Online interactions are becoming ubiquitous as the technological era progresses, especially for young people who have grown up in the digital age. As of 2018, 45% of teenagers claimed to be online “almost constantly” (Anderson & Jiang, 2018). Researchers are beginning to investigate how using online platforms for social interactions may be shaping people’s personal and social lives. The present study focused particularly on the social lives of emerging adults and explored whether and how individual’s time spent on social media impacts social behaviors and tendencies as well as whether these altered social behaviors lead to social media addiction.

Mobile Phone Use and Online Communication
Research on social media use is a subset of studies on internet use and mobile phone use. The emergence and pervasiveness of cell phones has exploded in the last decade. As of June 2019, 96% of American adults own a cell phone of some kind, and 81% of American adults specifically own a smartphone (Pew Research Center, 2019). Beyond adult use, 95% of adolescents reported either owning a smartphone or having access to one as of 2018 (Anderson & Jiang, 2018). Mobile phones have moved beyond being just fun, convenient gadgets to essential and even preferred means of establishing and maintaining social relationships.

Researchers have raised concern that mobile phones and internet use may be replacing in-person interaction. Indeed, young people’s use of online communication is primarily driven by social motives (i.e., using a phone to build relationships with other people) more than extrinsic and task-oriented motives (i.e., seeking out information; Chan, 2015). Researchers have discovered that because primary motivations for using social media tend to be of a social nature, online communication is a tool many use to maintain relational connections (Krishnan...
& Atkin, 2014). Further, adolescents have reported that text messaging and online communication are easier forms of communication, especially in the case of budding romantic relationships or when initial encounters are awkward and difficult (LaBode, 2011). However, initial evidence suggests that the increased use of online communication may be detrimental to interpersonal relationships, leading to more peer aggression and relationship apprehension (Cyr et al., 2015) and a lack of psychological well-being and close personal ties that are associated with nondigital communication (Chan, 2015). Although online communication use is motivated by social factors, it may also be the very thing limiting the quality of social interactions.

Social Media Use and Addiction
In particular, social media may be contributing to an illusion of connectedness in replacement of close, genuine relationships among young people. Alongside mobile phone use, social media use has become a pervasive part of teen life, with 85% of adolescents reporting use of some form of social media (Anderson & Jiang, 2018). Interestingly, less than a third of adolescents in one study reported that social media has a mostly positive effect and yet 60% claimed that they would spend more time with friends online than in person (Anderson & Jiang, 2018).

Within the literature, one of the biggest negative impacts and rising concerns for social media use has centered on the addictive nature of social media. Researchers have established that social media use and subsequent addiction is correlated particularly with single, younger, and student age groups (Andreassen et al., 2017). Social media addiction comprises a range of addictive tendencies including fixation on social media, compulsive use, mood modification, and tolerance and withdrawal (Lin et al., 2017). There is particular concern for young people who seem to be most vulnerable to social media addiction (Andreassen et al., 2016). In a study conducted on social media addiction, researchers demonstrated correlations between several mental health disorders (including ADHD, OCD, anxiety, and depression) and social media addiction. In particular, researchers theorized that people with anxiety may be more likely to turn to social media in order to avoid face-to-face interactions (Andreassen et al., 2016). Previous research has also established that social anxiety predicts higher internet use (Weidman et al., 2012). As such, researchers have theorized that hiding behind a screen allows for more distance, control, and anonymity when communicating with others, thus reducing feelings of anxiety that social interactions might normally produce (LaBode, 2011; Weidman et al., 2012). Even traits like introversion and communication apprehension play a role in predicting social media addiction due to the desire to avoid the discomfort from social anxiety (Punyanunt-Carter et al., 2018). Research on social media addiction points to how social anxieties motivate the use of social media and mediate the development of an addiction.

Motivation to secure social relationships encourages the use of social media sites, informing why individuals may turn to social media even when acknowledging the negative effects from social media use (Anderson & Jiang, 2018; Krishnan & Atkin, 2014). Unfortunately, other researchers confirmed that using mobile phones for information-seeking activities and time-passing activities (such as social networking sites) are both related to increased negative affect and decreased positive affect respectively (Chan, 2015). Due to the social motivation driving the use of social media sites, it is possible that the use of social media may be impacting the way that users interact socially in other ways even with negative consequences. Research has yet to fully explore how social media use may be impacting interpersonal relationships, and how this contributes to other social behaviors.

Social Behaviors
Several aspects of social behavior contribute to a person’s social experience. For the purpose of the present study, the author explored three areas of behaviors theorized to be impacted by social media use: how people communicate (i.e., online versus face-to-face), how people feel about communication (i.e., communication apprehension), and how successful people are at actually communicating (i.e., the presence or absence of social deficits).

Face-to-Face Communication
In the pretechnology era, face-to-face communication was the standard way to communicate and relate to others. With the rise of communication technology, it is important to interrogate the relevance of face-to-face communication as a way that people relate today. In particular, concern may be raised for younger groups who have been raised with communication technology and use it constantly. As of 2018, only 50% of teens reported getting together with friends almost every day or several times a week, while 60% reported getting
together with friends online every day or almost every day (Anderson & Jiang, 2018). Roughly 36% of respondents felt that they spent too little time face-to-face with their friends. Reasons for not putting in more time face-to-face with friends varied with the top explanations being the strain of having too many obligations and the ease of keeping in touch online (Anderson & Jiang, 2018). With all this in mind, it is important to consider the importance of in-person communication in maintaining strong relationships.

Researchers have considered face-to-face communication as the “gold standard” of communication, in part because of the unspoken forms of communication that occur with facial expressions, tone, and body language (Flaherty et al., 1998). In a study conducted by Westerman et al. (2016), researchers investigated college students’ and internet participants’ attitudes about social media and face-to-face interactions. Researchers found that students had a generally positive attitude toward social media and an even stronger positive attitude toward face-to-face communication. Importantly, face-to-face communication predicted higher levels of quality of life, whereas online communication and internet use did not (Lee et al., 2011). Face-to-face communication is therefore an important form of communication and human connection, even in the technological age. However, with the rise of online communication and social media sites, the frequency of face-to-face interaction is changing.

**Communication Apprehension**

Another facet of social behavior has to do with how a person feels entering into a social situation. In particular, individuals who are anxious or nervous about interactions with others may experience communication apprehension. Punyanunt-Carter et al. (2018) defined communication apprehension as “the state or trait-like anxiety an individual experiences when faced with or when anticipating communication” (p. 511). Four reactions are typical for people experiencing communication apprehension including avoidance, withdrawal, disruption, and overcommunication. Investigators have evaluated social media use in the context of communication apprehension. In their study, Punyanunt-Carter et al. (2018) surveyed college students on their social media use and found a statistically significant correlation between social media addiction and social media communication apprehension. In another study by Punyanunt-Carter et al. (2017), researchers looked specifically at Snapchat use as a form of gratification and how it may correlate with communication apprehension. Their survey of university students showed that higher scores in apprehension predicted higher Snapchat use, though most users reported that Snapchat was a source of positive social interaction. Additionally, researchers have connected social media use with social anxiety. It is possible that people with anxiety may be tempted to turn to social media in order to avoid face-to-face interactions that are anxiety producing. In a meta-analysis conducted on 13 studies analyzing mental health and social media use in adolescence, Keles et al. (2020) found general correlations between social media use, anxiety, and distress. The hesitancy to communicate due to communication apprehension may contribute to people turning to social media as an alternative form of communication that is more removed and easier to control than an in-person interaction.

**Social Deficit Hypothesis**

A final aspect of social behavior is how successful an individual may be at communicating effectively. Researchers have theorized that certain groups may lack certain social skills or confidence in their ability to communicate, otherwise known as social deficits. The social deficit hypothesis refers to the idea that lonely people who lack social skills will be less likely to interact and form meaningful relationships with others, thus increasing their loneliness (Jones et al., 1982). In a study on adolescent phone use and social deficit theory, Jin and Park (2012) found that poor social skills were related to higher feelings of loneliness and less face-to-face communication. In turn, increased mobile phone use was positively correlated with loneliness, whereas face-to-face communication was negatively correlated with loneliness. Given the social motivation behind social media use, individuals who have more social deficits may be especially drawn to social media if they are struggling to meet their social needs in other ways.

**The Present Study**

The purpose of the present study was to examine the relationships among social media use and social behaviors (specifically face-to-face interactions, communication apprehension, and social skill deficits) in a sample of university students. The age of onset for social media use was also examined because age of onset may contribute to an early reliance on social networking sites as a means of communication and maintaining social bonds with peers. Based on previous findings, the author developed a model
for predicted relationships (see Figure 1). First, the model predicted that participants who have an earlier onset of social media use would report higher levels of social media use. Second, the model predicted that social media use would predict addiction to social media. Third, the relationship between social media use and social media addiction would be mediated by reduced face-to-face communication, higher communication apprehension, and poorer social skills (see Figure 1).

The study was a correlational research design. Before beginning the study, the author sought and received approval from the International Review Board of Santa Clara University. The author collected data from participants and then examined the correlations between variables according to the proposed model in order to conduct a mediation analysis based on the proposed theory.

Method

Participants
One hundred nine participants were recruited from a midsized private university in California. Participants were recruited through online surveys distributed to introductory psychology classes. Students who took the survey received course credit for participation. Demographic information was not collected due to an error in survey design. The limitations for this will be addressed in the discussion section.

Measures

Social Media Use and Face-to-Face Communication
Social media use was assessed using a questionnaire constructed by the author for this study. Questions included the age of first social media use and hours per day scrolling through social media. Hours were self-reported based on the participant’s personal estimation and did not require documentation or a system tracking use. Amount of time on social media was collected via a 5-point Likert-type scale with possible responses ranging from 30 minutes to more than 4 hours. Participants were also asked about which social media platforms they currently use, including Instagram, Snapchat, Facebook, TikTok, Twitter, Reddit, Tumblr, and Pinterest. Face-to-face communication was assessed with two 5-point Likert-type scales. The first question addressed how many hours participants spent communicating with friends face-to-face each day with possible responses ranging from less than 30 minutes to more than 4 hours. The other question addressed how many friends participants regularly talked to in-person per day with possible responses ranging from 0 to 1 friend to more than 6 friends. The scores from each of these measures were combined to create a composite score for face-to-face interactions that could possibly range between 2 and 10. Questions for face-to-face interactions were adopted from Jin and Park’s study (2012).

Communication Apprehension Scale
Communication apprehension was measured using the Communication Apprehension Scale, which is an 18-item, 5-point Likert scale (McCroskey, 1982). Six items related to giving speeches were removed from the scale to keep questions relevant to communication apprehension regarding interpersonal relationships. Questions were also adapted to be relevant to an undergraduate population rather than adults in the workforce (e.g., the question “I am afraid to express myself at meetings” was changed to “I am afraid to express myself in class or in meetings”). Some questions were reverse scored to maintain the integrity of participant responding. Scores for each response were combined into an overall communication apprehension score, possibly ranging from 18 to 90. For the Communication Apprehension Scale in the present study, Cronbach’s alpha was large, $\alpha = .950$, and therefore the scale was deemed reliable.

Social Skills Deficits Scale
To measure social skill deficits, participants completed the Interaction Anxiousness Scale, which is defined as a measure of “the affective component of social discomfort” (Leary & Kowalski, 2010, p. 137). The Interaction Anxiousness Scale, is a 15-point Likert scale on which participants indicated their degree of agreement with a series of statements. Sample items from the scale include “I often feel nervous even in casual get-togethers” and “I usually feel comfortable when I am in a group of people I don’t know.” Some items required reverse coding.

![FIGURE 1](image-url)
I ran descriptive analyses to calculate the means, standard deviations, and confidence intervals for the age at which participants got their first social media account. For the age of getting a social media account ($M = 12.39$, $SD = 1.82$), 95% CI [12.05, 12.74], $p < .001$.

**Associations Among Variables**

Pearson correlations were calculated for each relationship proposed by the model (see Table 1). As expected, significant correlations existed between hours of social media use and social skills deficits, $r(108) = .204$, $p = .017$. Contrary to expectations, no significant correlations were found between hours of social media use and the other social behaviors (face-to-face interactions and communication apprehension). There were also no significant correlations between social media addiction and any of the social behaviors (face-to-face interactions, communication apprehension, and social skill deficits). A significant positive correlation was found between social media use and social media addiction, $r(108) = .495$, $p < .001$. Lastly, significant correlations existed between the measures of social behavior. A significant negative correlation between face-to-face interactions and communication apprehension was found, $r(108) = −.336$, $p < .001$, as well as between face-to-face interactions and social skill deficits, $r(108) = −.390$, $p < .001$. Communication apprehension and social skill deficits were also strongly and significantly correlated, $r(108) = .776$, $p < .001$.

Correlations were conducted again controlling for the age at which individuals first got a social media account. For relationships between social media addiction and other variables (including face-to-face interaction, communication apprehension, and social skill deficits) no changes were seen in the correlations when controlling for age of first social media account. Additionally, the change in the correlation between social media use and social media addiction was negligible, $r(106) = .497$, $p < .001$.

**Mediation Analyses**

To assess whether face-to-face interactions mediated the relationship between social media use and social media addiction, regression analyses were conducted with and without the face-to-face interaction variable and results were subsequently compared. Before adding in face-to-face interaction, data established a significant correlation between hours of social media use and social media use.

to control for participants inaccurately responding to the scale measures. Scores could possibly range between 15 and 75. Researchers have used the Interaction Anxiousness Scale in previous studies to measure social deficits (Jin & Park, 2012). Alpha for the social skills deficits scale was high in the present study, $\alpha = .879$, and therefore the scale was deemed reliable.

**Social Media Addiction**

The Social Media Addiction Scale was used to measure social media addiction. Participants responded using a 6-item Likert scale. Example items include “You spend a lot of time thinking about social media or planning how to use it,” “You use social media in order to forget about personal problems,” and “You become restless or troubled if you are prohibited from using social media” (Andreassen et al., 2012). Previous researchers adapted the Social Media Addiction Scale from the Facebook Addiction Scale and demonstrated that it is a reliable and valid measure (Andreassen et al., 2012). The range of potential total scores for social media addiction was 6 through 30, with higher scores indicating stronger addiction. For the social media addiction scale, Cronbach’s alpha was high, $\alpha = .820$, and therefore the scale was determined to be reliable.

**Procedure**

Before data collection, approval was obtained from the institutional review board. Surveys were conducted anonymously and online. Participants completed a consent form before proceeding with the survey. Participants were informed that they had the right to withdraw from the survey at any time and were asked to acknowledge this right before beginning the survey. Surveys were conducted through Qualtrics containing four sections. Each section contained one of the four questionnaires described previously (social media use, face-to-face interactions, communication apprehension, and social skill deficits). Sections appeared in random order for each participant to counteract any order effects.

**Results**

**Frequency of Social Media Use**

The mode hours of time spent on social media habits was 2 to 3 hours per day with 30 participants reporting. The most frequently reported social media platforms included Instagram and Snapchat, with 92% of participants using Instagram and 94.4% using Snapchat. Only one participant reported no current social media use.
addiction, $F(1, 107) = 34.70, p < .001, r^2_{\text{Adjusted}} = .24$ (see Table 2). When face-to-face interaction was added to the model, there was no significant change, indicating that face-to-face interactions did not mediate the relationship between hours of social media use and social media addiction, $F(2, 106) = 17.64, p < .001, r^2_{\text{Adjusted}} = .24$. A second set of analyses was conducted to assess whether communication apprehension mediated the relationship between social media use and social media addiction. After adding communication apprehension to the model, no significant change was observed in the relationship between social media use and social media addiction, $F(2, 106) = 17.93, p < .001, r^2_{\text{Adjusted}} = .24$ (see Table 2). From these findings, researchers concluded that communication apprehension was not a mediator in the relationship between hours of social media use and social media addiction.

A third set of regression analyses were conducted to assess whether the social skill deficits mediated the relationship between hours of social media use and social media addiction. After accounting for the social skill deficit variable, no significant change was seen in the relationship between social media use and social media addiction, $F(2, 106) = 17.42, p < .001, r^2_{\text{Adjusted}} = .25$ (see Table 2). As such, the author concluded that social skills deficit was also not a mediator between the two variables of interest.

**Discussion**

**Summary of Findings**

Results did not support a relationship between social behaviors (including face-to-face communication, communication apprehension, and social skill deficits) and social media use or addiction. Correlations were found between each of the social behaviors (face-to-face interactions, communication apprehension, and social skill deficits), though none of these variables correlated significantly with social media use or addiction. Although social media use predicted social media addiction, participants’ face-to-face communication, communication apprehension, and social skill deficits did not mediate the relationship. Additionally, no relationship was found between the age at which participants started using social media and their social media use or their levels of social media addiction. Specific variable findings are discussed below.

**Social Media Use and Addiction**

Data showed that hours of social media use predicted levels of social media addiction. This supports previous research findings that users who are addicted to social media and therefore more dependent will use social media more than those who are not dependent on social media (Andreassen et al., 2017). A key aspect of social media addiction is that individuals do not only use social media frequently, but may experience distress without it (Lin et al., 2017). As such, participants who score high on the Social Media Addiction Scale are likely to demonstrate higher use of social media. However, because the data measures both addiction and use at the same time point, one cannot definitively say which precedes the other. It could be that people who are addicted use social media more or that people who use social media more become addicted. Additionally, previous research has indicated that younger populations are especially prone to social media use and addiction which may account for the high rates of addiction and use found in this sample.

**TABLE 1**

<table>
<thead>
<tr>
<th>$R$ Values From Pearson Correlations</th>
</tr>
</thead>
<tbody>
<tr>
<td>$M$</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>1. Age of first social media</td>
</tr>
<tr>
<td>2. Social media use</td>
</tr>
<tr>
<td>3. Face-to-face interactions</td>
</tr>
<tr>
<td>4. Communications apprehension</td>
</tr>
<tr>
<td>5. Social skill deficits</td>
</tr>
<tr>
<td>6. Social media addiction</td>
</tr>
</tbody>
</table>

Note: * $p < .05$. ** $p < .01$.

**TABLE 2**

<p>| Mediation Analyses of the Role of Face-to-Face Interactions, Communication Apprehension, and Social Skills Deficits on Social Media Addiction |
|---|---|---|---|---|---|---|---|</p>
<table>
<thead>
<tr>
<th>Models</th>
<th>Predictor variables</th>
<th>$B$</th>
<th>SE $B$</th>
<th>$\beta$</th>
<th>$F$</th>
<th>Adjusted $r^2$</th>
<th>$\Delta R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td>Social media use</td>
<td>1.92</td>
<td>.33</td>
<td>.50**</td>
<td>34.70**</td>
<td>.24</td>
<td></td>
</tr>
<tr>
<td>Model 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 1</td>
<td>Social media use</td>
<td>1.92</td>
<td>.33</td>
<td>.50**</td>
<td>17.64**</td>
<td>.24</td>
<td></td>
</tr>
<tr>
<td>Step 2</td>
<td>Face-to-face</td>
<td>−.17</td>
<td>.20</td>
<td>−.07</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 1</td>
<td>Social media use</td>
<td>1.87</td>
<td>.33</td>
<td>.48**</td>
<td>17.93**</td>
<td>.24</td>
<td></td>
</tr>
<tr>
<td>Step 2</td>
<td>Communication apprehension</td>
<td>0.03</td>
<td>.03</td>
<td>.09</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model 4</td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Step 1</td>
<td>Social media use</td>
<td>1.88</td>
<td>.33</td>
<td>.48**</td>
<td>17.42**</td>
<td>.25</td>
<td></td>
</tr>
<tr>
<td>Step 2</td>
<td>Social skill deficit</td>
<td>0.02</td>
<td>.04</td>
<td>.05</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: * $p < .001$. ** $p < .01$. 

Larson | Social Media Use and Social Behavior
of emerging adults (Andreassen et al., 2017). For the findings presented here, it is important to note that although high social media use was significantly predictive of social media addiction, this relationship does not appear to be mediated by face-to-face interactions, communication apprehension, or social skills deficits.

Contrary to predictions, there was no relationship between the age at which participants began using social media and their overall use of social media at the end of adolescence. Previous research had yet to investigate how the age at which one begins using social media impacts use of social media later in life as well as the potential for one to develop an addiction to social media. According to the present findings, age of social media use onset does not predict social media use in emerging adults. This finding was further substantiated by the fact that the relationship between social media addiction and other variables including social skills deficits, communication apprehension, and face-to-face interactions did not change when controlling for age of first using social media. In other words, the age at which an individual began using social media did not inform the relationships between social media use and other social behaviors. Given the lack of relationship between when individuals begin using social media and their later use of social media, concerns about early use with regard to developing unhealthy use of social media may be unfounded.

It is worth noting the possibility of a generational impact given that this study was conducted with a sample of emerging adults who have been raised in the technological era and have likely integrated technology into their social lives. Previous research has shown that individuals between the ages of 18 and 30 report social media use as a part of their systems of social support and psychological wellbeing (Chan, 2018). Therefore, social media use may not come at the expense of in-person interactions, but actually as a way to augment their social interactions and experiences.

Face-to-Face Interactions
No relationship was found between social media use and face-to-face interactions. The author had originally hypothesized that reduced face-to-face interactions would mediate the relationship between social media use and addiction because individuals would turn to social media to fulfill their social needs. Previous research has shown evidence for a social motivation behind social media use, indicating that social media’s role involves creating connections with others (Krishnan & Atkin, 2014). The present findings indicated no relationship between face-to-face interactions and either social media use or social media addiction. Therefore, individuals may not be using social media at the expense of in-person interactions to fulfill a social need. Additionally, it is possible that other forms of online communication such as texting or calling may be used by individuals to increase their social interactions while still maintaining fewer face-to-face interactions. In this case, individuals would not need to turn to social media as much to fulfill their lack of in-person interaction.

Other researchers have demonstrated that individuals who are introverted or experience social anxiety are more likely to use social media (Punyanunt-Carter et al., 2018). One might also assume that those with higher levels of introversion and social anxiety would have fewer face-to-face interactions due to these higher levels of social media use. Although face-to-face interactions predicted communication apprehension and social skill deficits in the present study, they did not predict social media use, which seems to contradict previous findings by Punyanunt-Carter et al. (2018) and Weidman et al. (2012). Although individuals who are introverted and more socially anxious might have fewer face-to-face interactions, they are not necessarily replacing their face-to-face interactions with social media use. More research is needed to substantiate this claim.

Communication Apprehension
In the proposed model, communication apprehension was hypothesized to mediate the relationship between social media use and social media addiction based upon the assumption that those with more anxiety around communication would be more likely to rely on social media to fulfill their social needs. According to the findings from this study, communication apprehension was not significantly correlated with social media use, thereby not substantiating the author’s hypothesis. Interestingly, this finding is inconsistent with past findings showing evidence that people who score higher in communication apprehension report relatively high levels of social media use in order to fulfill their need for social interactions without the anxiety that in-person interactions can bring about (Punyanunt-Carter et al., 2018). However, the present study found no correlation between communication apprehension and social media
use nor addiction. Although previous research has indicated that individuals experiencing higher levels of apprehension and anxiety use social media more, the current findings did not provide evidence for this claim (Keles et al., 2020; Punyanunt-Carter et al., 2017). One possible explanation for this deviation from previous findings is that the measure by which individuals reported their social media use was too broad to adequately identify groups of high users. Because participants reported an average range of use, these ranges might not have been specific enough to separate out participants with high levels of use. This explanation is further discussed in the limitations section.

Social Skill Deficits
The last mediator proposed by the model was social skill deficits. According to mediation analyses, a significant small positive correlation was found between use of social media and social skills deficits. This finding was in line with the predictions made about how social media use would predict altered social behaviors. It also confirms findings from previous research demonstrating a relationship between poorer social skills and higher social media use (Jin & Park, 2012). Because the research here is correlational, one cannot determine the directionality between social media use and social skill deficits, more research would be needed to establish if there is any causal relationship between these two variables.

Interestingly, social skill deficits did not predict social media addiction as previously hypothesized by the model. Although poorer social skills have been shown to predict high social media use both in this study and previous research, data from the present investigation did not show that poorer social skills predict social media addiction. Although people who lack the social skills required for effective communication may resort to social media use, their social skill deficit did not seem to inform their potential for social media addiction. It is possible that the addictive nature of social media does not relate to its fulfillment of a social need, but rather to some other aspect of social media.

Proposed Alternative Model
The intercorrelations among face-to-face interactions, communication apprehension, and social skill deficits and the finding that only social skills deficits were associated with media use suggested an alternate model that may better account for the data (see Figure 2). This alternate model supposed that face-to-face communication and communication apprehension predict social skills deficits, which in turn predict social media use and ultimately social media addiction. That is, it may be that people with impoverished face-to-face communication and who are anxious about communicating with others develop social skills deficits, which lead them to use social media more and may ultimately lead to addiction to social media. The relatively strong correlation between communication apprehension and social skills deficits found in the current study suggested that communication apprehension may account for a larger amount of the variance in social skills deficits compared to a dearth of face-to-face interactions. Given that social skill deficits and communication apprehension relate strongly to each other, it may be that a lack of social skills more readily predicts feelings of anxiety with communication than actual social interaction. In other words, those who may lack social skills might feel more apprehension in social situations but still maintain some level of face-to-face interactions.

Implications
According to the data found in this study, the age at which a person begins using social media does not predict their social media use or addiction at the end of adolescence. This means that the age of onset may be less critical to consider by parents, educators, and other stakeholders when it comes to understanding social media use throughout adolescence and into early adulthood. With regard to addiction, the present research has yet to find evidence that earlier use of social media is connected with higher likelihood of developing a social media addiction at the end of adolescence.

The relationship between social media use, social media addiction, and the social behaviors of individuals may be much more complex than realized. Based on the present findings, little evidence...
exists that face-to-face interactions, communication apprehension, and social skill deficits mediate a relationship between social media use and social media addiction. One possible implication of this finding is that these social behaviors do not influence the propensity of an individual to develop an addiction to social media. Instead, other aspects of social life or social media may be more influential drivers in determining social media addiction.

Limitations
The present study has several limitations. Because demographic information was not collected, it is difficult to assess what ages, ethnicities, genders, and socioeconomic statuses are exactly represented by the sample. Due to this limitation, researchers cannot definitively say to which population the data exactly speaks to other than a population of emerging adults. Possibly, different groups of people may express different patterns of communication, indicating that the data can only support the communication habits of a specific group. For example, previous research has shown that women tend to use social media more than men to connect with friends (Thompson & Lougheed, 2012). More generally, women also tend to report having more intimate friendships than men do (Zarbatany et al., 2013). Gender therefore could impact how men and women prioritize interpersonal communication both in person and online, impacting how they would respond to the survey. Because demographic information was not collected, researchers cannot say how the data may generalize, limiting the study’s external validity.

Additionally, all data was collected through self-report and recall measures. Previous research has shown that self-report measures tend to differ from diaries tracking actual use, and so self-report measures may fail to completely capture actual social media use (Greenberg et al., 2005). Researchers counteracted the impact of the accuracy of self-report estimates by having participants estimate their use within a range of values rather than estimate a specific value. Participants might have also been influenced by demand characteristics, attempting to respond in a socially favorable way rather than an accurate way.

Another limitation involves the measures themselves. With regards to face-to-face communication, the measure did not distinguish the type of activity or quality of face-to-face interactions, but only asked about the duration of said interactions. Given that social interaction may change depending on the activity accompanying the face-to-face interaction (e.g., eating lunch versus playing a sport), the quality of face-to-face interactions may vary between participants. Another limitation from the face-to-face interaction measure was that results were negatively skewed, likely indicating a ceiling effect and restricting the variance of this measure. The measure for social media use might also have been unable to adequately distinguish a specific group of high scorers by requiring participants to estimate a range of hours for use rather than provide a specific number themselves.

Additionally, the high correlation between the measures of communication apprehension and social skill deficits (.78) calls into question the construct validity of the measures (i.e., they may be measuring the same construct). However, the correlation, although strong, was not perfect between the two measures and only social deficit scores were correlated with social media use, so it is likely that the measures were sufficiently distinct.

Future Directions
Additional studies are needed to test the proposed new model of the relationships among social behaviors and social media use and addiction. Studies that are grounded in theory and longitudinal in design are especially important to assess competing causal models. Longitudinal studies would also illuminate how each of these variables change throughout the development of social media use and possibly establish directionality of the relationships between social media use and aspects of social behavior. Of particular interest would be to observe how face-to-face interactions change from when a person begins using social media. Additionally, research should continue to bolster understanding of how social media addiction may or may not be influenced by social behaviors, especially the interaction of these behaviors.

Psychometric analyses and measure development of the variables used in this study, especially communication apprehension and social skills, will help to ensure that distinct constructs are being measured. Future research may want to address the problem by adding in more questions to the measure and having the measure account for high quantities of face-to-face interactions in order to distinguish between high scoring groups.

Lastly, other social factors not measured by the present study may be accounting for why some people report higher and more problematic addiction to social media. For example, research
has investigated how other social factors like the fear of missing out predicts social media addiction (Blackwell et al., 2017). It is possible that social behaviors are mediating the relationship between social media use and addiction, just not the social factors accounted for in this study. Future research may examine which aspects of social life may be more likely to influence social media use and addiction.

**Conclusion**

As technology becomes more pervasive and incorporated into social life, research should identify how technology may be influencing people’s relationships with others. The present study sought to add to the understanding on how social media may be influencing the ways that emerging adults relate to each other, and the possible role of social media in managing their relationships. Moving forward, it may behoove researchers to examine these relationships more closely and examine how individuals’ online and face-to-face interactions impact the way they relate to others.

**References**


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