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Empathy, Narcissism, Alexithymia, and Social Media Use

Alison Jane Martingano, Sara Konrath, Sasha Zarins, and Anastesia A. Okaomee

Empathy, Narcissism, Alexithymia, and Social Media Use

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As social media becomes more popular, so do debates about its socio-emotional implications. The current study examined the relationship between social media use and narcissism, alexithymia, and empathy among 1253 American adults. We find that, within this sample, social media use is negatively correlated with self-report and performance measures of empathy, particularly cognitive empathy, and positively correlated with narcissism and alexithymia. However, this result appears constrained to the demographics of this sample. We also report a mini meta-analysis on the relationship between empathy and social media use including our results alongside those of previous research. We find that this strength and direction of this relationship may depend upon nationality, age, and data collection date. In contrast to our result, studies conducted in Europe or with a sample under 18 years of age find a positive relationship between social media use and empathy. In addition, data collected in more recent years tends to report a more positive association between social media and empathy. This paper helps to clarify the relationship between social media use and socioemotional traits and contributes to public debates about social media.

Public Policy Relevance Statement
In a large correlational study, social media use was found to be negatively associated with empathy and positively associated with narcissism and alexithymia (traits typified by a lack of empathy). When included in a mini-meta-analysis of related literature, these results help clarify a conflicted literature and point to potential explanations for why the relationship between social media and empathy appears inconsistent.

Keywords: narcissism, alexithymia, empathy, social media, meta-analysis

Supplemental materials: https://doi.org/10.1037/ppm0000419.supp

Social media use is widely prevalent in the United States, with 72% of Americans reporting that they used some type of social media in 2019. This figure rises to 90% in young adults aged 18 to 29 years (Pew, 2019). Facebook was by far the most popular site, with 69% of Americans on average and 79% of young adults using it (Pew, 2019). Yet, other social media sites also have a substantial following—39% of Americans (67% of young adults) use Instagram, and 22% (38% of young adults) use Twitter (Pew, 2019). Given its high prevalence, there are important questions about how social media use relates to social and emotional competencies.

Ongoing debates in academia, the popular press, and around dinner tables question the value and implications of social media. These types of debates occur historically whenever new media emerge and are widely adopted (Drotner, 1999). In this case, the empirical research does not land firmly on one side. Research finds both positive and negative correlates of social media use with users' well-being. On the one hand, social media platforms can help to create and maintain support networks, which gives people wider and faster access to support than is possible with offline support systems (James et al., 2017). At the same time, extensive social media use has been linked to mental health problems such as anxiety, depression, and stress. Factors such as the type of information shared, the responses received, and the content people engage with may affect whether the implications of social media use are positive or negative (James et al., 2017). Other research has claimed that the recent rise in depressive symptoms among adolescents is caused by an increase

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in the use of screen media (Twenge et al., 2018). However, that work is challenged by scholars finding that there may be a "Goldi-locks effect" of social media—with too much *and* too little use being linked to poor mental health (Przybylski & Weinstein, 2017).

Defining Social Media

There is not a single commonly accepted definition of social media (Bayer et al., 2020; Fox & McEwan 2020). Many defini-tions emphasize how social media can expand the capabilities of human interaction to allow people to interact across time and space. One popular definition describes social media sites as "Internet-based, disentrained, and persistent channels of mass per-sonal communication facilitating perceptions of interactions among users, deriving value primarily from user-generated con-tent" (Carr & Hayes, 2015, p. 50). However, this definition is too broad for our purposes, as it encompasses a wide variety of online platforms including social games, dating sites, blogs, and web-based productivity tools (e.g., Slack). Instead, the current research focuses on a subclass of social media known as social network sites. We adopt Boyd and Ellison's (2007) definition, which describes social network sites as "web-based services that allow individuals to (1) construct a public or semipublic profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connec-tions and those made by others within the system" (Boyd & Elli-son 2007, p. 211). Social media use typically occurs across multiple platforms (Vaid & Harari, 2021). In the current article, we specifically focus on the use of the popular social networking sites Twitter, Facebook, and Instagram and investigate how this use relates to dispositional empathy, narcissism, and alexithymia.

Empathy and Social Media Use

Compelling theoretical arguments have been made on both sides as to why social media might influence empathy. Spending time online may reduce time spent with people offline, which may allow empathy skills to become "rusty" because they require prac-tice (Konrath, 2013, p. 14). People may lose practice processing nonverbal emotional cues if these expressions are less common online than offline. However, others argue that there are no differ-ences in the intensity of expressing emotions between online and face-to-face communications (Derks et al., 2008). It is also possi-ble that people may use social media to practice their social skills (Valkenburg et al., 2011) and transfer these skills to offline inter-actions (Koutamanis et al., 2013; Valkenburg & Peter, 2007a). Another theoretical argument is based on the anonymity afforded by social media, which may lead people to depersonalize, and in extreme cases dehumanize, other users (Harel et al., 2020), leading them to fail to empathize because they do not recognize the other person's humanity. Yet, many types of contemporary social media are no longer anonymous (Valkenburg & Peter, 2011) and are of-ten used to maintain relationships with offline friends (Bryant et al., 2006; Valkenburg & Peter, 2007b), rendering depersonaliza-tion and dehumanization rare.

Despite a proliferation of theoretical arguments for why social media use might be related to empathy, there have only been a few published articles on the direct relationship between the two, which find mixed results. For example, some correlational research has found that social media use is associated with higher self-reported empathy (Mayshak et al., 2017; Vossen & Valken-burg, 2016). However, these relationships are more complex upon further inspection. For example, one study finds that although Facebook and Twitter users who use the sites more frequently score higher on empathy compared with those who use the sites less frequently, they report *less* empathy compared with those who do not use the sites at all (Errasti et al., 2017). Several other stud-ies have found no consistent relationship between social media use and self-reported cognitive or emotional empathy (Alloway et al., 2014; Lozada & Tynes, 2017).

One potential reason for these mixed results may be the nature of empathy being measured. Empathy is a multidimensional construct that includes both attempts to understand other people's experiences and feelings (cognitive empathy) and feelings of care and concern for other people (emotional empathy). Although these facets of em-pathy are generally positively correlated (Davis, 1983), they repre-sent distinct neural processes and appear to be aroused by different mechanisms (Yu & Chou, 2018). Cognitive empathy is considered a deliberate skill that develops with practice, whereas emotional em-pathy may occur more automatically in response to evocative stimuli (Martingano, 2020). In an attempt to determine whether the relation-ship between social media and empathy is different for cognitive and emotional empathy, Guan et al. (2019) conducted a mini meta-analysis of five previously published studies on this topic. They found that, overall, individuals' social media use was associated with higher self-reported emotional empathy and cognitive empathy. However, this mini meta-analysis indicated that the effect sizes var-ied substantially. Therefore, it is likely that the relationship between social media and empathy is moderated by one or more additional variables not considered in this previous mini meta-analysis. Thus, in the current study, we add another study to this debate and also update Guan et al.'s mini meta-analysis to examine the size and direction of the overall relationship between social media use and empathy and explore potential moderators.

Another reason why previous research has found mixed rela-tionships between social media use and empathy may be that the type of digital interaction may matter. For example, one study found that *commenting*, a behavior that is normally public, was associated with higher cognitive and emotional empathy, but *instant messaging*, a private action, was unrelated to either type of empathy (Powell & Roberts, 2017). Sadly, few studies to date dif-ferentiate the nature of social media use when analyzing its rela-tionship to empathy. In the current study, we investigate whether simply checking one's social network site versus posting on it have different correlations with socioemotional traits, including empathy.

Another potential reason for inconsistent results in the literature may be that previous research studies have relied on the different populations, which vary by gender composition, age, and national-ity. For example, previous research has found that time spent in various online activities (including social media) is associated with lower cognitive empathy among women, but not men. Yet, time spent in these activities is unrelated to emotional empathy among men and women (Carrier et al., 2015). In addition, both empathy and social media use differ by culture (Chopik, O'Brien, & Konrath, 2017; Günsoy et al., 2020), so it is perhaps unsurpris-ing that the relationship between the two may be inconsistent across different cultural groups. Studies conducted in the United

States with adult populations have generally found null or negative relationships between social media use and empathy (Alloway et al., 2014; Carrier et al., 2015); however, studies conducted in Europe have more frequently found positive relationships (Errasti et al., 2017; Powell & Roberts, 2017; Vossen & Valkenburg, 2016). In a recent study conducted with an Indian population, researchers found no relationship between social media use and empathy (Sharma et al., 2020).

To further complicate matters, much of the European research has also been conducted with children (<18 years old), so it is possible that age, rather than location, moderates the relationship between social media use and empathy.

It is important to note that most existing studies examine how social media use is associated with *self-reported* measures of empathy. It is possible that social desirability bias and low self-awareness may influence participants' responses on these measures. To date, there is virtually no research on how social media use is associated with *objective* or performance-based measures of empathy, such as emotion recognition skills, which are a type of cognitive empathy. A notable exception is an experimental study that found an increase in emotion recognition skills after preteens were away from their screens at a camp for 5 days, compared to a control group (Uhls et al., 2014). However, it is unclear whether being away from screens or intensive face-to-face socializing (or something else) caused these results. To our knowledge, no study to date has directly examined the relationship between empathy and social media use using objective measures of empathy. We do so in the current article.

Narcissism, Alexithymia, and Social Media Use

Existing research suggests that two traits that are typified by low empathy (narcissism and alexithymia) are consistently *positively* related to social media use. Narcissism involves excessive self-esteem in combination with low empathy, especially low emotional empathy (Urbonaviciute & Hepper, 2020). On the other hand, alexithymia is typified by a struggle with cognitive empathy (Grynberg et al., 2010). People with alexithymia have difficulty in identifying and describing emotions (Bagby et al., 1994). Because narcissism and alexithymia are typified by low levels of emotional and cognitive empathy, respectively, quantifying these traits provides additional insight into the relationship between social media use and empathic tendencies from the opposing side.

Even if research finds positive relationships between social media usage and empathy, this does not imply that the relationship between social media and narcissism is necessarily negative. Empathic and narcissistic individuals may be attracted to social media for different reasons and may use it in different ways. Indeed, much previous research has examined the relationship between narcissism and social media use, with two meta-analyses finding overall positive associations between narcissism and a range of social media behaviors (Liu & Baumeister, 2016; McCain & Campbell, 2018). Effect sizes ranged from .11 to .42, depending on the type of digital behavior being measured, with the strongest associations being for interactions such as commenting (Liu & Baumeister, 2016). We contribute one additional study to this literature.

Similar to narcissistic individuals, people who score higher in alexithymia also report spending more time on social media

(Mersin et al., 2020; Youssef et al., 2020) and are more likely to disclose personal feelings and opinions on Facebook (Lyvers et al., 2020). This time spent on social media is likely not benign, as more alexithymic individuals are likely to have problematic or addictive social media use (Lyvers et al., 2020). In the current study, we add to this emerging literature on social media usage on alexithymia.

The Current Article

In the literature to date, there are consistent positive relationships between social media use and traits typified by low empathy (narcissism and alexithymia), but inconsistent relationships between social media use and empathy. Therefore, we investigate how peoples' use of social media relates to all three variables (dispositional empathy, alexithymia, and narcissism). We adopt a between-person paradigm, as these psychological traits are assumed to be relatively stable within any given individual over time (Chopik & Grimm, 2019; Davis & Franzoi, 1991). Given the mixed results in the literature on the relationship between social media use and empathy, it is critical to establish both the direction and size of this relationship. As it is likely that the nature of this relationship may differ based on the type of empathy being measured, the population under consideration, and the nature of social media engagement (e.g., posting vs. checking), the current article seeks to take all of these variables into account.

Method

Data from four studies that used identical measures, but were conducted for other purposes, were combined for this analysis using integrated data analysis (Curran & Hussong, 2009). Two of the studies ($N = 1,064$) were conducted online, and the other two were conducted in the lab ($N = 189$). Laboratory participants completed an additional performance-based measure of empathy (i.e., emotion recognition), which is described in the following text. All studies received institutional board approval, and the research was carried out in accordance with the Declaration of Helsinki. Participants gave their informed consent online by selecting an agreement button or in person by signing a consent form. Measures, data, and analysis syntax are available on the Open Science Framework (https://osf.io/gdqab/?view_only=3db40a947c6b4ba2 b4cc1e36f64d4b54).

Participants

Participants were 1,253 adults recruited online via snowball recruitment and in lab via university subject pools ($M_{age} = 27.6$; 69.7% female; 82% Caucasian).

Measures

Social media use was assessed with five questions. Each question assessed the frequency of using (checking, posting) a social media site. Participants were asked, "How much did you use the following types of media yesterday?" Frequency was reported on a 7-point scale (1 = *none*; 2 = *once*; 3 = *two or three times*; 4 = *once an hour*; 5 = *once every 30 minutes*; 6 = *once every 10 minutes*; 7 = *more than once every 10 minutes*). We asked people about the previous

day so that it would be easier for them to remember and accurately estimate their social media use. Participants reported their frequency of checking Twitter ($M = 2.11$, $SD = 1.55$), posting on Twitter ($M = 1.51$, $SD = .98$), checking Facebook ($M = 3.52$, $SD = 1.46$), posting on Facebook ($M = 1.88$, $SD = 1.16$), and using Instagram[1] ($M = 2.00$, $SD = 1.47$) the previous day.

Narcissism was assessed using the Narcissistic Personality Inventory 16-item scale (Ames et al., 2006). Each item comprises two statements, one which represents a narcissistic response such as (e.g., "I am an extraordinary person") and a nonnarcissistic response (e.g., "I am much like everybody else"). The number of narcissistic responses chosen out of 16 was summed ($M = 4.62$, $SD = 3.14$, $\alpha = .72$).

Alexithymia was assessed using the 20-item Toronto Alexithymia Scale (Bagby et al., 1994) with three subscales, including difficulty describing feelings (e.g., "It is difficult for me to find the right words for my feelings"), difficulty identifying feelings (e.g., "I am often confused about what emotion I am feeling"), and a tendency to focus attention on external reality versus inner experience (e.g., "I prefer to just let things happen rather than to understand why they turned out that way"). All alexithymia items were rated by participants on a 5-point scale, ranging from 1 = *strongly disagree* to 5 = *strongly agree*. Participant's responses were summed (scale total: $M = 50.00$, $SD = 10.30$, $\alpha = .83$; difficulty identifying feelings: $M = 12.73$, $SD = 4.90$, $\alpha = .85$; difficulty describing feelings: $M = 12.98$, $SD = 4.21$, $\alpha = .80$; externally oriented thinking: $M = 22.03$, $SD = 3.40$, $\alpha = .35$)

Self-reported empathy was assessed using the Interpersonal Reactivity Index (Davis, 1983), a 28-item scale with four subscales. *Perspective Taking* (cognitive empathy) assesses the degree to which people can imagine others' experiences and views (e.g., "I sometimes try to understand my friends better by imagining how things look from their perspective"). *Empathic Concern* (emotional empathy) assesses people's feelings of care and compassion for others (e.g., "I often have tender, concerned feelings for people less fortunate than me"). *Fantasy* assesses people's tendency to become immersed in fictional worlds (e.g., "I really get involved with the feelings of the characters in a novel"). *Personal Distress* is a self-oriented response to others' distress in which people become overwhelmed in the presence of suffering (e.g., "I sometimes feel helpless when I am in the middle of a very emotional situation"). Participants rated all the self-reported empathy items on a 5-point scale, ranging from 1 = *not very true of me* to 5 = *very true of me* (Perspective Taking: $M = 3.55$, $SD = .65$, $\alpha = .79$; Empathic Concern: $M = 3.83$, $SD = .66$, $\alpha = .81$; Fantasy: $M = 3.40$, $SD = .82$, $\alpha = .81$; Personal Distress: $M = 2.59$, $SD = .71$, $\alpha = .79$).

Emotion recognition (objective cognitive empathy) was measured using the Facial Action Coding System–verified University of California set of Emotion Expressions (Tracy et al., 2009) photographs, cropped to headshots. Participants were shown a total of 20 photos of 10 facial expressions posed by two individuals (White man, White woman) in a random order. Before each photograph, a red cross appeared on the screen, and participants fixated on it before a photograph then appeared for 1000 ms. Participants were then asked, "Which emotion, if any, do you think is being expressed by the person in the photo?" Participants selected which emotion the target was expressing from 11 options (anger, contempt, disgust, embarrassment, fear, happiness, pride, sadness, shame, surprise, and neutral). For each correct answer, participants

were awarded 1 point (out of 20; $M = 11.83$, $SD = 3.02$). Higher scores on this task indicate that participants can correctly infer the mental states of others, which is a key component of cognitive empathy. This measure was only assessed in laboratory participants ($N = 189$).

Data Analysis Plan

Data Inclusion, Cleaning, and Checking

Participants' data were included if they responded to the social media questions and completed one or more of the personality trait measures (i.e., narcissism, empathy, alexithymia; note that the lab study with emotion recognition only included 189 participants). Average social media use was calculated as the mean frequency of social media use across all three platforms.

Social media usage, personality trait, and emotion recognition measures were examined for outliers and normality via skewness and kurtosis statistics. We also examined the linearity, normality, potential outliers, multicollinearity, and homoscedastcity in all regression analyses We performed a visual inspection of scatterplots between predictor and outcome variables, and they all appeared to be linear. In addition, a visual inspection of scatterplots only revealed a single potential outlier in the emotion recognition analyses, and removing this outlier did not change the results or conclusions of the current study. Thus, we retain this data point in the full analyses. We found that all social media usage scales except Checking Facebook had positive skewness and kurtosis >1, indicating that they deviated from normality (Supplementary Table 1). Homoscedasticity scatterplots of predictor residuals versus outcome variable residuals also suggested that data were not fully normal. Thus, we log transformed the social media variables that violated normality assumptions and reran all analyses reported in this article with the log transformed variables (Supplementary Table 2). All results and conclusions remain consistent with raw analyses; thus, we report untransformed analyses in the main article for ease of interpretation. As for multicollinearity, Table 1 includes intercorrelations between all study variables. We examined the correlations between each of the covariates and all other variables to determine whether the covariates could potentially introduce collinearity into the regression models. As can be seen in Table 1, the three covariates (gender, age, and education) were all correlated below r = $+/- .46$ with the other variables in the study, which suggests that multicollinearity is not a serious concern in our analyses (typical cutoffs are below r = $\pm .80$).

Linear Regression

Raw Pearson's correlations were computed between average social media use and each measure of empathy, alexithymia, and narcissism, as well as for each platform independently. Our sample size of 1,253 was sensitive to effects of r = $\pm.06$ with 80% power ($\alpha = .05$, two-tailed). This means our study should be able to detect correlations higher than r = .06 or lower than $-.06$, a size comparable to previously reported average effect sizes ($r = .05–.07$; Guan et al., 2019).

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[1] Due to a researcher error, only one item was used to measure Instagram use, which did not differentiate between posting and checking.

Table 1

Correlation Matrix Showing Pearson R Values for All Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1. Gender	1																		
2. Age	.002	1																	
3. Education	.009	.455**	1																
4. Emotion recognition	−.096	.197**	—	1															
5. Perspective taking	−.096**	.029	.008	.025	1														
6. Empathic concern	−.245**	.096**	−.006	.056	.502**	1													
7. Fantasy	−.215**	−.273**	−.124**	.092	.166**	.292**	1												
8. Personal distress	−.150**	−.207**	−.107**	−.037	−.163**	−.021	.170**	1											
9. NPI	.196**	−.185**	−.077**	.222**	−.139**	−.137**	−.009	−.141**	1										
10. Alexithymia total	.053	−.167**	−.065*	−.010	−.248**	−.293**	.011	.347**	.005	1									
11. Alexithymia DDF	.017	−.201**	−.097**	.016	−.225**	−.228	.033	.297**	−.042	.866**	1								
12. Alexithymia DIF	−.036	−.146**	−.072*	−.049	−.141**	−.135**	.135**	.365**	.021	.851**	.642**	1							
13. Alexithymia EOT	.212**	−.002	.044	.036	−.226**	−.391**	−.238**	.058*	.036	.524**	.300**	.131**	1						
14. Checked Twitter	−.016	−.303**	−.175**	−.188**	−.061*	−.061*	.064*	.106**	.158**	.049	.048	.052	−.007	1					
15. Posted on Twitter	−.029	−.217**	−.112**	−.164**	−.041	−.052	.058	.085**	.142**	.066*	.056	.081**	−.011	.680**	1				
16. Checked Facebook	−.079**	−.365**	−.188**	−.090	−.078**	−.048	.117**	.151**	.118**	.091**	.087**	.116**	−.034	.328**	.242**	1			
17. Posted on Facebook	−.078**	−.105**	−.041	−.225*	−.035	.008	.032	.067*	.067*	.055	.033	.105**	−.044	.098**	.242**	.510**	1		
18. Used Instagram	−.110**	−.317**	−.159**	−.123	−.107**	−.050	.041	.150**	.159**	.078*	.055	.098**	−.001	.455**	.347**	.359**	.290**	1	
19. Average social media use	−.083***	−.390**	−.202**	−.122	−.094***	−.053	.085***	.161**	.196**	.094***	.079***	.128**	−.035	.757**	.688**	.719**	.590**	.730**	1

Note. NPI = Narcissistic Personality Inventory; DDF = difficulty describing feelings; DIF = difficulty identifying feelings; EOT = externally-oriented thinking. * Correlation is significant at the .05 level (two-tailed). ** Correlation is significant at the .01 level (two-tailed). There is no correlation between education and emotion recognition as the college student sample (N = 189) who took this performance measure of empathy all had the same level of education (some college).

After examining the raw correlations, we also used regression analysis to examine the relationship between social media use and each measure of empathy, alexithymia, and narcissism, controlling for participants' age, gender, and education level as covariates (note that the laboratory sample consisted of college students, and thus education level was not included as a covariate for them).

Meta-Analysis

We next conducted a mixed effects meta-analysis using the Comprehensive Meta-Analysis V3 software to combine the empathy results from our current study with those included in Guan et al.,'s (2019) meta-analysis of five studies. This analysis calculated the weighted mean correlation between emotional empathy and social media use and also the weighted mean correlation between cognitive empathy and social media use. We converted correlations into Fisher's z for analysis but use Person's r for interpretation. To maintain consistency with the original meta-analysis, we only included self-report measures of empathy.

We also explored whether the relationship between social media and empathy differed based on several moderators that were identified from our literature review (i.e., participant age, gender composition of sample, location, and date of data collection). We computed two subgroup analyses using a mixed effects analysis first comparing American and European populations, then comparing adult to child populations. We report Q statistics to test the null hypotheses that the correlation does not differ between regions or age groups. We also used metaregression to see if the variation in effect sizes could be explained by the date of data collection or gender composition of the samples. We report the r value of the regression model and the Q statistic to test the null hypotheses that there is no relationship between the size of the correlation and date of data collection or gender composition of the sample. For all moderator analyses, we computed composite scores of empathy (combining emotional and cognitive empathy measures for each study) to ensure the N for each study was not artificially inflated, as recommended by Borenstein et al. (2006).

Results

Participants reported a range of social media use during the previous day: 89% of them used Facebook, 43% used Twitter, and 40% reported using Instagram. Raw correlations between all variables are presented in Table 1.

Narcissism and Social Media Use

Average social media use was positively correlated with narcissism even when controlling for gender, age, and education (β = .15, p < .001). Participants who scored higher on narcissism reported using all types of social media (Twitter, Facebook, Instagram) more frequently (Table 2).

Alexithymia and Social Media Use

Raw correlations suggest that similar to narcissism, alexithymia is also associated with higher average social media use (β = .09, p < .01). However, this association was not robust to covariates (β = .03, p > .05). One alexithymia subscale, Difficulty Identifying Feelings, continued to be associated with average social media

Table 2
The Relationship Between Social Media Use and Empathy, Narcissism, and Alexithymia

Social media use	Empathy					Narcissism	Alexithymia			
	Emotion recognition	Perspective taking	Empathic concern	Fantasy	Personal distress	Narcissism (NPI-16)	Alexithymia total	Difficulty describing feelings	Difficulty identifying feelings	Externally oriented thinking
Checking Twitter	−.19* (−.16*)	−.06* (−.06*)	−.06* (−.04)	.06* (−.02)	.11*** (.05~)	.16*** (.10***)	.05~ (.00)	.05~ (.00)	.05~ (.01)	−.01 (−.01)
Posting on Twitter	−.16* (−.15*)	−.04 (−.04)	−.05~ (−.04)	.06~ (−.01)	.09** (.04)	.14*** (.11***)	.07* (.04)	.06~ (.02)	.08** (.05~)	−.01 (−.01)
Checking Facebook	−.09 (−.06)	−.08** (−.07**)	−.05~ (−.03)	.12*** (.01)	.15*** (.08**)	.12** (.07*)	.09** (.03)	.09** (.01)	.12** (.06*)	−.03 (−.02)
Posting on Facebook	−.23* (−.26*)	−.04 (−.04)	.01 (−.00)	.03 (−.01)	.07* (.03)	.16*** (.08*)	.06~ (−.04)	.03 (.01)	.11*** (.08***)	−.04 (−.04)
Using Instagram	−.12 (−.16)	−.11*** (−.10**)	−.05 (−.04)	.04 (−.09**)	.15*** (.06*)	.16*** (.16***)	.08* (.02)	.06~ (−.02)	.10*** (.03)	−.00 (.02)
Average social media usage	−.12~ (−.10)	−.09** (−.09**)	−.05 (−.04)	.09** (−.04)	.16*** (.08**)	.20*** (.15***)	.09** (.03)	.08** (.00)	.13*** (.07*)	−.04 (−.02)

Note. $N = 189$ for emotion recognition (lab studies). Frequency ranged from $1 = none$ to $7 = more than every 10 min$. Raw correlation is presented first, and then the standardized β controlling for gender, age, and education (in parentheses). NPI = Narcissistic Personality Inventory. Boldface values indicate an associated *p*-value of <.05.
~ $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

use even with covariates added ($\beta = .08$, $p < .05$). This relationship appeared to be driven by Facebook use (checking and posting), and the relationship between Difficulty Identifying Feelings and other social media platforms was not robust to covariates (Table 2).

Empathy and Social Media Use

Self-reported cognitive empathy (perspective taking) was negatively associated with average social media use even when accounting for covariates ($\beta = -.09$, $p < .01$). This relationship appears to be driven by checking, rather than posting, on social media. Namely, perspective taking was associated with less frequent checking of Twitter and Facebook, and less frequent use of Instagram, even with covariates added (Table 2). Using an objective measure of cognitive empathy (emotion recognition), a similar negative trend with average social media use was found, but this was not robust to covariates ($\beta = -.10$, $p > .05$). Nevertheless, participants who scored higher on the emotion recognition task reported less frequent use of Twitter (checking and posting), and less frequent posting on Facebook, even taking into account participants' age, gender, and education as covariates (Table 2).

Emotional empathy (Empathic Concern) was unrelated to average social media use when taking into account covariates ($\beta = -.04$, $p > .05$). Although emotional empathy was negatively associated with less frequent checking of Twitter, this association disappeared when covariates were added. All other types of social media use were unrelated to Empathic Concern (Table 2). In addition, Fantasy was also unrelated to average social media use when taking into account covariates ($\beta = -.04$, $p > .05$). Although there were some positive relationships between Fantasy and social media use, these were also no longer significant when considering covariates. However, when including covariates, there was a significant negative correlation between Fantasy and Instagram use ($\beta = -.09$, $p < .01$).

In contrast to the other empathy measures, there was a significant positive relationship between the more self-focused subscale, Personal Distress, and average social media use even with covariates added ($\beta = .08$, $p > .05$). This positive relationship was consistent for all measures of social media use when no covariates were added, but only two remained significant when covariates were added (checking Facebook and using Instagram; Table 2).

Updated Mini Meta-Analysis

Our updated mini meta-analysis (Table 3) indicates that on average, social media use is unrelated to both cognitive empathy, $r = .06$ (95% confidence interval [CI] [−.04, .16]; $z = 1.18$, $p = .24$), and emotional empathy, $r = .08$ (95% CI [−.02, .18]; $z = 1.59$, $p = .11$).

However, subgroup analyses revealed that the correlation between social media use and empathy differed based on two moderating variables. Results differed based on the geographical location the research was conducted in, $Q(1) = 32.02$, $p < .001$. Studies conducted in Europe (Spain, the Netherlands, the United Kingdom) find a positive relationship between social media use and empathy, $r = .16$ (95% CI [.11, .21]; $z = 6.14$, $p < .001$), whereas studies conducted in the United States found a marginally *negative* correlation, $r = -.04$ (95% CI [−.09, .01]; $z = -1.76$,

Table 3

Updated Mini Meta-Analysis on the Relationship Between Social Media Use and Empathy (Cognitive and Emotional)

Study	N	Age	Region	Percentage female	Year	Media type	r	Confidence interval	Z	p
Alloway et al. (2014)	410	18–50	United States	75	2013	Facebook chat, photo, video, link	0.030	[−0.067, 0.126]	0.605	.545
Carrier et al. (2015)	1,390	23.39	United States	58	2013	General use	−0.040	[−0.092, 0.013]	−1.49	.136
Errasti et al. (2017)	503	14.62	Spain	45.9	2014	Facebook and Twitter frequency	0.170	[0.084, 0.254]	3.839	<.001
Powell and Roberts (2017)	100	22.57	United Kingdom	50	2015	Duration of digital interactions	0.280	[0.088, 0.452]	2.833	.005
Vossen and Valkenburg (2016)	942	12.93	Netherlands	50.4	2015	Social media frequency	0.170	[0.107, 0.231]	5.260	<.001
Current study	1,249	27.55	United States	69.7	2013	Social media frequency	−0.050	[−0.105, 0.005]	−1.766	.077
Meta-analysis emotional empathy (trait empathic concern)							0.059	[−0.040, 0.157]	1.176	.240
Alloway et al. (2014)	410	18–50	United States	75	2013	Facebook chat, photo, video, link	0.050	[−0.047, 0.146]	1.010	.313
Carrier et al. (2015)	1,390	23.39	United States	58	2013	General use	−0.060	[−0.112, −0.007]	−2.237	.025
Errasti et al. (2017)	503	14.62	Spain	45.9	2014	Facebook and Twitter frequency	0.110	[0.023, 0.196]	2.470	.014
Powell and Roberts (2017)	100	22.57	United Kingdom	50	2015	Duration of digital interactions	0.290	[0.099, 0.460]	2.941	.003
Vossen and Valkenburg (2016)	942	12.93	Netherlands	50.4	2015	Social media frequency	0.150	[0.087, 0.212]	4.631	<.001
Current study	1,249	27.55	United States	69.7	2013	Social media frequency	−0.090	[−0.145, −0.035]	−3.186	.001
Meta-analysis cognitive empathy (trait perspective taking)							0.080	[−0.019, 0.178]	1.589	.112

$p = .07$). Another subgroup analysis demonstrated that the relationship between social media and empathy depended on participants' ages, $Q(1) = 7.27$, $p = .01$. Research conducted with younger participants (children) shows a positive relationship between social media and empathy, $r = .15$ (95% CI [.06, .24]; $z = 3.19$, $p = .002$), whereas research conducted with adult populations find no significant relationship between social media and empathy $r = −.01$ (95% CI [−.08, .06]; $z = −.34$, $p = .74$). Unfortunately, these two moderators are confounded, as research conducted with younger populations has generally been conducted in Europe (Table 3).

Exploratory metaregression analyses also revealed that data collected in more recent years tends to report a more positive association between social media and empathy ($r = .12$, $p = .009$). This suggests that the relationship between social media and empathy is getting more positive over time. In addition, samples with a greater percentage of women show a marginally more negative relationship ($r = −.008$, $p = .0752$).

Discussion

Our results suggest that among our sample of American adults, social media use is associated with lower social and emotional skills. This is supported both by positive correlations with narcissism and alexithymia (both typified by lower empathy) and negative correlations with measures of cognitive empathy. Critically, however, this result appears constrained to our particular population. When our results are considered in combination with previous research via meta-analysis, we find no significant overall relationship between empathy and social media use. Our meta-analysis suggests that this apparent null result is likely due to the different populations the research included. In contrast to our own research, studies conducted in Europe or among children find a positive relationship between social media use and empathy. In addition, data collected in more recent years tends to report a more positive association between social media and empathy. We encourage future researchers to explore whether the relationship between social media use and empathy depends upon culture, gender, or age, and whether this relationship is changing over time with the wider adoption of social media.

Cultural differences in the way social media platforms are used may offer a potential explanation for the different relationships between social media use and empathy among different populations. A recent study examined the Facebook posts of a sample of White Americans and found they were more likely to post updates about their personal achievements and emphasize their uniqueness compared to Turkish Facebook users (Günsoy et al., 2020). Therefore, although White Americans may tend to use social media in manner consistent with low empathy, this is not a requirement of the platforms themselves, and other populations may use them quite differently. Moreover, it is worth noting that the social norms around acceptable social media use are likely changing over time and also likely depend upon the age of the user.

Notwithstanding the abovementioned caveats, our results replicate an extensive body of research finding that narcissism is associated with more frequent social media use (Liu & Baumeister, 2016; McCain & Campbell, 2018). Our results also support the emerging literature on social media use and alexithymia (Lyvers et al., 2020; Mersin et al., 2020; Youssef et al., 2020).

Together, the results for narcissism, alexithymia, and empathy suggest that some people who struggle with social and emotional skills may be more comfortable online. The current study cannot help to determine why, but we speculate that perhaps social network sites may be appealing because the asynchronous interactions allow people to process social and emotional information in their own time and in their own way. People with higher alexithymia may choose to use additional time to make sense of other peoples' emotional expressions. Those with higher narcissism may use this heightened control to focus on expressing their views without having to devote time to others.

Although no single study can be conclusive, this study reports findings that are robust to participant gender, age, or education. In addition, the use of a behavioral measure of empathy helps to reduce concerns surrounding participant responses to self-report measures (Baumeister et al., 2007). In particular, self-report measures of cognitive empathy appear particularly problematic because participants may be reluctant or unable to report this accurately (Murphy & Lilienfeld, 2019). By using a behavioral measure of cognitive empathy in this study, we can be more confident in interpreting these results as measuring empathy skills rather than reflecting reporting biases.

However, our study did suffer from some methodological limitations. First, we relied on a single self-report measure of empathy (the Interpersonal Reactivity Index), which has been criticized for having too narrow a conception of empathy (Vachon et al., 2014). Future research could use broader self-report measures of empathy, such as the Affective and Cognitive Measure of Empathy (Vachon & Lynam, 2016). Second, we relied on self-reported social media use. Although such measures correlate strongly with actual social media use ($r = .59$ for Facebook and $r = .87$ for Twitter), they often overestimate the time people spend on social media (Junco, 2013). Although using previous day social media use is likely to help us obtain more accurate responses, it also makes the data dependent on the day during which participants answered the question. Social media use may vary across the week, for example, being stronger at the weekend than the rest of the week. Methods that either directly record use (with participant permission) or use daily diary methods over a longer period would be better than retrospective self-report. In addition, we attempted to differentiate how people use social media (i.e., checking vs. posting), but we note that these two behaviors are likely confounded because posting first requires users to log on and thus check their social media. Checking is therefore best considered an umbrella variable that encompasses various social media behaviors.

Fourth, our use of university subject pools and snowball sampling contravenes the assumptions of random selection and representativeness. Our sample was entirely composed of American adults. It is particularly important not to generalize these results to different populations, as our meta-analysis indicates that the relationship between social media use and empathy differs by nationality and/or age. Like our own, most research in this field has been conducted with samples from Western, educated, industrialized, rich, and democratic societies (Henrich et al., 2010; Rad et al., 2018), with the notable exception of recent data collected by researchers in Delhi, India, that found no relationship between social media use and cognitive nor emotional empathy (Sharma et al., 2020). Nevertheless, Western, educated, industrialized, rich, and democratic populations are the largest consumers of social media, so

it is still useful to understand the relationship between empathy and social media within this group. Our result from a sample of American adults is in line with other research using American adults that finds a negative correlation between social media use and cognitive empathy (Carrier et al., 2015).

Finally, as with any correlational study, the direction of causality is unclear. Previous longitudinal research indicates that social media use does *not* lead to increased narcissism. Instead, earlier narcissism predicts later social media use (Walters & Horton, 2015). Regarding empathy, the results are more mixed. A longitudinal study found that social media use predicted cognitive and emotional empathy 1 year later among preteens (Vossen & Valkenburg, 2016). However, another longitudinal study did not replicate this result (Lozada & Tynes, 2017). Our results are consistent with both the idea that screen time may reduce empathy *and* the reverse possibility—that highly empathic individuals may choose to spend less time on social media. There is also the possibility that our results are explained by third variables that we did not assess. Given the wide interest and debates around these topics, more longitudinal and experimental research is needed to better understand potential causal relationships.

The relationship between digital technology and social and emotional skills is complex, with studies showing both positive and negative implications of social media use (James et al., 2017; Waytz & Gray, 2018). Our study is one among many and should be understood within the broader context of the literature. Together these results indicate the nature of the relationship between social media and empathy likely depends on the population in question and how they choose to use social media.

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