors as predictors of depressive symptoms could provide evidence of the consequences to health and well-being in adult users.

Problem Statement

Instagram, one of the newer social networking sites, has become the second most used site by both adolescents and emerging adults (Pew Research Center, 2017). Researchers have been intrigued by what users, who have the freedom to share personal photos and videos, share and why (Lee, Lee, Moon, & Sung, 2015). One phenomenon that has been of interest with Instagram use is the "selfie." The growing culture of snapping a picture of oneself during various activities has captivated people of all ages, although adolescents and young adults engage in this behavior more frequently than older adults (Dhir, Pallesen, Torsheim, & Andreassen, 2016). Researchers have suggested that sharing selfies on Instagram is influenced by the need to gain likes (Mascheroni et al., 2015) and further body verification (Wagner, Aquirre, & Sumner, 2016), self-expression and social interaction (Lee et al., 2015), and impression management and self-esteem (Pounders, Kowalczyk, & Stowers, 2016). Users who share selfies for approval or attention may experience negative impacts such as depressive symptoms from negative or

absent feedback. Chua and Chang (2016) discovered that many of the teenage girls in their study (ages 12-16) experienced negative impacts to their self-esteem, body image, confidence, and health as a result of their social networking use. In another study, Lup, Trub, and Rosenthal (2015) found Instagram use to be positively associated with depressive symptoms in participants 18-29 years.

Early in 2017, the RSPH and Young Health Movement in the United Kingdom surveyed nearly 1,500 individuals (aged 14-24) to examine the positive and negative effects of social networking on mental health and scored each platform's impact on 14 health and well-being issues (RSPH, 2017). Some of the health and well-being issues identified by professionals to be most significant included self-expression, self-identity, depression, emotional support, sleep, anxiety and body image (RSPH, 2017). Of the five major platforms (Facebook, Twitter, Instagram, Snapchat, and YouTube), Instagram received the most negative rating on health and well-being issues (RSPH, 2017). Despite receiving points for providing a medium for self-expression and self-identity, Instagram was also associated with high levels of anxiety, depression, and body image issues (RSPH, 2017).

Although social networking is empowering and positive for some users, it may inadvertently create a community of users who will never be satisfied (Kong, 2015). Instagram may contribute to adult depressive symptoms by reinforcing already existing negative feelings about the self, triggered by negative social comparison (Lup et al., 2015). Much of the research has focused on emerging adult users, yet there is a growing population of older adults using Instagram (Pew Research Center, 2017) whose selfie-

sharing behaviors may predict depressive symptoms, and there is a need to research this population.

Purpose of the Study

The purpose of this quantitative correlational study was is to investigate if adult women between the ages of 25 and 55 years who use Instagram experience similar negative effects to health and well-being as the younger participants of the RSPH survey. By examining the number and frequency of selfies shared, the perceived feedback the selfies received, time spent on Instagram, as well as the scores from the Rosenberg Self-Esteem Scale (RSES) and the Iowa-Netherlands Comparison Orientation Measure (INCOM), I identified variables that predict depressive symptoms for adult women Instagram users as measured by the New Multidimensional Depression Scale (NMDS). As witnessed with younger users, selfie-sharing behaviors may have negative impacts on health and well-being and the proposed study intended to explore the predictability of depressive symptoms of adult Instagram users who share selfies.

Research Question and Hypotheses

RQ: What is the predictive relationship between selfie-sharing behaviors (as measured by time spent on Instagram, frequency of selfie posting, number of selfies shared, and perceived feedback on selfies), self-esteem (as measured by the Rosenberg Self-Esteem Scale), and social comparison (as measured by the Iowa-Netherlands Comparison Orientation Measure) on depressive symptoms (as measured by the New Multidimensional Depression Scale) in adult women users (25 to 55 years)? The null and research hypotheses that I tested were as follows:

H_0: Selfie-sharing behaviors (as measured by time spent on Instagram, frequency

of selfie posting, number of selfies shared, and perceived feedback on selfies),

self-esteem (as measured by the Rosenberg Self-Esteem Scale), and social

comparison (as measured by the Iowa-Netherlands Comparison Orientation

Measure) do not predict depressive symptoms (as measured by the New

Multidimensional Depression Scale) in adult women users (25 to 55 years).

H_1: Selfie-sharing behaviors (as measured by time spent on Instagram, frequency

of selfie posting, number of selfies shared, and perceived feedback on selfies),

self-esteem (as measured by the Rosenberg Self-Esteem Scale), and social

comparison (as measured by the Iowa-Netherlands Comparison Orientation

Measure) predict depressive symptoms (as measured by the New

Multidimensional Depression Scale) in adult women users (25 to 55 years).

Theoretical Framework

The theoretical framework for this study was Festinger's (1954) social

comparison theory. The theory states that individuals possess an internal drive to gain an

accurate self-evaluation by comparing themselves to others to reduce uncertainty and

learn how to define themselves (Festinger, 1954). When measurable means for

comparison, such as test scores, are not available, people evaluate themselves based on

subjective comparisons (i.e., how attractive or popular they are compared to others).

Comparisons are more commonly made with others who are most similar, as

comparisons with dissimilar people would not lend to an accurate evaluation of attributes,

abilities, or opinions (Festinger, 1954). Festinger hypothesized that people strive to

improve themselves over others to whom they compare themselves to. This comparison is known as upward comparison. Downward comparison is when individuals compare themselves to others whom they perceive are better off (Wills, 1981). Upward comparison can motivate self-enhancement or self-improvement but may also lead to negative effects such as one being overly critical of the self (Feinstein et al., 2013). I provide more details about the social comparison theory in Chapter 2.

Social comparison may impact the type of selfies women share on Instagram. Viewing the photos of others who have many followers or likes (upward comparison) may influence women to share similar photos in hopes of gaining the same outcomes. However, as shown in literature, upward comparison can have detrimental effects on one's self-esteem. In studying the role of social comparison in shaping women's body dissatisfaction, some researchers have found that exposure to thin-idealized female beauty advertisements resulted in increased negative mood and body dissatisfaction (Tiggemann & McGill, 2004). It is important to determine if social comparison on Instagram has a negative impact on women's perception of themselves because this knowledge can help people anticipate and maintain better control over the consequences of photo sharing on social networking sites. Leaders of social networking sites such as Instagram may consider adding disclosures to new users to inform them of the negative effects and foster a positive environment.

Nature of the Study

I used a predictive correlational design for this quantitative study. By using this analytical approach, I was able to examine the number and frequency of selfies shared,

perceived feedback from shared selfies, time spent on Instagram, self-esteem, and social comparison in relation to depressive symptoms. I analyzed data using a multiple regression analysis to determine which predictor variables best associated with the outcome variable. In working with multiple independent variables and one dependent variable, my goal was to gain a more accurate and precise understanding of the association of each individual factor with the outcome. Multiple regression is favorable to other linear regressions because it allows for a thorough investigation of the individual variables.

I asked participants to complete a Qualtrics online survey consisting of items from the RSES (Rosenberg, 1979), the INCOM (Gibbons & Buunk, 1999), and the NMDS (Cheung & Power, 2012), as well as provide Instagram usage information. The online survey was the sole source of participant data used in the study. The target population included adult women ages 25-55 years who have an active Instagram account.

Operational Definitions

Depressive symptoms: Symptoms of depression that occur across four main domains: emotional, cognitive, somatic, and interpersonal (Cheung & Power, 2012). Symptoms include low mood, sadness, irritability, and guilt/shame for the emotional domain; poor concentration, ruminations, loss of interest, and feelings of hopelessness for the cognitive domain; fatigue, change in appetite/weight, and low energy for the somatic domain; and social withdrawal/avoidance, decrease in activities, and feeling undeserving of other care/attention for the interpersonal domain (Cheung & Power, 2012).

Feedback: Comments that users can leave on a post by tapping the speech bubble icon below the post. Comments are visible to others unless the user has their profile set to private (Instagram, 2019).

Following: A virtual activity that allows users to stay up to date on others' activities by allowing them to see recent posts on their main newsfeed page (Instagram, 2019).

Like: The act of tapping the heart icon or double tapping a photo or video to indicate that one likes the user's post. If users have their notifications for this activity on, they will receive a notice when someone likes their post and the post will show a number count for the number of likes each post received (Instagram, 2019).

Self-esteem: The individual's positive or negative attitude toward the self as a totality, derived from Rosenberg's global self-esteem (Rosenberg, 1979).

Selfies: Self-portrait that are usually taken with a smart phone or other electronic device; the term *selfie* appeared in a book by Krause but was first used by Kruszelnicki, an Australian scientist, in a 2002 forum (Oxford Online Dictionaries, 2013)

Social comparison: The act of comparing oneself or analyzing the self in relation to others as proposed by Festinger (1954); social comparisons is one of the key ways people make judgments about themselves.

Social networking sites: Web-based services that allow users to create public or semipublic profiles within the website, articulate a list of other users with whom they share connections, and view and traverse their list of connections and those made by others within the website (Boyd & Ellison, 2007).

Assumptions

In conducting this study there were several assumptions made. The first assumption is that all participants were honest in answering the items on the questionnaire. Truthful answers impact the validity of the study and participants were encouraged to be honest in their answers. I also assumed that individuals participating in this study understood the assessment items in the survey. The items were composed in simple terminology as some of them were developed for younger populations, however context could have been misunderstood. Third, it was assumed that I recruited a broad sample of participants both depressed and non-depressed. Collecting data from only participants who were not experiencing depressive symptoms or only participants experiencing these symptoms would skew the results. Finally, I assume that a significant relationship existed between selfie-sharing behaviors and depressive symptoms. While previous literature demonstrated the relationship between self-esteem, social comparison and depressive symptoms, there was no significant evidence to support the correlation of selfie-sharing and depressive symptoms.

Multiple linear regression analysis makes several key assumptions. The dependent and independent variables must be linear. Variables that are outliers will be removed as these can skew the results. The second assumption for multiple linear regression requires that the errors between the observed and predicted values is normally distributed. The third assumption is that there is no multicollinearity in the data. The independent variables can not be too highly correlated with each other. Homoscedasticity is also assumed. No patterns should be visible in the scatterplot of residual. A cone-shaped

pattern indicated heteroscedasticity and violates the assumptions for multiple regression. All assumption were tested using SPSS.

Scope and Delimitations

The proposed study was intended to uncover the predictive power of selfie-sharing behaviors, self-esteem and social comparison for depressive symptoms in adult Instagram users. The focus was not to determine a causal effect between the variables. While there is existing research to support the relationship between social comparison, self-esteem and depressive symptoms, this study included selfie-sharing behaviors due to the significant relationships with self-esteem and social comparison (Chua & Chang, 2016; Wang, Yang, & Haigh, 2017) The target population was restricted to women between the ages of 25 and 55 years old due to the limited research for this age group. Dhir and colleagues (2016) recognized the need for future research to consider the effects social networking has on the growing number of adult users. Much of the existing research on the impacts of social networking on health and well-being has focused on adolescents and emerging adults. Social networking usage was limited to photo-sharing activities due to the strong correlations with negative effects to health and well-being (Sherlock & Wagstaff, 2018; Mascheroni et al., 2015). Other social networking sites, such as Facebook and Twitter were excluded due to the text-based content the platforms offer. The current study expanded the knowledge base by adding findings for older adult women who share selfies on Instagram.

Limitations

In the present study, one limitation was the method used for recruiting participants. Convenience sampling method recruits participants who are easy to contact and available. I passively recruited on social networking sites with recruiting posts in order to gain a broad sample of participants. However, this method possessed its own set of limitations such as lack of interest resulting in low response rates. In addition, the global reach of social networking sites may recruit participants whose native language is not English posing challenges to them understanding the survey items. To combat these challenges, I placed the recruiting posts on multiple social networking sites (Instagram, Facebook, & Twitter) with detailed instructions for ensuring participants have a firm comprehension of English. Using a paid recruiting tool creates limitations as well because the motivations for completing the survey may cause participants to rush through the survey in order to get paid. Another limitation of the study was the reliance on self-report measures. With this type of data collection, there was the assumption that participants will be honest in their responses and not alter their answers to avoid portraying themselves in a negative fashion. Participants were encouraged to respond honestly and ensured that their responses will be anonymous and confidential. Last, a limitation of the research design was the lack of causation between the variables even if a significant relationship exists. No causal relationship can be determined between the proposed variables.

Significance

Examining the selfie-sharing behaviors of adult women ages 25-55 years and how it can be used to predict depressive symptoms provided greater insights into the impacts of Instagram on health and well-being. The RSPH and previous studies have focused on the impacts social networking has on adolescents and emerging adults, but there is little investigation of the impacts on older adults. Noted as a limitation and area for future exploration, expanding the investigation of selfie-related research to older adult users would fill a gap in the literature (Dhir et al., 2016).

Factors such as low self-esteem have been shown to be predictive variables for depressive symptoms (Orth, Robins, Trzesniewski, Maes, & Schmitt, 2009). If adult women, like their younger counterparts, access Instagram to improve their view of themselves and their lives, they may also experience depressive symptoms. Predictive variables for depressive symptoms in adult women using Instagram could provide useful information to health care professionals. How women perceive and compare themselves to others could lead some women to question their self-worth (Stefanone, Lackaff, & Rosen, 2011), view themselves more negatively (Lup et al., 2015) and experience depressive symptoms (Hernandez & Smouse, 2017). Given the impact social networking has on younger users, it is important for mental health workers to gain a better understanding of the effects social networking has on adult users.

Summary

The photo-based social networking site, Instagram, has been a focus in research due to the psychological impacts observed. With the growing popularity with older

adults, this study will expand empirical findings on the impacts to health and well-being of adult women who engage in selfie-sharing behaviors. The participant's selfie-sharing behaviors, including the number and frequency of selfies posted, perceived feedback on selfies, time spent on Instagram, along with social comparison and self-esteem scores were analyzed in a multiple regression to identify which variables best predict depressive symptoms. As much of the existing research has focused on younger populations, this study will increase what is known about the psychological impacts of Instagram to include older adults. Chapter 2 details the current literature on social comparison, self-esteem and selfie-sharing behaviors on health and well-being to explain the need for the current study in order to fill the literary gap.

Chapter 2: Literature Review

Introduction

The purpose of this study was to examine whether depressive symptoms can be predicted in adult female Instagram users by assessing selfie-sharing behaviors including the number and frequency of selfies shared, feedback from shared selfies, self-esteem, social comparison, and time spent on Instagram. I focused primarily on Instagram, a image-based platform, as it is a favorite among social networking sites and has rapidly increased in use over recent years (Stapleton, Luiz, & Chatwin, 2017). As with many social networking sites, Instagram facilitates social comparison by the ease of access it affords users (Bassett, Dickerson, Jordan, & Smith, 2016). With its increasing popularity with users, it has also been of interest to researchers (Sherlock & Wagstaff, 2018). This chapter includes the search strategy for current relevant literature and a description of the theoretical perspective. I categorized the literature into key constructs of interest for the study (i.e., social comparison, Instagram, social networking impacts on well-being, depression, self-esteem, and selfies).

I will discuss the impacts of Instagram and similar social networking sites on well-being before more explicitly focusing on self-esteem and depressive symptoms. The selfie phenomena may impact users' well-being because it allows users to engage in social comparisons. As a form of self-presentation and impression management, selfies may directly impact self-esteem leading to increased depressive symptoms (Mascheroni et al., 2015). A review of the literature established the need for further exploration as findings on the associations between social comparison, self-esteem, depressive

symptoms, and selfie-sharing behaviors have yielded mixed results (Valkenburg et al., 2006). A majority of the existing literature has also focused primarily on adolescents and emerging adults (e.g., Brown & Tiggemann, 2016; Chou & Edge, 2012; Vogel et al., 2014) leaving the impacts on the well-being of older adults largely unstudied.

Literature Search Strategy

I conducted a literature review using online databases such as PsycINFO, PsycArticles, and Google Scholar. The key terms used for the search included *Instagram*, *Instagram use*, *self-esteem*, *social comparison*, *depression*, *depressive symptoms, social networking sites*, *social media*, *Instagram predicting depression*, *adult women*, *selfie,* and *selfie-sharing*. Using these key terms, I found hundreds of articles that I reviewed for relevance to the current topic. Over 50 articles were identified as pertinent, although few studies focused on the target population of this study. Additional relevant resources I identified as references in the populated articles were included in the literature review. The number of articles published before 2010 are minimal as Instagram was not in use then; however, some were included to provide an understanding of the concerns regarding social networking sites and user well-being. Most of the articles were quantitative and addressed correlations between social networking sites and user well-being.

Theoretical Foundation

Festinger (1954) posited in his social comparison theory that humans have an innate drive to evaluate their opinions, abilities, and attributes. This objective evaluation provides an assessment of how well or poor a person is doing compared to others' (e.g.,

scoring higher on a test than a peer). However, not all facets of life are quantifiable and, in these cases, another means for evaluation is required. Festinger further hypothesized that "to the extent that objective, non-social means are not available, people evaluate their opinions and abilities by comparison respectively with the opinions and abilities of others" (p. 118). In other words, when measurable or observable means are not available, individuals subjectively compare themselves to others. How attractive or popular people believe they are is based on how they compare themselves to others. Comparisons do not occur randomly. People generally compare themselves to others with whom they are most similar. Comparisons to someone who is too dissimilar would not provide an accurate evaluation of the individual's attributes, abilities, or opinions (Festinger, 1954). Festinger posited that "the tendency to compare oneself with some other specific person decreases as the difference between his opinions or abilities and one's own increases" (p. 120).

There are two mechanisms for social comparison: upward social comparison and downward social comparison. In Festinger's (1954) fourth hypothesis, he conceived that there is a unidirectional drive upward. With upward social comparison, people compare themselves to those who are perceived to be superior (Vogel et al., 2014). Such comparisons can promote self-enhancement as people improve themselves to become more like the person they are comparing themselves to. Downward social comparison occurs when people compare themselves to others they perceive as inferior, usually when they are experiencing negative affect (Wills, 1981). Individuals using downward social comparison can enhance their subjective well-being by comparing themselves to those

they perceive as less fortunate (Wills, 1981). Suls and Wills (1991) stated that this type of

comparison is more likely engaged in by individuals with low self-esteem, suggesting

that self-esteem influences social comparison types. People generally choose upward

comparisons prioritizing the similarities to the target while minimizing the differences

(Collins, 2000; Gerber, Wheeler, & Suls, 2018). Downward comparisons are less likely

to occur because people do not expect or want to be similar to those they perceive as

inferior and will not minimize their differences (Collins, 2000).

People engage in social comparison for a variety of reasons. During times of

ambiguity about the self, people may rely on the consensus of others to gain a better

gauge of their attributes, appearances or opinions. For some, downward comparison

during times of adversity serves to boost their perception of life, attributes or appearances

because at least they are not "as bad off" as others (Wills, 1981). Upward social

comparison can become a motivating drive for self-enhancement or self-improvement

(Corcoran, Crusius, & Mussweiler, 2011). Inspiring a person to become more like their

comparison target and achieving these goals can be beneficial to their self-confidence and

self-esteem (Gibbons & Buunk, 1999; Lockwood & Kunda, 1997).

Social networking sites have become a facilitator of social comparison for many

individuals (Manago et bal., 2008). The ease of access to people in an individual's

network allows for anytime comparison through any mobile device. With platforms such

as Facebook and Instagram that are geared toward more visually-based practices, social

comparisons can be done without much effort (McLean, Jarman, & Rodgers, 2019).

Individuals can engage in social comparisons to ascertain their position amongst their

network of social interactions as well as facilitate the development of identity. People may use upward social comparisons to their online role models and celebrities as goals to strive for and engage in self-enhancement to become more like the target they admire. This can improve self-esteem. Downward social comparisons offer an anytime boost in mood for people who are feeling bad about themselves or their situation by viewing online posted images of social networking site users who are not as fortunate.

Yet, social comparison can pose adverse outcomes to users' well-being and mental health as found in several studies (Feinstein et al., 2013; Manago et al., 2008; Nesi & Prinstein, 2015; Vogel et al., 2014). Feinstein et al. (2013) noted that while upward social comparisons themselves may not be problematic, the maintained or exacerbated self-appraisal through ruminations may lead to poorer well-being. Users with fragile self-esteem who compare themselves to celebrities or attractive peers may internalize the deficits to measure up to the standard of beauty leading to a lower appraisal of the self (Manago et al., 2008; Brown & Tiggeman, 2016). These repeated comparisons to successes that seem unattainable despite attempts paired with self-deflating views can have deleterious impacts to a person's self-esteem and mood (Bäzner et al., 2006; Vogel et al., 2014). The reliance on the perceived opinions of others can greatly influence how users view themselves. People who are more likely to compare themselves to others and the activities they engage in may also feel more loneliness and be socially withdrawn (Yang, 2016).

In examining the predictability of depressive symptoms in adult Instagramming women using selfie-sharing behaviors, selfie feedback, self-esteem, and social

comparison, Festinger's theory provides a plausible explanation for higher levels of depressive symptoms. There are several studies aside from the previously mentioned literature that have used the theoretical framework to explain the correlations found between poorer well-being and social networking use (Chua & Chang, 2016; Haferkamp & Krämer, 2011; Sherlock & Wagstaff, 2018; Stapleton, et al., 2017; Wang et al., 2017). Chua and Chang (2016) reported participants noting that social comparisons are unavoidable due to the accessibility and proliferation of social media. For some social media users, social comparisons to posted content can be a motivating force to self-improve, but it may consequently cause negative perceptions of physical appearance, insecurities and in extreme cases, self-harm and eating disorders (Chua & Chang, 2016). Wang et al., (2017) corroborated the relationship of content viewing on social networking sites increasing social comparisons made, resulting in decreased psychological well-being.

Although there are many supports for the relationship between social networking sites and negative outcomes of well-being, Mullin's (2017) findings were contrary to much of the literature in that there was no significant correlation between Instagram use and social comparison as it related to self-esteem and anxiety. Participants who engaged in high levels of social comparison indicated that viewing non-celebrity images on the feed made them feel their lives were less exciting, but this did not lead to jealousy or feeling bad about themselves. However as noted in the literature, the inconstancy with prior studies may have been due to methodological limitations. The limited time the participants were exposed to the feed may not have left a significant impact on them as

some participants may have just scrolled to the bottom of the feed, not viewing each

picture for the requested time (Mullin, 2017). Despite this, there are substantial supports

for the negative correlation between social comparison and well-being that suggest

continued exploration of the relationship, especially on Instagram and for older women.

Literature Review Related to Key Variables and/or Constructs

Social Networking Sites

The introduction of social networking sites has sparked a new way people of all

ages interact with each other. Social networking sites are web-based networking tools

that create connections and interactions through the sharing of digital information in

video, audio, and text formats. The most popular social networking sites in the United

States include Facebook, Instagram, Twitter, Snapchat, and Tumblr, with Facebook and

Instagram leading the way with over 100 million monthly users as of May 2018 (Statista,

2018). Each social networking site draws different audiences. Depending on the

intentions, the user may favor certain social networking sites over others. Following is a

brief description of the popular social networking sites.

Facebook was created to promote and maintain social ties among its users and

build social capital (Ellison, Steinfield, & Lampe, 2007). Through text, photo, and video

sharing, users could update their friends on the day to day activities. More recently,

Facebook has become a method of getting and sharing news as many news broadcasts

have incorporated a social networking page to deliver information (Oeldorf-Hirsch &

Sundar, 2015). Over the years Facebook has been evaluated by researchers for

correlation to online addictions (Guedes et al., 2016), narcissism (Carpenter, 2012),

depression (Blease, 2015), and well-being (Kross, et al., 2013). Facebook is only one of the many social networking sites that has been the focus of research in its relationship to well-being. With the plethora of information and opportunity to engage and interact with others, many users visit the site daily, often times several times a day. Recent statistics have found that 65% of Americans use Facebook, 51% of them several times a day for an average of 35 minutes a day (Sprout Social, 2019).

Twitter is a social network and micro-blogging platform that allows users to connect in real-time with people who share interests (Chen, 2011). The text-based messages, known as "tweets" consisting of 280 characters are created and sent out to the Twitter world for others to view. Users can respond to and share follower's tweets. As another form to stay up-to-date with news, sports, celebrities, and followers, Twitter has become a popular way of connecting with friends and other fascinating people. The non-reciprocal relationship of Twitter users is not necessarily geared toward fostering social relationships so much as spreading information broadly (Kwak, Lee, Park, & Moon, 2010). Despite the limited capabilities for interaction, Twitter has also been indicated to have negative impacts on health and well-being including anxiety, depression, loneliness, and sleep disturbances.

Snapchat is a multimedia messaging service that allows users to create time-limited messages to send to other users. Unique to this platform, senders create an image or video then have the option to select how long the receiver can see them. Snapchat does not allow users to browse through received communications as with Facebook or Twitter (Piwek & Joinson, 2016). As an instant messaging platform, Snapchat is much more

direct because the user decides who will receive and view content. Similar to Twitter, anxiety, depression and sleep have been reported to be worsened with use. Snapchat and Facebook explained more variance in both upward and downward social comparisons resulting in lowered body satisfaction (Saunders & Eaton, 2018).

Tumblr is another micro-blogging platform like Twitter with the unidirectional network and use of hashtags. It differs from Twitter in that it has no character limitation for each post an allows users to post images, audio, and videos (Chang, Tang, Inagaki, & Liu, 2014). Of all the social networking sites, the effects Tumblr has on well-being has been understudied. This may in part be due to the site having less traffic than the others. Ranked 9 out of 10 according to active user base and usage data, Tumblr is considered more of a blogging platform than a social networking site.

Social networking sites have increasingly been a topic of discussion in the literature. Researchers have investigated the positive and negative effects of different social networking site usage. Social networking sites can be important in the development and validation of self-concept through self-representation and self-defining (Stern, 2008). Users create profiles and upload content that they tailor and use to represent themselves to their network. It can be empowering to users as they feel social connectedness, maintain relationships and have peer to peer support (Dobrean & Pasarelu, 2016; Sainsbury & Benton, 2012; Sheldon & Bryant, 2016). Antheunis, Schouten, and Krahmer (2014) found that more time spent on these sites resulted in a greater level of friendship quality, feeling a part of a community, and social support. They also provide a sense of belonging (Mackson, Brochu, & Schneider, 2019) which is

important for younger users' development of a healthy self and increasing self-esteem (Davis, 2012). Research found that profile viewing, and time spent on social networking sites improved the participants self-esteem (Gentile, Twenge, Freeman, Campbell, 2012). While research supports that social networking sites have been related to positive outcomes for users, it appears to only be positive when peer feedback is positive and providing affirmation (Meens, Beullens, & Schneider, 2019; Valkenburg et al., 2006). Mackson et al. (2019) noted that users of Instagram reported lower levels of anxiety, depression, loneliness and higher levels of self-esteem than those who did not use Instagram. However, social comparison and negative feedback can strip all the benefits of social networking.

Numerous research studies contribute supports to the overall theme of negative relationships between social network sites and user well-being (Nesi & Prinstein, 2015; Sherlock & Wagstaff, 2018; Valkenburg et al., 2006). Valkenburg et al. (2006) expanded on the positive outcomes from social networking to explain that when perceived feedback is negative or absent, the user's self-esteem is decreased. Not receiving the affirmation or reassurance from their audience may cause them to feel rejected or ignored. Social networking users who utilize the sites to engage in feedback-seeking behaviors may be at additional risk to negative outcomes. Meeus et al. (2019) stated that dependence on social approval through positive feedback of others may ultimately result in decreased self-esteem if the need for such affirmations is not met. Users engaging in technology-based social comparison and feedback-seeking behaviors may form a distorted perception of peers, leading them to harmful social comparisons, or to doubt that the positive feedback

is sincere, and experience decreased mood or self-esteem (Nesi & Prinstein, 2015). The frequency of social networking site use, such as Instagram, was correlated with decreased well-being including lowered self-esteem, increased anxiety and body dissatisfaction, poorer appearance-based self-perception, and depressive symptoms (Chang, 2019; Jeri-Yabar et al., 2019; Sherlock & Wagstaff, 2018). Social network site usage has also been associated with the perception that others have happier lives and that life isn't fair (Chou & Edge, 2012).

The RSPH collaborated with the Young Health Movement (2017) to examine the effects of social networking sites on health and well-being. Focusing on five major platforms (Facebook, Twitter, Instagram, Snapchat, & YouTube), participants were asked to rate each based on health and well-being issues including self-expression, self-identity, community building, loneliness, awareness, depression, emotional support, sleep, anxiety, and body image issues (RSPH, 2017). Participants gave positive ratings to sites that promoted self-expression and self-identity, but despite receiving points for these positive features, Instagram received the worst overall rating for health and well-being followed by Snapchat, Facebook, and Twitter. YouTube was the only platform that had a net positive ranking. Instagram was associated with high levels of anxiety, depression, and body image issues (RSPH, 2017). If younger users have noted the negative impacts of Instagram, it leaves the questions if older adults experience similar negative feelings when using Instagram.

Instagram

Instagram launched in 2010 exclusively on the Apple Inc. operating system. Two years later when developers Systrom and Kreider sold Instagram to Facebook, a version was released for Android devices. It has since become a favorite among social networking sites (Smart Insights, 2016). Although created six years after Facebook, statistics have shown that Instagram is used at the next highest rate after Facebook by both adolescents and young adults (Pew Research Center, 2017). What differentiates Instagram from other social networking sites like Facebook, is that Instagram creates a stronger visually oriented culture (Lee et al., 2015). Users cannot create text-only content as with Facebook and Twitter. Users engage in image first, text second behaviors. While uploaded pictures can have captions, the first thing users see are the shared pictures. Also, Instagram is all-in-one. Users can easily take, edit, and upload high-quality photos using only the Instagram app. There are filters the user can add to change the look and feel of the picture before posting it. Once shared, the pictures are viewable by the user's followers. Feedback can be left with the comment option and photos can be "liked" by pressing the heart symbol or double tapping the image. The feedback and likes are visible to all that can see the user's profile. Using hashtags in the captions makes the picture searchable to other users based on interests; allowing them to see the pictures of others who they may not be following. There is the option to set one's profile as private so people not following the user cannot see the uploaded pictures. Users can send private messages to other users that will only be visible to the parties involved and in 2016,

Instagram added a "story" feature that allows users to share a series of timed photos that would be displayed at the top of the user's home page.

A platform that allows its users to share personal photos and videos, researchers have been intrigued by what users share and why. The motivations identified in the literature for using Instagram include self-expression, social interaction, and archiving, (Lee et al., 2015); surveillance of others, documentation, coolness, and creativity (Sheldon & Bryant, 2016); self-promotions and networking with friends (Hu, Manikonda, & Kambhampati, 2014). Unlike Facebook, Instagram's social network is asymmetric; meaning a user can follow another user without being followed back (Hu et al., 2014; Lup et al., 2015). This type of system allows users to have a large audience from which to receive feedback and likes. With a large audience, users may feel pressured to post many "up-to-standard" pictures to gain likes and followers (Chua & Chang, 2016) but also subject themselves to an equally large amount of criticism (Bassett et al., 2006). Instagram offers features that attract users who seek reassurance from others or experience interpersonal rejections (Sheldon & Newman, 2019). The persona created on an Instagram profile is oftentimes designed to impress an audience. With a platform that is geared toward self-promotion and self-expression (Li, Chang, Chua, & Loh, 2018), many users use Instagram to satisfy social interaction, self-representation and diversion needs (Hwang, 2019). However, if a post does not receive the desired number of likes, the user may delete the post (Hwang, 2019). The drive for attaining a lot of likes and followers to validate popularity and status is what motivates some user's activity (Dumas, Maxwell-Smith, Davis, & Giulietti, 2017; Mascheroni et al., 2015).

Narcissism has been a motivational force for using social networking sites such as Facebook (Carpenter, 2012; DeWall, Buffardi, Bonser, & Campbell, 2011; Ong et al., 2011) and Twitter (Bergman, Fearrington, Davenport, & Bergman, 2011; Davenport, Bergman, Bergman, & Fearrington, 2014; Hughes, Rowe, Batey, & Lee, 2012), so it is not surprising that it has also been a focus for Instagram. Sheldon and Bryant (2016) found that narcissism was positively related to using Instagram to appear cool and for the surveillance of others. The platform provides a means for narcissists to appear cool with minimal and shallow interactions with others. Two other motives authors identified were documentation and creativity. Like Lee and colleagues (2015) the ability to create a digital record of life activities is a motivating factor for users. The ability to do so in creative manners bring about ample opportunities for users to portray their creative sides (Sheldon & Bryant, 2016). For many users, Instagram fulfills the need to belong through a social presence and connection with real people (Mackson et al., 2019) which explains the decreased level of loneliness reported in several studies (Keep & Amon, 2017; Pittman & Reich, 2016; Yang, 2016).

As with other social networking sites, many of the benefits of using Instagram can be undermined when social comparisons are factored, possibly more so due to the image-based nature of the platform. Users are more exposed to increased opportunities to view and judge themselves and others (Chang, 2019). The interaction between negative psychological outcomes and social comparisons on Instagram are likely to be stronger than for other social networking sites (Mackson, et al., 2019, Stapleton et al., 2017). Exposure to images of attractive celebrities and peers on Instagram led to greater

negative mood and body dissatisfaction for the participants of Brown and Tiggmann's (2016) study. Social comparison acted as a mediator in the relationship between celebrity/peer images and negative mood and body dissatisfaction. In assessing the psychological effects of viewing selfies on Instagram, self-esteem mediated the relationship between selfie viewing and life satisfaction (Wang et al., 2017). Whereas social comparison may be a plausible explanation for the relationship, the authors suggested that by frequently viewing photos, the user may feel a greater sense of loneliness, lowering self-esteem and life satisfaction (Wang et al., 2017).

With over 400 million monthly users (Instagram, 2016) who spent around 30 minutes a day on the site (Tiggemann & Zaccardo, 2015), researchers have an abundant pool from which to study. A recent data estimated that over half of U.S. adults ages 18-29 use Instagram while 40% of 30 to 49-year-olds, 21% of 50 to 64-year-olds, and 10% of 65 years and older use the social networking site (Smith and Anderson, 2018). The large percentage of users between the ages of 18-29 years may explain why the literature has focused solely on this demographic. This leaves the findings not generalizable to the target population in question as motivations or outcomes may vary. Instagram use can pose risks to the psychological well-being of adolescents (Chang, Li, Loh, & Chua, 2019; Jeri-Yaber et al., 2019; Meeus et al., 2019; Nesi & Prinstein, 2015; Sherlock & Wagstaff, 2018), but no known study has examined what, if any relationship exists for older users who are a growing population. While the development of self-esteem begins in adolescence, it continues well into adulthood peaking between the ages of 50-60 years

(Orth, Robins, Widaman, 2012). Therefore, it is important to expand the research on the

psychological impacts, specifically self-esteem, of Instagram into adulthood.

Social Networking Impacts on Well-being

Examining the aspects of social networking sites and its impact on well-being, it

can be categorized into two usage types: creating and viewing content. Some authors

have referred to this as active and passive use (Montague & Xu, 2012; Yang, 2016). Each

of these play a role in the outcomes the user perceives from their engagement. Creating

content, or active use, involves the user sharing life experiences through the creation of

text, audio, or video posts that are shared with their network (Escobar-Viera et al., 2018).

These activities can foster improved subjective well-being from the positive feedback

received on their posts (Valkenburg et al., 2006). Receiving a greater number of

affirmations in the form of "likes" reliably predicted greater self-esteem (Burrow &

Rainone, 2017) and acts as protective factors to facilitate recovery from mild threats to

well-being (Gross, 2009). As the creator of one's self-representation on social networking

sites, a user can decide what features to share and highlight. Posting positive self-

representation increases the opportunity for users to receive feedback that support the

positive beliefs they hold about themselves from a meaningful source of social capital

(Kim & Lee, 2011). Actively engaging with social networks was found to be positively

related to life satisfaction through the interactions users had with their network

(Wenninger, Krosnova,& Buxmann, 2014). Users gain a sense of belonging with the

social interactions they share with others (Davis, 2012; Gangadharbatla, 2008; Seidman,

2013). Furthermore, social connectedness, positive interactions and social supports were

related to lower depression and anxiety (Seabrook, Kern, & Rickard, 2016). Escobar-Viera et al. (2018) validated previous findings on the positive outcomes of active use on depression.

However, creating content does not always yield positive effects. Users that receive negative or absent feedback on created content may experience negative outcomes such as lowered self-esteem (Valkenburg et al., 2006). Users who are highly invested in their content, such as girls posting well-tailored selfies, are more likely to have greater body-related or eating concerns with negative feedback (McLean, Paxton, Wertheim, & Masters, 2015). Actively posting socially desirable content or actively seeking and comparing feedback on posts may leave the user scrutinizing themselves and/or the content they posted. Content viewing (passive use) has been associated with decreased well-being (Krasnova, Widjaja, Buxmann, Wenninger, & Benbasat, 2015; Tromholt, 2016; Verduyn et al., 2015) and social anxiety (McCord, Rodebaugh, & Levinson, 2014; Shaw, Timpano, Tran, & Joormann, 2015). Content viewing was also positively associated with increased depressive symptoms (Escobar-Viera et al., 2018). Online comparisons heighten appearance focus and increase the internalization of appearance ideals (McLean et al., 2015). The negative outcomes of social networking use appear to consistently circle back to social comparisons. Passively browsing through social feeds, as noted by Chang et al. (2019), was negatively associated with body esteem and fully mediated by social comparisons. Women engage in this behavior more and are at a greater risk of negative feelings about their appearance or status when checking out the attractiveness and successes of other people (Fox & Vendemia, 2016). Viewing

behavior is an example of social comparison that can have influences on self-esteem and life satisfaction (Wang et al., 2017). Excessive exposure to social networking content may negatively influence aspects of psychological well-being (Chowdhry, 2016 ; Sherlock & Wagstaff, 2018). Researchers have also found negative associations between social networking sites and: self-esteem (Fioravanti, Dèttore, & Casale, 2012; Huang & Leung, 2012; Mehdizadeh, 2010), and body dissatisfaction and mood (Brown & Tiggemann, 2016).

Self-esteem. Self-esteem refers to a person's self-evaluation as positive or negative; in other words, whether a person approves or disapproves of themselves (Rosenberg, 1965). This type of self-esteem is often referred to as global self-esteem as opposed to specific self-esteem. Global self-esteem deals more with psychological well-being, while specific self-esteem is more related to behavior (i.e. academic self-esteem) (Rosenberg, Schooler, Schoenback, Rosenberg, 1995).   With the continual self-evaluation people engage in on social networking sites, social comparison provides an easy method to appraise their "self". Looking to others to determine how good or poor a person is doing can impact self-esteem. Poor comparisons to others may lead the person to view the self more negatively, lowering self-esteem (Vogel et al., 2014). Conversely, if an individual assesses their surroundings and sees he/she is doing well or better than others, the evaluation of the self is positive and increases self-esteem.

The effects of social comparison on social networking sites have shown to impact self-esteem when the users feel they are not "measuring up" to their comparison target. Authors have found a positive correlation between social comparison and adverse effects

from the comparison including negative impacts to self-worth (Stapleton et al., 2017),

low self-esteem, insecurity, worthlessness, and in extreme cases, self-harm behaviors

(Chua & Chang, 2016), low self-esteem, high self-uncertainty, and self-consciousness

(Lee, 2014), life envy and jealousy (Chou & Edge, 2012). While no direct relationship

between the intensity of Instagram use and self-esteem was observed, Stapleton et al.

(2017) concluded that users whose self-worth was contingent on the approval of others

relied more heavily on social comparison and the feedback of others to make judgments

of themselves. This had adversely impacted the participant's self-worth and ultimately

their self-esteem. Chua and Chang (2016) interviewed participants and determined that

while most of them agreed that social comparison was unhealthy to self-esteem it was

unavoidable. Social comparisons motivated users to edit, enhance and manipulate photos

in order to meet beauty standards but ultimately led to issues of insecurity, feeling of

worthlessness, and low self-esteem (Chua & Chang, 2016). Life envy and jealousy

resulted for participants who spent more time on Facebook and engaged in more social

comparison with people they did not know in person (Chou & Edge, 2012). These

comparisons can have negative impacts to self-esteem as participants feel life is unfair

and others have better lives than them.

Users view pictures posted by others and see beauty, popularity, wealth, success,

and happiness. Comparing their life to these pictures may lead the user to determine they

fall short and feel negative about their life. Surrounded by all the idealized pictures, users

may feel the need to be viewed in a similar light and go to great lengths to achieve this.

Impression management and self-presentation can be very exhausting for users who are

striving to post a more positive life than their actual life (Pounders et al., 2016). The desire to be perceived as perfect may push users to extremes (i.e., eating disorders) as Mascheroni, and colleagues (2015) found in their study of European children aged 11-16 years old. The need for popularity is likely to affect the self-esteem of people viewing selfies of popular others but unsuccessfully striving to be at that level (Wang et al., 2017).

Self-esteem is a critical factor in understanding selfie-posting behaviors on social networking sites. Identified as both a motivator and an outcome in Pounders and colleagues (2016), self-esteem can be enhanced by receiving likes and comments on selfies or diminished by receiving no confirmation of the self through likes or comments. Other authors had found similar effects to self-esteem when feedback was negative or absent (Martino, 2014; Walker, 2013; Valkenburg et al., 2006). Some Instagram users may opt to make their profiles public to increase their followers from which to receive likes. A greater audience, however, leaves the user susceptible to engage in imaginative audience behaviors where the user overestimates how much others are watching and evaluating them (Valkenburg et al., 2006). Users becoming preoccupied with how they appear in the eyes of others, sometimes strangers, can have negative consequences to their well-being, especially if the social identity is crafted to ensure it is socially desirable. The focus on this false sense of reality can lead to low self-esteem and depressive symptoms (Kong, 2015).

Depressive symptoms. Depression is a mood disorder characterized in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) by low mood, sleep disturbances, change in appetite, disruptive thoughts, feelings, and sense of

well-being, problems concentrating, lack of energy, and loss of pleasure (American

Psychiatric Association, 2013). Jelenchick, Eickhoff, and Moreno (2013) have also found

additional symptoms of low self-esteem, loss of motivation, loneliness, and fear of

rejection in depressive individuals. With the complex symptomology of depression, the

presence or absence of symptoms classifies the person into one of eight depressive

disorders. However, some people display relevant depressive symptoms but do not meet

the standard diagnostic criteria according to the DSM-5 for a clinical depressive disorder

(Cuijpers, Koole, van Dijke, Roca, Li, & Reynolds, 2014). Subclinical depression can

have serious consequences to the quality of life (Cuijpers & Smit, 2008). While there is

little to no evidence to suggest that social networking causes clinical depression, some

users may be subject to depressive symptoms of subclinical depression as a result of their

social networking usage.

There are mixed reviews as to what contributes to the increased likelihood of

depressive symptoms for social network users. The frequency of use/time spent on social

networking is a common factor identified as correlating to increased depressive

symptoms in the literature; however, the rationale varies. Larger amounts of time spent

on social networking sites lead users to engage in more social comparison and increase

depressed feelings by the comparisons (Donnelly & Kuss, 2016; Feinstein et al., 2013,

Hernandez & Smouse, 2017; Huang, 2017; Lin et al., 2017). Research suggested that

spending more than 2 hours per day on social networking sites is associated with higher

psychological distress, including depression (Dobrean & Pasarelu, 2016). Users who

indicated a dependence on social networking sites (Instagram, Facebook, Twitter)

reported higher depressive symptoms (Jeri-Yaber et al., 2019). Twitter and Instagram had the strongest associations to depressive symptoms, whereas frequent Facebook use showed a more protective factor. Twitter is an optimal site for depressed people who seek attention through sharing their feelings with the unlimited amounts of tweets they can post, allowing them to feel heard (Jeri-Yaber et al., 2019). There are two plausible explanations for the associations of depressive symptom with Instagram as causality cannot be assumed. Depressed people may seek attention and acceptance through photo sharing to improve self-esteem or excessive use may lead to depressive symptoms by setting body image standards the user perceives they cannot meet (Jeri-Yaber et al., 2019). Depressed people who are engaging in feedback seeking behaviors may be confounding their risk for worsened depressive symptom if the need for attention and acceptance is not met (Nesi & Prinstein, 2015).

　　　Personality is also believed to play a role in the onset of depressive symptoms regarding high social networking usage, with users higher in neuroticism and agreeableness showing the best predictors (Giota & Kleftaras, 2013). Addiction to social networking was identified by Khattak and Ahmad (2018) and Wang and colleagues (2018) as a predictor of depressive symptoms because it leads to social isolation and lower real-world social interactions. Excessive engagement in social networking impacts self-esteem negatively and promotes a sedentary lifestyle, both of which may contribute to depressive symptoms (Pantic, et al., 2012). Using multiple social networking sites may require the user to multitask between different platforms with their own distinct set of rules and idiosyncrasies to increase interaction but never fulfilling the need for quality

interactions (Primack et al., 2017). Blomfield Neira and Barber (2014) determined that the user's investment and motivations for using social networking may predict depressive symptoms. If the investment is high to receive validation and these needs aren't met depressed mood may be more likely, especially with many strangers following (Lup et al., 2015).

Of all the possible contributing factors to users' depressed mood, self-esteem has been shown to be a strong predictor (Cheng & Furnham, 2003). When assessed together with social comparison, which has often been conceptualized as depressogenic interpersonal behavior (Borelli & Prinstein, 2006), it may provide greater predictability for depressive symptoms in users. Frequent social comparisons were noted as one of the most prominent risk factors for depression (Seabrook et al., 2016). An investigation of the associations between Instagram and psychological well-being yielded further supports. Social comparison, time spent on the site, self-esteem and anxiety were significant predictors of depression in a sample of 204 participants (Mackson, et al., 2019). Instagram may not directly increase depression, however, users engaging in social comparison may lead to negative outcomes that include depression. In fact, the relationship between Instagram use and depression was only significant when social comparison was mediating the relationship (Hwang, 2019). Users may continuously second-guess their appearance, their abilities or their worth when engaging in upward or negative comparisons with other users leading to lowered self-esteem and ultimately depressive symptoms (Vogel et al., 2014). While social networking sites are empowering

and positive for some users, it may inadvertently create a community of users who will never be satisfied, especially when sharing selfies (Kong, 2015).

The Selfie

Krause coined the term *selfie*,or self-portrait taken with a smartphone or other electronic device at an elavated, flattering angle, in his book, but the term was first used by Kruszelnicki, an Australian scientist, in a 2002 forum (Oxford Online Dictionaries, 2013). According to the British Broadcasting Corporation (2014), Twitter named 2014 the year of the "selfie" due to the rapid increase of this behavior; 12 times more than the previous year. Wordstream (2018) reported that as of December 2016, over 282 million selfies were shared on Instagram alone. People of all ages are taking part in this popular form of self-expression and self-presentation, although adolescents and young adults are more likely to post and edit selfies than older adults (Dhir et al., 2016). Statistics for respondents in the U.S. show that a majority have taken and shared selfies to a social networking site (87% for 18-34 years, 74% for 35-54 years), however, Systrom claimed in an interview with Kubina (2015) that selfies "didn't really exist in the same way before Instagram" (para. 19). Over the years, selfies on Instagram have taken new shapes with behavior specific variations to include welfies (workout selfies), belfies (bum selfies), hairfies (hair selfies), bedfies (bed selfies), and drelfies (drunk selfies).

The questions some researchers have asked is why people share the selfies they do and what does the shared selfie say about the user. As with using Instagram, there are different theories to explain why people share selfies. Some motivations for users engaging in selfie-sharing behaviors include impression management (Pounders et al.,

2016) and attention seeking, communication, archiving, and entertainment (Sung, Lee, Kim, & Choi, 2016). As a means for self-exploration, selfies can reveal personality traits of the owner. Past studies have shown that photos can reveal personality-related cues (Gosling, Ko, Mannarelli, Morris, 2002; Nestler, Egloff, Küfner, & Back, 2012). However, these pictures were taken in naturalistic settings, and selfies provide controlled settings and presentation. Researchers sought to determine if selfies remain predictive of the owners' true personality. Qiu, Lu, Yang, Qu, and Zhu (2015) identified several personality-related cues suggesting that *duckface* selfies (pressing lips together into a pout while sucking in the cheeks) indicate neuroticism, emotional positivity indicates agreeableness and openness, and the private location of the selfie indicates conscientiousness. These findings should be considered with caution because selfies can easily be manipulated to post non-genuine selfies to communicate a more favorable impression than the actual self (Pounders et al., 2016). For example, a shy person may share a selfie in which they look outgoing to present to a social network and display social desirability and conformity.

Another question regarding selfies is what impacts they have on the user. Here, the results have also been mixed. While most of the research on the selfie has focused on the negative aspects associated with it, there are a few articles that share some of its benefits. Rutledge (2013) noted that selfies could boost self-esteem and provide a positive mode for self-exploration by allowing users to be more authentic. As a direct form of impression management, the user has complete control as to how they present themselves to others (Ozansoy Çadırcı & Sağkaya Güngör, 2019). Likes on posted selfies

motivate the continuation of this behavior (Ponders et al., 2016) promoting further boosts

to self-esteem. Some have viewed selfies as a means of communication that is enhancing

text messaging (Wortham, 2013), as selfies may trigger conversations. Selfies can also

have a more personal motive such as creating memories of events to reflect on

(Balakrishnan & Griffith, 2018; Wickle, 2015).

      There is also a darker side of selfie-related behaviors. Only recently have studies

of the negative health outcome and selfie-sharing practices emerges in the U.S and

Australia (Cohen, Newton-John, & Slater, 2018; Mills, Musto, Williams, & Tiggemann,

2018). Selfie practices may appear trivial, but this is what makes them threatening

(Griffith & Balakrishnan, 2018). Selfie-sharing practices involved taking (preparing,

staging and posing), modifying (selecting, editing and filtering), and posting photos,

viewing and evaluating others' selfies through likes and comments (McLean et al., 2019).

In light of the calculated steps of selfie-sharing behaviors, it has shown associations with

narcissism (Fox & Rooney, 2015; Halpern, Valenzuela, Katz, 2016; Sorokowski,

Sorokowski, Oleszkiewicz, Frackowiak, Huk, & Pisanski, 2015). Users go to great

lengths to present the most perfect version of themselves. In photo editing, the user may

color-correct and retouch skin or make body parts appear thinner (Anderson, Fagan,

Woodnutt, & Chamorro-Premuzic, 2012). These behaviors have been associated with

poorer self-esteem and body image concerns (Chang et al., 2019; Mills, Shikatani,

Tiggemann, & Hollitt, 2014). Users feel that these measures are necessary to satisfy the

socially sanctioned beauty ideals. Therefore, completing all these steps and not receiving

the desired feedback from posted selfies can negatively impact the user's well-being,

especially if they are emotionally invested or in need of approval (Bloomfield Neira &

Barber, 2014).

Selfies are one of the reasons some people feel awful about themselves, their lives

and have insecurities about their appearances (Sai Krishna & Komal Krishna, 2016).

Zheng, Ni, and Luo (2019) uncovered that for a population of adolescents more selfie

posting led to higher levels of self-objectification, which was moderated by imaginary

audience ideation. The more they perceived the ideation of the imaginary audience, the

greater they objectified themselves. Mills et al (2018) conducted an experimental study

where they examined the outcomes for selfie taking and sharing behaviors on mood and

body image. One group of women could only take one photo to be share to the site while

another group was permitted to take several pictures and retouch the selfie before posting.

The control group engage in a non-appearance related activity. Both groups of women

that posted selfies felt more anxious and questioned their appearance than the control

group, but only the retouched photo group felt more confident than the unretouched

group (Mills et al., 2018). Taking and posting selfies, overall lowered mood and

worsened self-image in this study.

Viewing selfies online can also have negative impacts to well-being and body

confidence, specifically when the user places importance on the perceived feedback on

the selfie (McLean et al., 2019; Rosenthal-von der Pütten et al., 2019). A sample of

Netherland teens experience negative effects on body satisfaction when viewing

manipulated selfies (Kleeman, Daalmans, Carbaat, & Anschütz, 2018). Although many

people assume that selfies have been edited and filtered to be the most flattering, the

impact of manipulated images continues to have adverse effects on the viewer. Self-confidence may be grounded in the social acceptance of the beauty standards displayed in selfies (Mascheroni et al., 2015). For users with insecurities and high self-consciousness, selfies can perpetuate bad feelings about the self with negative or absent feedback (Martino, 2014; Walker, 2013).

Gender differences have been noted in selfie-sharing behaviors with females engaging in these behaviors more frequently than males (Dhir et al., 2016). This may be partially due to the concept that women have a dominant beauty standard to conform to in order to viewed as attracttive. The posting of selfies allows them to show their attempts to need these standards. For this reason, this study has focused on women's selfie-sharing behaviors in hopes of clarifying the relationship between these behaviors, self-esteem, and depressive symptom.

Summary

With the rise of Instagram usage, research could shed light on the psychological impacts of Instagram usage in older women. As discussed in this chapter, there was substantial literature centered on the social network impacts on the well-being of adolescents and young adults specifically as it related to social comparison There are fewer studies of the social networking impacts of older adults, specifically the image-driven Instagram (Fardouly & Vartanian, 2015). Although self-esteem has been shown to increase with age until around the age of 60 (Orth et al., 2009), social networking may become a source for supporting the maladaptive thoughts an individual may have of themselves. A woman that already holds negative feelings about herself could have these

feelings reinforced by the feedback or lack thereof on social networking leading to lowered self-esteem and possibly depressive symptoms (Hernandez & Smouse, 2017; Lup et al., 2015). As older adults using Instagram are growing in numbers, a new population of Instagram users warrants examination of the effects on well-being. While there is no known literature establishing the effects of selfies and self-esteem on depression, research has identified correlations between self-esteem, Instagram use, depressive symptoms, and selfies. The purpose of this study was to determine if selfie-sharing behaviors have negative impacts on the health and well-being of adult women on Instagram and the predictability of depressive symptoms from its uses to fill a gap in the literature. The methods to be used in this study are detailed in the following chapter to clarify how the proposed variables correlate and could be used to predict depressive symptoms.

Chapter 3: Research Method

Introduction

Social networking sites have been scrutinized for potentially having a negative impact on users' health and well-being, including low self-esteem, anxiety, and body image issues (RSPH, 2017). Adult women are a particularly understudied population concerning these consequences. The purpose of the study was to examine if depressive symptoms could be predicted in adult women Instagram users by six variables: selfie-sharing behaviors including time spent on Instagram, the number and frequency of selfies shared, perception of feedback from shared selfies, self-esteem, and social comparison. In this chapter, I explain the methods used to address the RQ. In the major sections, I describe the sampling size and procedures, instrumentation, data collection and analysis procedures, and threats to validity. Ethical considerations related to the study's methodology are also addressed.

Research Design and Rationale

The regression analysis design for the study involved the use of a cross-sectional online survey to analyze how variables covary together in order to assess their predictive qualities. A survey was ideal for gathering information on selfie-sharing behaviors, social comparison, self-esteem, and depressive symptoms from a large sample while maintaining the participants' confidentiality. Survey costs are low, take minimal time to gather a large amount of information, and have a global reach (Evans & Mathur, 2005). A regression analysis design allows for the relationships between variables to be tested and predictions to be made. Examining the relationships of the predictor variables (self-

esteem, social comparison, and selfie-sharing behaviors) on the outcome variable (depressive symptoms) for women Instagram users can lead to insights in the impacts they experience every day. In addition, participants could not be randomly assigned to conditions, there was not control group for the study, and the independent variables were not manipulated--all criteria that must be satisfied to be identified as a true experimental design. Although a relationship between the variables may exist, this study was observational, and no treatment conditions were imposed on the participants. Participants completed the survey in their day-to-day settings without being randomly assigned to groups. For these reasons, I was not able to establish a causal relationship between the variables; rather, I assessed the study variables' ability to predict depressive symptoms in women using Instagram.

Methodology

Population

The population for this study included women age 25 to 55 years who had an active Instagram account and share selfies. Sending direct messages to potential participants on Instagram was problematic as some users had privacy settings restricting direct messages or did not display information necessary to determine whether they met inclusion criteria. Therefore, participants consisted of a convenience sample from various locations. I posted advertisements on social networking sites, including Instagram, Facebook, and Twitter, for women who met the inclusion criteria, requesting that they complete the survey and share the link within their network. The additional platforms were included because Facebook and Twitter allow for more text-based posts that can be

shared broadly. I had intended to place flyers (see Appendix A) at local gyms, libraries, colleges, churches, and businesses, with permission of the institutions, requesting eligible participants to complete the online survey; however, due to COVID-19, these establishments were closed. To compensate for the low number of responses to the advertisements on the social networking sites, I used a paid recruiting tool to increase sample size. Individuals were excluded if they were not within the age range of women participants or did not complete the necessary surveys or consent to participate.

Sampling and Sampling Procedures

I calculated the sample size by using a power analysis software called G*Power. The software determines the smallest sample size needed to detect the relationship among variables at a given degree of confidence. G*Power calculates sample size by using the effect size, power level, alpha level, and number of predictors (Faul, Erdfelder, Buchner, & Lang, 2009). The effect size is the strength of the connection between the variables. There are three degrees of effect size for research: small at .2, medium at .15, and large at .35 (Cohen, 1988). For this study, the medium effect size was used as is common for social science research (Cohen, 1988). A power level of .8, which is the probability of rejecting a false null hypothesis, is acceptable in psychological research (Cohen, 1988). Finally, the alpha level for research, or the probability of falsely rejecting the null hypothesis, is standard at .05 (Cohen, 1988). Computing these numbers with the six independent variables of the study yielded a sample size of 98 participants.

Procedures for Recruitment, Participation, and Data Collection

To collect the necessary data, I asked participants recruited through social networking sites to complete an online survey created with Qualtrics software. The survey included measures for self-esteem, social comparison, as well as information on selfie-sharing behaviors. Demographic data including age, gender, ethnicity, education level, relationship status, and region of residence were also collected for the generalizability of the findings. Before data collection, all participants needed to provide informed consent by reading and acknowledging with a yes/no option. Individuals who did not consent could not continue and exited the survey. Informed consent indicated that participants could discontinue the survey at any point. The completed survey would provide all the data for analysis. Once the survey was completed, the participants exited the study. Initially, participants were not provided with compensation for their participation in this study, but due to lower response rates, a paid recruiting tool was used, and those participants were compensated less than $2 a person.

Instrumentation

Demographics. The survey began with the collection of demographic information (see Appendix B). Participants were asked to provide their age, gender, and whether they have an Instagram account to ensure that they met the inclusion criteria for the study. Additional demographic information was collected from the participants to include education level, ethnicity, relationship status, and region of residence to identify trends in generalizability.

Selfie-sharing behaviors. I asked a total of seven questions to establish the intensity and frequency of selfie-sharing behaviors (see Appendix C). Using a 6-point Likert scale (1 = < 10 mins, 2 = 11-30 mins, 3 = 31-60 mins, 4 = 1-2 hrs, 5 = 2-3 hrs, 6 = >3 hrs), participants were asked to rate how much time they spend on Instagram daily. The frequency of selfie posting and number of selfies shared were rated with a 7-point Likert scale. Four additional questions were asked to determine the importance placed on the selfie's feedback that the participants responded to using a 5-point Likert scale (1 = *not at all important*, 5 = *extremely important*).

Self-esteem. I measured self-esteem by using the RSES. The RSES is a 10-item self-report scale developed by Rosenberg (1965) to measure self-esteem (see Appendix D). The items measure both positive and negative feelings about the self, using a 4-point scale (0-3) ranging from *strongly disagree* to *strongly agree*. Participants were asked to indicate how strongly they agree or disagree with each statement. Examples of the items include "On the whole, I am satisfied with myself," and "I feel I do not have much to be proud of." As with all self-report measures, the items are susceptible to socially desirable responding. A statement appeared at the beginning of the survey requesting the participants to respond honestly. Five of the ten items were reverse scored. Total scores range from 0-30, with 30 indicating the highest score for self-esteem. The measure was free to use without explicit permission for professional or academic research. However, the author's family requested Rosenberg to be credited and to be kept informed of its use (see Appendix E).

The RSES is widely used in self-esteem research and assessed for continued reliability and validity. It has been used in over 199 studies with more than 65,965 participants due to its validity, simplicity, and brevity (Sinclair, Blais, Gansler, Sandberg, Bistis, & LoCicero, 2010). Originally, the measure demonstrated excellent internal consistency with a coefficient of reproducibility of .92 and test-retest reliability over a 2-week period of .85 and .88 (Rosenberg, 1965). In a rigorous psychometric evaluation of the RSES across diverse populations across 53 nations, researchers found the mean reliability to be substantial at .81 (Schmitt & Allik, 2005). For age groups 26-35 years, 36-45 years and 46-55 years, Sinclair et al. (2010) found the measure to be internally consistent with reliability scores of .89, .91 and .91, respectively.

The RSES has been found to be highly correlated with several measures of self-esteem across countries and cultures (Schmitt & Allik, 2005). Demo (1985) found that the RSES's convergent validity correlated with the Coopersmith Self-Esteem Inventory in a sample of ninth graders (r = .55 - .58) and a sample of tenth graders (r = .65 - .66). The RSES was originally designed for high school students but has also been used with adults with mental illness (Torrey, Mueser, McHugo, & Drake, 2000). Assuming item convergent validity is satisfactory if items correlate r = .40 or higher (Ware, Gandek, 1998), convergent validity is met for age groups above 26 years of age with above .55 (Sinclair et al., 2010). The RSES significantly correlated with other dimensions of self-concept such as emotional self-concept (r = .50) and physical self-concept (r = .46) as measured by the Self-concept Form 5 Questionnaire (Garcia & Musitu, 2001; Martín-Albo, Núñez, Navarro, & Grijalvo, 2007). Rosenberg, Schooler, and Schoenbach (1989)

found that the RSES also predicted depression due to the bidirectional relationship of the two constructs. Discriminant validity was assessed in Sinclair and colleague's (2010) study using the Participant Measure for Post-acute Care (PM-PAC) which was designed to measure health outcomes such as physical, social and role functioning. The PM-PAC Social Relationship scale was used to differentiate between evaluations of the self (the RSES) and relationships with others. For age groups 26-55 years of age, discriminant validity met as the RSES and the PM-PAC SR correlations were below .85. With correlations between $r = .28 - .59$, the two scales measure theoretically different constructs (Sinclair et al., 2010). In the 53 nations evaluated (Schmitt & Allik, 2005) correlations between self-esteem as measured by the RSES and the Big Five Inventory trait openness were not significant across most participating countries providing support for the discriminant validity of the RSES.

Social comparison. I gauged social comparison by using the INCOM. The INCOM is an 11-item measure developed by Gibbons and Buunk (1999) to measure individual differences in comparison orientation (see Appendix F). As Festinger's (1954) theory emphasized people comparing abilities and opinions, Gibbons and Buunk focused on these concepts. Items in the measure load on both ability (e.g., "I often compare myself with others with respect to what I have accomplished in life") and opinion (e.g., "I always like to know what others in a similar situation would do"). As the two subscales are highly correlated, the measure can effectively be used as a single factor scale. However, the statistical fit is improved with a two-factor model (Gibbons & Buunk,

1999). The measure may be used without permission for research purposes (see

Appendix G).

The INCOM uses a 5-point Likert-type scale (1 = strongly disagree, 5 = strongly

agree) with two items reversed scored. After a brief description and example of social

comparison, participants were asked to rate to what degree they agree/disagree with the

11 statements. Totals scores range from 11 to 55. In the original sample of Dutch and

American participants, the mean scores were 38.05 (SD = 6.79) and 39.75 (SD = 6.39)

(Gibbons & Buunk, 1999). Comparable scores were found in a sample of physicians in

Valencia with mean scores 32.39 (SD = 7.59) (Buunk, Zurriaga, Peíró, Nauta, &

Gosalvez, 2005). Higher total scores than the mean indicate a greater tendency for people

to gather information about others and/or relate it to themselves as lower total scores

indicate a lesser tendency to do so (Schneider & Schupp, 2014).

Cronbach's alpha in the original sample was .83 (Gibbons & Buunk, 1999).

Across samples, the INCOM remained consistent ranging from .78 to .85 in 10 American

samples and .78 to .84 in 12 Dutch samples. Test-retest reliability assessed over six

different occasions in the American sample and once in the Dutch sample range from .71

for 3-4 weeks, to .60 for a year in US and Spanish samples and .72 for 7.5 months in

Dutch samples (Buunk & Gibbons, 2006). Schneider and Schupp (2011) found high

reliability scores in the sample of German participants ranging from .49 to .73 of

explained variance.

The INCOM's validity was assessed and supported across Dutch and American

samples and with comparable measures (Gibbons & Buunk, 1999). The social orientation

trait of the INCOM was assessed with the Interpersonal Orientation (Swap & Rubin, 1983) and the Attention to Social Comparison Information Scale (Lennox & Wolfe, 1984). Convergent validity was supported by a moderately high correlation with the Interpersonal Orientation ($r = .45$) and stronger correlation with the Attention to Social Comparison Information Scale in American and Dutch samples ($rs = .47$ and .66). Schneider and Schupp (2011) provided further evidence of the construct validity of the measure's constructs amongst a German sample. Discriminant validity was tested with comparisons to measures that should not correlate to social comparison, such as life and domain satisfaction, social support, and need for cognition. Gibbons and Buunk (1999) found that people who compare themselves to others more frequently were no more or less satisfied with their life situation than those who did not in Dutch and American samples (Diener , Emmons, Larsen, Griffin, 1989; $r = -.19$ and $-.13 - .03$). In relation to social support and need for cognition in the American sample, correlation remained largely independent ($r = .13$ and $-.08$ respectively). This was further supported with Schneider and Schupp (2011) who found that the Life Satisfaction and the Domain Satisfaction scales did not significantly correlate with the INCOM ($r = -.08$ and .10).

Depressive symptoms. I measured depressive symptoms by using the NMDS. The NMDS is a 52-item scale developed by Cheung (2010) designed to measure four domains of depressive symptomatology: emotional, cognitive, somatic, and interpersonal (see Appendix H). The emotional domain focuses on the feelings associated with depression (i.e., sadness, low mood, unhappiness, anxiety, irritability, guilt, and shame) (Blatt, 2004). Cognitive symptoms of depression include poor concentration, poor

memory, decision-making difficulties, thoughts of being a failure, loss of

interest/pleasure, ruminations, self-blame, and negative attitudes of self and life. The

somatic domain of depression is aimed to evaluate the biological and physical symptoms

of depression. These symptoms include low energy, sleep disturbances, changes in

appetite/weight, intestinal problems, changes in sexual interests, and increased pain

sensitivity (Cheung, 2010). Many of the existing depression measures emphasize

emotional, cognitive, and somatic symptoms but largely overlook the impacts depression

has on interpersonal domains (Cheung & Power, 2012). Symptoms such as a decrease in

activity, social withdrawal and avoidance, negative social comparisons, and heightened

reactivity to everyday interpersonal stress are more vulnerable to depressive symptoms

(O'Neil, Cohen, Tolpin, & Gunthert, 2004). I obtained written permission from Cheung

to use this measure for the study (see Appendix I).

Rating the items from each domain on a 5-point Likert scale (1 = not all, 5 = all

the time), participants were asked to describe how often they have felt that way in the

past. Rather than simply evaluating emotional, cognitive, and somatic symptoms as many

commonly used tools (e.g., Beck Depression Inventory-II (BDI-II), Patient Health

Questionnaire (PHQ), Hamilton Depression Rating Scale (HDRS), and Major Depression

Inventory (MDI)) measure, the NMDS includes interpersonal aspects. Looking at the four

domains provides a more comprehensive tool with greater sensitivity to assess all aspects

of depression (Darharaj, Habibi, Power, Farzadian, Rahimi, Kholghi, & Kazemitabar,

2016). The scores range from 12 to 60 for the emotional, somatic and interpersonal

subscales and 16 to 80 for the cognitive subscale with higher scores indicating more frequent depressive symptoms.

The NMDS's psychometric properties and subscales support the appropriateness of this measure despite its recent development. In the preliminary study of the measure, the NMDS demonstrated a good internal consistency score ($.8 \leq \alpha < .9$) between items and total score (Cheung, 2010). The NMDS's Cronbach alpha for the total scale (0.87) and the four subscales emotional (0.87), cognitive (0.88), somatic (0.83), and interpersonal (0.89) suggest the measure has good internal consistency (Cheung & Power, 2012).

Comparing the NMDS to other scales validated convergent and discriminant validity. The convergent validity of the NMDS was evaluated by correlating the measure's scores to the BDI-II, Oxford Happiness Inventory (OHI), Beck Anxiety Inventory (BAI) and Short-Form Health Survey (SF-36). Cheung (2010) found that the NMDS and the BDI-II to be correlated ($r = .77$) indicating an acceptable relationship between the two scales (Cheung, 2010; Cheung & Power, 2012). The four subscales correlated with the BDI-II ranging from 0.6 to .7. The emotional and interpersonal subscales correlated marginally ($r = .59$ and $.63$, $p = .01$) (Cheung & Power, 2012). The positive correlation of the BAI and negative correlations of the OHI and SF36 to the NMDS were strong ($r = .73$ and $r = -.52 – -.68$, $p < .01$), indicating good convergent validity. (Darharaj, Habibi, Power, Pirirani, & Tehrani, 2018). To establish discriminant validity, a group of participants was divided into dysphoric and non-dysphoric groups according to the scores on the BDI-II (scores greater than 13 were classified as

dysphoric). Participants then completed the NMDS and their results were analyzed. Each item of the measure significantly discriminated between dysphoric and non-dysphoric participants (Cheung & Power, 2012).

Data Analysis Plan

The RQ and hypotheses were as follows:

RQ: What is the predictive relationship between selfie-sharing behaviors (as measured by time spent on Instagram, frequency of selfie posting, number of selfies shared, and perceived feedback on selfies), self-esteem (as measured by the Rosenberg Self-Esteem Scale), and social comparison (as measured by the Iowa-Netherlands Comparison Orientation Measure) on depressive symptoms (as measured by the New Multidimensional Depression Scale) in adult women users (25 to 55 years)? The null and research hypotheses were as follows:

H_0: Selfie-sharing behaviors (as measured by time spent on Instagram, frequency of selfie posting, number of selfies shared, and perceived feedback on selfies), self-esteem (as measured by the Rosenberg Self-Esteem Scale), and social comparison (as measured by the Iowa-Netherlands Comparison Orientation Measure) do not predict depressive symptoms (as measured by the New Multidimensional Depression Scale) in adult women users (25 to 55 years).

H_1: Selfie-sharing behaviors (as measured by time spent on Instagram, frequency of selfie posting, number of selfies shared, and perceived feedback on selfies), self-esteem (as measured by the Rosenberg Self-Esteem Scale), and social comparison (as measured by the Iowa-Netherlands Comparison Orientation

Measure) predict depressive symptoms (as measured by the New

Multidimensional Depression Scale) in adult women users (25 to 55 years).

The data from completed surveys using Qualtrics was collected and imported to the Statistical Package for Social Science (SPSS), version 25. This software was used for hypothesis testing and to provide descriptive statistics. Participant data that was not completed was eliminated. The study analyzed the independent variables (self-esteem, social comparison, and selfie-sharing behaviors) against the dependent variable (depressive symptoms). Multiple regression was successfully used in previous research to determine the predictability of depression among variables (Donnelly & Kuss, 2016; Nesi & Prinstein, 2015), suggesting this to be an appropriate approach for the current study. Multiple regression analysis was used to examine the predictive relationships, if any, of each independent variable on the dependent variable. This approach was used when dealing with multiple independent variables. The aim of multiple regression was to understand how much the dependent variable would change when changes are made to the independent variables. This analysis approach was the most appropriate in investigating the predictive importance of the variables. As this study is based on theory, a more exploratory approach, such as stepwise regression, would not have been appropriate. Also, all the critical factors are accounted for in one model. Multicollinearity is a concern with multiple regression when independent variables are too highly correlated to each other. When independent variables are correlated, the condition index will be above one. If the condition index is below 15, collinearity is not a problem.

As with all multiple regression analysis, the relationship between the independent variable and dependent variables should be linear. Variables that are extreme outliers are removed as these can have large impacts in skewing the results. The second assumption of multiple regression assumed that the residuals are normally distributed. Another assumption was that the data was not too highly correlated with one another, in other words no multicollinearity exists. Last, in multiple regression analysis, homoscedasticity was assumed. The variances of the variables are equal across the range of scores for this assumption to be met. Using SPSS, the assumptions were tested to ensure the analysis was reliable and valid. SPSS also identified variables that were significant in predicting depressive symptoms.

Threats to Validity

As with most research designs, the potential exists for threats to validity. Threats to internal validity included the Hawthorne effect in which the participants aware of being evaluated may become more aware of their responses. Relying on self-report measures added to this threat. This could have resulted in participants providing inaccurate responses in order to avoid presenting themselves unfavorably or perceived as negative. Another threat to internal validity was assuming that a significant relationship existed between the dependent and independent variable. Prior research suggested that self-esteem and social comparison correlated with depressive symptoms, however there was no evidence to support that selfie-sharing behavior correlated with depressive symptoms.

The extent to which the findings could be generalized across people posed a threat to external validity. As this study intended to determine the predictability of depressive symptoms in women sharing selfies on Instagram, it would be inappropriate to assume that every woman who posts selfies will or will not experience depressive symptoms. The study may recruit participants who are less likely to observe the negative impacts or be less willing to share these feelings. Conversely, due to the inability to randomly select participants, the study may receive above average numbers of participants who endure more severe impacts to health and well-being. Relying on a volunteer sample could jeopardize validity as research has shown that volunteers do not have the same characteristics as the general population (Rosenthal & Rosnow, 1975). The motivations for each participant to take part in the study may vary, which could influence how they respond. Individual differences of people would make generalizability difficult. There is no one-size-fits-all model in psychological studies. One can only hope to determine if there may be trends.

Ethical Procedures

I began data collection for this study after obtaining approval from Walden University's Institutional Review Board (IRB). After approval was obtained, participants were recruited for this study using Facebook, Twitter, Instagram and Prolific, a paid participant recruiting site. No flyers were distributed due to the pandemic. Information was gathered anonymously with a Qualtrics survey from adult participants. Qualtrics' servers are protected by high-end firewall systems and scans are regularly performed. Vulnerabilities are quickly discovered and patched to ensure security of information

(Qualtrics, 2018). Survey protections include preventing search engines from finding restricted surveys, restricting what websites respondents come from, blocking duplicate survey completion, and specifying survey active time (Qualtrics, 2019). The data is stored securely and transferred to SPSS encrypted. In other words, the information is scrambled or coded using Transport Layer Security (TLS) and can only be decoded with the encryption key of an authorized subscriber that is protected with a password (Qualtrics, 2018). Participant's dataset can be made viewable to only the survey owner or uploaded securely. The survey began with an informed consent that stated that participation was entirely voluntary and a disclaimer to inform the participants that the information collected would not be used for diagnostic or clinical purposes, only research purposes. With a focus on depressive symptoms and possible suicidal thoughts, resources was provided at the end of the survey for participants in need of additional assistance. The intent of the study was not to exacerbate existing conditions. For participants in need of confidential support, a free hotline number and website was provided. Per Walden University's requirements, all raw data will be securely maintained for no less than five years after completion of the doctoral study (Walden University, 2011). The data transferred from Qualtrics and analysis from SPSS will be saved in a password-protected file on my personal laptop which is also password protected.

Summary

The methodology described in this chapter reflected a study designed to answer the RQ while adhering to ethical standards. The study aimed to investigate if social comparison, self-esteem, and selfie-sharing behaviors have any predictive relationship to

depressive symptoms of adult women using Instagram. The measures selected for the

study were chosen for their appropriateness to collect the desired information reliably. A

collaborative survey comprised of Social Comparison Orientation Scale, RSES, NMDS,

and Selfie-Sharing behaviors questionnaire was used for anonymous online data

collection. After IRB approval, data from a minimum of 98 survey participants was

analyzed using multiple regression to determine whether a significant relationship

existed. Interpreting the information from the SPSS software is detailed in Chapter 4 to

provide insight into the variables' predictive strengths for depressive symptoms in

women using Instagram.

Chapter 4: Results

Introduction

Most of the research on social networking sites has concentrated on emerging adults' and adolescents' engagement on the sites. Although older adults are a growing population group in the United States, they are vastly underrepresented in the literature. The purpose of this quantitative study was to identify the predictors of depressive symptoms in adult women using Instagram based on selfie-sharing behaviors, social comparison, and self-esteem. In this chapter, I describe the processes for the collection and analysis of the data to answer the RQ and test the hypotheses. The results, including descriptive statistics, evaluation of assumptions, and statistical analyses, are presented, with tables included to illustrate the findings. The chapter concludes with a summation addressing the study's answer to the RQ.

The RQ for this study was, what is the predictive relationship between selfie-sharing behaviors, self-esteem, and social comparison on depressive symptoms in women Instagram users (ages 25-55 years)? The hypotheses were as follows:

H_0: Selfie-sharing behaviors (as measured by time spent on Instagram, frequency of selfie posting, number of selfies shared, and perceived feedback on selfies), self-esteem (as measured by the Rosenberg Self-Esteem Scale), and social comparison (as measured by the Iowa-Netherlands Comparison Orientation Measure) do not predict depressive symptoms (as measured by the New Multidimensional Depression Scale) in adult women users (25 to 55 years).

H_1: Selfie-sharing behaviors (as measured by time spent on Instagram, frequency

of selfie posting, number of selfies shared, and perceived feedback on selfies), self-

esteem (as measured by the Rosenberg Self-Esteem Scale), and social comparison

(as measured by the Iowa-Netherlands Comparison Orientation Measure) predict

depressive symptoms (as measured by the New Multidimensional Depression

Scale) in adult women users (25 to 55 years).

Data Collection

I began recruitment on March 8th after obtaining IRB approval. An online survey created on Qualtrics that included the study measures was the first wave of recruiting shared on Facebook, Instagram, and Twitter. A recruiting post as shared on these sites linked to the survey that began with an informed consent form. I encouraged my friends to share the post with their friends and to kept their privacy settings for the post open so more people could see it. Once the participants signed the consent form, the survey began with demographic information (including age, ethnicity, education level, relationship status, and the continent of region) before launching the measures. After several months of sharing posts, only 50 out of the 120 targeted participants completed the Qualtrics survey. Recruiting on social networking sites ended May 25th, 2020.

Initially, I had planned to passively recruit participants by posting flyers. However, due to the area-wide shut down of libraries, gyms, colleges, churches, and some businesses because of COVID-19, no flyers could be hung. Relying solely on social networking yielded limited results as the pandemic stalled recruiting. I sought other options for recruiting to supplement the lower response rates. Ultimately, I used the paid

participant recruiting site Prolific for my data collection because it was a much more user-friendly way to recruit participants to complete the surveys. The site provided the participants with a small compensation ($< \$2$) for completing the survey. The Prolific survey was linked to the Qualtrics survey, where the data were collected. The survey went live on Prolific on June 9th; however, due to an error on the link to the survey, only 37 of the 120 data sets were usable after data cleanup. Revising and relaunching the Prolific survey on June 19th resulted in an additional 44 participants. Data collection officially ended on June 21st. I removed incomplete surveys, rejected informed consents, and surveys completed by participants who did not meet the inclusion criteria (i.e., being female, 25-55 years of age, and having an active Instagram). A total of 117 of the 131 recorded responses were left to be analyzed after data cleanup.

Data analysis procedures. Once data collection was complete, I transferred the raw data from Qualtrics to SPSS, version 25, for hypothesis testing and to compute descriptive statistics. Multiple linear regression was conducted to examine the relationship between selfie-sharing behaviors (as measured by time spent on Instagram, frequency of selfie posting, number of selfies shared, and perceived feedback on selfies), self-esteem (as measured by the RSES), and social comparison (as measured by the INCOM) on depressive symptoms (as measured by the NMDS).

Demographic data. The survey included items to provide demographic information of the sample population. These items included age, ethnicity, education level, relationship status, and the continent of residence for generalization purposes. All participants reported being women between the ages of 25-55 years who had an active

Instagram account. A summary of the sample's ($N = 117$) demographic characteristics is provided in Table 1. Age was measured as an ordinal variable where participants indicated their current age range. Ethnicity, education level, relationship status, and the continent of residence were nominal variables asking the participants to indicate with choice best described them. A majority of the sample were single (58%), white women (58%) between 25-35 years (87%), holders of a bachelor's degree (40%), and living in North America (65%).

Table 1.

*Descriptive Statistics for Sample Demographics (*N = *117)*

Variable		*n*	%
Age	25-35 years	87	74.4
	36-45 years	22	18.8
	46-55 years	8	6.8
Ethnicity	European American/White	68	58.1
	African American/Black	10	8.5
	American/Alaskan Native	2	1.7
	Asian	14	12.0
	Hispanic/Latinx	14	12.0
	Mixed race	9	7.7
Education level	Some high school	1	.9
	High school/GED	8	6.8
	Some college	23	19.7
	Associates degree	5	4.3
	Bachelor's degree	47	40.2
	Master's degree	28	23.9
	Doctoral degree	5	4.3
Relationship status	Single	68	58.1
	Married	41	35.0
	Divorced	5	4.3
	Widowed	3	2.6
Continent of residence	North America	76	65.0
	South America	1	.9
	Europe	28	23.9
	Asia	2	1.7
	Africa	1	.9
	Australia	8	6.8
	Missing	1	.9

Variable descriptive statistics. A test of skewness and kurtosis was run to describe the distribution of the variables. Ideally, for normal distribution, the variables will have a bell-shaped curve. This distribution implies that most of the scores will be at the center of the distribution, with fewer scores moving away from the center in similar patterns on either side. Skewness describes the symmetry of the scores as they fit under the bell curve. Distributions with most of the scores clustered at the lower end (left) are positively skewed, whereas clusters of scores at the higher end (right) are negatively skewed. Distributions can also vary in the degree that scores cluster at the tails of the curve, also known as kurtosis. Positive kurtosis has many scores in the tails, making them pointy and negative kurtosis has fewer scores in the tails, making them flatter. In a normal distribution, the values for skew and kurtosis are 0. Positive values for skewness coincide with a positive skew, and negative values indicate negative skew. Positive values for kurtosis signify leptokurtic or positive kurtosis. Negative values denote platykurtic or negative kurtosis. The following table and figures will present the skewness and kurtosis of the variables for this study.

Table 2.

Skewness and Kurtosis

	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error
How much time do you spent on Instagram daily?	.740	.224	.190	.444
How often do you post selfies on Instagram?	.819	.224	.384	.444
How many selfies (on average) do you share on Instagram a week?	4.802	.224	25.143	.444

RSES_TOTAL	.066	.224	1.090	.444
PFB_TOTAL	.430	.224	-.233	.444
INCOM_TOTAL	-.730	.224	.527	.444
NMDS_TOTAL	.587	.224	-.120	.444

The skewness of the time spent on Instagram was .740. Measures of skewness between -1 and -0.5 or 0.5 and 1 are moderately skewed (Bulmer, 1979). Figure 1 shows a moderately positive skewed distribution as most of the scores are clustered on the lower end of the curve.

Kurtosis was .190, which is close to zero and, therefore, only slightly leptokurtic.
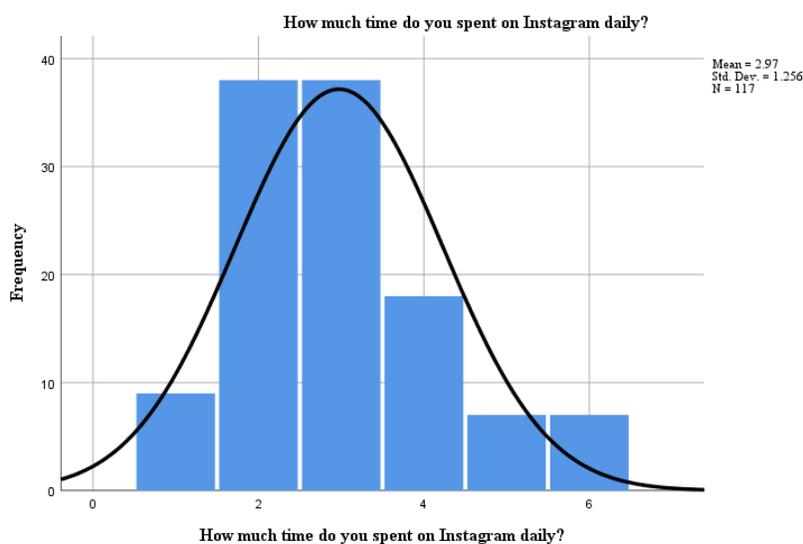

Figure 1. Frequency distribution of time spent on Instagram (time).

The skewness of the selfie posting frequency was .819. With scores clustered on the left side, this distribution is positively skewed, also moderately. Kurtosis was .382 with a pointy tail on the right side, as shown in figure 2. This distribution is leptokurtic.
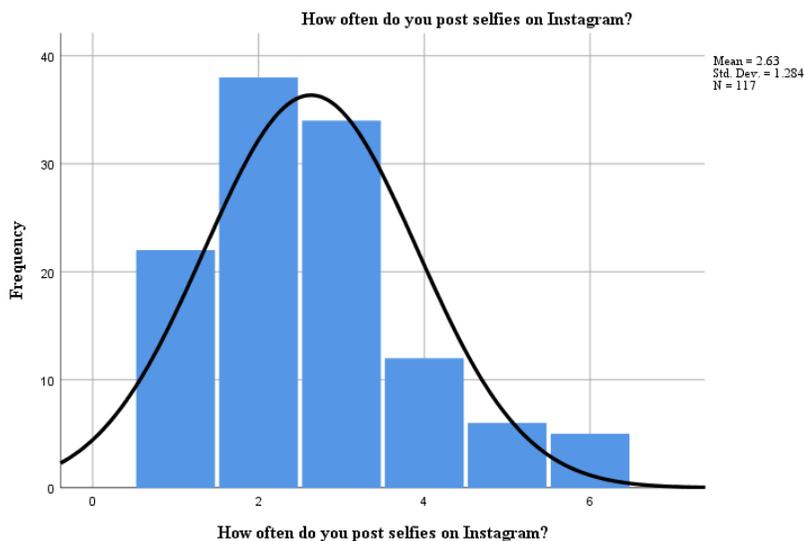
Figure 2. Frequency distribution of selfie posting frequency (frequency).

The skewness of the average selfies shared was 4.802. Figure 3 shows a highly positive skewed and heavy-tailed distribution. Most of the scores are on the lower end, reflected by the high skewness value. The kurtosis value was 25.143, which deviates significantly from a normal distribution and is highly leptokurtic.
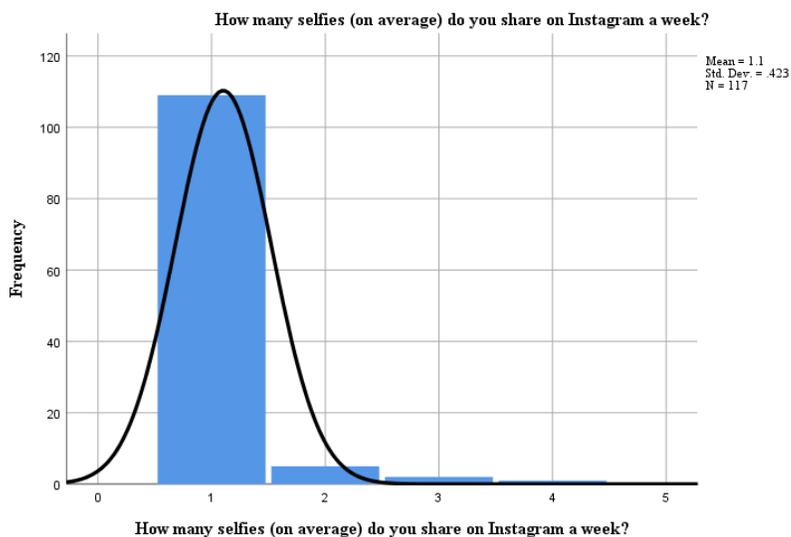

Figure 3. Frequency distribution of average selfies shared (# selfies).

The skewness of self-esteem based on the Rosenberg Self-Esteem (figure 4) scale was .066. According to Bulmer (1979), measures of skewness between -.5 and .5 are approximately symmetric. With the cluster of the scores to the left and the skew value above one, the histogram shows a moderately positive skew. The kurtosis at this level was 1.09. Since the kurtosis was greater than 0, the distribution has pointy tails and is leptokurtic.
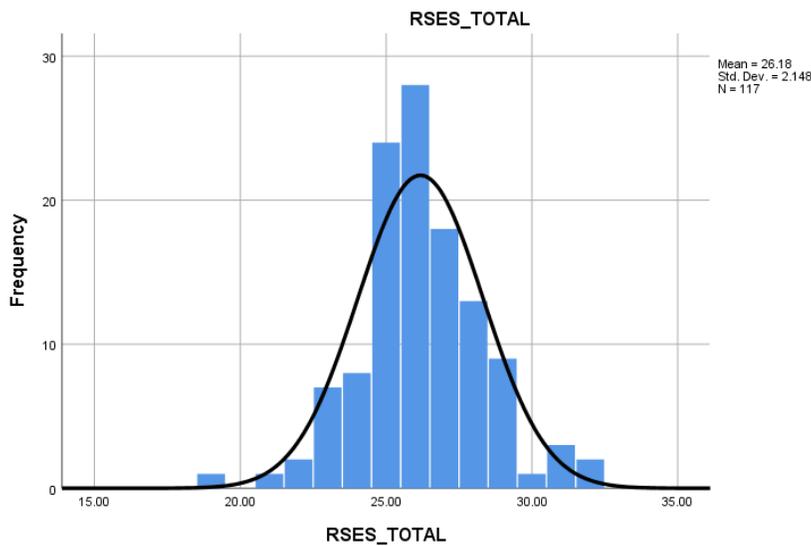

Figure 4. Frequency distribution of the Rosenberg Self Esteem Scale (RSES) Total.

The skewness of perceived feedback total was .242. The scores are clustered to the left of the distribution. Figure 5 shows a moderately positive distribution. The measure of kurtosis was -.625. With a kurtosis level below 0 and flatter tails, this distribution is platykurtic.
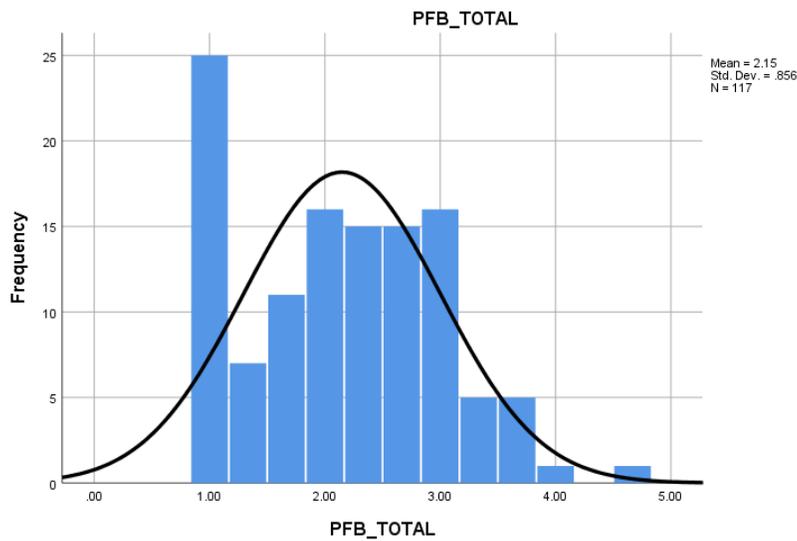
Figure 5. Frequency distribution of the Perceived Feedback (PFB) Total.

The skewness of the Iowa Netherlands Comparison Orientation Measure was -.730. The negative value indicated at negative skewness as most of the scores are clustered to the right. Figure 6 depicts a moderately negative skewed distribution. The .527 value and pointy tails denote the leptokurtic distribution of the Iowa Netherlands Comparison Orientation Measure.

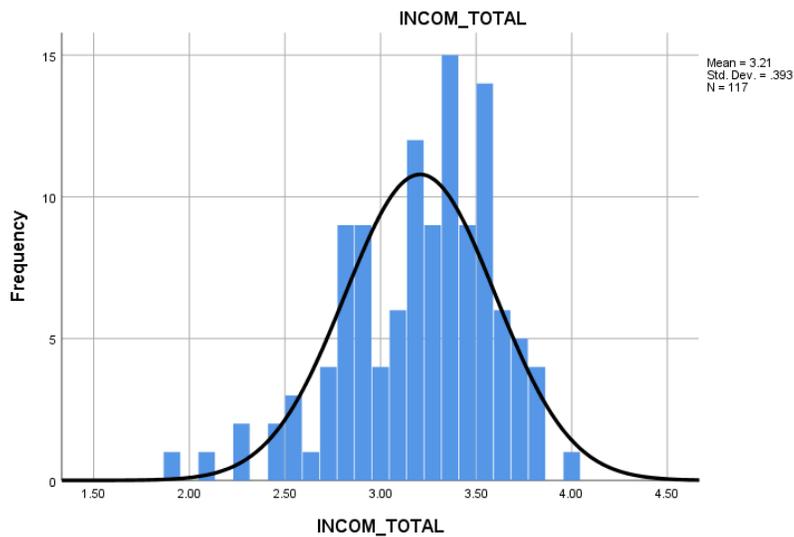*Figure 6*. Frequency distribution of the Iowa Netherlands Comparison Orientation Measure (INCOM) Total.

The skewness of the NMDS was .587. The positively skewed distribution has most of the scores clustered to the left and is moderate. Figure 7 shows the flattened tails indicating a platykurtic distribution with a measure of -.120.
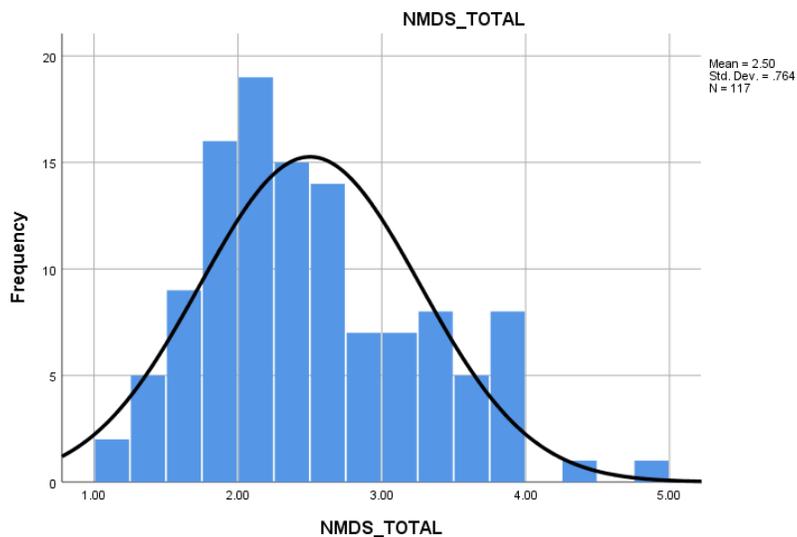

Figure 7. Frequency distribution of the New Multidimensional Depression Scale (NMDS) Total.

Results

Instrumental measurement analysis. The measures that were used for this study were chosen because of their established reliability. In this study, the NMDS has a Cronbach's alpha of .87 for the total score (Cheung, 2010). As the measure is designed with four subscales, each subscale (emotional, cognitive, somatic, and interpersonal) were also found to be reliable (.87, .88, .83, and .89, respectively) (Cheung & Power, 2012). The Cronbach's alpha for the NMDSs for this study was .977. For the subscales, the reliability scores were .948 for the emotional, .942 for cognitive, .88 for somatic, and .93 for interpersonal. Lastly, the four perceived feedback questions were adopted from Li and colleagues (2018) study and had composite reliability of .88, and for this study, the measure had an alpha score of .79. Table 4 shows the reliability measure for the current study.

Table 3.

Instrument Reliability	*N/*items	*α*
Rosenberg Self-Esteem Scale	10	.921
Perceived Feedback	4	.79
Iowa Netherlands Comparison Orientation Measure	11	.533
New Multidimensional Depression Scale Total	48	.977
NMDS Emotional	12	.948
NMDS Cognitive	15	.942
NMDS Somatic	12	.88
NMDS Interpersonal	12	.93

Statistical assumptions. Assumptions were tested using procedures in SPSS for multiple regression. The first assumption requires the independent variables and dependent variables to be linear. SPSS showed that this assumption was met with the observed partial regression plots between each independent variable and the dependent variable (see figure 8-16).
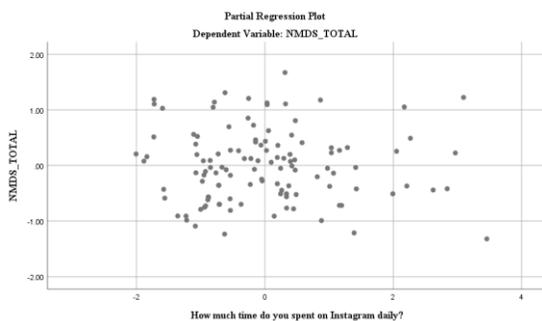
Figure 8.
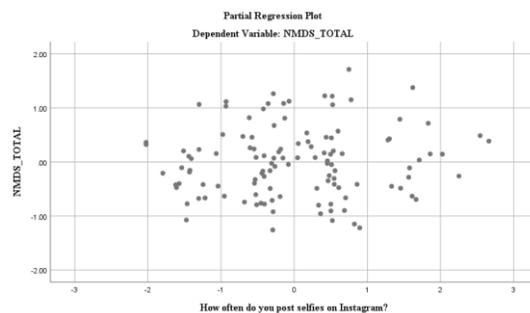
Figure 9.
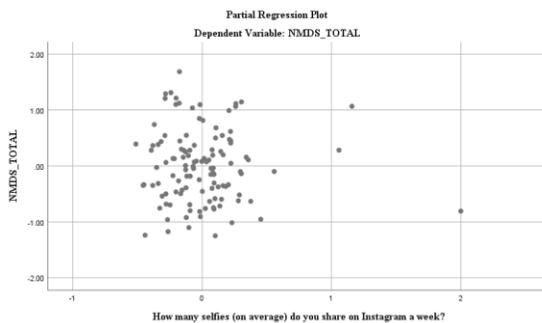
Figure 10..
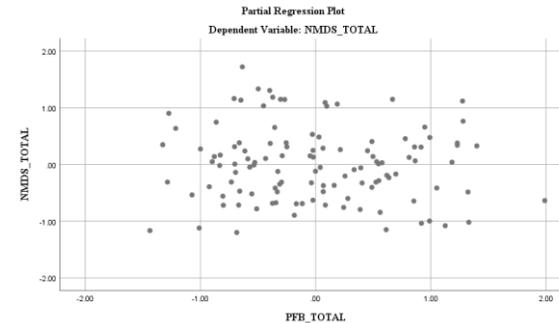
Figure 11.
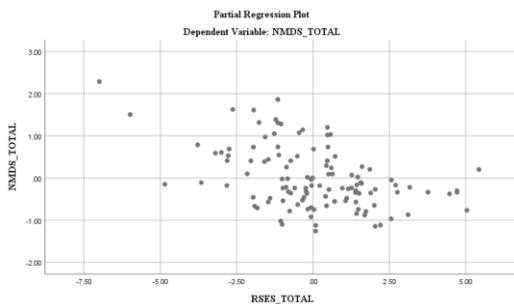
Figure 12.
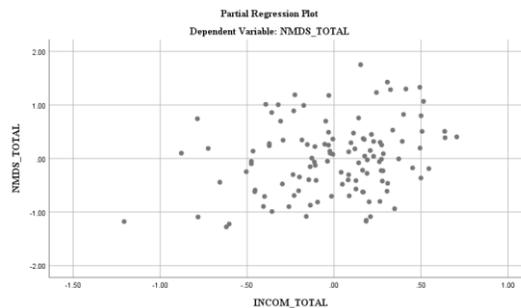
Figure 13.

The second assumption (normality) was met as observed with the P-P plot and histogram for the model (see figure 9 & 10). The dots lie close to the line indicating how close to normal the residuals are distributed. The assumption of homoscedasticity was also examined with no noted violations (see figures 11). The scatterplot shows a random array of dots without any funneling.
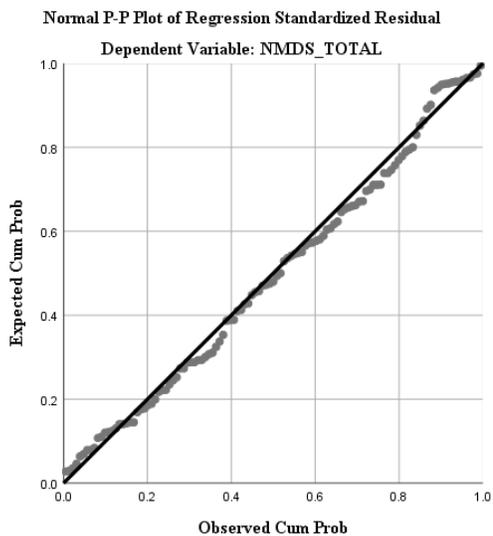
Figure 14. P-P Plot Normality of residuals.
residual.
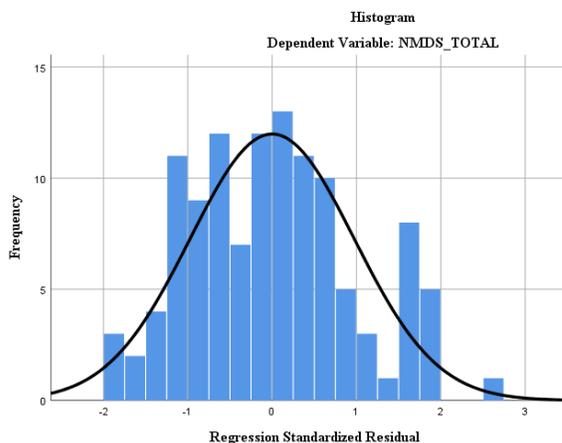
Figure 15. Histogram Normality of
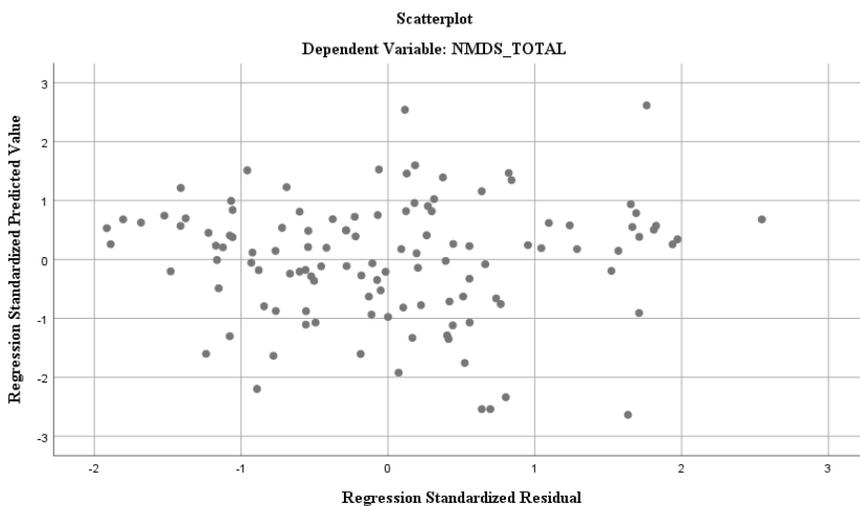
Figure 16. Homoscedasticity plot of residuals and predicted values.

Multicollinearity was the fourth assumption tested. This was done in two different ways. After running all the regression analyses, the correlations table showed none of the independent variables were correlated above .50. Correlations approaching one are highly correlated, and correlations above .8 are problematic. Looking at the coefficients table, the tested assumption is displayed in the collinearity statistics (see table 3). Tolerance scores above .2 and VIF scores below 10 met the multicollinearity assumption.

Table 4.

Collinearity Statistics

	Tolerance	VIF
Time on IG	.809	1.235
Frequency of Selfies	.637	1.571
Number of Selfies	.586	1.706
PFB_Total	.777	1.287
RSES_Total	.939	1.065
INCOM_Total	.810	1.234

The fifth assumption is that the values of the residuals are independent. This assumption was tested by computing the Durbin-Watson statistic. The statistic can vary from 0 to 4, but the value needs to be close to 2 to meet this assumption. For this model, the Durbin-Watson value was 2.138. Lastly, the final assumption is tested with Cook's Distance values to ensure there are not compelling cases biasing the model. The values need to be below 1 for this assumption to be met, which all 117 were.

Data analysis results. The results of the regression were significant, $F(6, 110) = 7.708$, $p < .001$, $r^2 = .296$. In the final model, only self-esteem $b = -.161$, $t (117) = -5.482$, $p < .001$ and social comparison $b = .488$, $t (117) = 2.827$, $p < .05$ provided any

significant contribution to the prediction of depressive symptomology. Therefore, the null

hypothesis is rejected, and the alternative hypothesis is accepted. Low self-esteem was

predictive of higher depressive symptoms. Higher levels of social comparisons were

predictive of higher depressive symptoms. Time on Instagram, $b = -.010$, $t(117) = -.312$,

$p > .05$, frequency of selfies, $b = .048$, $t(117) = .798$, $p > .05$, number of selfies, $b = -.052$,

$t(117) = 2.275$, $p > .05$ and, perceived feedback, $b = -.067$, $t(117) = -.791$, $p > .05$ did not

significantly predict depressive symptoms. The final regression equation is: Depressive

Symptoms = 5.272 -.017(time) +.048(frequently posting) -.052 (# selfies) -.067(PFB) -

.161(RSES) + .488(INCOM). Table 5 presents the regression results.

Table 5.

Regression Summary

Variable	*B*	*SE B*	B	*T*	*P*
Time on IG	-.017	.054	-0.28	-.312	.756
Frequency of Selfies	.048	.060	.080	.798	.426
Number of Selfies	-.052	.189	-.029	2.275	.784
PFB	-.067	.085	-.072	-.791	.431
RSES_Total	-.161	.029	-.453	-5.482	<.001
INCOM_Total	.488	.173	.251	2.827	.006

Summary

In this chapter, I explained the data collection and analysis. The findings of the

multiple regression indicated that the null hypothesis should be rejected, and the alternate

hypothesis should be accepted. While time spent on IG, the number of selfies, frequency

of selfies, and perceived feedback did not significantly contribute to the model, self-

esteem, and social comparison did contribute significantly. In the final chapter, I will

examine my findings with previous literature. I will analyze the results in the context of

the theoretical framework. Limitations and recommendations for further research will

conclude this study.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purpose of this quantitative study was to determine if there was a correlation between Instagram selfie-sharing behaviors as measured by the number and frequency of selfies posted, time spent on Instagram, and perceived feedback on selfies, self-esteem, social comparison, and depressive symptoms. This predictive correlational investigation was an expansion of previous literature on the health and well-being impacts of social networking sites that focused on younger users to include women between the ages of 25 and 55 years (Lin et al., 2016; Lup et al., 2015; RSPH, 2017; Sherlock & Wagstaff, 2018; Valkenburg, et al., 2006). Using multiple regression analyses, I examined which variables predicted depressive symptoms.

The null hypothesis for this study was rejected because the model of the regression was significant, though not all the variables contributed. The findings supported the predictive quality of self-esteem and social comparison on depressive symptoms for the target population. In this chapter, I will interpret the results in relation to the prior literature discussed in Chapter 2 and the theoretical framework. Limitations, recommendations, and implications for social change will also be addressed before the chapter is concluded.

Interpretation of the Findings

In Chapter 2, I provided an overview of the correlations between social networking sites and health and well-being. Prior research suggested that social network site use negatively impacted self-esteem, mood, body/life satisfaction, and overall

psychological well-being (Hernandez & Smouse, 2017; Lin et al., 2016; Lup et al., 2015;

RSPH, 2017; Sherlock & Wagstaff, 2018). The literature spanned all popular social

networking sites, including Facebook, Twitter, Instagram, Snapchat, and Tumblr. I

selected Instagram because it had been singled out as one of the worst social networking

sites for health and well-being outcomes in a study conducted by the RSPH (2017).

However, the populations selected for these studies only included adolescents and

emerging adults. According to my review of the literature, no researchers to date had

examined the health and well-being impacts of Instagram on older adults.

With an overall significant model for the correlations between selfie-sharing

behaviors, self-esteem, social comparison, and depressive symptoms, supports for the

adverse outcomes on health and well-being were determined. Similar to the findings in

previous literature (Cheng & Furnham, 2003; Mackson et al., 2019; Rosenberg et al.,

1989), self-esteem scores, as measured by the RSES, were negatively associated with

depressive symptoms as measured in this study by the NMDS ($r = -.492$). Higher scores

on the RSES were associated with higher levels of self-esteem, whereas higher scores on

the NMDS were associated with higher depressive symptoms. The inverse relationship

between the two scores was moderate in strength. Another moderate relationship between

significant variables in the model was with social comparison, as measured by the

INCOM and depressive symptoms ($r = .309$). The positive relationship between the two

variables indicates that high levels of social comparison correlate with increased

depressive symptoms.

Festinger's (1954) social comparison theory offers a plausible explanation for the relationships between self-esteem and depressive symptoms. His first theory stated that humans have an innate drive to evaluate themselves in comparison to others to gain a better evaluation of one's opinions, abilities, and attributes. People frequently engage in this behavior and often subconsciously (Mussweiler, Ruter, & Epstude, 2004). Social networking sites, especially Instagram's photo-based platform, offer an abundant opportunity to compare oneself to others, often through upward social comparisons as this is the most frequent type of comparison. People are less likely to compare themselves with downward comparisons because they do not want to be similar to those they perceive as inferior and will not minimize their differences (Collins, 2000). However, when engaging in upward social comparison, self-evaluations may fall short when repeatedly comparing oneself to idealized, glamorized, filtered, and edited pictures (Bäzner et al., 2006; Vogel et al., 2014). The comparisons themselves may not be problematic, but they may exacerbate the already negative self-appraisals (Feinstein et al., 2013). Not meeting up to perceived standards of beauty, not receiving desired amounts or types of feedback, or worse, receiving negative feedback can be deleterious to one's self-esteem. The deficits may be internalized by users with fragile self-esteem who make efforts to measure up to their target, lowering self-evaluations further (Manago et al., 2008; Tiggemann & Brown, 2016).

Poor comparisons to others on social networking sites may lead to more negative self-evaluations, lowering self-esteem (Vogel et al., 2014). In younger samples, researchers have found that positive correlations between social comparisons and the

adverse effects on well-being included negative self-worth (Stapleton et al., 2017) and lowered self-esteem (Chua & Chang, 2016; Lee, 2014). As correlations cannot determine causation, Stapleton et al. (2017) suggested that users whose self-worth was contingent on the approval of others relied on social comparison and feedback to make judgments of themselves. When the external inputs were lacking or fell short of expectation, the judgments were negative, resulting in low self-esteem. Examining the relationships of social comparison and self-esteem to depressive symptoms in this study appears to substantiate what was already known in younger populations to older samples.

Selfie-sharing behaviors, which included times spent on Instagram, number, and frequency of selfies, and perceived feedback on selfies did not contribute significantly to the model. This was the first study of its kind to directly correlate selfie-sharing behaviors to depressive symptoms, although there may have been an indirect link between them. Selfie-sharing practices have recently been found to result in adverse health outcomes (Cohen et al., 2018; Mills et al., 2018). The impression management of selfies requires that individuals expend considerable effort to post the perfect image (Pounders et al., 2016). It involves taking (preparing, staging, and posing), modifying (selecting, editing, and filtering), and posting photos and viewing and evaluating others' selfies through likes and comments (McLean et al., 2019). Going to great lengths to present the perfect version of one's self has been associated with lower self-esteem, self-objectification, and body image concerns, specifically for those in need of approval who are not receiving it (Chang et al., 2019; Bloomfield Neira & Barber, 2014; Mills et al., 2014). Despite these previous findings, I did not find any supports for this correlation.

There are a few possible explanations for the lack of correlation between selfie-sharing behaviors and depressive symptoms. The first explanation could be the infrequent engagement in this behavior by my sample. Most participants did not spend a lot of time on Instagram, post many selfies, or post selfies frequently. Although they reported engaging in selfie-sharing behaviors, the participants in this study may not have been the best sample for the purpose. For time spent on Instagram, 72.6% of the participants used the site 60 minutes or less a day. Selfies were posted at most 2-3 times a month by 80.3% of the sample, and 93.2% of the 117 participants shared five or fewer selfies a week. The correlations for these variables with depressive symptoms were inverse and nonsignificant ($r > .030$). The perceived feedback was also on the lower side, indicating less importance place on perceived feedback on selfies. The correlation of this variable with depressive symptoms was nonsignificant ($r = .031$). The lack of correlation may lend support to the notion that individuals with more life experience (age) may be more comfortable and seek out feedback less frequently (Anseel, Beatty, Shen, Lievens, & Sackett, 2015).

Limitations of the Study

There are a few limitations to this study. The research design poses the first limitation as correlational designs do not offer causation. It cannot be determined if depressive symptoms are caused by lowered self-esteem or increased social comparison or vice versa. The only conclusion drawn from the findings is a correlation between the variables and the strength of that relationship. Another limitation of the study was the use of self-report measures. While this method allows for quick and anonymous data

collection, it assumes that the participants will answer the items honestly. Participants may favor responding in a socially desirable manner to portray themselves in a positive light, which could skew findings.

The recruiting method was also a limitation. Passive recruiting and convenience sampling can yield low response rates due to a lack of interest. With the initial plan on social networking sites recruiting was slow. Flyers were not utilized as facilities identified for hanging recruiting posts were closed due to COVID-19. Without compensation that was offered through the second recruiting method, there was little interest in participating. However, recruiting with a paid pool could also pose a limitation because participants may not take the survey seriously and rush through to completion to receive compensation. Relying on a volunteer sample could have jeopardized the validity because volunteers may not have the same characteristics as the general population (Rosenthal & Rosnow, 1975). Therefore, the findings for this study may not be generalizable to the general population.

Last, the sample selected may not have been the most ideal for the intent of the study. After reviewing that data, most participants were not very active selfie sharers, so the selfie-sharing behaviors did not significantly contribute to the model. There might have been some range restriction in the sample data that was not available across the entire range of interest. This may have accounted for the lower range of data observed. The frequency distribution shows time spent on Instagram, number and frequency of selfies were all positively skewed indicating a skew in the data. The positive skewness means that the frequencies are clustered to the left of a normal distribution. The data

frequencies were much lower than the normal distribution which was evident in figures 1-3. The kurtosis for the three variables also deviated from the normal distribution. Time spent of Instagram and frequency of selfies were closer to zero therefore only slightly leptokurtic. The kurtosis statistic for number of selfies was much higher than zero and showed a significant peak. This deviations from a normal distribution could explain the limitation of the selfie-sharing behaviors.

Recommendations

Based on the limitations of this study, it would be beneficial to have further studies that solicit more participants that engage in selfie-sharing behaviors. The population of this study engaged in this behavior infrequently. Most participants used Instagram an hour or less a day, shared 0-5 selfies a week, and posted selfies three times or less a month. These frequencies were on the lower side, and the study was geared at examining this behavior. Future studies should reconsider the measures of frequency for the behaviors to determine what is low versus high. While this study considered one hour of use low intensity, additional research should reevaluate how the time spans are calibrated. Additional studies should also include users who engage in higher levels of selfie-sharing behaviors as an inclusion criterion. A larger sample size could also potentially provide a more accurate measure of the effects of selfie-sharing behaviors, self-esteem, and social comparison have on depressive symptoms. Recruiting from a pool interested in the findings as opposed to a paid sample could result in more meaningful results.

Implications

This research study contributes to the growing body of knowledge regarding social networking site outcomes. Existing literature (Hernandez & Smouse, 2017; Lin et al., 2016; Lup et al., 2015; RSPH, 2017; Sherlock & Wagstaff, 2018) has established robust supports for the harmful impacts site use can have on health and well-being for adolescents and emerging adults. The findings from this study expand what is known about this relationship to adult women as this was a mostly underrepresented population on this topic. Positive social change is driven by ideas and actions with real-world implications (Morris, 2017). This change can result in improvements to human and social conditions for the betterment of society. The increased awareness of the adverse outcomes social networking sites have on the user could prompt platforms to initiate alerts to notify the user that they have been browsing the site too long or editing their photos with too many filters. The findings offer an increased awareness and greater understanding of the health and well-being impacts of social networking sites for mental health practitioners to aid adult women struggling with low self-esteem due to negative self-evaluations. Teaching self-compassion with focus of self-kindness, common humanity, and mindfulness instead of self-judgement, isolation, and over-identification can help women overcome the negative emotions brought on by comparisons to foster better self-esteem. As one of the first known studies focusing on the social networking site use of adults, positive social change may come from further studies emerging as a result that could alter how social networking sites are used/governed.

On an individual level, the knowledge of the impacts social networking site use can have on health and well-being may allow people to make better-informed decisions. Simply knowing that photo-based platforms such as Instagram promote social comparison, which can negatively affect self-esteem, may deter individuals from using the sites, or at least make them cautious of this relationship. With the over 400 million monthly users that traverse the site (Instagram, 2016), awareness could reduce the number of users whose self-esteem is negatively impacted.

Mental health practitioners understanding the relationship between Instagram and health and well-being may identify problem areas for clients struggling with self-esteem issues. Potential threats could include a need for social approval, acceptance, or validation that could be addressed in counseling to help the client adopt healthier skills. As technology has become such a big part of daily life for so many, practitioners need to understand the influences they pose to functioning.

Conclusion

As the population of Instagram continues to grow and include wider age ranges of users, it is vital for research to continue to explore the facets of its use on health and well-being. The results of this study presented similar findings to those found in younger populations with a significant regression model. Self-esteem was moderately correlated with depressive symptoms, though the directionality could not be determined with correlational designs. The inverse relationship between the two variables suggests that lower scores on the RSES correlate with higher scores on the NMDS. Within the same correlation, higher levels of social comparison, as measured by the INCOM correlate

with higher depressive symptoms. While those adverse outcomes from Instagram use were not influenced by selfie-sharing behaviors, it cannot be ruled out in the future due to the low engagement of this behavior in the sample. The current study corroborates prior findings on social networking site use and negative effects on health and well-being and opens the door to extend other areas of study with the older users.

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Appendix A: Flyer

Selfie-Sharing Research Study

Participants Needed

Take part in an important research study

- Are you a woman between 25 and 55 years of age?
- Do you take and share selfies on an active Instagram account?

If you answered YES to these questions, you may be eligible to participate in a selfie-sharing research study.

The purpose of this research study it to examine the effects of selfie-sharing behaviors on health and well-being of adult women. Participants will not be compensated monetarily.

Women (25-55 years of age) are eligible to participate. For more information please contact Rochelle Henry at .
To access the study: (Qualtrics link to the study will be here)

This study is being conducted with the approval of Walden University Institutional Review Boards (IRB)

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Appendix B: Demographic Information

Age:
Gender:
Ethnicity:
Have an Instagram Account:
Education Level:
Relationship Status:
Region of Residence:

Appendix C: Selfie-Sharing Behaviors

Time spent on IG: <u>How much time do you spent on IG daily?</u>
1 - <10 mins   2 – 11-30 mins   3 – 31-60 mins   4 – 1-2 hrs   5 – 2-3 hrs   6 – >3 hrs
Frequency of selfie posting: <u>How often do you post selfies on IG?</u>
1 – never   2 – rarely (1x / month)   3 – occasionally (2-3x / month)   4 – sometimes (3-4x / month)   5 – frequently (2-3x / week)
6 – usually (1-2 times a day)   7 – very frequently (>2 times a day)
Number of selfies: <u>How many selfies (on average) do you shared on IG a week?</u>
 1 – 1-5 selfies 2 – 6-10 selfies   3 – 11-15 selfies   4 – 16-20 selfies   5 – 21-25 selfies   6 – 26-30 selfies   7 – 30+ selfies
Feedback on selfies: <u>How important is it for you to get a lot of likes?</u>
1 – not at all important   2 – slightly important   3 – neutral   4 – moderately important
5 – extremely important
<u>How important is it for you to get likes as quickly as possible?</u>
1 – not at all important   2 – slightly important   3 – neutral   4 – moderately important
5 – extremely important
<u>How important is it for you to receive positive comments on my selfies?</u>
1 – not at all important   2 – slightly important   3 – neutral   4 – moderately important
5 – extremely important
<u>How important is it for you to have a lot of IG followers?</u>
1 – not at all important   2 – slightly important   3 – neutral   4 – moderately important
5 – extremely important

Appendix D: Permission to Use the Rosenberg Self-Esteem Scale

Requesting Permission to use Rosenberg Self Esteem Scale

Thank you for your submission. You now have permission to use the Rosenberg Scale. Please be sure to properly cite Dr. Rosenberg's work in your paper or project. The most appropriate citation is: "Rosenberg, Morris. 1989. Society and the Adolescent Self-Image. Revised edition. Middletown, CT: Wesleyan University Press".

Appendix E: Permission to Use the Iowa-Netherlands Comparison Orientation Scale

Iowa-Netherlands Comparison Orientation Measure (INCOM)

Acronym: INCOM

Test Year: 1999

Authors: Gibbons, Frederick X., **Iowa** State University, Department of Psychology, Ames, **Iowa**, United States

Buunk, Bram P., University of Groningen, Department of Psychology, Groningen, **Netherlands**

Address: Gibbons, Frederick X., **Iowa** State University, Department of Psychology, W112 Lagomarcino Hall, Ames, **Iowa**, United States, 50011-3180, fgibbons@iastate.edu

Source: PsycTESTS, 1999.

Language: Dutch; English

Purpose: The purpose of the INCOM is to measure individual differences, across two cultures, in social **comparison orientation**.

Description: In response to further consideration of Festinger's (1954) social **comparison** theory, the **Iowa-Netherlands Comparison Orientation** Measure (INCOM; Gibbons & Buunk, 1999) was developed to measure individual differences in social **comparison orientation**, and to be compared in two cultures. The scale authors proposed that the INCOM could be useful in basic, applied, and intervention settings. An initial item pool was written in English, then translated into and back-translated from Dutch. Culling, after administration to 2 samples in the US and 2 samples in the **Netherlands**, resulted in 11 usable items. Internal consistency estimates were consistent across 10 American and 12 Dutch samples at levels considered to be good. Temporal stability was found to be reasonable based on assessments at 6 different occasions in the American samples, and once in the Dutch samples. A version of the known-groups validation technique was used in assessing construct validity. INCOM scores in American and Dutch samples compared by age, country, and gender indicated that mean level of **comparison orientation** (CO) was higher in Americans, and that women reported a level of CO that was significantly, if modestly so, higher than that of men. With regard to discriminant validity, a finding said to be worth noting involved life satisfaction, which was typically not related to CO. This was stated as indicating that those subjects who compared frequently with others were no more or less satisfied with their life situations than those who did not compare often. (PsycTESTS Database Record (c) 2017 APA, all rights reserved)

Format: The measure is rated on a 5-point, Likert-type scale ranging from 'I disagree strongly' (1) to 'I agree strongly' (5).

Instrument Type: Test

Administration Method: Paper

Commercial Availability: No

Permissions: May use for Research/Teaching
Fee: No

Appendix F: Permission to Use the Multidimensional Depression Assessment Scale

From: Amy CHEUNG Ho Nam <cheunghn@ouhk.edu.hk>
Sent: Sunday, November 25, 2018 9:37:30 PM
To: Rochelle Henry
Subject: RE: Multidimensional Depression Assessment Scale
 Hi Rochelle,
 Thank you for your interest in MDAS. Please feel free to use it in your study. All the best.
Warmest regards,
Ho Nam
Dr Amy H. N Cheung
Lecturer
BCogSc (HKU), MSc, PhD (Edinburgh U)
+852 34609823
The Open University of Hong Kong
Li Ka Shing Institute of Professional and Continuing Education (LiPACE)