Generation Validation: The Role of Social Comparison in Use of Instagram Among Emerging Adults

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Abstract

Social networking sites (SNSs) provide emerging adults with extreme and unprecedented transparency, exposing them to a plethora of opportunities for social comparison. In light of the growing use of the popular SNS, Instagram, among emerging adults, the purpose of this study was to examine the impact of exposure to social media-based social comparison information on self-esteem. The study recruited 237 participants through social media. The sample was narrowed to young adults aged 18–29 years. The study used a correlational nonexperimental approach to investigate two mediation models proposed in the literature. First, the study investigated the mediating role of social comparison on Instagram in the relationship between intensity of Instagram use and self-esteem. Second, the study examined the mediating role of social comparison in the relationship between self-worth contingent on approval from others and self-esteem. Although the first model was found to be nonsignificant, results observed a significant indirect pathway that confirmed the second model. Thus, social comparison on Instagram mediated the relationship between contingent self-worth and self-esteem. Furthermore, moderation analyses found that self-worth contingent on approval from others moderated the relationship between intensity of Instagram use and social comparison on Instagram. Thus, although Instagram did not directly affect self-esteem, the significant moderation suggested that intensity of Instagram use is influential when the young person’s self-worth is contingent on approval from others. Overall, the findings are consistent with previous research and enhance our understanding of the mechanisms that link SNS use to low self-esteem.

Keywords: Instagram, youth, social networks

Introduction

Young adults of the 21st century are growing up among a momentous sociocultural change catalyzed by the international growth of the Internet, social media, and social networking sites (SNSs). Instagram, an online mobile SNS that provides users with an immediate means to capture and share their experiences, is rapidly becoming one of the fastest growing social media platforms. Of Instagram’s 400 million users, 55 percent are between the ages of 18 and 29 years. Research indicates that youths’ SNS behavior entails exploration and self-presentation, which is potentially associated with the pivotal task of identity development. Feedback from the social context within which the individual operates has a profound impact on identity consolidation. Within the digital age, emerging adults have to navigate the task of identity formation utilizing SNSs. A 2011 study found Facebook users are driven by a sense of belonging, a need for connection, and acceptance. Although these psychosocial needs are imperative to identity development in emerging adulthood, some researchers have suggested that SNS use may threaten these developmental milestones, particularly the development of self-esteem.

Self-esteem refers to an individual’s positive or negative appraisal of the self; that is, the extent to which the individual views the self as worthwhile and competent. Although some research has highlighted the relative stability of self-esteem, there is evidence to suggest that it is fluid and reactive to life events. For emerging adults who face overwhelming instability as they navigate this transitional phase, global self-esteem (or overall sense of worth) is likely to evolve.
Social media and self-esteem

Erikson\(^5\) initially posed that establishing a cohesive identity and sense of self is a fundamental developmental task, and this involves exploring and questioning the parameters of various roles, values, and identities in diverse social contexts, then subsequently amalgamating each into a cohesive ego identity. Feedback from the social context within which the individual operates has a profound impact on identity consolidation, and Erikson\(^5\) argued that learning to develop interpersonal relationships separate to the family unit during the transition from adolescents to adulthood is imperative to optimal psychological development. Within the digital age, emerging adults often navigate this developmental task utilizing SNSs, such as Instagram, that provide them with limitless access to their social networks. Any psychological vulnerability during this time may result in SNSs affecting constructs such as self-esteem and well-being.\(^7\)

Research has found participants who used Facebook to express their need for support were more likely to receive social support on Facebook, which, in turn, predicted increased psychological well-being.\(^11\) Paradoxically, studies have reported that SNSs have also promoted an unhealthy dependence on approval from others to authenticate an individual’s identity claims and self-worth.\(^1\) Prior research has demonstrated that high-intensity Facebook use is associated with increased depression, decreased psychological well-being, and poorer trait self-esteem.\(^7,12,13\)

Findings from a 2012 study suggested that contingent self-worth is another factor that may explain individual differences in the effects of SNS use.\(^14\) Other researchers in the field have argued that not all events, good or bad, affect individual self-esteem equally;\(^15\) it depends on how connected the events are to their contingencies of self-worth. Research has found that external contingencies of self-worth, such as contingencies that rely on other people for self-validation, are strongly linked with compromised psychological well-being.\(^16\) The literature suggests two plausible relationships, including the relationship between intensity of SNS use and self-esteem, and the relationship between contingent self-worth and self-esteem.

Social comparison

Several qualitative studies with samples of adolescents and emerging adults demonstrated that social comparison frequently takes place on SNSs.\(^17,18\) Vogel et al.\(^13\) found that the more participants used Facebook, the more they are engaged in social comparison on Facebook. Social comparison theory posits that individuals learn about the self by comparing themselves with other individuals.\(^15\) Instagram allows its users to present themselves in a desired manner that represents their ideal self with emphasis on their desired traits.\(^20\) There is evidence to suggest that individuals consider other users to have happier, more successful lives than themselves,\(^21\) which may, in turn, create opportunity for upward social comparison and adverse effects on their self-esteem.\(^11,22\) Vogel et al.\(^13\) found that upward social comparison significantly mediated the relationship between SNS use and self-esteem, but the mediation pathway through downward social comparison was nonsignificant, thus indicating that participants who used Facebook frequently had poorer trait self-esteem, and that this was mediated by greater exposure to upward social comparison.

Other research studies have found that participants who were exposed to physically attractive Facebook profiles reported less positive emotions than participants who were exposed to unattractive Facebook profiles.\(^23\) The authors argued that the effects of social comparison were dependent on the participants’ self-esteem. Although Vogel et al.\(^13\) proposed that social comparison mediates the relationship between SNS use and self-esteem, other studies have suggested an alternative relationship driven by contingent self-worth.\(^24\)

Research has indicated that contingent self-worth enhances motivation to engage in social comparison.\(^24\) Instagram provides an accessible platform through which emerging adults with self-worth contingent on approval from others can exercise their self-validation goals.\(^15\) Evidence has highlighted that self-worth staked in the domain of approval from others promotes behaviors such as social comparison, as well as internalization of societal ideals that subscribe to monitoring and valuing physical attractiveness.\(^15\)

Current research

This study focused on the effects of Instagram use on self-esteem among emerging adults. This study aimed to test the merits of previous research proposing mediation models in relation to social media use, social comparison, and self-esteem or self-worth.\(^13,15,24\) Based on this prior research, the following were anticipated:

- There would be a significant relationship between intensity of Instagram use and self-esteem, and that this would be mediated by social comparison on Instagram.
- There would be a significant relationship between contingent self-worth and self-esteem, and that this would be mediated by social comparison on Instagram.
- The relationship between intensity of Instagram use and social comparison on Instagram would be significantly moderated by self-worth contingent on approval from others. That is, the more the individual’s self-worth is contingent on approval from others, the stronger the relationship between intensity of Instagram use and social comparison on Instagram.

Methods

Participants

The participants were recruited as part of a larger study through the social media platform Facebook. Participants were invited to forward the survey hyperlink to others in their social networks if they wished. This invitation continued to be forwarded by both the researcher and the recipients ad infinitum; this sampling method is referred to as chain sampling. Any information regarding Facebook use was not analyzed for this study. The final sample comprised 237 participants \((n = 237)\) aged 18–25 years \((M = 23.12, SD = 2.17)\). Before this, 328 participants were excluded because they did not meet inclusion criteria (which included being aged between 18 and 29 years), did not have Instagram, or failed to complete the survey. On average, participants had been using Instagram between 6 months and 3 years, with most participants joining Instagram at age 21. The range of hours per day spent on Instagram was between 30 minutes and 5 hours \((M = 2.88, SD = 1.23)\). See Table 1 for descriptive statistics in relation to demographic information.
Materials

The materials used consisted of a web-based omnibus survey package, which included demographic questions (related to age, gender, ethnicity, country of residence, highest level of education attained, marital status, and age when first joined Instagram) and four self-report scales.

Social comparison. The 11-item Iowa-Netherlands Comparison Orientation Measure\(^1\) was used to measure individual differences in social comparison habits. Among the 11 items, 9 are positively keyed (“I often compare how I am doing socially (e.g., social skills and popularity) with other people on Instagram”), and 2 are negatively keyed (“I am not the type of person who compares often with others on Instagram”). The negatively keyed items were reverse scored, where a lower mean score indicated a lower level of social comparison. The scale was also adjusted by adding the term Instagram to items. For example, the original item “I often compare myself with others on Instagram with respect to what I have accomplished in life” was adjusted by inserting the term Instagram. The adjusted item reads “I often compare myself with others on Instagram with respect to what I have accomplished in life.” No other changes were made to the original scale.

The psychometric properties of the original scale have been demonstrated previously, including high internal consistency (0.83), good discriminant validity, and adequate criterion-related validity.\(^2\) The adjusted scale was observed to have adequate internal consistency in this study (\(\alpha = 0.86\)).

Instagram use. There are currently no standardized measures available to assess Instagram use, thus the Facebook Intensity Scale\(^3\) was adapted in this study by replacing the term Facebook with Instagram (two comparable SNSs) and Facebook friends with Instagram followers; for example, instead of the statement “I feel I am part of the Facebook community,” the statement was amended to “I feel I am part of the Instagram community.” No other changes were made the original scale. The Facebook Intensity Scale was developed for a study investigating university students’ SNS usage, social capital, and the resources gained from being part of the SNS. The scale is designed to measure Facebook use beyond simple measures of frequency and duration, integrating emotional connectedness (e.g., “I would be sorry if Facebook shut down”) and its assimilation into the individual’s day-to-day life (e.g., “Facebook is part of my everyday activity”). Participants were required to respond to two self-report items measuring the extent to which participants actively engage in Facebook activities, and indicate their level of agreement on these series of close-ended statements. The internal consistency of the original scale is good at 0.83, with convergent validity also well supported.\(^4\) The adjusted scale was observed to have adequate internal consistency in this study (\(\alpha = 0.89\)).

Self-esteem. The 10-item Rosenberg Self-Esteem Scale\(^5\) was used to measure individuals’ global evaluation of the self. Scale items include “I feel that I am a person of worth, at least on an equal plane to others” and “All in all, I am inclined to feel that I am a failure.” The measure consists of 10 statements, whereby respondents are asked to indicate their level of agreement on a four-point likert scale anchored by strongly disagree and strongly agree. The scale items are all positively keyed, where a higher mean score indicated a higher level of self-esteem. Studies have confirmed the internal consistency (0.91),\(^6\) test–retest reliability (0.82),\(^7\) and convergent/divergent validity of the school. The scale was observed to have adequate internal consistency in this study (\(\alpha = 0.89\)).

Self-worth. The 35-item Contingencies of Self Worth Scale\(^8\) was employed to measure the approval from others domain of self-esteem. The measure consists of 35 items, whereby respondents are asked to indicate their level of agreement on a five-point likert scale anchored by strongly disagree and strongly agree. Among the 35 items, 28 items are positively keyed (“When I think I look attractive, I feel good about myself”) and 7 are negatively keyed (“My self-esteem is unrelated to how I feel about the way my body looks”). The negatively keyed items were reverse scored and the total score for each subscale was divided by five. The internal consistency across subscales is high (0.82–0.96), adequate test–retest reliability over a 5-month period,\(^9\) and strong construct validity.\(^10\) The scale was observed to have adequate internal consistency in this study (\(\alpha = 0.81\)).

Design

This study utilized a nonexperimental survey sample design. Predictor variables were intensity ofInstagram use, contingent self-worth in the domain of approval from others, and social comparison on Instagram. The criterion variable was self-esteem.

Procedure

This study was approved by the relevant ethics committee. Participants recruited through Facebook who met the criteria

| Table 1. Descriptive Statistics for the Final Sample |
|---------------------------|-----------------|
| Demographic               | Percentage of participants |
| Gender                    | Male            | Female | 144 |
| Education level           | Completed senior school | Completed up to Grade 9 or Grade 10 | 30.8 | 1.3 |
| Geographical location     | In Australia | Outside of Australia | 88.2 | 11.8 |
| Cultural background       | White/Caucasian | Asian | Middle-Eastern | European | Pacific Islander | Other | 85.2 | 3.4 | 1.3 | 4.2 | 0.4 | 5.5 |
| Marital status            | Single         | In a relationship | Married | 46.4 | 52.3 | 1.3 |

TAFE, technical and further education.
of having an Instagram account received a hyperlink to the online survey by instant message. The participants were presented with an informed consent page, demographic questions, and the self-report scales were described.

Results

Power analysis, using G*Power 3.1, confirmed that the current sample was adequate. Before conducting main analyses, all variables were intercorrelated, and the means and standard deviations were investigated (Table 2).

Mediation model 1

A mediation analysis was performed to test the first hypothesis that social comparison on Instagram mediates the association intensity of Instagram use and self-esteem (Table 3). Baron and Kenny proposed that to demonstrate mediation, four steps are required. Step 1 stipulates that there must be a significant relationship between the predictor and the criterion, that is, there must be a significant relationship between intensity of Instagram use and self-esteem. Step 2 stipulates that there must be a significant relationship between the predictor and the mediator, that is, there must be a significant relationship between intensity of Instagram use and social comparison on Instagram. Step 3 stipulates that there must be a significant relationship between the mediator and the criterion once the predictor is controlled for, that is, there must be a significant relationship between social comparison on Instagram and self-esteem after variance in the criterion attributed to the predictor is partialled out. Lastly, step 4 stipulates to establish that the mediator completely mediates the relationship between the predictor and the criterion; when the mediator is controlled for, the relationship between the predictor and the criterion should be zero. More specifically, to demonstrate complete mediation, when social comparison on Instagram is controlled for, there should be no relationship association between Instagram intensity and self-esteem. The mentioned steps were tested using a Hierarchical Multiple Regression (HMR), with the predictor, intensity of Instagram use entered in block 1, and the mediator, social comparison on Instagram, entered in block 2.

Results of the hierarchical regression can be seen in Table 2. Step 1 of the hierarchical regression revealed no significant association between the predictor and the criterion; intensity of Instagram use did not significantly predict self-esteem, $F(1, 235) = 0.34, p = 0.56$. It is worth noting, however, that there was a significant association between the predictor and mediator, $r = -0.35, p < 0.001$, and at step 2, social comparison on Instagram significantly predicted self-esteem, $F(2, 234) = 19.54, p < 0.001$. Despite intensity of Instagram use significantly predicting social comparison on Instagram, and social comparison on Instagram predicting self-esteem, the hypothesized mediated model was not supported because intensity of Instagram use was not associated with self-esteem, as required by Baron and Kenny first condition. It is interesting to note that at step 2 of the HMR, a significant unique association was found between the intensity of Instagram use and self-esteem, $b = 0.15, p = 0.022$, which may indicate a suppressor effect in that the intensity of Instagram use only predicts self-esteem when social comparison on Instagram is held constant.

Mediation model 2

A mediation analysis was performed through a HMR to test the second hypothesis that social comparison on Instagram mediates the association between the predictor, contingent self-worth in the domain of approval from others, and self-esteem. The mentioned steps were tested using a Hierarchical Multiple Regression (HMR), with the predictor, intensity of Instagram use entered in block 1, and the mediator, social comparison on Instagram, entered in block 2. Results of the hierarchical regression can be seen in Table 2. Step 1 of the hierarchical regression revealed no significant association between the predictor and the criterion; intensity of Instagram use did not significantly predict self-esteem, $F(1, 235) = 0.34, p = 0.56$. It is worth noting, however, that there was a significant association between the predictor and mediator, $r = -0.35, p < 0.001$, and at step 2, social comparison on Instagram significantly predicted self-esteem, $F(2, 234) = 19.54, p < 0.001$. Despite intensity of Instagram use significantly predicting social comparison on Instagram, and social comparison on Instagram predicting self-esteem, the hypothesized mediated model was not supported because intensity of Instagram use was not associated with self-esteem, as required by Baron and Kenny first condition. It is interesting to note that at step 2 of the HMR, a significant unique association was found between the intensity of Instagram use and self-esteem, $b = 0.15, p = 0.022$, which may indicate a suppressor effect in that the intensity of Instagram use only predicts self-esteem when social comparison on Instagram is held constant.

Table 2. Means, Standard Deviations, and Intercorrelations Among the Variables IIU, RSES, SCS, CSW-AFO

<table>
<thead>
<tr>
<th>Scale</th>
<th>M</th>
<th>SD</th>
<th>IIU</th>
<th>RSES</th>
<th>SCS</th>
<th>CSW-AFO</th>
</tr>
</thead>
<tbody>
<tr>
<td>IIU</td>
<td>3.06</td>
<td>0.96</td>
<td>—</td>
<td>—</td>
<td>0.03</td>
<td>0.46**</td>
</tr>
<tr>
<td>RSES</td>
<td>30.70</td>
<td>5.42</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>SCS</td>
<td>24.46</td>
<td>8.38</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>0.27**</td>
</tr>
<tr>
<td>CSW-AFO</td>
<td>4.16</td>
<td>1.23</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

**p < 0.001.

CSW-AFO, Contingencies of Self-Worth–Approval from Others; IIU, intensity of Instagram use; RSES, Rosenberg Self-Esteem Scale; SCS, Social Comparison Scale.

Table 3. Hierarchical Regression Testing for Mediation Between Intensity of Instagram Use (Predictor), Social Comparison on Instagram (Mediator), and Self-Esteem (Criterion)

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Adjusted $R^2$</th>
<th>$\Delta R^2$</th>
<th>$\beta$</th>
<th>B</th>
<th>SE B</th>
<th>95% CI for B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>-0.00</td>
<td>0.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IIU</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 2</td>
<td>0.13</td>
<td>0.14</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IIU</td>
<td>0.15**</td>
<td>0.03</td>
<td>-0.03</td>
<td>-0.21</td>
<td>0.36</td>
<td>-0.93 to -0.51</td>
</tr>
<tr>
<td>SCS</td>
<td>-0.42**</td>
<td>-0.27</td>
<td></td>
<td></td>
<td></td>
<td>-0.36 to -0.18</td>
</tr>
</tbody>
</table>

**p < 0.001.

CI, confidence intervals; SE, standard error.
and the criterion self-esteem (Table 4). At step 1, contingent self-worth in the domain of approval from others predicted self-esteem, $F(1, 235) = 85.03, p < 0.001$, thus satisfying the first condition of Baron and Kenny’s four conditions of mediation. The second condition was demonstrated by the significant bivariate correlation between contingent self-worth in the domain of approval from others and social comparison on Instagram, $r = 0.22, p < 0.001$. At step 2, the combination of contingent self-worth in the domain of approval from others and social comparison on Instagram significantly predicted self-esteem, $F(2, 234) = 53.29, p < 0.001$, with contingent self-worth in the domain of approval from others ($b = -0.45$) and social comparison on Instagram ($b = -0.22$) making a significant unique contribution to explained variance in self-esteem. The third condition was satisfied as demonstrated by the $\beta$ weight of social comparison on Instagram. Lastly, the fourth condition was also demonstrated in that the unique association between contingent self-worth in the domain of approval from others and social comparison on Instagram at step 2 is less than the association shown at step 1 of the regression ($\beta = -0.51$). In addition, a Sobel test was conducted that showed that the indirect pathway was significant, $z = -2.98, p = 0.002$ (Fig. 1).

**Moderation**

The mentioned steps were tested using a HMR. Baron and Kenny proposed that the moderation model has three causal paths that lead into the outcome variable (self-esteem). These include effect of intensity of Instagram use as a predictor (Path $a$), the effect of contingent self-worth within the domain of approval from others as a predictor (Path $b$), and the interaction of these two predictors (Path $c$). Moderation has occurred if the interaction (Path $c$) is significant, thus indicating that the moderator alters the strength of the relationship between the predictor and the criterion. However, when the moderator, predictor, and interaction term are found to be significant (Paths $a$ and $b$), then moderation has occurred with significant main effects. Significant main effects are conceptually not directly applicable to assessing the moderator hypothesis. For the interaction term to be clearly interpretable, it is preferable that the moderator is uncorrelated with the predictor and the criterion variable; however, if correlations do exist, both the predictor and the moderator should be centered. Consequently, the predictor (intensity of Instagram use) and the moderator (contingent self-worth within the domain of approval from others) were both centered to address any problematic multicollinearity from the creation of an interaction term. An interaction term was created by multiplying the centered predictor by the centered moderator. Therefore, centered intensity of Instagram use and approval from others were entered into step 1, followed by the addition of the interaction term in step 2. At step 1, intensity of Instagram use and approval from others accounted for a significant amount of variance in social comparison on Instagram scores, $R^2 = 0.26, F(2, 234) = 43.06, p = 0.001$. At step 2, the overall model was significant, $R^2 = 0.27, F(3,$

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Adjusted $R^2$</th>
<th>$\Delta R^2$</th>
<th>$\beta$</th>
<th>$B$</th>
<th>$SE$</th>
<th>$B$</th>
<th>95% CI for $B$</th>
</tr>
</thead>
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<td>0.26</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CSW-AFO</td>
<td>-0.51**</td>
<td>-2.26</td>
<td>0.24</td>
<td>-2.75 to -1.78</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 2</td>
<td>0.30</td>
<td>0.04</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>CSW-AFO</td>
<td>-0.45**</td>
<td>-1.9</td>
<td>0.24</td>
<td>-2.49 to -1.50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SC</td>
<td>0.22**</td>
<td>-0.14</td>
<td>0.03</td>
<td>-0.21 to -0.07</td>
<td></td>
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</tbody>
</table>

**$p < 0.001$.**

**FIG. 1.** Path coefficients for the association between self-worth contingent on approval from others and self-esteem, with confirmed partial mediation by social comparison on Instagram. Standardized $\beta$’s are shown for all paths. $**p < 0.001$.**
Thus supporting the hypothesized moderation.

Higher levels of self-worth contingent on approval from others, Instagram intensity and social comparison on Instagram

Moderation term, criterion. Nonetheless, in the final model, the interaction only explained an additional 1.60 percent variance in the criterion. The addition of the interaction term at step 2 = .714, 30.97, p = 0.001, explaining 27 percent of the variance in the criterion. The addition of the interaction term at step 2 only explained an additional 1.60 percent variance in the criterion. Nonetheless, in the final model, the interaction term, \( b = 0.94, t(233) = 2.28, p = 0.023 \), was significant, indicating that moderation has taken place (Table 5).

A simple slopes analysis was conducted to further investigate the observed moderation. Simple slopes analysis was performed using PROCESS.\(^{29}\) PROCESS computes a regression equation for the predictor and the criterion at low, high, and moderate levels of the moderator defined as 1 SD below the mean, at the mean, and 1 SD above the mean, respectively.\(^{34}\) The simple slopes analysis revealed that the association between the independent variable and criterion was significant at all three levels of the moderator. When self-worth contingent on approval from others is low, there is a significant relationship between Instagram intensity and social comparison on Instagram, \( b = 2.64, 95\% \text{ CI: } 1.36–3.92, t = 4.05, p < 0.001 \). At a mean value of self-worth contingent on approval from others, there is a significant relationship between Instagram intensity and social comparison on Instagram, \( b = 3.81, 95\% \text{ CI: } 2.83–4.78, t = 7.71, p < 0.001 \). Lastly, when self-worth is highly contingent on approval from others, there was a significant relationship between Instagram intensity and social comparison on Instagram, \( b = 5.00, 95\% \text{ CI: } 3.61–6.34, t = 7.14, p < 0.001 \). This indicated that the relationship between Instagram intensity and social comparison on Instagram changes specifically becomes stronger, as individuals report higher levels of self-worth contingent on approval from others, thus supporting the hypothesized moderation.

**Discussion**

In this study, there was no significant mediation observed between intensity of Instagram use and self-esteem, as there was no significant association between the predictor and criterion. This is largely inconsistent with previous research.\(^{13,30}\) Although this could suggest that unlike Facebook, Instagram use is not related to self-esteem at all, another explanation for this is perhaps issues relating to measurement of Instagram. This study adapted the well-established Facebook Intensity Scale, but although Facebook and Instagram share many commonalities, there are a number of subtle differences (e.g., Facebook relationships being bidirectional, whereas Instagram following is a unidirectional process) that may imply that the adapted measure was less sensitive to capturing this construct. An alternative explanation for the already mentioned results is that perhaps SNSs use can have deleterious effects on self-esteem, but only when young people seek external validation from their peers, thus pointing to the second hypothesized model.

Results of this study indicated that self-worth contingent on approval from others and social comparison on Instagram make a significant unique contribution to the explained variance in self-esteem scores among emerging adults, consistent with the literature.\(^{21,23,24}\) This may indicate that social comparison on Instagram provides young people whose self-worth is contingent on approval from others an opportunity to exercise their self-validation goals, and subsequently authenticate their self-worth. In the process of self-validating through social comparison, young people are more likely to fall into the trap of correspondence bias, which, in turn, adversely affects their self-esteem. This term refers to the tendency to presume that others’ actions and words are representative of their personality as opposed to being affected by their immediate social context.\(^{21}\) For example, when a young person views images or videos of other Instagram users that depict the user as happy, the young person may conclude that the individual is happy without considering the situations that made the user happy.

In this study, results revealed a significant moderation effect, suggesting that young people who use Instagram more intensely engage in greater levels of social comparison when they have higher levels of self-worth that is contingent upon approval from others. These findings are consistent with previous studies in the area of SNSs and self-worth.\(^{31}\) Although the interaction term effect was seemingly small, research has highlighted that even when reliable moderator effects are observed, the decrease in model error as a result of adding the interaction term is disconcertingly low.\(^{33}\)

**Limitations of this study**

Although some significant results were observed, variance in self-esteem explained by social comparison on Instagram and self-worth contingent on approval from others was small and there is a large quantity of variance unaccounted for.\(^{23,34}\) Although variances less than 50 percent are anticipated in human research,\(^{34}\) results should be interpreted with caution. This study used a convenience sampling method to recruit a larger sample size, which may also present subsequent threats to the study’s external validity.

Finally, this study did not examine the number of followers on Instagram as well as feedback provided on Instagram by peers/followers and actual size of offline social network. This may also have influenced self-esteem. In line with this, other

| Table 5. Linear Model of Predictors of Social Comparison on Instagram |
|-------------------------|---------|-------|-----------------|
|                        | B  | SE B | β  | 95% CI for B |
| Step 1                 |    |      |    |               |
| Constant               | 24.48* | 0.46 | 0.44** | 23.55–25.39 |
| Intensity of Instagram use | 3.84 | 0.51 | 0.24** | 2.80–4.88 |
| CSW–Approval from Others | 1.63 | 0.38 |          | 0.85–2.36 |
| Step 2                 |    |      |    |               |
| Constant               | 24.39* | 0.46 |          | 23.49–25.30 |
| Intensity of Instagram use | 3.81 | 0.50 | 0.43** | 2.81–4.86 |
| CSW–Approval from Others | 1.64 | 0.37 | 0.24** | 8.44–2.35 |
| Interaction term (Intensity × CSW) | 0.94 | 0.39 | 0.12* | 0.14–1.74 |

\(^{*}p < 0.05, \quad **p < 0.001, \quad R^2 = 0.26 \text{ for step 1; } \Delta R^2 = 0.27 \text{ for step 2 } \left( p \text{ values} < 0.001 \right).\) CSW–Approval from Others = Contingent Self-Worth Within the Domain of Approval from Others.
social media use (e.g., Facebook) was not examined alongside the outcomes, and future research should also include control groups (of persons not using Instagram, or not using SNSs at all) to control for influence of offline social networks and face-to-face contacts.

Implications of this study

This study has investigated Instagram, a new SNS that is relatively untoucheed by the psychological science research community, and shows that social comparison on SNSs can be detrimental to the self-esteem of emerging adults. Findings emphasize the practical implications of everyday SNSs use among emerging adults. The younger the people engage in SNS use, the more at risk they are of being exposed to social comparison information, which, in turn, could result in cumulative harmful effects on well-being. As emerging adults with low self-esteem are more likely to use SNSs to communicate their needs in what they perceive to be a safe environment, this has the potential to result in a perpetuating cycle of using SNSs to be given social support while simultaneously exposing the young adult to social comparison information, thus, hindering self-esteem and continuing the cycle. Overall, findings may imply that although it may be increasingly adaptive for emerging adults to utilize various social communication tools to express their identities in the digital age, psychological well-being may be fostered by stronger offline relationships with friends and family who are not contingent on approval from others on SNSs.

Conclusion

Overall, this study tested the intrinsic worth of two proposed models suggested in the literature. Results suggested that social comparison on Instagram mediated the relationship between self-worth contingent on approval from others and self-esteem, and that self-worth contingent on approval from others plays a significant role in the relationship between Instagram use and social comparison on Instagram. This study contributes to a better understanding of individual differences in the effects of the use of Instagram on self-esteem among emerging adults. Future studies may seek to consider the implications of social comparison on Instagram within clinical samples. Moreover, alternative approaches to exploring these variables would be useful, perhaps by adopting an experimental design whereby young adults are exposed to Instagram profiles created by the researchers, which is manipulated to convey upward or downward comparative information. This information is pivotal in maximizing the benefits of Instagram use and in decreasing the threats posed by social media use for the well-being of emerging adults.

Author Disclosure Statement

No competing financial interests exist.

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