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Exploring the Associations between Instagram Use and Depressive Symptoms: A Replication with Extension

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Exploring the Associations between Instagram Use and Depressive Symptoms: A Replication with Extension

**A senior thesis submitted to
The Department of Psychology
College of Arts & Sciences**

In partial fulfillment of the requirements
for a Bachelor of Arts degree in Psychology

by

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Table of Content

Acknowledgments.....	2
Abstract.....	4
Introduction.....	5
Literature Review.....	8
Method.....	27
Results.....	31
Discussion.....	33
References.....	39
Appendix A.....	50
Appendix B.....	53

Abstract

Today, social media platforms continue to grow. Users of these platforms are also spending extended periods of time on them. Researchers in the literature are finding that social media use can have detrimental effects on a user's wellbeing. This study is a replication with extension of a 2015 study by Lup, Trub, and Rosenthal. This study uses a moderated mediation model to explore the association between Instagram use and depressive symptoms through negative social comparison and moderated by amount of strangers followed and type of Instagram use. One hundred and forty two participants between the ages of 18-29 completed anonymous online questionnaires. This questionnaire measured demographic information, frequency of Instagram use, amount of strangers followed, social comparison, depression symptomology, and type of use. Instagram use mediated by social comparison and moderated by type of Instagram use was a significant indicator of depressive symptoms.

Keywords: Instagram, depressive symptoms, social comparison, type of use

Exploring the Associations between Instagram Use and Depressive Symptoms:
A Replication with Extension

A relatively new area of study for researchers is the domain of social networking sites. More specifically, the effects social networking sites have on users. In the research, social networking sites (SNS) are often referred to as social media. Aladwani and Almarzouq (2016) suggested that social media use has become a compulsive addiction among some college students. They argued that decreased self-esteem and interaction anxiousness are the two main factors that contribute to a compulsive use of social media. Such compulsive social media use then leads to negative consequences such as poorer learning outcomes due to low self-esteem. Additionally, intrapersonal effects affecting well-being have also been observed. Kross et al. (2013) defined subjective well-being to include moment-to-moment interactions and satisfaction with life. Subsequent researchers who studied only Facebook use found that subjective well-being declined with an increase in use (Kross, Verduyn, Demiralp, Park, & Seungjae, 2013). The latter research group suggested that the more participants used Facebook, the less satisfied with life they reported themselves to be.

While exploring the broad area of social networking sites, there are differences among platforms. Image-based social media platforms have the ability to facilitate loneliness at higher rates than text-based platforms. A significant factor that contributes to this trend is the difference in the level of intimacy offered through image-based versus text-based platform (Pittman & Reich, 2016). Olds and Schwartz (2009) suggested that loneliness in the 21st century is at an all-time high, regardless of the fact that Americans

are investing in more technology and social media in order to stay connected to each other.

Not only is the type of platform an important dimension to consider in social media studies, intensity of use is also considered key in researching the intrapersonal consequences of SNS use (Steinfeld, Ellison, & Lampe, 2008). When studying Facebook use, intensity was a predictor of self-esteem and satisfaction with life reports (Steinfeld, Ellison, & Lampe, 2008). Additionally, Tromholt (2016) found that Facebook use has negative effects on users' well-being in terms of depressive symptoms and their satisfaction with life and suggested this was due largely to unrealistic social comparison.

Not only does intensity matter, but type of use can play a role in adverse outcomes. Passive social media users, as defined by Zongchao (2016), are spectators. In contrast, active users are creators and critics (Zongchao, 2016). Passive following is browsing and interaction with other profiles without posting one's own content. Two primary types of use are discussed by Krasnova, Wenninger, Widjaj, and Buxman (2013). Active use is engaging with others and posting personal content to have other users engage with it (Krasnova et al., 2013). Krasnova et al. (2013) found that rather than active use, passive use (consuming social media content rather than contributing) was associated with depressive symptoms and lower satisfaction with life. Given the implications that intensity of use and type of use have on users, along with the growth of Instagram use overall, exploration of Instagram specifically seems warranted. This exploration will produce valuable insight and data about the effects and implications of using this important, yet understudied, SNS platform.

In the literature, researchers suggested that using social media is capable of having significant effects on well-being. Various factors such as intensity and type of social media play roles in these effects. While there is significant research in the literature about Facebook, in addition to other social media platforms, there are very few Instagram studies. The few studies there are about Instagram do not provide convincing information about the effects Instagram has on users. This gap provides opportunity for future research.

Due to a gap in our understanding of the effects of image-based social media platforms like Instagram more research is necessary. Understanding how and why social media continues to foster loneliness and decrease well-being among users is imperative to future research (Pittman & Reich, 2016). Because of the ubiquity of technology and social media use in college students and the next generations, this is an imperative area of study (Boyd & Ellison, 2008). Considering the fact 91% of smartphone owners ages 18-29 use social networking on their phone, understanding how these individuals process their relationships via social media is essential (Pittman & Reich, 2016). Given these usage rates, it is unsurprising that Boyd and Ellison (2008) have argued that social media has become integrated into young people's daily practice. Furthermore, some SNS platforms are gaining more traction than others. In a 2016 study the Pew Research Center found that Instagram use was relatively high among young adults as compared to Facebook and other SNS platform use (Greenwood, Perrin, & Duggan, 2016). Additionally, Instagram's user base is growing and 51% of users report visiting Instagram at least once per day (Greenwood, Perrin, & Duggan, 2016).

To enhance research on this important yet understudied platform, my study is a replication and extension of Lup, Trub, and Rosenthal's 2015 study exploring the relationship between frequency of Instagram use and its association with depressive symptoms. In this replication study, I hypothesize that there will be a positive association between frequency of Instagram use and depressive symptoms. I also hypothesize this association will be mediated by negative social comparison as suggested in Lup et al. (2015). Percentage of strangers followed will moderate this relationship (Lup et al., 2015). Percentage of strangers followed refers to how many people one considers to be strangers on their account. To extend upon their mediation model, I also hypothesize that passive Instagram use will also play a significant role in moderating this relationship.

Lup et al. (2015) found that Instagram use was positively associated with depressive symptoms and that social comparison also moderated this association. My replication and extension will be an important test of their original results and will explore the implications of Instagram use via the additional consideration of passive or active use. As Instagram continues to grow, the benefits of the results of this study could further provide insight into the effects of its use.

Literature Review

In the literature review that follows, the development and impacts of social media will be more fully explored in order to provide a historical context of how social media came to be. When social media has been researched, there is little attention given to the implications of image based platforms, such as Instagram. It is imperative to study Instagram because its user base has continued to grow, specifically reaching young people ages 18 to 29. Factors that influence these users include: intensity of use, types of

use, motives for use, and compulsive use. Conceptualizing these factors can provide great insight into the positive and negative effects social media use can have on well-being.

History of Social Media

The study of social networking sites, or social media, is relatively new. In order to fully understand social media and all of its implications it is important to have conceptual and historical context. It is not until later on in its history that the term social media was developed. In this thesis SNS and social media are used interchangeably. Different social media platforms support a wide range of interests and practices. In addition, various cultures emerge from specific platforms (Boyd & Ellison, 2007). In the literature, the definition of a social networking site, or social media, all varies in small aspects.

Boyd and Ellison (2007) define social networking sites as,

web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system. The nature and nomenclature of these connections may vary from site to site (p. 211).

Social networking sites are also a place where users can develop and grow their own social networks in some capacity. Whether this is meeting and connecting with new people or building connections with an already established network, social networking sites allow a space for this. Related to the concept of SNS, social media has been defined as “forms of electronic communication (such as websites for social networking and microblogging) through which users create online communities to share information,

ideas, personal messages, and other content (such as videos)” (The Merriam-Webster Dictionary, 2017).

Edosomwan et al. (2011) stated that human history has consisted of creating technologies that make it easier for humans to communicate with each other. How social media is defined has changed as communication outlets and sources have evolved. At the core of social media is the need and desire to communicate with others in some way. The mechanisms humans have developed in order to communicate over time have led to where technology and social media are today. For example, social media has become a preferred outlet for this communication when there is some type of geographical distance between people.

The emergence of the postal system is the first development of communication over geographical distance. While the postal system provided the opportunity for individuals to communicate, it was not ideal for broadcasting or dispersing knowledge efficiently in regards to time (Lucky, 2000). The invention of the telegraph in the 1830s was another advancement of human communication over distance (Phalen, 2014). The introduction of the radio and the telephone in the late 1800s further developed the ability for humans to quickly and efficiently communicate over great distances. Subsequent to these technologies, the development of computers and the launch of the internet and email services in the 1990’s significantly changed the way humans were able to communicate (Edosomwan, 2011). Computers and internet accessibility went from exclusive use in science, engineering, and business fields to public availability. Approximately 40% of Americans had personal computers in their homes by 1998 (Kraut, Patterson, Lundmark, Kiesler, Mukopadhyay & Scherlis, 1998). The personal

computer in addition to other technological advances were a catalyst for rapid communication and large growth in social media.

For example, the internet was the foundation for “a wide range of platform services, each occupying a distinct niche of online sociality, particularly social networking and user-generated content services” (Dijck, 2013, p.1). The first social media site launched in 1997 and was called Six Degrees (Boyd & Ellison, 2007). On the Six Degrees website, users could create profiles and find other users they knew on the website. In the early 2000s, Photobucket and Flickr launched. These were significant as they were the first exclusive photo sharing social networking sites (Cha, Mislove, & Gummadi, 2009). Around the same time, MySpace and LinkedIn launched. These sites focused more on customizable profiles and facilitating communication among friends.

In 2006, MySpace became the most popular social networking site in the United States (Boyd & Ellison, 2007). Previously, Facebook had been exclusively available only at Harvard and then only in certain high schools (Brugger, 2015). In 2006, Facebook became available to the general public. Facebook differed from other social media at the time because it focused on users building various networks, identifying their relationships with other users, and the company allowed outside applications to be incorporated (The History of Facebook, 2013). In the same year, Twitter, a limited text platform, also launched. Two years later, in 2008, Facebook became the most popular social networking site worldwide, with one hundred million daily users (Boyd & Ellison, 2007). In addition to these more well-known platforms, various other social networking sites launched. Common features across these social networking sites are the ability to create some version of a custom profile and search engines for the purpose of finding other users to

connect with. Primary differences included the way content is posted on the platform, who can join the platform, and how profiles are linked (Dijck, 2013).

As technology advanced, a variety of social media platforms continued to develop and launch. One significant part of this advancement, was the *fourth screen*. Smartphones and tablets are considered the *fourth screen* because they came “historically after the cinema, television, and computers” (Miller, 2014, p.209). The smartphone has been adopted at unprecedented rates and has become imperative in communication. This is especially true in younger generations, even though smartphones are owned by users of all ages. Degusta (2012) stated that the smartphone has

outpaced nearly any comparable technology in the leap to *mainstream* use. It took landline telephones about 45 years to get from five percent to 50 percent penetration among U.S. households, and mobile phones took around seven years to reach a similar proportion of consumers (p. 4).

With the introduction of the smartphone came a shift from web-based platforms to mobile-based platforms. Many social media sites created mobile applications of their platforms that were compatible with smartphones. This made social media even more accessible to users. Now users could have direct access to be connected to their networks and friends at any time. This also brought the opportunity for live-updating and posting in real time (Miller, 2014).

Types of Social Media

Researchers have divided social media platforms into three categories: image-based, text-based, and mixed (Pittman & Reich, 2016). Examples of image-based platforms, where pictures are primarily posted or sent, are Instagram and Snapchat. Text-

based platforms include Twitter and WhatsApp. On these sites, text is the primary way of communicating. Facebook is an example of a mixed platform where both text statuses and pictures are commonly uploaded. These classifications of social media play a crucial role in understanding the effects social media can have on a user.

Sundar (2008) researched how perception of credibility can be altered by digital technology. According to Sundar's (2008) Modality, Agency, Interactivity, and Navigability (MAIN) model (as cited by Pittman & Reich, 2016), "our brains implicitly trust visual modalities such as images and video more than text because those modalities cue the 'realism heuristic.' This heuristic immediately determines that a photograph of something is inherently more real than text written about the same thing" (p. 157).

Pittman and Reich (2016) explain that,

people could potentially use text via Twitter, for example, to tweet about a vacation at the beach, which might conjure a mental model in the mind of the reader, but this is not the same as posting a picture of the beach itself (p. 157).

This is one example of why and how the type of social media matters.

According to Goh et al. (2009), pictures have always had the ability to express feeling, emotions, and situations at a quicker rate. Because of this, platforms like Instagram are able to provide more intimacy to users. One possibility for this intimacy could be that feelings of belonging and happiness are on some level transmitted through image-based platforms, like Instagram (Cacioppo, Hughes, & Waite, 2006). From their quantitative study with 274 participants (36% female), Pittman and Reich (2016) concluded that when it came to combatting loneliness, image-based platforms were more successful than text-based. From this perspective, images have the power to re-create

intimacy and decrease loneliness. This is especially important now, considering that “the problem of loneliness persists in the same societies where social media usage is likely at its highest (e.g., the US, the UK, etc.)” (Pittman & Reich, 2016).

Instagram

Today, Instagram is one of the most popular image-based social media platforms. Instagram has “more than 400 million active users and nearly 80 million photos shared on the platform daily, Instagram has become the fastest-growing major social network platform in the U.S.” (Pew, 2015). Additionally, when compared to other social networks, young people use Instagram more (Greenwood, Perrin, & Duggan, 2016). Instagram has doubled their users since 2012 and is still growing (Kim, Seely, & Jung, 2017).

Instagram is “a mobile device application designed for the sharing of lifetime moments through photos in real time” (Kim, Seely, & Jung, 2017). Instagram launched on October 6, 2010. By December 2014, Instagram had 300 million active monthly users and an average of 55 million pictures being shared daily (Geurin-Eagleman & Burch, 2016). Today, Instagram has over 800 million monthly active users, over 500 million daily users, and over 250 million daily stories posted (Instagram, 2017). Instagram users can upload pictures or videos directly from their camera roll or take pictures or videos through the Instagram application. These photos or videos can be enhanced using filtering technology. These photos and videos are then uploaded to user’s profiles where followers can “like” and comment on them. The purpose of using the site is to share photographs and videos that include a hashtag (#) so that other users can find the photographs (Sheldon & Bryant, 2016). Users can follow the accounts of their friends

and people in their social networks, as well as strangers. All users have the option to have public or private accounts. Other features on Instagram include a personal photo messenger option and an “explore” page where recommended pages to follow are displayed (Lee, Lee, Moon, & Sung, 2015).

Young people between the ages of 18 and 29 are the most common age group on Instagram. This age group represents over one third of Instagram users. In this age group, Instagram users report they use Instagram more than other social media sites (Duggan & Smith, 2014). Researchers provided various motives for using Instagram, as well as other social media sites. When compared to other social media sites, Instagram use is “focused more on self-presentation and promotion rather than building and maintaining relationships” (Dumas, Maxwell-Smith, Davis, & Giulletti, 2017, p. 1). Dumas et al. (2017) suggested the idea of *like-seeking behavior*. This describes various behaviors that users will exhibit in order to increase the number of users who will “like” the content, whether that be in photo or video form. The research being done in this area is critical for understanding how and why young people are seeking personal validation and attention from online sources, like social media (Dumas et al., 2017).

In their 2015 study, Lee, Lee, Moon, and Sung explored the social and psychological motives behind using Instagram. In this study, 212 (51% female) Instagram users completed a survey evaluating motivation, primary Instagram activities, use intention, and attitude regarding Instagram (Lee et al., 2015). The results indicated that the top five motives for Instagram use included: social interaction, archiving, self-expression, escapism, and peeking. Social interaction refers to users wanting to maintain social relationships with others. Since the nature of social media focuses on networking,

the idea of fostering relationships via Instagram is logical. The archiving motive suggests that users post content on Instagram to keep a digital record of daily events. Lee et al. (2015) argued that Instagram content is self-expression through the illustration of user's personalities and lifestyles. This motive is particularly supported by the fact that Instagram is an image based platform where users can more easily utilize pictures rather than text to express themselves. Escapism is the idea that users utilize Instagram as a way to escape their everyday lives through others' posts. Closely connected, peeking describes users looking at what other users are saying and doing via their posts (Lee et al., 2015).

Conceptualizing Social Media Use

Intensity of use. Intensity of social media use is a key factor in understanding the implications social media can have on its users. Intensity of use can also be more than frequency and duration. Ellison, Steinfield, and Lampe (2007) suggest intensity of social media use encompasses time, integration to everyday activity, investment in the social media platform, as well as attachment. Ellison, Stienfield, and Lampe (2007) studied intensity of Facebook use and its relationship to social capital. The researchers defined social capital as the resources one acquires through networks and relationships. They used an intensity scale to measure the extent that participants were actively engaged in their Facebook activities (Ellison, Steinfield, & Lampe, 2007). The results indicated that intensity of Facebook use also interacted with measures of psychological well-being (Ellison, Steinfield, & Lampe, 2007). The effects of social media on psychological well-being will be discussed in detail further below.

Types of use. In order to understand social media use, intensity of use is extremely important. Differentiating various types of social media use is also imperative to comprehensively understanding social media use. Types of social media use can have a significant effect on users. Types of social media use include: contributing, sharing, consuming, searching, participating, and playing (Bolton et al., 2013). More generally, and more relevant to the present study, social media activities can be classified as “either active or passive use contribution (posting) or consumption (lurking or observing) activities” (Bolton et al., 2013, p. 248). Active use is participating within a social media platform. This includes user-to-user and user-to-content interactions. (Shao, 2009). Examples of these interactions are “liking” content, commenting, sharing with others, and posting content with which other users can then actively engage. Ideally, successful social media sites can promote a cycle of content creation and content consumption. In this cycle, posting content enabled viewing and then viewing motivated posting (Pagani, Hofacker, & Goldsmith, 2011). Zongchao (2016) explained, “creating the highest level of user engagement involves actively producing and publishing content that others consume and contribute to” (p. 51).

In contrast to active use, passive use consists of watching, reading, and viewing but never participating. Passive use consists of searching and consuming (Schlosser, 2005). Passive use is essentially being a spectator, while other users engage in active social media use (Zongchao, 2016). It is imperative to understand the implications of active and passive use on social media users. Leung (2009) found that active use positively correlated with higher levels of self-efficacy and perceived competence. Seven hundred and ninety eight participants completed a survey measuring for gratifications of

content generation, psychological empowerment and user generated content (Leung, 2009). The results indicated that psychological empowerment can be enhanced by one's content use, whether active or passive. Additionally, actively engaged internet content producers show an increase in sense of self-esteem and personal empowerment (Barak, Noeile-Nissim, & Suler, 2008). There is a moderated effect however, as Mo and Coulsion (2010) found that while passive internet users exhibited levels of self-empowerment, they were significantly lower than active users.

User Characteristics. Understanding who is using social media also provides crucial insight about social media use and its impact on users. According to the Pew Research Center (2017), 69% of the public uses some type of social media platform. Additionally, 86% of 18-29 year olds are using social media. From this age group, 59% use Instagram as a social media platform. Furthermore, more than half of all Instagram users visit the platform at least once a day (Pew Research Center, 2017). Bolton et al. (2012) in their review of the literature assert that Generation Y, or the Millennial Generation, are digital natives because they are the first generation to have spent the entirety of their lives in a digital environment. Due to the constant exposure to technology, this generation is more prone to engage in social media use for various reasons including entertainment, interaction with others, and emotional regulation. (Bolton et al., 2012). Understanding these motives is key in exploring the implications of social media use on well-being.

Motives for use. Bolton et al. (2012) argues that not only is Generation Y extremely technologically savvy and capable of social media use, but also that a key reason they rely on social media is to interact with others. Lomborg (2015) has argued

that conceptualizing meaning in social media can broaden the attention and understanding of various patterns and engagements among users. Under this framework, meaning is communicatively grounded. At a basic level, social media is “networked communicative practices” (Lomborg, 2015, p. 1). Meaning can then be derived by and from them through different users and developers. Meaning, and therefore communication, can be expressed visually through posting content. It can also be expressed in less visible ways such as reading another's post or choosing one social media platform over another (Lomborg, 2015). All interactions on social media are opportunities for users to create meaning.

According to Geurin-Eagleman and Burch (2016), social media has the ability to serve as a platform on which an individual can build a public presentation of themselves” (p. 133). How an individual self-constructs their image on social media is influenced greatly by their intended perceived audience. Additionally, how they view themselves will also play a role in how they present themselves online (Geurin-Eagleman & Burch, 2016). Kaplan and Haenlein (2010) categorized social media under high self-presentation and high self-disclosure. Since social media is based on user-generated content, self-presentation is very intentional and planned. Most often, social media sites encourage their users to post the most positive aspects of one’s own life for the purpose of gaining approval from friends via likes and comments (Jackson & Luchner, 2017). Researchers suggested that reasons why people use social media cannot be confined to one individual factor. Rather, it is a combination of various motives interacting. These include: needs, social context, expectations, and individual differences and circumstances (Sheldon & Bryant, 2016).

Compulsive use. Another important aspect to consider when studying social media is compulsive use, specifically in young people. Young people have become vulnerable to compulsive Internet use due to technological advancements and constant exposure (Aladwani & Almarzouq, 2016). Longstreet and Brooks (2017) suggested that the same compulsive use is happening with social media. In their 2016 study, Aladwani and Almarzouq reviewed what factors influence compulsive social media use and the consequences compulsive use can have. Their study was comprised of 407 university students. Self-esteem played a negative role in compulsive use. Students who reported having lower self-esteem found some type of psychological relief in constantly using social media (Aladwani & Almarzouq, 2016). In regards to education, their data suggested that excessive social media use correlates positively with increased problematic academic outcomes.

Aladwani and Almarzouq (2016) suggested that “individuals with innate dysfunction are more likely to develop problematic internet usage behaviors that lead to several negative outcomes” (p. 576). While some users may be more predisposed to compulsive use than others, all social media users can be at risk. Under this framework, once an individual transitions to prefer online communication as opposed to face-to-face communication they become more vulnerable to problematic use. Social media users may experience the drive to continue to use social media and this drive can be debilitating (Longstreet & Brooks, 2017). The inability to disconnect from social media can interfere with daily activities. Longstreet and Brooks (2017) focused on how happiness and stress influence social media addiction through satisfaction with life. They asserted that the motive behind why individuals compulsively use social media is to pursue diversion,

building relationships, and self-presentation. In the study that consisted of 251 university students, Longstreet and Brooks (2017) constructed a cognitive-behavioral model to measure pathological internet usage. The data they collected reinforced this model that suggested that when happiness increases, satisfaction with life increases, and compulsive social media use decreases. Likewise, when stress increases, satisfaction with life decreases, and compulsive social media use increases (Longstreet & Brooks, 2017).

Positive effects on well-being. This constant social media exposure has “advantages and disadvantages in terms of cognitive, emotional, and social outcomes” (Bolton et al., p.247). For example, in a meta-analysis done by Skoric, Zhu, Gon, and Pang (2016) of 22 studies focused on social media use and participation, they concluded that there are many positive impacts of social media use. Social media generally has a positive relationship with engagement in three sub-categories. These sub-categories are social capital, civic engagement, and political participation (Skoric, Zhu, Gon, & Pang, 2016). Social capital refers to “the resources embedded in one’s social networks that can be accessed for collective action” (Skoric, Zhu, Gon, & Pang, 2016, p. 1820). Social capital is also beneficial because it provides social support, access to resources, and reciprocity. Further, online social networking fosters environments for community engagement. This is key to sustaining social capital (Skoric, Zhu, Gon, & Pang, 2016). Civil engagement, or taking action to address community concerns, is another positive effect of from social media. Social media provides a space for protesting, donating, and campaigning a variety of political activities (Skoric et al., 2016).

Kim & Kim (2017) support these claims and build upon them by advocating that the core values of social media are building interpersonal relationships through

interacting as part of a social community. These relationships enable social support. The interactions combined with frequency of use contributes to stronger social capital. In their 2017 study, Kim and Kim distributed surveys to 443 college students. They measured social media use, communication, network heterogeneity (i.e. interaction and communication with heterogeneous others), social capital, and subjective well-being. The data supported their path model where social media use had a positive relationship with network heterogeneity. Network heterogeneity then mediated a positive relationship between social capital and well-being.

As another positive effect, Forest and Wood (2012) found that under some circumstances Facebook can help individuals who struggle to build and maintain connections in their everyday life. This is because people with low self-esteem often feel lonelier and have less satisfying relationships (Forest & Wood, 2012). Using the results of three different studies, Forest and Wood (2012) suggested that a main factor in how Facebook can help build relationships is self-disclosure. Facebook, along with many other social media platforms, foster environments that are inductive to self-disclosure. Self-disclosure is a crucial factor in developing intimacy.

Negative effects on well-being. However, other researchers have reported differently. While reviewing the literature, the majority of studies about social media use and well-being focus on Facebook. The studies that have yielded results suggest that there can be negative relationships between Facebook use and well-being. For example, Rosenthal et al. (2016) examined negative Facebook experiences and their association with depressive symptoms. The negative experience included: bullying, meanness, unwanted comments, misunderstandings, and any other negative experiences (Rosenthal

et al., 2016). The study consisted of 564 participants. These participants reported on the negative experiences they had experienced on Facebook and how upset they were following these experiences. Those who reported the most negative experiences also had the highest reported depression rates (Rosenthal et al., 2016).

Building on the work of Rosenthal and colleagues (2016), Shensa et al. (2017) conducted a nationally-representative study exploring the association between depression and problematic social media use, focusing on Facebook. 1749 participants between the ages of 19-32 were selected nationally to participate. The results concluded a strong independent association in increased depression symptoms. Problematic Facebook use explained this association (Shensa et al., 2017). The implications of these results suggest that how individuals use social media might matter more than how much (Shensa et al., 2017). This depressive symptomatology could possibly be due to users neglecting other important aspects of their lives. For example, “engagement in computer-mediated activity may lead to fewer face-to-face social interactions, decreased physical activity, and interrupted sleep” (Shensa et al., 2017, p. 154).

In a systematic narrative review, Best, Manketelov, and Taylor (2014) found that among 43 studies common negative effects from social media included: “increased exposure to harm, social isolation, depression, and cyberbullying” (p. 27). These researchers also asserted that it is imperative that researchers pay close attention to young people and how social media is affecting them. They stated, “in the midst of such technological advances one must consider the developmental influences these new technologies are having on young people” (Best et al., p. 28).

In his 2016 study, Tromholt created a treatment group who did not use Facebook for a week and a control group who continued to use Facebook as normal for a week. After pre and posttests, the treatment group scored higher on cognitive and affective emotional scales and the satisfaction with life scale when compared to the control groups. Tromholt also argued that while the reasons people might use Facebook are well intended, such as communicating and gaining information about others, they are still continuing to negatively affect well-being on several dimensions.

Another Facebook study by Kross, Verduyn, Demiralp, Park, and Seungjae (2013), used experience-sampling in order to measure behavior and the psychological experience. Eighty-two participants (64% female) were sent text messages five times per day for 14-days. With each text, participants completed a survey about their current social media use. Kross et al. (2013) found that over time when social media was being used more frequently satisfaction with life started to decline, along with affective well-being. In a 2014 related study by Choi and Toma, participants reported their experiences on their social media platform of choice. Participants kept daily journals in order to find patterns in their social sharing and how this affected participant's emotional well-being. The results indicated that negative sharing consequently resulted in negative emotional well-being. Lomborg (2016) advocated that the challenge with studying social media is that it is always changing, explaining "changes to existing services, the emergence of new services, and the disappearance of previously popular services testify to the sense of social media as a moving target." (p. 6). As researchers adapt to the constantly changing social media culture, they must depend on what has already been done and advocate for more to be done on the topic, despite its challenges.

Koutamanis, Vossen, and Valkenburg (2015) suggested that users can become especially vulnerable to negative effects of well-being when they received negative feedback on social media. Specifically in adolescence, social acceptance and approval is critical in development. Being extremely preoccupied with peer perceptions can make them highly sensitive to negative feedback (Koutamanis, Vossen, and Valkenburg, 2015). Negative feedback can also be harmful because of its public nature and permanence, when compared to face-to-face interactions (Koutamanis, Vossen, and Valkenburg, 2015). Furthermore, the more users self-disclose, the more negative feedback this disclosure can generate (Koutamanis, Vossen, and Valkenburg, 2015).

Additionally, using multiple social media platforms increases association with symptoms of anxiety and depression (Primack et al., 2017). Primack et al. (2017) asserted that the number of users utilizing multiple platforms is continuing to increase. This is not abnormal considering platforms differ by type, function and purpose (Primack et al., 2017). In their study, Primack et al. (2017) measured depression, anxiety, and multiple use of social media platforms in 1,768 participants ages 19-32. There was a positive linear association between an increase in platforms used and self-reported anxiety and depression (Primack et al., 2017).

In one of the few Instagram specific studies in the literature, Lup et al. (2015) found similar results as the various Facebook studies explored above. Their study consisted of distributing questionnaires to 117 participants (84% female) between the ages of 18 and 29. These questionnaires measured for Instagram use, percentage of strangers followed, social comparison, and depressive symptoms. Their results indicated that the association between Instagram use and depressive symptoms was positive. The

results also supported their research model which advocated for the moderation of these factors by the measure of percentage of strangers followed and the mediation via social comparison. Lup et al. (2015) findings are essential to furthering the studies specifically exploring Instagram and its effects on a user's well-being.

Conclusion

Understanding the components and possible effects of using social media is imperative in such a technologically advanced world. The literature surrounding social media and implications it has on users' well-being is wide and continuously growing. Gaps still remain in specific studies focusing on other social media platforms besides Facebook. Instagram, a constant growing platform with a large young user following must continue to be studied. Based on the literature, there can be benefits of further focus and study regarding Instagram and its association with depressive symptoms. The following study hypothesizes that there will be a positive association between frequency of Instagram use and depressive symptoms. As suggested by Lup et al. (2015), this association will be mediated by negative social comparison and moderated by the percentage of strangers followed. In these models, mediation refers to a variable that accounts for the relation between the independent and dependent variable (Baran & Kenny, 1986). Moderation refers to a variable that affects the direction and/ or strength of the relation between an independent and dependent variable (Baran & Kenny, 1986). Lup and colleagues' (2015) study will be extended by hypothesizing that passive use will also be a significant moderator. The following section will contain the methodology used to explore these hypotheses.

Method

Participants

This study was a non-experimental cross sectional study intended to replicate and extend on the 2015 study by Lup and colleagues. Anyone between the ages of 18-29 years of age who identified as an Instagram user met the eligibility requirements to be part of the participant population. Other demographic information such as race, education level, and gender were inquired about in the questionnaire. These demographics were only used to test if any of these characteristics were related to the mediators, moderators, or outcome variables.

Sampling Procedures

Non-probability purposive sampling was used to sample participants that met the age requirement and self-identified as an Instagram user. The planned minimum sample size was 128 participants who completed all questionnaire items. This number was calculated using a power analysis on an independent t test with a medium effect size ($d=.50$). In the original study, by Lup et al. (2015), the sample size was 117 participants. Having a sample size within this range was optimal for the replication of this study and the testing of my hypothesis. The total participant population for this study was 142.

Participant demographics

Participants ranged in age from 18-29 ($M=22.51$, $SD=3.17$). After assessing for missing and incomplete data sets, 143 participants met the criteria to be involved in this study (91% female, 85.5% white, 2.8% black/African American, 4.1% American Indian/Alaska Native, 9.7% Asian, 4.8% Native Hawaiian/Pacific Islander, 11%

Latino/Hispanic; .7% less than a H.S. degree, 5.5 H.S. degree, 61.4% some college, 31% college degree, .7% graduate degree).

Data Collection Procedures

Data collection for this study was completed solely online. Users who came across the questionnaire had the option to participate or not. Once they agreed to the informed consent documentation (see Appendix B), participants were prompted to complete an online and anonymous questionnaire (see Appendix A). Due to the anonymity, there was no conflict of interest between the participants and the researcher. Participants also had the option to withdraw from the study at any time. The participant population was recruited through the researcher's personal Facebook page. All data collected for the study was secured using the Concordia Qualtrics system.

The first section of the questionnaire regarded demographic information including: race, education level, and gender. Participants then reported how much time they spend on Instagram per day. As adapted from Ross, Orr, Sisic, Arseneault, and Simmering (2009), choices included 10 minutes or less, 11-30 minutes, 31-60 minutes, 1-2 hours, 2-3 hours, and 4 or more hours. Additionally, based on Acar's (2008) study and adapted by Lup et al. (2015), percentage of strangers followed was determined by asking the number of strangers participants reported to follow. This number was then divided by the total number of people participants reported to follow. The following two questions were asked: How many accounts do you follow on your Instagram account? How many of these accounts are strangers?

The Social Comparison Rating Scale from Allan and Gilbert (1995) was used to measure social comparison. In the present study, the scale assessed "how confident,

attractive, desirable, and inferior one feels in comparison to others on Instagram” (Lup et al., 2015, p. 249). The scale contained a slide with 10 possible points where higher scores indicated positive social comparison. This scale has high reliability with a Cronbach alpha of .91 with student populations (Allan & Gilbert, 1995).

Depressive symptoms were measured by a 20-item self-report depression scale from the Center of Epidemiological Studies (Radloff, 1977). Through the scale, participants reported how they had felt during the last week on a scale from 1= rarely or none of the time to 4= most or all of the time. For example, “During the last week I felt lonely” (Radloff, 1977). The Cronbach alpha for this scale in the general population was .85 (Radloff, 1977). Lastly, the extension to the original study was measuring passive use among users. To measure passive use, a modified scale by Paganit and Mirabello (2011) and Zongchao (2016) was used. Passive use was measured on a seven-point likert scale, where 1= never to 7=constantly/all the time (Zongchao, 2016). The Cronbach alpha for this scale was .81 (Zongchao, 2016).

Data Analysis

Data were entered from Concordia Qualtrics directly into the Statistical Package for the Social Sciences (SPSS). To ensure the integrity of the data, each questionnaire was reviewed to confirm participants answered the questions according to the correct Likert scale and that all questions were answered completely. Questionnaires that were incomplete or appeared to be answered with an incorrect response set were removed from the study.

First, demographic control variables were run using *t* tests to examine if any characteristics were related to social comparison or depressive symptoms. Then, each key

variable was assessed for normality. Those that were skewed were transformed using square root transformations. Next, the various models were tested, using the bootstrap analyses with the PROCESS macro for SPSS. Model 8 (see Figure 1) was used in order to replicate the moderated mediation model of Lup et al. (2015). Then, the extended model accounting for type of use was run and analyzed in order to establish which moderator was most effective with the data. The criteria for assessing which moderator model was more effective was determined by positive and significant associations in the higher percentiles.

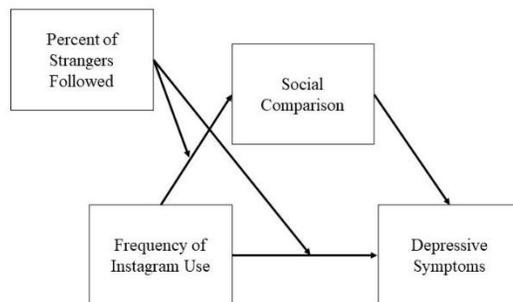


Figure 1. Moderated Mediation Model 8 by Lup et al. (2015)

Risks and Benefits

All data was stored securely in SPSS on the researcher's private password protected computer. Only the researcher had access to it. Participant identities were protected because they never provided their names and their demographic characteristics were used to connect them to their questionnaire answers. In this study, participants were only asked to take a questionnaire. As demonstrated in the original study by Lup, Trub, and Rosenthal (2015) there were no adverse effects to participants by taking the questionnaire. However, because the depression scale from the Center of Epidemiological Studies (Radloff, 1977) was a large part of the questionnaire, online resources were

offered to participants after they completed the survey. These resources included links to Psychology Today (2018), National Alliance on Mental Health (2018), and National Institute of Mental Health (2018). All these organizations focus on mental health education and treatment. Participants who took the depression scale (Radloff, 1977) and found themselves feeling negative about their answers, could have been at risk for some level of distress. From taking part in this study, participants had the opportunity to possibly become more aware of their own Instagram use and the implications this use has in their personal lives. They could have also considered how they use Instagram and the way they interact with others. The following section will discuss the results of the participant data.

Results

In the preliminary analyses, all continuous variables were tested for non-normality using Kolmogorov-Smirnov (K-S) test of normality as well as inspections of Q-Q plots. The variable operationalizing depression was positively skewed ($K-S_{142} = .137; p \leq .001$). The variable measuring the percentage of strangers following was also positively skewed ($K-S_{142} = .510; p \leq .001$). Because both of these variables violated the assumption of normality, they were transformed using square root transformations. Next, t tests were run to explore if any of the demographic variables were related to social comparison or depression. Demographic group comparisons included white versus other races, more than a college degree versus college degree or less, and female versus male. No significant differences were noted in any of these comparisons. Next, Mahalanobis distance ($df=3$, critical value=16.27, $p < .001$) was checked for any multivariate outliers

within these variables and one was found (critical value=133.37, $p < .001$). Thus, this outlier was removed from the dataset.

Table 1.

Means, Standard Deviations, and Bivariate Correlations for Main Study Variables

($N=142$)

	M	SD	1	2	3
1. Frequency of Instagram Use	3.12	1.31			
2. Percentage of Strangers Followed	0.59	1.16	0.02		
3. Social Comparison	18.94	6.10	0.11	0.04	
4. Depressive Symptoms	6.39	0.61	0.18	0.39	0.003

Next, the original moderated mediation model by Lup et al. (2015) was analyzed using Hayes' (2013) PROCESS macro for SPSS. In the Lup et al. study (2015), this was model 8 with 10,000 bootstrap samples. Unlike in the original model, social comparison was not a significant mediator between frequency of Instagram use and depressive symptoms ($p=.30$). Additionally, strangers followed was not a significant moderator between the association of Instagram use and social comparison ($b= 4.59$, $SE= 6.026$ [95% CI -7.334 to 16.51], $p=0.45$).

Because there was no relationship between social comparison as a mediator, the original study was not be replicated. Consequently, there could be no extension on this model with an additional moderator. Therefore, the categorical variable measuring type of Instagram use (i.e., passive versus active) was substituted as the moderator to the original model. This Instagram use variable had a Cronbach alpha of .79. Once again,

model 8 of Hayes' (2013) PROCESS macro for SPSS was used. In this replication of the model, social comparison was a significant mediator ($b = -.083$, $SE = .033$ [95% CI $-.150$ to $-.017$], $p = .04$). Type of use was also a significant moderator ($b = -.806$, $SE = .327$ [95% CI -1.453 to $-.159$], $p = .02$). In regards to depression, the overall model was statistically significant with a moderate effect size ($R^2 = .14$, $p = .04$). So while the original model by Lup et al. (2015) could not be replicated, an additional extended model (see Figure 2) with a replacement moderator was significant in replicating the findings for the moderation relationship when predicting depressive symptom outcomes.

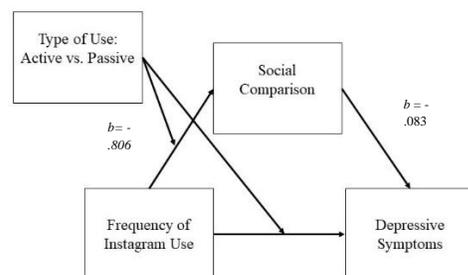


Figure 2. Extended Moderated Mediation Model

Discussion

This study was an extension of the original Lup et al. (2015) study. The extended model hypothesized that there would be a positive relationship between frequent Instagram use and depressive symptoms. Within this relationship, negative social comparison would be a key mediator. In addition, following more strangers and passively using Instagram would moderate this association. Yet, the results only partially supported this model when it came to predicting depressive symptoms. While there was no mediation from social comparison between the relationship of frequency of Instagram use

and Depression, there was this relationship when type of use was the moderator. The implications of these findings are similar to those found in the literature about other social media platforms.

When the design parameters of this study were analyzed, many limitations could have played a role in the outcome and interpretation. First, was the limitation of having a sample population that lacked in diversity. Since this population was majority female (91%) and white (N=124), the generalizability of these findings could be impacted. This study was only distributed on the researcher's personal Facebook page. The constraints on distribution limited who could participate in the study. Also, in accordance to Lup et al. (2015), "a non-dichotomous definition of 'stranger' that includes a way of distinguishing between a distant acquaintance and a good friend would deepen the current findings" (p. 251). Additionally, the accuracy of percentage of strangers followed might have been compromised as participants had to report how many strangers they followed on Instagram. It is unlikely, that all participants knew the exact number while they were completing the survey. Future research should consider these limitations and continue to advance the literature in order to educate Instagram users of potential consequences and also promote conscious social media use.

In the literature social media use, specifically Facebook, is having detrimental effects on user's well-being. This replication, in addition to Lup et al. (2015), is one of very few studies specifically related to Instagram use and its association with depressive symptoms. More specifically, both these studies explore the effects of moderation and mediation variables when exploring the relationship between Instagram use and depressive symptoms. Research on this theoretical model can result in "a clearer picture

of the various psychological constructs at play” in regards to social media use (Lup et al., 2015, p. 251). Social media studies can be extremely valuable in providing insight into the effects of specific social media features and prolonged exposure to social media.

More research on Instagram and the factors that contribute to negative, or even positive, effects need to be studied in depth. These few studies have set a foundation to further explore the relationship users have with Instagram. Future research should more closely explore various moderation and mediation variables that are present during Instagram use. Future longitudinal studies could further explore the long-term effects of Instagram use. Furthermore, replicating this study using measures that more deeply and accurately measure variables such as frequency of Instagram use and social comparison could provide more concrete moderation and mediation relationships. While Instagram is a growing social media platform, there are many other platforms that also lack research. Applying similar theoretical models to study social media platforms such as Twitter or Snapchat would greatly benefit social media research as a whole. In order to have the most comprehensive understanding about social media use and well-being, all major platforms need to be studied.

There is research in the literature to suggest that following more strangers can cause and reinforce negative social comparison (Krasnova et al., 2013; Haferkamp & Kramer, 2011). However, the results of this study indicated that type of use was a more effective moderator than percentage of strangers followed. This could be due to a variety of factors. Verdayn et al. (2015) found that passive use, but not active use, significantly undermined affective well-being in participants. Participants in this study spend 50% more of their time passively using Facebook than actively using it. Participants then self-

reported a decline in well-being over time (Verdayn et al., 2015). On the other hand, active social media use has been linked to enhancing positive outcomes through social connectedness (Burke & Kraut, 2014). Users who are actively using social media also report reduced feelings of loneliness and isolation (Burke & Kraut, 2014).

Similarly, Frison and Eggermont (2015) found that active users reported higher levels of perceived online social support and lower levels of depressed mood. In their study, passive use positively predicted depressed mood scores because perceived online social support was absent as a mediator. Krosnova et al. (2013) explored envy as a mediator between intensity of passive use on Facebook and life satisfaction. Their data supported this mediation model. Participants who demonstrated high passive use, reported increased feelings of envy which decreased satisfaction with life. These studies are examples of the complexity of relationships between type of use and various psychological factors that play a role in how users interact on social media. The data from the current study, further supports the existing literature regarding possible reasons why type of use was a more effective moderator than percentage of strangers followed. How one is engaged on social media and how one is internalizing these interactions is more significant than who one is following on social media.

It is also important to understand why users continue to passively use social media, even when their well-being is undermined. As explored in the literature review, social media can become compulsive and addictive (Aladwani & Almarzouq, 2016). For some users, the social ties and capital built via social media is more important than how social media is influencing their well-being (Verdayn et al., 2015). Lastly some users may not even be aware how passive or active social media use is playing a role in their

well-being (Verdayn et al., 2015). A benefit of research regarding type of social media use and well-being is awareness and education. More research specifically exploring type of use and its implications would be a significant contribution to the literature.

It is also relevant to note that participants who took this questionnaire, by default are multi-platform social media users. They came across the questionnaire on Facebook, while also identifying as an Instagram user. According to the the Pew Research Center's 2015 social media survey, "the median 18-to 29-year old uses four [social media] platforms" (p. 1). Within the general population, 47% of Facebook users also use Instagram (Pew Research Center, 2018). There is no current research that explores multi social media platform type of use and its relationship to social comparison and depressive symptoms. However, inferences could be made suggesting that using two or more social media platforms could facilitate more frequent social media use. If this frequent social media use was passive, there could be a significant relationship between social comparison and depressive symptoms.

Lastly, the literature has a significant amount of research regarding the conception, effects, and implications of social media use as a whole. However, there is little research to suggest what to do about this issue or how to combat the negative effects. In her book *The Happiness Effect*, Donna Freitas (2017) argues that young people are using social media as a comparative source to measure their own happiness. According to Freitas' (2017) quantitative and qualitative research on college campuses, young people are experiencing extreme pressure to portray themselves as "happy" on their social media accounts. Freitas (2017) ends her book with a call to action to all student affairs staff, faculty, and parents. While she specifically names these positions,

her tangible tools can be applicable to anyone. Freitas encourages the reader to unplug from technology and develop the will power to continue to do so. Additionally, Freitas emphasizes the importance of conversation and reflection about social media in the academic setting. In this environment, it is also imperative to teach skills such as stillness, meditation, and slowing down. Freitas (2017) asserts that while there is a long way to go, one day social media can be a tool that empowers all its users rather than one that dominates and oppresses.

In conclusion, research regarding social media is broad and complex. Deconstructing the psychological constructs and the effects social media has on its users provides a more holistic approach to the implications of social media. Bridging the gaps in the literature that were discussed above is essential in fully being able to understand social media. The future of this research will help social media users “anticipate, understand, and maintain greater control over the consequences of social networking for their well-being” (Lup et al., 2015, p. 251). It will also assist social media users to navigate social media in a way that is beneficial to their well-being and will support healthy development.

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Appendix A
Instagram Questionnaire

The following demographics are taken from the original study by Lup, Trub, and Rosenthal (2015).

Demographics:

Race/ Ethnicity- White/Latino/Hispanic/Black/Asian/Other

Age in years:

Education: Less than a High School Degree/ HS Degree/ Some college/ College Degree/

Graduate Degree

Gender- Male

Female

Non-binary/third gender

Prefer to self-describe:

Prefer not to say

Sexuality Orientation:

Straight/Heterosexual

Gay or Lesbian

Bisexual

Prefer to self-describe

Prefer not to say

Instagram Use:

Participants will report how much time they spend on Instagram a day with the following options: 10 minutes or less, 11-30 minutes, 31-60 minutes, 1-2 hours, 2-3 hours, and 4 or more hours (Ross, Orr, Sisic, Areneault, & Simmering, 2009).

Strangers Followed:

Based on Acar's (2008) study and adapted by Lup et al. (2015), percentage of strangers followed was determined by asking the number of strangers participants reported to follow. This number was divided by the total number of people participants reported following. The following two questions will be asked: How many accounts do you follow on your Instagram account? How many of these accounts are strangers?

Social Comparison:

The following 10 point social comparison scale developed by Allan and Gilbert (1995) and adapted by Feinstein, Hershenberg, and Bhatia (2013) will be used to answer to finish the statement ““When I compare myself to others on Instagram, I feel. . .” (Lup, Trub, & Rosenthal, 2015).

Unconfident 1 2 3 4 5 6 7 8 9 10 More confident

Unattractive 1 2 3 4 5 6 7 8 9 10 More attractive

Undesirable 1 2 3 4 5 6 7 8 9 10 More desirable

Inferior 1 2 3 4 5 6 7 8 9 10 Superior

Depressive Symptoms:

The CES-D scale: a self-report depression scale for research in the general population (Radloff, 1977) will be used to measure depressive symptoms. It is attached as “CU-07-Bruner- CES-D”.

Passive Use:

To measure type of Instagram use participants will answer the following questions based on a seven-point scale from 1="never" to 7="constantly/all the time". This scale is a passive use scale developed by Paganit and Mirabello (2011) and adapted by Zongchao (2016) to measure passive use on Facebook. In this study, Instagram has replaced Facebook in the statements.

Passive use:

I watch videos or pictures posted on Instagram

I read online discussions on Instagram

I read user comments/ratings/reviews on Instagram

Active use:

I comment on others' posts on social media sites.

I "like" posts on companies' Instagram sites (clicking the like button)

I share contents on Instagram sites with my connections

I post contents on my own Instagram page

Appendix B
Consent Form

CONSENT FOR ANONYMOUS SURVEY (click consent)

Research Study Title: Exploring the Associations Between Instagram Use and Depressive Symptoms: A Replication with Extension

Principal Investigator: Jasmine Bruner

Research Institution: Concordia University

Faculty Advisor: Reed Mueller

Purpose and what you will be doing:

The purpose of this survey is to explore the relationship between Instagram use and depressive symptoms. We expect approximately 128 volunteers. No one will be paid to be in the study. We will begin enrollment on November 1, 2017 and end enrollment on April 28, 2018, or until desired sample size is obtained, whichever is first. To be in the study, you must be between the ages of 18 and 29 and identify as an Instagram user. In this study, you will answer an online questionnaire composed of a variety of different questions and scales.

. The online survey is anonymous and no demographic information provided will be used to identify you. Doing these things should take less than 20 minutes of your time

There are no risks to participating in this study other than the everyday risk of your being on your computer as you take this survey. Information you provide will help further explore the topic of social media and the positive and negative effects of Instagram. You could benefit in this study by gaining awareness of personal Instagram use and the implications that use has on your life.

All data is collected anonymously. If you were to write something that made it to where we predict that someone could possibly deduce your identity, we would not include this information in any publication or report. And data you provide would be held privately. All data will be destroyed three years after the study ends.

You can stop answering the questions in this online survey if you want to stop.

Please print a copy of this for your records. If you have questions you can talk to or write the principal investigator, Jasmine Bruner at jasmineebruner@gmail.com. If you want to talk with a participant advocate other than the investigator, you can write or call the director of our institutional review board, Dr. OraLee Branch (email obranch@cu-portland.edu or call 503-493-6390).

Click the button below to consent to take this survey.