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Social Media Use, Social Comparison, and Loneliness

by

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Abstract

      Since its invention, the use of Instagram and its psychological effect on users has been a topic of conversation for researchers. To achieve a better understanding of Instagram's effect on loneliness, it's important to isolate different behaviors on Instagram because of its different attributes as a social media app. Drawing on literature on the emotional effects of social media use and social comparison orientation (SCO), this study takes a closer look at specific Instagram behaviors: broadcasting, interacting, and browsing as well as SCO's relationship with loneliness. A total of 147 undergraduate students attending a university in the Pacific Northwest completed a self-report survey about their feelings of loneliness, social comparison, and Instagram use. Findings showed that Instagram interaction and low SCO were both related to lower loneliness. There was no significant relationship between Instagram use as a whole, broadcasting, and browsing behaviors on feelings of loneliness. Implications and opportunities for future research are discussed.

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Review of Literature

   Loneliness can lead to mental health issues and depressive thoughts (Holt-Lunstad et al., 2015) and social media scholars are increasingly interested in the link between psychological well-being and social media use (Lin et al., 2016). Approximately 71% of Americans from ages 18-24 and 35% of total Americans use Instagram, making it one of the most used social media platforms (Pew Research Center, 2018). Of these young adult users, 60% use the app daily (Pew Research Center, 2018). This study examines the relationship between Social Comparison Theory and social media use on loneliness.

   In this study I begin by overviewing research on the connection between social media use and loneliness. I then review Social Comparison Theory and articulate the potential utility of social comparison orientation to better understand the relationship between loneliness and social media use. Finally, I report results of data collection and discuss the implications of the study.

What matters for loneliness, and why does loneliness matter?

   One factor of interest related to overall emotional well-being is loneliness. Loneliness is highly individualized and subjective, so it can be challenging to define and operationalize. It has been described as a painful and negative emotion that is "… an emotional state in which an individual is aware of the feeling of being apart from another or others, along with the experience of a vague need for individuals" (Bekhet et al., 2008). As early as five to six years old, humans start to perceive loneliness and this perception is marked by social isolation and depressive symptoms (Bonetti et al., 2010). Holt-Lunstad et al., constructed loneliness around social isolation and defined it as a

subjective emotional state, reporting, "loneliness is the perception of social isolation, or the subjective experience of being lonely, and thus involves necessarily subjective measurement" (2015 p. 228). Yarcheski et al. (2009) pointed out a few prominent aspects that lead to loneliness in adolescence through a meta-analysis on loneliness studies. Social support and prenatal testing showed a moderate effect on loneliness, while anxiety, self-esteem, depression, planned pregnancy, age, parity, ethnicity, marital status, income, and education had a low effect on loneliness. Understanding what leads to loneliness, can help further our understanding in preventing these feelings.

Loneliness is an important emotion to understand, as it is associated with poor health behaviors like suicidal thoughts and higher mortality (Holt-Lundstad, 2015). Holt-Lunstad et al. (2015) searched for moderators of loneliness due to social isolation and its association with higher mortality rates and finds quantitative data to support this association and, in combination with factors of living alone, isolation and loneliness are significant predictors of mortality. Loneliness in participants under the age of 65 contributes to a higher percentage of mortality. The percentages of higher mortality of social isolation, loneliness, and living alone are 29%, 26%, and 32% respectively (Holt-Lunstad, 2015). Additionally, a separate study conducted by Ozben (2013) found that social skills and life satisfaction were negatively related to loneliness. Through a longitudinal study on the effects of loneliness, Hawkley and Cacioppo (2010) confirm that loneliness predicts increases in mortality and negative side effects, not only mentally, but physically. "The greater the number of measurement occasions at which participants were lonely, the greater their number of cardiovascular health risks" (p. 219). Within this review, they also report the negative effects loneliness has on mentality, reporting that

loneliness has been associated with "personality disorders and psychoses, suicide, impaired cognitive performance and cognitive decline over time, increased risk of Alzheimer's Disease, diminished executive control, and increases in depressive symptoms" (p. 219). Lonely people report to be less happy, less satisfied, and more pessimistic and loneliness can serve as a source for acute stress (Mushtaq et al., 2014). Borderline personality disorder and schizoid personality disorder are also associated with loneliness (Mushtaq et al., 2014).

Loneliness and Social Media Use

Since 1995, social networking sites (SNS) have been used to connect and communicate with others, but it can also encourage comparison behavior (Sajithra & Patil, 2013). Specifically, social media allows users to present their lives in a more positive light than they naturally are (Sheldon & Bryant, 2016). Some social media platforms like Instagram, encourages people to meticulously decide which photographs to post and edit, choose carefully curated captions, and comments, and presents specific attributes to fabricate human interaction. Online communication can instill a sense of disconnect from face-to-face interaction (Van den Eijnden et al., 2008). Ashwini and Hoffmann (2011), show that social media, specifically Facebook, is used for two primary reasons: the need to belong and the need for self-presentation. The self-presentation aspect is affected by self-esteem, self-worth, and neuroticism (Ashwini & Hoffmann, 2011).

However, social media has been shown to positively affect users. Ellison et al. (2007), for example, investigated the relationship between Facebook use and social capital. They found a strong association between Facebook use and social capital and

found that social media use may provide benefits for users who have low self-esteem and low life satisfaction. Pittman (2015) also found that as an affinity for Twitter and Instagram increased, self-reported loneliness decreased. Additionally, they found that the more content created and consumed on Twitter and Instagram, the less loneliness was reported (Pittman, 2015). Valenzuela et al. (2009) found that Facebook use is positively related to other positive social effects, including life satisfaction and social trust. Frison and Eggermont (2017) found that adolescents' moods increased after posting content on Instagram. These studies provide evidence for social media's positive emotional effects on people, including reduced levels of loneliness.

However, while social media is meant to connect, some studies show an association between social media use and feelings of increased loneliness. Skues et al. (2012), for example, found that students with higher loneliness had more Facebook friends and reported more Facebook use. Lin et al. (2016) reports those with higher social media use per day had increased odds of depression. Kim, LaRose, and Peng (2009) didn't focus on one app entirely, but Internet usage as a whole. This study focused on the idea that Internet use is often accompanied by the need to counteract loneliness and depression. By way of surveying undergraduate students, this study found participants who were lonely or didn't have average social skills, were more likely to develop binge Internet usage behaviors and likely to negatively influence relationships instead of focusing on the issue of loneliness. The negative behaviors would then lead to more loneliness (Kim et al., 2009). Gilhooly (2020) also noted a negative correlation between social media use and self-esteem and life satisfaction, a tendency to compare oneself with others was associated with lower self-esteem and life satisfaction, and participants' self-

esteem and life satisfactions was dependent on how they thought of themselves based on the amount of positive feedback they received after posting a selfie compared to when others post a selfie.

Other studies investigate the extent to which loneliness drives social media use. Bonetti et al. (2010) conducted a study where students were given self-report surveys about their social anxiety and loneliness. The uses of social media were then examined, including how the participants used social media, what they communicated, whom they communicated with, and the amount of time they engaged with others. The participants were then categorized by their social habits: anxious and lonely, not anxious but lonely, anxious but not lonely, and not anxious or lonely. The media uses and social differences were then compared. Lonely individuals were seen to use social media to communicate more personal parts of their lives and used the Internet to explore self-identity through social interactions. Although this study focuses on communication on the Internet and not specific apps, it still lends a need for future research on how isolated individuals can more beneficially use the Internet and provides a need to further research the psychological well-being in regard to social media use. Additionally, Instagram possesses many of the same affordances as Internet communication in this study.

Skues et al. (2015) conducted a similar study to examine the association between three traits: self-esteem, loneliness, and narcissism and its relationship with Facebook use. Students with higher openness showed more Facebook use and more friends on Facebook. Interestingly, students with high levels of loneliness also reported having more Facebook friends. Participants used Facebook to reach out and interact with others, while lonely participants used Facebook to counteract the lack of friendship offline. Studies like

this suggest that loneliness and shyness coincide with social media use. Eijnden et al., (2008), investigated a long-term association between compulsive Internet use and depression and loneliness. Students between the ages of 12-15 years of age were surveyed about their chat room use and six month later were asked again. Compulsive Internet use was positively related to chat room use and depression, but negatively related to loneliness.

Social Comparison Orientation

Due to the mixed results of prior work surrounding social media use and loneliness, research aimed toward better understanding if other social media platforms and loneliness are positively associated with one another may help illuminate the cause of these mixed results. This study will explore the efficacy of Social Comparison Orientation in better understanding if and for whom feelings of loneliness occur.

Social Comparison Orientation (SCO) explains "how we use others to make sense of ourselves and our social world" (Buunk & Gibbons, 2006 p. 15). The term social comparison orientation was first used in Festinger's Social Comparison Theory Examination (1954). Festinger hypothesized that human beings, as evolutionary organisms, have a motivation to evaluate their own opinions and abilities by comparing them to others' respective opinions and abilities. He summarized his theoretical development by noting competitive behavior and social influence processes come from the same socio-psychological process and conceptually, humans are the same in the genesis of their self-evaluation progressions (Festinger, 1954).

SCO has been theorized to account for varying components that include, the nature of the dimension under evaluation and the dimensions that surround the dimension

under evaluation (Wood, 1989). The dimensions under evaluation is the attribute or characteristic being compared. While the surrounding dimensions are involved in comparisons they are not the focal dimension under evaluation. For example, "if one is evaluating one's ability to play the piano, one may not only compare one's own piano playing with that of others' piano playing; one also may take into account dimensions other than piano playing, such as how long the other person has played and whether the other is a professional or a hobbyist" (Wood, 1989 p. 234) and involves the priority in which these attributes are, personally, to the one in process of comparison. These have been shown to be related to self-evaluation, self-improvement, and self-enhancement.

Social Comparison Orientation and Social Media Use

Select studies have begun to use SCO to examine social media's effects on users. Yang (2016), in her research regarding SCO and loneliness through social media, found Instagram browsing and interacting resulted in lower loneliness while broadcasting resulted in higher loneliness. Browsing is defined as simply looking and scrolling on Instagram, interacting is defined as communicating directly with someone on Instagram, and broadcasting consists of posting pictures or updates to Instagram without direct communication. Yang (2016) also found that SCO was a moderator of Instagram use and loneliness, showing only those with lower SCO had less loneliness. Yang (2016) defines SCO as "the inclination to compare one's accomplishments, one's situation, and one's experiences with those of others" (p. 704). This definition of SCO will be the one I use for this study. SCO has been theorized to account for social comparison orientation through varying components (Wood, 1989). Vogel et al. (2015) also used SCO to explore social media use. They measured psychological views of self after social media use,

combined with an SCO measure. Vogel et al. report the consequences that social comparison can lead to when paired with social media. They found with higher SCO; more Facebook was used. They also found those with higher SCO had worse self-perceptions and lower self-esteem than those with lower SCO after engaging on Facebook. The evidence of social networking sites and its tendency for users to present themselves in a positive manner evoke an upward social comparison.

Instagram

Because Instagram is such a newly developed app and social platform, research surrounding its use is very new. Stapleton et al. (2017) recognize that Instagram is fairly untouched in its effect on psychological health but showed a relationship between the app and its effect on self-esteem in young adults. They found those whose self-worth is reliant on approval from others, the intensity of the use of Instagram is influential.

Instagram affords users the ability to engage in a social comparison behavior due to its specific features and characteristics. Because Instagram is a site which strictly permits image-based posts, narcissism and social comparison are hard to avoid (Paramboukis et al., 2016). Editing features afford users the ability to engage in a variety of behaviors on the app and it is likely that the affordances promote a culture of selective self-presentation which can then lead to social comparison behaviors (Sheldon & Bryant, 2016). 300 million Instagram users use the app daily (Instagram Press as cited in Paramboukis et al., 2016): "Based on the integration of previous research on other social networking sites and the affordances that Instagram provides to users, it is argued that narcissistic tendencies such as attention-seeking and exhibitionism may be facilitated by Instagram usage due to its specific image-based applications and functions"

(Paramboukis et al., 2016). The unique editing features allows users to glamorize the images of their everyday lives which can lead to social comparison behaviors. "Liking" and "commenting" features are readily available for other users to interact with the images and requires no depth of friendship for the use of this feature. Furthermore, the use of hashtags allows Instagram users to reach a worldwide audience by selecting a word or words to fit a popular search term (Paramboukis et al., 2016).

Although social media use and its effect on psychological well-being has been researched, Instagram, specifically, is less studied. Work that has been done thus far has generally found mixed results. For example, in a study conducted by Lup, Trub, and Rosenthal (2015), Instagram use was found to be marginally positively related to depressive symptoms. Although they were studying the relationship between the number of strangers they followed on Instagram, they measured each, depression, Instagram Use, and Social Comparison independently. Following strangers on Instagram likely means less communication behaviors and more time for social comparison behaviors. This may then contribute to more feelings of loneliness or depression. On the contrary, Pittman and Reich (2016) report a different finding between text-based social media platforms, such as Twitter and Yik Yak, compared to image-based platforms, like Snapchat and Instagram. The authors suggest images allow for more intimate interactions between users and the ability to relieve loneliness more effectively than words. Their hypotheses included, image based social media platforms will decrease loneliness, and increase happiness and 'satisfaction with life'. By way of Likert and semantic differential scales, undergraduate students were surveyed on their attitudes toward image and text-based platforms. They found an increase in happiness and decrease in loneliness with image-

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based social media while text-based social media had no substantial effect on the measured qualities.

Hypotheses

This study will examine the utility of SCO to test the hypothesis that higher levels of social comparison orientation will results in higher loneliness and Instagram use will also result in higher loneliness. Because research into the psychological aspects of Instagram is still growing, more work is necessary to dissect the relationship between potentially problematic emotional states like loneliness and social media platform use. Prior work has shown both a decrease in loneliness (Pittman, 2015; Valenzuela et al., 2009; Frison & Eggermont, 2017) and an increase in loneliness (Skues et al,. 2012; Kim et al., 2009; Lin et al., 2016) after social media use. As such, my first hypothesis is:

H1: Overall frequency of Instagram use will be positively correlated with loneliness

Previous literature has found there to be a positive relationship between loneliness and broadcasting on Instagram (Yang, 2016). Thus, my second hypothesis is:

H2: Frequency of IG broadcasting will be positively correlated with loneliness

Previous literature (Yang, 2016; Burke et al., 2010, Ryan & Xenos, 2011 as cited in Yang, 2016) may allow the assumption that interacting on Instagram makes a user feel more connected, accepted, and feel like they have community outside of social media use (Brandtzæg, 2012 as cited in Yang, 2016). As such, my third hypothesis is:

H3: Frequency of IG interacting will be negatively correlated with loneliness

Yang (2016) found browsing to be associated with lower loneliness, however I hypothesized it to be associated with higher loneliness because the bulk of literature

Yang (2016) reviewed found it be related to higher loneliness. Thus, my fourth hypothesis is:

H4: Frequency of IG browsing will be positively correlated with loneliness

I predict the relationship in the fifth hypothesis because it was supported with prior literature (Yang, 2016). Given this prior literature, the literature summarized above, and the previous research regarding the relationships between loneliness and social media use and research surrounding social comparison orientation, I offer the following hypotheses:

H5: Participants with high SCO will feel significantly lonelier than participants with low SCO

Methods

Using a student participant pool at a university in the Pacific Northwest, I distributed a survey using the online survey software Qualtrics. The survey included measures for loneliness, SCO, and Instagram use. Participants also answered demographic questions.

Participants

Data was collected from the student participant pool at a university in the Pacific Northwest (n=147). Participants were mostly female (n = 104, 65.4%), non-Hispanic (n=126, 79.2%), and white (n=107, 67.3%). Other racial categories included black/African American (n=12, 7.5%), American Indian or Alaskan Native (n=6, 3.8%), Asian (n=22, 13.8%), Native Hawaiian or Pacific Islander (n=6, 3.8%), and "other" (n=11, 6.9%).

Measures

Loneliness. I used version 3 of the UCLA Loneliness Scale developed by Daniel Russell et al., in 1978, to measure loneliness. This scale has been used in multiple studies regarding the relationship between loneliness and other variables including Yang (2016), Bonetti et al. (2010) and Borys & Perlman (1985). This 20-item survey measures the subjective feelings of loneliness and social isolation. Participants were asked to rate each statement by circling A (I always feel this way), O (I often feel this way), S (I sometimes feel this way), R (I rarely feel this way), or N (I never feel this way). Statements include items such as "I have nobody to talk to" and "My social relationships are superficial". A's equal 5, O's equal 4, S's equal 3, R's equal 2, and N's equal 1. The higher the score,

the greater the participant's feeling of loneliness. This scale had a very high reliability in this study ($\alpha = 0.951$). For a full copy of the scale, see Appendix A.

Social Comparison Orientation. I used an eleven-item survey developed by the formerly referenced Buunk and Gibbons (2006) to measure SCO. This Iowa-Netherlands Comparison Orientation Measure includes questions like "I compare how I am doing socially with other people" and participants were asked to rate each statement by circling a number 1 (I disagree strongly) and 5 (I agree strongly). The higher the score, the greater the participant's tendency to social compare themselves. The goal of the development of this survey was to dissect the self and add to the theoretical discussion assuming the underlying motives for SCO is self-evaluation, self-improvement, and self-enhancement (Buunk & Gibbons, 2006). This scale is a typical measure among social scientists (Yang, 2016, Vogel et al., 2015). This scale had a high reliability ($\alpha = 0.80$). For a full copy of the scale, see Appendix A.

Social Media Use. Prior work suggest that Instagram use can be divided into three categories: browsing, interacting, and broadcasting (Yang, 2016). Browsing refers to solely looking at content on social media. Interacting refers to directly communicating with another person using social media. Broadcasting refers to posting personal content to social media. Using Yang's Instagram Use scale with the addition of 6 novel questions, participants will be surveyed on the type of activities they use Instagram for. Instagram browsing was measured with statements like, "browse the home page without leaving comments". Instagram interacting was measured with statements such as, "comment on or reply to others' posts". And Instagram broadcasting was measured with statements like, "post something that is not directed to specific individuals". Each participant will

then be asked to rank each statement in a Likert scale of 1 to 5 (1=Never, 5=A lot) by

how much they do each activity stated. Each type of Instagram use – browsing,

interacting, and broadcasting – will be combined to produce one average and analyzed as

one number. A Pearson correlation will be run to examine the strength of the relationship

between Instagram use and feelings of loneliness for the first hypothesis. The second,

third, and fourth hypotheses will examine how loneliness is related to each Instagram

behavior, broadcasting, interacting, and browsing respectively. These hypotheses will

also be examined through a Pearson correlation. The higher the score, the greater the

participant's social media use. This scale had high reliability ($\alpha = 0.89$). For a full copy

of the scale, see Appendix A.

Results

All hypotheses used a rejection level set at alpha of 0.05. Hypothesis 1 states "Instagram use will be positively associated with loneliness." To test this hypothesis, an average score of Instagram use was calculated using the scale noted above. I found no significant correlation between overall Instagram use ($M = 3.43$, $SD = 0.826$) and loneliness ($M = 2.27$, $SD = 0.753$) ($r = -0.06$, $p=0.47$), therefore H1 was not supported.

Hypothesis 2 stated "Frequency of IG broadcasting is positively correlated with loneliness." In regard to specific Instagram behaviors, an analysis of the frequency of an individual's broadcasting behaviors on Instagram ($M = 3.40$, $SD = 1.000$) revealed that it is not significantly correlated with loneliness ($r = 0.06$, $p=0.47$), therefore H2 was not supported

Hypothesis 3 stated "Frequency of IG interacting is negatively correlated with loneliness." Analysis of the frequency of an individual's interacting behaviors on Instagram ($M = 3.15$, $SD = 0.999$) was found to be significantly and negatively correlated with loneliness ($r = -0.19$, $p=0.02$). Therefore, H3 is supported.

Hypothesis 4 stated "Frequency of IG browsing is positively correlated with loneliness." An individual's browsing behavior on Instagram ($M = 3.73$, $SD = 1.002$) did not show any significant correlation to loneliness ($r = -0.03$, $p=0.75$). Therefore, H4 is not supported.

Hypothesis 5 states "Participants with high SCO will feel significantly lonelier than participants with low SCO." Participants with a score at or above the average SCO within the sample were classified as "high SCO" (n=87) and those below the average were classified as "low SCO" (n=60). The relationship between SCO and loneliness was

examined by means of an independent-samples *t*-test. The findings show that for

participants with low SCO report lower loneliness (*M* = 2.09, *SD* = 0.777) than those

with high SCO (*M* = 2.40, *SD* = 0.715; *t*[145] = -2.44, *p* = 0.02). Thus, H5 is supported.

Post-hoc Analyses

Post-hoc analyses were run to evaluate differences across biological sex. These

analyses show that female participants use Instagram significantly more than men. The

difference was examined by means of an independent-samples *t*-test. The findings show

that females (*M* = 3.57, *SD* = 0.734) use Instagram more compared to males (*M* = 3.09,

SD = 0.910; *t*[145] = -3.32, *p* < 0.001). Additionally, I found that females (*M* = 3.51, *SD*

= 0.900) broadcast more on Instagram compared to males (*M* = 3.13, *SD* = 1.18; *t*[145] =

-2.14, *p* = 0.034), females (*M* = 3.87, *SD* = 0.940) browse more on Instagram compared

to males (*M* = 3.39, *SD* = 1.08; *t*[144] = -2.65, *p* = 0.009), and females (*M* = 3.32, *SD* =

0.910) interact more on Instagram compared to males (*M* = 2.76, *SD* = 0.968; *t*[145] = -

3.16, *p* = 0.002).

Discussion

The first hypothesis explored the relationship between loneliness and overall Instagram use. The current study found a very small and insignificant correlation. The lack of significant relationship found here could be due to the small sample size of this study and as Bonetti et al. (2010) found, lonely individuals may use the Internet as a whole and not specific apps to cope with loneliness.

The second hypothesis examined the relationship between Instagram broadcasting and loneliness. There was no significant correlation between broadcasting behaviors and loneliness which was surprising due to prior literature results. Reliability tests proved each of the scales to be reliable so these results may indicate less of a need to seek sociability through posts and vague broadcasting behavior than in 2016. Broadcasting on Instagram refers to posting on Instagram and could possibly be used more for users to reach an audience, reminding them of the vast community they could possibly have. It is possible that when Instagram was a newer application, users posted more frequently for attention and for others to reach out to them because they were lonely. As Yang (2016) suggests, followers may not be responding to broadcasting messages of lonely people which may have caused those individuals to stop partaking in broadcasting behaviors.

The third hypothesis examined the relationship between interacting behaviors on Instagram and loneliness and this study found a negative and significant correlation between the two variables, supporting H4. Additionally, it may suggest that less lonely users are more apt to reach out and interact with users on Instagram than lonely users as Yang (2016) noted, using social media to interact with other is related to greater psychological well-being (Brandtzæg, 2012, Burke et al., 2010 as cited in Yang, 2016).

Broadcasting on Instagram refers to reaching out to others and speaking directly to other users on Instagram which adds to a user's interaction and could help negate feelings of loneliness.

The fourth hypothesis explored the relationship between Instagram browsing and loneliness and there was no significant correlation found between the two variables. A lack of significant correlation in the current study could be because browsing behaviors may not be as passive as they seem. Many people use social media to gather information about their peers (Yang et al., 2014 as cited in Yang, 2016), which may suggest browsing is more of a data seeking behavior than an emotional behavior. It is suggested by Yang (2016) that the term "passive use" be replaced with "content consumption", to imply more of the usage of a tool than an app to pass time. Browsing refers to scrolling through Instagram without leaving comments or interacting with posts directly. This could apply to another reason no significant correlation may have been found, which is that browsing could possibly remind users of the vast potential their social circle has (Misra et al., 2014 as cited in Yang, 2016), allowing them to keep neutral feelings of loneliness.

The fifth hypothesis explored the relationship between SCO and loneliness and found that participants with low SCO had significantly lower loneliness than those with high SCO. This suggests that those who think about others' opinions and compare themselves more often to others report higher loneliness. There are several reasons this could arguably be the case. People with low SCO may be more open to being more social and engage in more social activities, those with low SCO may feel more free to be themselves without worry of others' opinions in a social setting, thus allowing them to feel more comfortable and accepted by a community, and those with low SCO may feel

free from peers' judgement to do the kinds of activities they desire to, thus adopting a confidence that others may be drawn to (Gilbert et al., 1995).

Post-hoc results show females broadcast, interact, and browse more on Instagram. This could be due to the fact that females have been found to have higher SCO and would possibly want to use social media as a tool for social comparison behaviors (Nesi & Prinstein, 2015). Ozben (2013) also compared males and females in relation to social media use and loneliness. They found that females showed higher social skills and life satisfaction than males by a significant amount. Consequently, males reported more loneliness than females and social skills were found to be positively related to life satisfaction (Ozben, 2013). Additionally, these findings may be solely due to the fact that more females partook in this study, 104 females compared to 43 males.

Limitations and Future Studies

Findings of this study confirmed the relationship between SCO and loneliness as well as highlighted a need for further research on Instagram use and loneliness. The inconclusive results of this study may be due to a small sample size and a significant correlation may have been found if more people participated in the study. This data was collected a couple of weeks before final exams were taken at the Pacific Northwest University in which undergrads were surveyed. The results could have been affected by stress and pressures of other classes and the survey may not have been a priority, time wise, for students. This could have affected the accuracy of the data. Although reliability was high for each of the scales, there may have been a misunderstanding of a few Instagram use items if the user wasn't keen on each new aspect of Instagram (e.g. story postings, story replies). Although loneliness wasn't found to be correlated with overall

Instagram use, other negative emotions could be, like jealousy (Lim & Yang, 2015 as cited in Yang, 2016). Unfortunately, those emotion variables were not examined in the current work. As such, the results reported here shouldn't be used to infer a solely positive impact of Instagram use on users. Future research should take an experimental, longitudinal approach to specific activities on Instagram and feelings after each use.

Additionally, it is important to note the shortcomings of a correlation while studying a complex emotion like loneliness within this study. There are multiple factors that could affect a persons' feelings of loneliness as noted previously in the literature review (gender, depression, anxiety, social context, etc.). A simple correlation is difficult to draw firm conclusions with, that's why it's vital in future studies to examine a causal link between social media use and loneliness. Other tests like mediation analysis to clarify the relationship between an independent and dependent variable through an alternative, mediator variable, regression analysis to examine the influence of a constant variable on a dependent variable, or an ANOVA to examine significant differences between the means of three or more variables could additionally be run to understand the relationship between these variable further.

Future research can also focus on the positive impact interacting on social media can have on users to expand the understanding of social media use and psychological well-being. Instagram users could benefit by an increasing their awareness of social media's effect on relationships and feelings like loneliness. There should also be an experimental study performed to analyze causation. If Instagram use could be held constant in participants with varying initial SCO levels, loneliness before and after the use of Instagram could be compared to then assume SCO's impact on loneliness, coupled

with Instagram use. This could enlighten understanding of the harm social media use could have on users who already have a tendency to socially compare.

Conclusion

In sum, by surveying undergraduate students, this study found Instagram interaction to be significantly negatively correlated with loneliness and SCO to be significantly positively correlated with loneliness. Additionally, there was no correlation between overall Instagram use, Instagram broadcasting, and Instagram browsing and loneliness. This study helped reinforce the findings of previous studies as well as highlight a need for identifying causal links between Instagram use, SCO, and loneliness. By expanding the current study further, Instagram behaviors and its effect on psychological well-being can be promoted and explained to users.

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UCLA Loneliness Scale

INSTRUCTIONS: Indicate how often each of the statements below is descriptive of you.

        A indicates "I always feel this way"

        O indicates "I often feel this way"

        S indicates "I sometimes feel this way"

        R indicates "I rarely feel this way"

        N indicates "I never feel this way"

1. I am unhappy doing so many things alone   A O S R N
2. I have nobody to talk to   A O S R N
3. I cannot tolerate being so alone   A O S R N
4. I lack companionship   A O S R N
5. I feel as if nobody really understands me   A O S R N
6. I find myself waiting for people to call or write   A O S R N
7. There is no one I can turn to   A O S R N
8. I am no longer close to anyone   A O S R N
9. My interests and ideas are not shared by those around me   A O S R N
10. I feel left out   A O S R N
11. I feel completely alone   A O S R N
12. I am unable to reach out and communicate with those around me A O S R N
13. My social relationships are superficial   A O S R N
14. I feel starved for company   A O S R N
15. No one really knows me well   A O S R N
16. I feel isolated from others   A O S R N
17. I am unhappy being so withdrawn   A O S R N
18. It is difficult for me to make friends   A O S R N
19. I feel shut out and excluded by others   A O S R N
20. People are around me but not with me   A O S R N

Scoring:

Make all A's =5, O's =4, all S's =3, all R's =2, and all N's =1. Keep scoring continuous.

Self Report Measures for Love and Compassion Research: *Loneliness and Interpersonal*

Problems   Fetzer Institute

Iowa – Netherlands Social Comparison Orientation Scale

Response scale for all items:

1. I disagree strongly
2. I disagree
3. I neither agree nor disagree
4. I agree
5. I agree strongly

Recode: items 6 en 10
Short version: items 1, 3, 4, 6, 7, 11

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

1. I often compare myself with others with respect to what I have accomplished in life

2. If I want to learn more about something, I try to find out what others think about it

3. I always pay a lot of attention to how I do things compared with how others do things

4. I often compare how my loved ones (boy or girlfriend, family members, etc.) are doing with how others are doing

5. I always like to know what others in a similar situation would do

6. I am not the type of person who compares often with others

7. If I want to find out how well I have done something, I compare what I have done with how others have done

8. I often try to find out what others think who face similar problems as I face

9. I often like to talk with others about mutual opinions and experiences

10. I never consider my situation in life relative to that of other people

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

Instagram Use Scale

1. Never	2. Rarely	3. Sometimes	4. Often	5. Almost Always

IG Direct Interaction
1. Comment on or reply to others' posts
2. Tag others in your posts or comments
3. Send posts to others through direct messages
4. Converse with others through direct messages

IG Broadcasting
5. Post/Upload on your profile without tagging anyone
6. Post something that is not directed to specific people
7. Post/Upload on your story without tagging anyone
8. Post/Upload pictures or videos to your story that is not directed to specific people or involving others

IG Browsing
9. Browse the homepage/news feed (where you see new updates) without leaving comments
10. Browse others' profiles without leaving comments
11. Browse the "Discover" page of Instagram
12. Watch others' stories without replying

Demographic Questions

Are you male or female?
    Male
    Female

What is your ethnicity?
    Hispanic
    Non-Hispanic

What is your race? Check all that apply
    White
    Black or African American

American Indian
Asian
Native Hawaiian or Pacific Island
Other: _____

What is your age? _____.