EFFECTS OF SOCIAL MEDIA USE ON
COGNITIVE AND AFFECTIVE
EMPATHY

by

Kristin M. Whited

An Abstract
of a thesis submitted in partial fulfillment
of the requirements for the degree of
Master of Science
in the Department of Psychological Science
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Previous research suggests an overall decrease in empathy and interpersonal skills. Studies implicate social media as a variable in these trends; however, much of this previous research has only been correlational. The present study examined the effects of social media use as well as face-to-face interpersonal interaction on state empathy and trait empathy. College students ($N=110$) were randomly assigned to scroll through social media posts, participate in a face-to-face conversation, or complete a word search puzzle. They then completed measures of state empathy, trait empathy, amount of typical social media use, and amount of typical face-to-face interaction. It was hypothesized that increased typical social media use would be related to decreased trait empathy, and that participants in the interpersonal group would display the highest state empathy while those in the social media group would display the lowest. Significant effects of social media on state empathy were found.
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CHAPTER 1
NATURE AND SCOPE OF THE STUDY

The present study examined the effects of social media use as well as face-to-face interpersonal interaction on state empathy and trait empathy. Previous research has focused on technology’s impact on academic functioning (Keller, 2013; Kirschner & Karipinski, 2010; Rosen, 2013) as well as social media’s effect on narcissism (Buffardi & Campbell, 2008) and overall life satisfaction (Krasnova, Wenninger, Widjaja & Buxmann, 2013; Kross, Verduyn, Demiralp, Park, Lee et al., 2013). The results seem to suggest that social media has negative effects on social functioning. In relation to social media use, research has also been conducted on a number of interpersonal issues including an increase in divorce (Kennedy & Ruggles, 2014), an increase in depression and suicide (Compton, Conway, Stinson & Grant, 2006; Xu, Kochanek, Murphy & Arias, 2014), an increase in cyberbullying and online harassment (Duggan, 2014), a decrease in life satisfaction (Stepanikove, Nie & He, 2010; Burke, Marlow & Lento, 2010), and an overall decrease in empathy (Konrath et al., 2011). However, the direct impact social media use has on empathy has not been studied empirically. Furthermore, previous studies have not compared social media interaction with face-to-face interaction, nor considered the confounding effects of typical amounts of social media use. Thus, the present study compared social media and face-to-face interpersonal interaction in terms of their effects on empathy levels while controlling for typical social media use.

The present study used a between-subjects experimental design to study the impact these two different forms of communication have on empathic responses. Male and female college students were randomly assigned to one of three conditions. In condition 1, the participants scrolled through a number of social media posts containing discussions of typical college-student life concerns. In condition 2, participants were subject to this same discussion of life concerns in
a face-to-face interpersonal setting. Condition 3 served as the control condition in which participants completed a short word-find puzzle. Finally, typical frequency of social media use as well as typical frequency of face-to-face interaction was controlled for and resulting levels of state empathy and trait empathy were analyzed.

It was hypothesized that higher levels of typical social media use would correlate with lower levels of trait empathy, and that lower levels of typical social media use would correspond with higher levels of trait empathy. In other words, a negative correlation between level of social media use and trait empathy was predicted. No significant relationship was found between social media use and trait empathy. It was also predicted that students in the social media condition would display lower state empathy levels than students who were subject to the face-to-face interaction condition as well as the control condition. Significant effects of social media use on state empathy were found. The study also explored differences among the three conditions in both state and trait empathy levels when typical social media use was controlled.
CHAPTER 2
LITERATURE REVIEW

People are relational beings and have always needed deep and meaningful relationships in their lives (Feeney & Collins, 2014). Maslow outlined the vital necessity of interpersonal belonging and acceptance in his hierarchy of needs; the third level of this pyramid, love and belongingness needs, encompasses the inherent interpersonal nature of humankind (Maslow, 1943). The field of psychology agrees that this need is manifested in the desire for friends, love, and a sense of community (Boeree, 2006). However, though people are inherently interpersonal, society as a whole does not appear to be living to the full interpersonal potential that it needs. This can be seen in both the decrease of interpersonal skills as well as the increase of interpersonal issues and concerns in recent years (Duggan, 2014; Kennedy & Ruggles, 2014; Konrath, O’Brien & Hsing, 2011; Twenge & Campbell, 2009). This current study addresses a possible cause of these phenomena. This literature review examines three distinct areas relevant to the current research: it outlines the evidence of society’s lack of interpersonal skills, reviews the increase in and effects of social media usage as well as inspects the differences between social media and face-to-face interaction, and conceptualizes the construct of empathy as it pertains to this study.

Decreasing Interpersonal Skills

It seems to be a clear fact of life that people are relational beings (Downie & Llewellyn, 2011). Deep relationships and meaningful connections are a vital part of life and society (Feeney & Collins, 2014). Maslow developed the hierarchy of needs that impacts many fields in psychology, including research, psychotherapy, and more. The third level of this hierarchy is the one that is important to the proposed study; after physical needs and needs for safety are fulfilled, Maslow stated that the third level of human need is interpersonal, involving a sense of love and
belonging (Maslow, 1943). Other recent researchers have agreed with this and have stated “the human need for social connection and belonging is one of our fundamental needs, starting in infancy and lasting throughout our lives” (Konrath, 2013, p. 206). These discussions have encompassed the idea of people being relational; Maslow’s theory of interpersonal need is still widely accepted, researched and used today (Hagerty, 1999; Koltko-Rivera, 2006).

It is clear that a number of influential researchers and theorists in psychology have outlined the importance of interpersonal belonging and interaction. However, society seems to be experiencing a recent decrease of interpersonal skills and abilities; many people in society are no longer acting on or fulfilling the need for interpersonal connection. One author has posited evidence supporting this idea:

The latest neuroscience research tells us that 98% of us have the ability to empathize wired into our brains, but we’re living far below our empathic potential. We now confront a generational challenge – in the face of online culture – to switch on our empathic brains and regenerate our empathy, both as individuals and as a society. (Krznaric, 2014, p. 3).

This problem, society’s decreasing ability to think and act empathically especially in a culture inundated with technology, spurred the development of the current study. The decrease in interpersonal skills, as well as the increasing incidences of a number of interpersonal issues (Konrath, O’Brien & Hsing, 2011; Twenge & Campbell, 2009; Xu, Kochanek, Murphy & Arias, 2014), seems to be clear from the evidence presented in previous research and literature. The possible cause of this phenomenon is the basis of the current study, and is explored later in this review.

The first line of research that has demonstrated this trend in decreasing interpersonal skills is an observed increase in narcissism. One study (Twenge et al., 2008) observed narcissism levels in college students across the country. The authors found a significant increase ($d = 0.41$)
in narcissism as measured by the Narcissistic Personality Inventory (NPI) from 1982 to 2006. The authors noted the significance of the amount of this increase, and also stated their confidence in a large and representative sample. A second study collected data from 37,000 college students and examined the data grouped by decade. These authors also found a similar result; scores for narcissism rose faster in the 2000’s than in all previous decades, by 2006 25% of college students agreed with a majority of the items on the NPI, indicating higher levels of narcissism, and 10% of all Americans in their 20’s evidenced the symptoms of Narcissistic Personality Disorder (Twenge & Campbell, 2009). The evidence seems to suggest that narcissism is on the rise. This is important in regards to interpersonal connection for one main reason: increasing narcissism has been directly linked to a decrease in empathy (Konrath, O’Brien & Hsing, 2011; Twenge et al., 2008).

A second interpersonal issue seen is a decrease in affective attunement, or in other words, a decrease in the ability for one to accurately recognize the emotions others are displaying. One field experiment examined whether increasing face-to-face interaction while simultaneously decreasing media interaction would improve emotion recognition (Yalda, Michikyanb, Morrisc, Garcia, Smalle, et al., 2014). The researchers observed teens who spent five days at an outdoor camp with no screen-based media access, as well as their school-based peers who retained normal media use. Both groups completed pre- and post-tests that measured participants’ ability to infer emotions from facial expressions; the researchers found that after only five days of interacting face-to-face at the outdoor camp, teens’ recognition of nonverbal emotional cues improved significantly more than the control group. The researchers concluded that real social interaction and decreased media use improves understanding of emotional cues. A second study examined affective attunement, but instead used a collegiate sample. The researchers conducted a cross-temporal meta-analysis of college students who completed at least one of the four sub-
scales of the Interpersonal Reactivity Index (Davis, 1983), which is a measure of dispositional empathy. Because the sample included college students, researchers assumed participants were using a number of forms of technology in daily life. The results showed a significant decrease in Empathic Concern, as well as a decrease in Perspective Taking, between 1979 and 2009 (Konrath, O’Brien & Hsing, 2011). Both of these research studies show the potential consequences of increasing technology use on people’s ability to infer emotions in others; this directly affects interpersonal relationships and how one relates to another.

The third interpersonal issue seen is an increase in divorce. There are some researchers who have claimed that divorce rates have stabilized, and even decreased in some scenarios. However, recent research conducted at the University of Minnesota has controlled and corrected for issues seen in this previous research (Kennedy & Ruggles, 2014). These researchers found that when basic changes in the age composition of the married population were controlled for, overall divorce incidence has doubled in recent years. Also, the authors noted this increase in divorce rates has occurred specifically between 1990 and 2008.

There have also been recent increases in depression and suicide rates. Both of these psychological issues often have an interpersonal cause, effect, or both; this can be seen in the substantial effect that interpersonal relationships can have on both depression and suicide. Two large cross-sectional surveys, representative of U.S. samples, were completed 10 years apart (Compton, Conway, Stinson & Grant, 2006). Both surveys used identical instruments, including face-to-face interviews and widely accepted measures. This research found that major depression rates for American adults increased significantly, from 3% to 7%, between 1991 and 2002. The researchers stated these increases were significant for all major ethnic groups of all ages. Later research has shown that the World Health Organization considers depression to be a global epidemic, with 5% of the total population suffering from depression (World Health Organization,
A recent study that examined suicide involved a number of large surveys. From the last time data was made available, national suicide rates have increased two percent in one year (Xu, Kochanek, Murphy & Arias, 2014). While both depression and suicide can be considered a personal and individual phenomenon on the surface, there are interpersonal implications within these two trends. People often cite loneliness as a symptom (or cause) of depression, and also often cite interpersonal or family issues as the reasoning behind attempted suicide (Stravynski & Boyer, 2001).

The wide-spread use of technology also has been shown to diminish interpersonal skills. Specifically, researchers have observed a recent increase in both cyberbullying and online harassment. One researcher (Duggan, 2014) conducted a number of online surveys and found 73% of all adult internet users have seen someone be harassed online, and 40% have experienced it themselves. Also, of those who have been harassed online, half of those adults have exclusively experienced severe types of harassment including stalking. The less severe forms of harassment, including name-calling and embarrassment, are more prevalent. Finally, this same researcher has found that social media is the most common platform for both types of online harassment, and that adults aged 18 to 29 are more likely than any other group to experience it (Duggan, 2014). Another group of authors suggested an important cause that is affecting the increasing prevalence of online harassment: “not having to see the victims’ eyes and being less aware of consequences reduces the potential for empathy and remorse – factors which would lessen the likelihood of future aggression” (Dooley, Pyzalski & Cross, 2009, p. 185).

Technology use has been implicated in other interpersonal issues; research has shown a decrease in life satisfaction rates, especially after technology use. Stepanikova, Nie, and He (2010) collected data from U.S. adults to examine whether loneliness and life satisfaction were related to time spent on internet activities. The researchers’ cross-sectional models revealed two
relationships: internet browsing was positively related to loneliness, and negatively related to life satisfaction. The authors stated that these same relationships persist even when considering other models of analysis. A second study looked at relationships between social media use, loneliness, and social capital (Burke, Marlow & Lento, 2010). Researchers validated their self-report scale and used empirical data collected from Facebook; the researchers also looked at two specific uses of social media, one being direct communication with friends online, and the other being simple consumption of online content. The results showed that when participants reported simply consuming the posts on social media, they felt lonelier and less bonded with friends. However, the research also showed that the few participants who mainly used social media for direct communication felt slightly less lonely than their counterparts. Both of these studies consider technology’s relationship to loneliness and life satisfaction, both of which are interpersonal aspects; however, the last study does reveal the importance of looking at the specific uses of social media before drawing solid conclusions regarding the possible impact of social media usage.

Two final trends seen in previous research and literature are directly related to interpersonal skills; both trends encompass the decrease in interpersonal skills seen recently in society. First, literature has outlined a decrease in the prevalence of secure attachment styles. One article examined changes over time on a commonly used instrument that measures adult attachment styles (Konrath, Chopik, Hsing & O’Brien, 2014). Over 25,000 American college students participated in a cross-temporal meta-analysis. Results showed that the percentage of students exhibiting secure attachment style decreased 8% between 1988 and 2011. Also, the percentage of students exhibiting all of the insecure attachment styles increased 8%, and the percentage exhibiting the dismissing attachment styles increased 7%, in the same time frame.
The authors noted these increases are seen even after controlling for the demographics of age, gender, and race.

Finally, empathy itself has experienced significant decreases in the past decades. One group of researchers (Konrath et al., 2011) studied dispositional empathy specifically from the 1980’s to the late 2000’s. Again, using a cross-temporal meta-analysis method, these researchers found that students who attended college in the 2000’s showed significantly less empathy than students who attended college in the previous decades. In some samples included in the meta-analysis, the authors observed a 50% decrease in empathy between 1990 and 2009. Also, the researchers examined two aspects of empathy together: empathic concern and perspective taking. When observed in combination, the researchers found a decrease of over 40% in 20-year-old college students from 1979 to 2009; however, most of this decline was observed after the year 2000. Twenge (2013) conducted a review of previous literature and examined 11 different studies involving multiple research methods, samples, and measures. Twenge outlined numerous trends including increased narcissism, increased self-esteem, and value shifts toward extrinsic materialism and away from intrinsic importance. The author combined these trends and concluded that these are leading to lower empathy, less concern for others, and a decrease in perspective taking. One final piece of evidence is exhibited by leading experts in the field; many of these experts, including Dr. Paul Ekman and Dr. Marc Brackett of the Yale Center of Emotional Intelligence, are noticing this shift in empathy and are responding with major research projects as well as conducting seminars to teach this construct (Kemeney, 2012; Krznaric, 2014; Vilton, 2014). This movement alone seems to point to a general conclusion and consensus among researchers: interpersonal skills, empathy specifically, seem to be on the decline.

In summary, many authors have outlined the evidence of a decrease in interpersonal skills. While the research does not come to an identical conclusion, much of the research falls
into a general consensus that points to the following interpersonal trends: increased narcissism; decreased affective attunement; increased rates of divorce; increased rates of depression and suicide; increased cyberbullying and online harassment; decreased life satisfaction; decreased rates of secure attachment style; and a decrease in empathy. All of the stated evidence seems to point to the negative trends in society’s interpersonal abilities and connections. There is one important fact to note about this conclusion: almost all of these trends have been observed in the last two decades. As in all scientific endeavors, there are many possible explanations for a given observed phenomenon. However, when considering the data, as well as the specific years these trends have been observed, one possible causal factor rises to the surface: the birth of social media and the increase in its use.

**Social Media**

**Social Media Use and Effects.** To best understand the use of social media, as well as its potential effects on those who use it, outlining a brief history of its birth is important. The beginnings of social media first occurred in the early 1990’s with community Bulletin Board System code games, and America Online (AOL) Member Profiles. By the mid-1990’s Amazon and Yahoo had just been created, and the drive to have a computer in every household was underway (EBuisness, 2015). In the late 1990’s, the first versions of modern social media were born, including Classmates.com. The early 2000’s brought the social media sites that are widely recognized today: LinkedIn and MySpace launched in 2003, and Facebook launched in 2004. The Facebook Platform that launched in 2007, which made it possible for third-party developers to create applications that work within Facebook itself, helped to make Facebook the leading social media site worldwide. Twitter was launched in 2006, and had an estimated 200 million users as of September 2013 (Liu, 2014). Mobile computing has also affected the social media world, and the most popular social media platforms of the past several years hinge on the
capabilities of smartphones. Photo and video-sharing applications such as Snapchat and Instagram, the latter of which has now garnered a staggering 20 billion images since the app’s initial inception in October 2010, exist almost entirely on mobile phones (Liu, 2014). The same goes for platforms such as Foursquare, an application in which users use their smartphones to check in to various locations around the globe, and Tinder, a type of dating site. While the early versions of social media can be traced back to the 1990’s, it is clear that the past decade, since 2004, is almost solely when the explosion of the current modern day social media has taken place.

Since its birth, social media usage has experienced exponential increases across cultures, age groups, and platforms. Data from the past five years show a number of these increases. Some of the most social-media-involved groups are teenagers and young adults. Just over half of online teens (55%) used social networking sites in November 2006 and 65% did so in February 2008 (Lenhart, Purcell, Smith & Zickuhr, 2010). In 2012, 26% of internet users ages 18-29 used Twitter, nearly double the rate for those ages 30-49; among the youngest internet users, ages 18-24, fully 31% are Twitter users (Smith & Brenner, 2012). For the first time in 2014, roughly half of internet-using young adults ages 18-29 used Instagram. Adults are also experiencing these increases. In 2012, 67% of adults used Facebook and, in 2014, further increases were observed: 71% of adults who used any form of the internet used Facebook, 23% of online adults used Twitter, 26% used Instagram, 28% used Pinterest; also, for the first time in history, more than half of internet users ages 65 and older used Facebook (Duggan, Ellison, Lampe, Lenhart & Madden, 2015).

Specific platforms and social media sites are observing exponential growth as well. Every major social media platform measured saw significant growth between 2013 and 2014 (Duggan et al., 2015). Instagram not only increased its overall user figure by 9% in one year, but also saw
significant growth in almost every demographic group; in 2014, 49% of Instagram users visited the site daily. Twitter also saw increases in usage across a variety of demographic groups. From 2010 to 2012, Twitter usage quadrupled; in 2012, one in five internet users ages 18 to 24 used Twitter on a daily basis (Smith & Brenner, 2012) and at the end of 2014 one quarter of all internet-using adults used Twitter multiple times a day (Duggan et al., 2015). Facebook’s large base of users continues to be very active. Fully 71% engage with the site daily (and 45% do so several times a day), a significant increase from the 63% who did so in 2013. As in 2013, Facebook continues to be the most popular social media site worldwide. Finally, multiple platform use is also on the rise: 52% of online adults use two or more social media sites, a significant increase from the 42% who did so in 2013 (Duggan et al., 2015).

It is clear from recent data that social media use has increased across many demographics. Recent research has also documented a number of known effects that social media has on its users. First, two separate recently conducted studies suggest that social media use, and specifically Facebook use, decreases overall life satisfaction (Krasnova, Wenninger, Widjaja & Buxmann, 2013; Kross, Verduyn, Demiralp, Park, Lee et al., 2013). One group of researchers used experience-sampling and texted participants five times a day for two weeks to examine how Facebook influenced subjective well-being; their results showed that Facebook use predicted negative shifts in both how the participants felt moment-to-moment and how satisfied they were with their lives (Kross et al., 2013). Another set of authors examined how Facebook use is related to feelings of envy, which, in turn, is related to a decrease the user’s life satisfaction. The authors collected almost 600 responses from Facebook users and found that those who passively follow friends on Facebook report decreased life satisfaction due to envy, as well as find Facebook to be a stressful environment (Krasnova et al., 2013).
A second related variable to social media is increased narcissism. This increase in narcissistic tendencies is widely reported across research literature (Twenge et al., 2008; Twenge & Campbell, 2009); however one recent study focused specifically on social media and narcissism. The authors collected information on users’ levels of narcissistic personality traits as well information on the content of users’ social media profiles. The researchers found that higher levels of social media use were directly related to higher narcissism levels; as a secondary finding, the authors also discovered that specific self-promoting content was related to narcissism as well (Buffardi & Campbell, 2008).

Researchers have also observed social media’s relationship with different social contacts. A number of authors have engaged in intense debates over the direction of this proposed relationship; however, the researchers have agreed that social media seems to be affecting friendships in some way (Cummings, Butler & Kraut, 2002; Vanzuela, Park & Kee, 2009). The first study (Pollet, Roberts & Dunbar, 2011) looked at the effect of social media use on number of friends and level of emotional closeness. The authors collected data from a large sample across a range of age groups; the findings showed that time spent on social media was associated with smaller offline friend networks as well as less emotional closeness to friends. A second study involved a number of separate surveys to attempt to reconcile differences in results found regarding this proposed effect of social isolation. The authors administered four surveys and found two results: internet users do not become more sociable simply because they already display high social abilities; however, internet use is also leading to reduced interpersonal interaction (Nie, 2001). While these articles seemed to find a relatively positive view on internet use, other scientists criticized their findings simply due to outdated information; other scholars now have claimed that due to the rise of social media that this new technology is having negative effects such as eroding the quality of relationships (Richardson & Hessey, 2009).
A fourth effect of social media is increased engagement in multitasking behaviors. The first study (Rosen, 2013) observed middle school, high school, and college students study behaviors; the researchers went to the students’ homes and simply observed them studying for 15 minutes, while noting the technology present in their study environment with a minute by minute assessment of their tasks, as well as administering a questionnaire addressing technology use and GPA. The researchers found a number of key results: all students averaged less than six minutes on task prior to switching to social media use or texting, and also found that those students who accessed Facebook had significantly lower GPA’s than their peers. Other researchers have made comments about these findings. One author stated that these multitasking behaviors will have direct effects on friendships and social relationships, and that social media will enable a communication overload that will result in a lower quality friendship (Keller, 2013). Other research has also found related results in regards to academic effects. A number of studies point to the relationship between social media and poor GPA and study habits (Kirschner & Karipinski, 2010; Walsh, Fielder, Carey & Carey, 2013). While these effects are not necessarily interpersonal in nature, they are still important to note, as the results reveal social media’s ability to change behavior.

A final effect of social media use which is directly related to the current study suggests social media use increases stress levels, which, in turn, decreases empathy. One recent study found that stress can be “contagious” through social media channels. The researchers examined users’ online friend networks as well as their stress levels at certain times. Results indicated a clear connection between social media and increased stress wherein social media makes users more aware of highly stressful events in their friends’ lives, thus increasing their own stress as well (Hampton, Rainie, Lu, Shin & Purcell, 2015). Furthermore, other recent research has found a link between stress and empathy. Researchers observed stress levels in both mice and humans
and how it affected their interactions with others. The researchers suggested that higher stress levels may actually directly be inhibiting feelings of empathy when in the presence of others (Martin, Hathaway, Isbester, Mirali, Acland et al., 2015). This specific effect noted in the literature is vital to the current study and seems to point to the connecting links between social media use and decreased empathy.

In the studies listed above that outlined the relationships between social media use and other variables, there are a number of methodological research limitations. Some studies used self-report surveys which can skew results due to social desirability effects, and a few cited small sample size as a possible limitation. Researchers also have found evidence for both sides of the issue, especially regarding social media’s isolating effect. The studies examined different ways of using social media, from passive following (simply reading others’ posts) to social interaction (messaging a friend). While the studies do differ in some ways, and there is still some debate within specific factions of researchers focusing on social media use, the research seems to suggest an overall consensus of negative effects that social media has on its users. There is one further piece of evidence of import: the previously listed evidence, including both the evidence of social media use effects as well as the evidence for the decrease of interpersonal skills, has occurred primarily since the turn of the second millennium. These dates correspond with social media’s timeline of birth and quick rise to popularity. While the previous literature can only suggest a possible correlational relationship between these two variables at this time, it is an important piece of evidence to keep in mind, as well as a driving force behind the motivation of the current experimental study.

**Social Media Interaction versus Face-to-Face Interaction.** Social media is an important variable in the current study; however, it is also important to look at how social media differs from other types of communication. Therefore, the current study will also examine face-
to-face interaction as well. This section outlines the difference between social media communication and face-to-face communication, as well as the effects face-to-face interaction elicits.

Researchers in this field have stated “the decisions we make are based on true interpersonal influence: social influence, which happens most often, and most powerfully, face-to-face” (Keller & Fay, 2012, p. 27). These same researchers also have gone on to say that their research findings suggest that at least 90% of influential conversations people have happen offline, while only 8% of this type of communication happens on social media. Another researcher agreed (Keller, 2013, p. 10), and stated that “there has been a shift in the way we communicate; rather than face-to-face interaction, we’re tending to prefer mediated communication” and went on to note that his research has revealed that interactions on social media tend to produce weak ties, while in-person interaction builds more personal connections. While it may seem intuitive that social media and face-to-face interaction are vastly different in type of connection as well as result, this idea has also been shown to be true in research; these authors have only touched on the many differences that exist between these two forms of communication.

One author stated “for several millennia, humans’ primary method for social learning and communication has been face to face” (Yalda et al., 2014, p. 387). There has been much research examining the effects face-to-face interaction has on people as well as interpersonal relationships. Drolet & Morris (2000) looked at the effect face-to-face communication had on negotiation outcomes. The researchers compared face-to-face negotiation with side-by-side discussions, or discussions that occurred when the two parties were not facing each other, and found that the dyads that communicated face-to-face arrived at quicker and more beneficial agreements than the partners who discussed without being able to see each other.
Research seems to show clearly that face-to-face communication has different outcomes and benefits as compared to communication that occurs without facial interaction; a number of other studies have expanded upon this conclusion. Leading experts in the field of emotion have agreed that roughly 90% of an emotional message happens on a nonverbal level (Goleman, 2006; Preece & Ghozati, 2001). Also, research studies have examined the intersection of face-to-face interaction and empathy. One group of researchers (Saarela, Hlushchuk, Williams, Schurmann, Kalso et al., 2007) studied brain activity while the participant either experienced a painful stimulus, or observed another person in pain. Results showed that participants experienced nearly identical brain activity during both actual personal pain and observed pain. The authors stated that these findings imply that empathic responses to pain are largely experienced through facial interaction and the mirroring systems in the brain. This finding seems to reveal that empathy requires face-to-face interaction, which is germane to the current study. Another study used a similar design, and found that certain regions of brain activity in the pain centers correlated significantly with the subjects’ empathic ability levels (Schulte-Ruther, Markowitzch, Fink & Piefke, 2007).

Another group of researchers looked at the experience of empathy through facial interaction on an unconscious level (Dimberg, Thunberg & Elmehed, 2000). All participants viewed a series of faces on a computer screen; however, the faces displaying strong emotions were only shown for 30 milliseconds, so the exposure to these emotions occurred on an unconscious level. Despite this unconscious exposure, these participants reacted with matching facial expressions as well as self-reported levels of the emotion that was shown on the screen. The authors stated that these findings demonstrate the particularly important unconscious aspects of emotional face-to-face communication. Sonnby-Borgstrom (2002) utilized a similar research design. This researcher again displayed emotional facial expressions on a computer screen;
however, they showed these facial expressions for a longer period of time, and also examined differences between participants with high and low emotional empathy abilities. The results showed a significant difference in one area: participants high in emotional empathy showed a significantly stronger correlation between the facial expressions on the screen and their own reactionary facial expressions. However, no difference was found between high and low empathy participants for their self-reported feelings after seeing the faces on the screen. The author noted these findings seem to show that emotional empathy is related to differences in automatic somatic responses, or affective empathy, but not to conscious cognitive processing of the emotions. In other words, facial expressions seem to be necessary for affective empathy, but not for cognitive empathy.

It seems to be clear from the above studies that face-to-face interaction has a significant relationship with empathy. Also, there seems to be little debate between leading researchers on this proposed conclusion. Synthesizing additional researchers’ work in this area, it is noted that observing emotional reactions in faces seems to be key to the experience of empathy. Due to mirror neurons, as well as emotional experiences that result from simply arranging one’s face into a certain expression, empathy can be elicited and acted upon (Decety & Ickes, 2009; Goleman, 2006). One author summed up the conclusions of these related studies well: “empathy itself is supported by, and requires, the embodied expression and communication of emotion that the face provides” (Cole, 2001, p. 7).

**Definition of Social Media.** This section has covered the history of social media, the recent increase in use of social media, as well a comparison of social media communication and face-to-face communication and their presumed effects. However, it is also important to note a specific definition of social media. The term “social media” can have a number of different meanings to different people, in part due to its fast-growing expansion and increase in the
number of platforms. For research use, a working definition of social media must be established. For the current study, the statistics on the use of certain social media platforms by college-aged students were used for this definition. Because the three top platforms in use by young adults are Facebook, Instagram, and Twitter, these three platforms were the only three utilized in the study (Liu, 2014). Therefore, for this current research the definition of social media stands as follows: personal posts written, and personal pictures placed, on the three platforms of Facebook, Instagram and Twitter.

**Empathy**

The third piece of this literature review discusses the construct of empathy. The above literature described how empathy can be a vital aspect of discussions on social media as well as social communication and interpersonal connectedness. Many authors have researched the construct of empathy, and a number of theories conceptualizing empathy exist. This section will examine the broad definition of empathy, the sub-constructs of state empathy and trait empathy, and the benefits and problems associated with empathy and empathy research.

Hakansson and Montgomery (2003) scrutinized the overarching components that make up empathy as a whole. The researchers analyzed participants’ narrative accounts of situations in which they had experienced or shown empathy. Through a content analysis of these narratives, the authors found four major components of the empathy construct: the empathizer understands the target’s situation, the target experiences at least one emotion, the empathizer has experienced a similar situation before, and the empathizer is concerned for the target’s well-being. This study demonstrated the major pieces that make up the construct of empathy.

Other research has examined the physiological qualities of empathy. Singer and Lamm (2009) conducted an in-depth review and discussion of the current literature on this subject. The authors noted that there is consistent evidence which shows that the sharing of emotions with
another activates the same neural activity that is present during the first-hand experience of a given emotion. The authors also noted that most of this neural activation seems to be automatically activated, and due to a number of factors including interpersonal relationship and perspectives, empathy seems to be a highly contagious phenomenon. A second study supported this conclusion (Levenson & Ruef, 1992). The researchers observed that participants demonstrated the same physiological patterns as the observed person who was experiencing negative affect; because of these physiological similarities, the participants were also able to identify the correct negative affect in the other person. Both of these studies support each other, as well as an important conclusion: empathy exists in part as a physiological phenomenon.

To further define empathy as a construct, other authors looked at how empathy was utilized in relationships (Reynolds & Scott, 1999). One study reviewed relevant literature and noted a number of important consistencies. The authors stated first that empathy has been shown to be a crucial piece of all helping relationships. This shows the necessity of empathy in interpersonal interaction. Also, the authors noted that this conclusion remains unchallenged in the literature; however, while the specific definition of empathy is still debated, most researchers have agreed that empathy involves the ability to communicate some understanding of the other person’s world. It seems to be clear in the literature that empathy is undoubtedly a construct both necessary to, as well as an effect of, interpersonal relationships.

Finally, the recent research on empathy seems to show four very distinct aspects of the construct: cognitive and affective empathy, and state and trait empathy. Numerous recent authors have agreed on the two-factor organization of cognitive and affective empathy; this split has been fairly widely researched and discussed, and a general consensus has been reached. One pair of researchers noted this by stating that empathy can be defined by two specific aspects that include “feeling grasping which involves a cognitive dimension, and the social dimensions of relating to
the emotions of another human being” (Engelen & Rottger-Rossler, 2012, p. 3). Other authors have reached similar conclusions, and have noted that both cognitive perception, as well as affective perspective taking are necessary for empathy to occur (Batson & Coke, 1981; Oswald, 1996). The second aspect of empathy, state empathy and trait empathy, will be more thoroughly discussed, as this pair is particularly germane to the current study.

**State Empathy.** State empathy and trait empathy are more widely debated than the cognitive-affective split. A number of authors consider empathy to exist in the state form, some think empathy is only a stable personality trait, and still others conceptualize empathy as both state and trait, depending on the situation (Duan & Hill, 1996). It is clear from the divide in the literature that this topic does not experience the same general consensus.

Duan and Hill (1996) cited numerous authors who agreed that empathy only occurs in the state form. They cited many researchers throughout history, including “Barrett-Lennard (1962), Greenson (1960, 1967) and Rogers (1949, 1951, 1957, 1959), who considered empathy to be a situation-specific cognitive-affective process” (p. 262). Here, the key word in their definition is “situation-specific” which refers to the state form of empathy occurring only in short moments, and is dependent upon the context of the situation. These authors argued that empathy only exists when the person is in a specific situation that induces empathy, and that empathy ceases to exist once this situation passes.

There also have been more recent authors who fall on the state side of the empathy debate. These authors have created a number of working definitions for state empathy. One group of authors cited state empathy to be “an emotional reaction in a particular situation” (Wilson, Linz, Federman, Smith, Paul et al., 1999, p. 12). A second set of authors gave this definition: “‘state empathy’ describes the empathic concern evoked in the here-and-now” (Loggia, Mogil & Bushnell, 2008, p. 170). Clearly, there are researchers who have agreed with each other and have
undoubtedly shown state empathy to be a concrete construct that exists both in empirical research as well as the natural world. When one combines all these authors’ definitions for state empathy, it can be seen that this form of empathy can be conceptualized as such: an emotional reaction or empathic concern that is evoked by a specific situation for only the duration of that situation. This will be the conceptual definition used for state empathy in the current study.

**Trait Empathy.** On the other side of this empathy dyad is trait empathy. Like state empathy, a number of researchers have endorsed this form of empathy. The authors of one review article again cited many researchers from history, including “Buie (1981), Sawyer (1975), Hogan (1969), Rogers (1957), and Davis (1983), who argue that empathy is disposition or orientation,” namely a stable personality trait (Duan & Hill, 1996, p. 262). This side of this empathy dyad has been more recently researched, as compared to state empathy. Most authors have agreed that this is due to the rise in personality research as well as the field of cognitive psychology. While state empathy does not fall into these two categories of study, both state empathy and trait empathy have been supported by notable research as tangible constructs related to empathy.

A number of authors who have done recent research on trait empathy have created working definitions of this construct. Researchers who have examined both state and trait empathy defined trait empathy as such: “a trait or a more stable personality characteristic” (Wilson et al., 1999, p. 12). A second set of authors gave a similar definition: “‘trait empathy’ refers to the dispositional tendency to respond empathically to every-day life situations” (Loggia, Mogil & Bushnell, 2008, p. 170). Combining the definitions from previous literature gives a good overview of trait empathy where trait empathy can be seen as a stable personality construct that refers to the dispositional tendency of a person to respond empathically in many situations.
One group of leading researchers in this field has studied trait empathy extensively and has created reliable instruments to measure this construct. These authors have conducted many studies on trait empathy and through factor analyses have found five distinct sub-components of this concept (Reniers, Corcoran, Drake, Shryane & Vollm, 2011). The first sub-component is perspective taking. Perspective taking involves intuitively putting oneself in another person’s shoes. The authors stated this component places an emphasis on emotion processing that is done by the one who is taking another’s perspective. The second sub-component is online simulation. Online simulation is defined by an effortful attempt to put oneself in another person’s position by imagining what that person is feeling. The authors stated an example of this component might be “Before criticizing somebody, I try to imagine how I would feel if I was in their place”; this component is similar to the first component of perspective taking, but online simulation takes it a step further by specifically including imagining the other’s emotions (Reniers et al., 2011, p. 90).

The authors note a distinct, as well as broader split of trait empathy that occurs in these five sub-components wherein these five components can be separated into two groups, one representing cognitive empathy, and the other affective empathy. Then, both cognitive empathy and affective empathy combine to create the overarching construct of trait empathy. Thus, these two first sub-components of perspective taking and online simulation represent the cognitive piece of trait empathy.

Affective empathy represents the other of the two groups with three sub-components that make up this group. The third sub-component is emotion contagion. Emotion contagion examines the automatic mirroring of the feelings of others, so a participant high in emotion contagion would exhibit sadness around others who were sad, and would feel happiness around others who were cheerful. The fourth sub-component is proximal responsivity. Proximal responsivity looks at the responsiveness aspect of empathic behavior. This component is
illustrated by the affective response when witnessing the mood of others in a close social context. Again, this component is similar to the component of emotion contagion, but the authors stated that instead of simply mirroring the observed emotion, the person displaying this construct would have an actual response to a person’s mood. The fifth and final component is peripheral responsivity. Peripheral responsivity is similar to proximal responsivity, but instead occurs in a detached manner. An example of this component would be “I usually stay emotionally detached when watching a film.” In a sense, peripheral responsivity is the inverse of proximal responsivity (Reniers et al, 2011).

These five sub-components of trait empathy, as well as the two sub-groups of cognitive empathy and affective empathy seem to fully encompass the construct. However, overall, trait empathy can still be conceptualized as a stable personality construct that refers to the dispositional tendency of a person to respond empathically in many situations. All five sub-components reflect this same definition in detail. As compared to state empathy, trait empathy is a deeper and more complex aspect reflected in the number of sub-components as well as the research on trait empathy. Because of this, all five sub-components of trait empathy will be examined in the current study.

**Benefits and Problems with Empathy.** To fully conceptualize and understand empathy, examining its benefits and issues is important. Empathy has a number of cited benefits that occur in many situations. Specifically, empathy has been shown to be useful and beneficial in interpersonal relationships. One group of researchers (Richardson, Hammock, Smith, Gardner & Signo, 1994) conducted a number of studies looking at how empathy acted as an inhibitor of interpersonal aggression. The researchers manipulated threats towards the participants and then noted how the participants used empathy in their responses; a total of three studies were conducted, and the authors found a number of important results. First, the authors noted that
dispositional, or trait, empathy correlated negatively with both self-reported aggression as well as responses that showed little concern for the other. In the second study the authors found that when participants were instructed to focus on the other person, as opposed to the task, both aggression levels and threat levels were lowered. Finally, the authors found that perspective taking inhibited aggression for moderate threats for both males and females. All of these results show a negative relationship between empathy and aggression and they point to the benefit that specific aspects of empathy can have on interpersonal interaction. A second study (Ickes, 1997) observed empathy in conversation as well as relationships. This author noted that empathic accuracy and understanding the states of others is vital to successful social interaction. In the research, the author found that empathic accuracy has been linked to positive peer relationships, adolescent adjustment, and stable adult relationships. Both of these studies portray the importance as well as the benefits empathy can have on positive and successful connection with others.

Empathy also has other benefits that have been noted in the literature. One study examined empathy’s effect on cooperation in social dilemmas (Rumble, VanLange & Parks, 2010). The authors stated that they hypothesized that actions taken to “go the extra distance,” which were motivated by feelings of empathy, could reduce social dilemma and incidents of noncooperation. The results showed that negative effects from noncooperation were absent when empathy-motivated cooperation with another was exhibited. The researchers concluded that empathy has broad benefits for social interaction, and specifically for coping with noncooperation behaviors. Another group of authors conducted a review of empathy research, and provided an overview of a number of empathic benefits including an increase in sensitive help offered to others, less aggression, increased cooperation in conflict, and improved attitudes
towards stigmatized groups (Batson, Ahmad & Stocks, 2004). These authors concluded that many interpersonal and overall social benefits are associated with the construct of empathy.

While there are numerous benefits due to empathy present in society as well as previous research, some scientists have also illustrated some issues with empathy and empathy research. Two authors stated one of the most cited and persisting problems with this construct: literature has failed to agree on a single definition of empathy (Levenson & Ruef, 1992). This is a wide-reaching problem, especially in empirical research, and is the reason why many authors have criticized empathy research as a whole. Another issue involves how empathy is measured. The same authors noted that there are many self-report empathy measures, but most of these have low inter-correlations, low reliability, and low validity (Levenson & Ruef, 1992). Many authors have also brought up issues with self-report measures themselves, including a social desirability effect as well as estimation error. While this is true for some older empathy measures, some of the more recent instruments seem to have been corrected for most of these problems. A final issue regarding empathy research is identified in a recent article: “the concepts of empathy, sympathy, and role taking are frequently embedded in theories…however, the interrelations of empathy, sympathy, personal distress, and related cognitive processes have not been adequately explored, conceptually or empirically” (Eisenberg, Shea, Carlo & Knight, 2014, p. 63). All of these issues, in some degree, seem to be present in at least some of the research conducted on empathy. These researchers have summed up these issues, as well as offered motivation for the current research; while some problems persist, a number of these problems have been adequately addressed and continuing research on empathy is needed.

The conclusions found in these articles are important to the current study as empathy has been defined as a useful interpersonal capacity. Thus the construct of empathy served as the dependent variable in this study.
Hypotheses

The hypotheses and explorations for this study were as follows:

1. Participants with higher typical social media use, as evidenced by higher scores on the Media and Technology Usage and Attitudes Scale, would display lower trait empathy, as evidenced by lower total scores on the Questionnaire of Cognitive and Affective Empathy. The sub-components of trait empathy were also be explored.

2. Participants who were experimentally exposed to social media would display lower state empathy levels as compared to participants who are assigned to interpersonal interaction or control conditions, as evidenced by lower scores on the Emotional Response Questionnaire. Participants subjected to the interpersonal interaction experimental group would display the highest state empathy levels.

3. Differences among the three conditions in both state and trait empathy were explored when typical social media use was controlled with the Media and Technology Usage and Attitudes Scale and Interpersonal Interaction Scale serving as the covariate variable(s).
CHAPTER 3
METHODOLOGY

Participants

A total of 110 participants volunteered for the current study and all participants were college students from the University of Central Missouri (UCM). The age range of the participants was 18 to 45 with an average age of 19.9 years old ($SD = 3.4$). The majority of the participants identified as Caucasian (70.9%), 18.2% identified as African American, 7.3% identified as Asian, and 3.6% identified as Hispanic. Freshman students (65) represented the largest group of participants (59.1%), followed by 25 sophomores (22.7%), 12 seniors (10.9%), and 8 juniors (7.3%). The majority of the participants identified as female (80.0%) and 20.0% identified as male. The study was advertised on SONA, the Department of Psychological Science’s website for recruiting student participants. Students had the opportunity to volunteer to participate in exchange for credit in undergraduate psychology classes being offered as compensation for participation in the study.

Materials

Condition treatment materials. There were three separate condition treatment groups for this study. Participants in the social media experimental group utilized lab computers to look at and read screen shots of various social media posts (see Appendix A). These were screen shots of a confederate’s Facebook, Twitter and Instagram account posts; while the content and name associated with the posts were fictitious, real pictures were used. These social media posts discussed and displayed a number of personal life issues as described by the research confederate. The issues displayed on these posts included problems with old high school friends as well as new college roommates, difficulty adjusting to UCM college class work, concerns about poor introductory course grades, and family issues. These issues were chosen based on
general knowledge of widely occurring freshmen college student concerns that are of moderate severity; also, the hashtags used in these fictitious social media posts include popular hashtags used by college students. The participants were told that a current UCM student consented to sharing her own social media posts for research purposes, but that her name had been changed.

Participants in the interpersonal experimental group were subject to mild deception that involved a controlled drawing for roles, a confederate acting as a fellow participant, and a fictitious scripted presentation of the confederate’s life issues. The research confederate acted as a fellow participant; the researcher instructed all participants to draw one of two available numbers from a bag to assign roles for the current task. While participants thought they were drawing a random number, this drawing was controlled and the confederate always drew the “talker” role. The confederate as the “talker” during the task utilized a previously scripted and memorized speech about her personal life issues (see Appendix B). The content of this scripted story utilized the same fictitious content and wording that was shown in the social media screen shots; as the confederate used real pictures in the social media posts, the appearance variable also remained constant.

Participants in the control group utilized a word find puzzle as the neutral task for the experiment (see Appendix C). Participants were asked to complete a generic word find puzzle that was generated by an online Puzzle-Maker tool created by Education Discovery. The seven words used in the 15-by-15 letter word find were randomly selected from a list of commonly used five-letter and six-letter English words.

**Empathy measures.** One of the empathy instruments measured participants’ state empathy levels, while the other instrument measured trait empathy levels. Both of these instruments were included in this study to correspond with the research design as well as offer data that addressed both the immediate and long-term effects of social media on empathy. The
three treatment groups addressed the specific and immediate situational effects of social media and face to face interaction on the participant. To correspond with this independent variable, the Emotional Response Questionnaire (Batson & Coke, 1981; ERQ) was used as the state empathy measure. On the other hand, the instruments used to measure potential covariates measured the inherent disposition of the participant in regards to typical social media use as well as typical face-to-face interaction. The Questionnaire of Cognitive and Affective Empathy (Reniers, Corcoran, Drake, Shryane & Vollm, 2011; QCAE) was used as the trait empathy measure.

**Emotional response questionnaire.** All participants completed the ERQ (Batson & Coke, 1981) as the state empathy measure (Appendix D). The authors of this scale shortened a 28-item emotional response questionnaire to create the current measure. Their previous research using emotional response questionnaires (Batson & Coke, 1981; Batson et al., 1981) had revealed consistent tendencies for six adjectives thought to reflect empathy (sympathetic, moved, compassionate, warm, soft-hearted, and tender) and eight adjectives thought to reflect distress (alarmed, grieved, upset, worried, disturbed, perturbed, distressed, and troubled.) These 14 adjectives loaded highly on separate, orthogonal factors to create an emotional response measure with two sub-scales: empathy and distress. Consistent with this previous research, a varimax-rotated, principal components factor analysis of the subjects' responses to these 14 adjectives produced a clear two-factor solution (accounting for 67% of the variance and all eigenvalues above 1.0). All six of the empathy adjectives loaded most highly on one factor, and all eight of the distress adjectives loaded most highly on the other, orthogonal factor. For the current study, only the empathy sub-scale of this measure was used. The authors of the ERQ noted a Cronbach’s alpha of .82 for the empathy sub-scale. This state empathy measure has been used in a number of studies (Batson & Coke, 1981; Batson et al., 1981; Loggia, Mogil & Bushnell, 2008; Oswald, 1996; Toi & Batson, 1982); all studies noted Cronbach alpha levels between 0.80
The empathy sub-scale of the ERQ listed 6 adjectives (sympathetic, moved, compassionate, warm, soft-hearted, and tender); the measure instructed participants to rate how much each item described how they were feeling at the present moment. The original measure used a 7-point Likert scale for participant rating \((1 = \text{not at all}, 7 = \text{extremely}; \text{Batson} \& \text{Coke}, 1981)\). However, more recent uses of this measure have used a 5-point Likert scale \((1 = \text{does not at all describe how I feel}, 5 = \text{describes how I feel extremely well})\) with only 5 similar empathic adjectives (concerned, warm, empathic, compassionate, softhearted), and have found reliable and statistically significant results in previous studies (Oswald, 1996; Loggia et al., 2008). Because the more recent versions of this state empathy measure have been able to utilize more recent research, and have also demonstrated multiple reliable uses of the revised scale, the current study also employed the use of the 5-adjective and 5-point Likert scale version as well.

In this 5-adjective version of the ERQ, items are rated on a 5-point Likert scale with lower ratings meaning the adjective does not describe how the participant felt, and higher ratings meaning the adjective does describe how the participant felt. The ratings of all five adjectives were summed to create the participants’ state empathy score on the ERQ. Lower scores on the ERQ suggested the participant had low levels of empathy towards the given subject at the time the measure was given, whereas higher scores on this measure suggested the participant had high levels of empathy towards the given subject at the time the measure was given.

**Questionnaire of cognitive and affective empathy.** As the second measure, the participants completed the Questionnaire of Cognitive and Affective Empathy (Reniers et al., 2011; QCAE; Appendix E). The QCAE is a measure of two types of trait empathy: “cognitive empathy will be understood as the ability to construct a working model of the emotional states of
others, and affective empathy will be understood as the ability to be sensitive to and vicariously experience the feelings of others” (Reniers et al., 2011, p. 85). The QCAE was derived from a number of previous empathy measures, including the “Empathy Quotient (Baron-Cohen et al., 2003), the Hogan Empathy Scale (Hogan, 1969), the Empathy subscale of the Impulsiveness-Venturesomeness-Empathy Inventory (IVE; Eysenck & Eysenck, 1978), and the Interpersonal Reactivity Index (Davis, 1983)” (cited in Reniers et al., 2011, p. 86). This allowed the current instrument to benefit from the strong validity of the four original questionnaires.

The QCAE was created by a process of two authors rating each item on the original measures as belonging to the construct of cognitive empathy, affective empathy, or neither; the authors used previously established definitions of cognitive and affective empathy (Reniers et al., 2011). If both authors agreed in their ratings, the item was included in the QCAE; this procedure resulted in 65 items being included in the first version of the instrument. After an exploratory factor-analysis as well as a separate confirmatory factor analysis, a 5-factor solution was discovered, resulting in the final 31-item measure. The 31 items were separated into five sub-components that consist of the following: perspective taking, intuitively putting oneself in another person’s shoes to see things from his or her perspective; online simulation, an effortful attempt to put oneself in another person’s position by imagining what that person is feeling; emotion contagion, the automatic mirroring of the feelings of others; proximal responsivity, the responsiveness aspect of empathic behavior that is illustrated by the affective response when witnessing the mood of others in a close social context; and peripheral responsivity, similar to proximal responsivity but in a detached context. The two sub-components of perspective taking and online simulation combined to create the sub-scale of cognitive empathy; the sub-components of emotion contagion, proximal responsivity, and peripheral responsivity combined to create the sub-scale of affective empathy (Reniers et al., 2011). Scores from all five sub-
components, both sub-scales, and the overall QCAE total score were analyzed in the current study.

Items on the QCAE were rated on a 4-point Likert scale. The instructions asked participants to indicate how strongly they agree with each item, with response choices as follows: *strongly agree* = 1, *slightly agree* = 2, *slightly disagree* = 3, *strongly disagree* = 4 (Reniers et al., 2011). The authors noted this specific type of Likert scale forces the participants to make a choice on their rating, as a neutral option was not included. Scores for the sub-components of the QCAE were derived by summing the corresponding item scores. Likewise, the scores for the two sub-scales were derived by summing the corresponding sub-component scores. Finally, the total empathy score for participants was calculated by summing the two sub-scale scores. Lower scores suggested that the participant had lower dispositional empathy levels for that specific sub-component or sub-scale; higher scores suggested that the participant had higher dispositional empathy levels. The authors stated these scores can be interpreted reliably in this way for all genders and ages (Reniers et al., 2011).

Convergent validity of the QCAE was demonstrated by strong positive correlations with one other widely-used measure of cognitive and affective empathy (Reniers et al., 2011). Construct validity for the QCAE was also assessed. From previous research, these authors predicted that cognitive empathy would have strong negative relationships with dysfunctional impulsivity and secondary psychopathy. Likewise, the authors also predicted that affective empathy would have strong negative relationships with empathic anger and expressive aggression. Using accepted measures for these constructs alongside the QCAE, the authors found both of these predictions to be true, providing evidence for the QCAE’s construct validity. Finally, gender differences were also examined for the measure; the confirmatory factor analysis
was shown to be consistent across genders and no significant gender differences were reported for the relationships between the sub-scales of the QCAE.

**Media and technology usage and attitudes scale.** Finally, the participants completed three subscales of the Media and Technology Usage and Attitudes Scale (MTUAS; Rosen, Whaling, Carrier, Cheever & Rokkum, 2013). The creators of this instrument noted that although it is appealing to measure actual time participants spend on social media, this is problematic as previous studies have shown these self-reported time measures to have poor validity and reliability. To correct for this problem, as well as offer a new comprehensive measurement tool, the researchers created the MTUAS (Appendix F). To create the MTUAS, the researchers utilized a literature search and pilot studies to gather 68 items from a wide variety of previous and valid technology use instruments. This original 68-item measure was evaluated using two separate studies (669 participants) and a varimax-rotated factor analysis; this resulted in the final 60-item measure with 11 different media usage subscales and four technology attitudes subscales. As the researchers noted, these subscales can be used separately because they are all internally reliable and externally valid. This study utilized only the three following media usage subscales: General Social Media Usage, Online Friendships, and Social Media Friendships. These three sub-scale scores were summed to create the participants’ MTUAS total score.

The General Social Media Usage subscale has 9 items and a Cronbach’s alpha coefficient of .97. This subscale is scored on a 10-point frequency response scale with points ranging from 1 being “never” to 10 being “all the time”; the items in this subscale included how often participants check social media sites, and how often they post status updates. The Online Friendships subscale has 2 items and a Cronbach’s alpha coefficient of .83. This subscale is scored on a 9-point numerical scale ranging from “0” to “751 or more”; these numbers indicate how many online friends each item is referring to. The items in this subscale included “How
many people have you met online that you have never met in person?” and “How many people do you regularly interact with online that you have never met in person?” Finally, the Social Media Friendships subscale has 2 items and a Cronbach’s alpha coefficient of .96. The subscale is scored on the same 9-point numerical scale as the Online Friendships subscale and included the items “How many friends do you have on Facebook?” and “How many of your Facebook friends do you know in person?” Scoring for each subscale as well as total scoring is conducted by summing the score of each item (with lower frequencies and numbers having lower scores, and higher frequencies and numbers having higher scores). The authors stated that a total score for the full-scale MTUAS can be derived by summing scores from all sub-scales; therefore, the MTUAS score for this study was a summation of all items on the three sub-scales listed above. A higher score on the MTUAS indicated increased social media use or an increased number of social media friends relative to other participants (Rosen et al., 2013).

The researchers noted that all subscales of the MTUAS showed strong reliability and validity. Three similar validity measures were used in the two studies used to create the measure, and all 15 subscales showed strong correlations with the predicted matching measures. The authors noted that these correlations, along with the high Cronbach’s alpha coefficients, demonstrated the statistical power and stability of the MTUAS. This measure has been shown to be both reliable and valid for all ages and genders, and finally the researchers concluded that, although two subscales directly relate to Facebook, the individual items have been created in such a way that they can be modified to fit any social networking site (Rosen et al., 2013).

Interpersonal interaction scale. This instrument was created specifically for use in the current study. It was utilized alongside the MTUAS scale as a measure of typical interpersonal interaction, specifically typical frequency of face-to-face interaction as well as typical number of friends one has met in person. This interpersonal interaction scale (IIS) allowed the study to look
at interpersonal connection in a way that matches the study design (Appendix G). These instruments complemented each other and enabled the study to examine both the relationship between social media use and empathy as well as the relationship between interpersonal interaction and empathy. The MTUAS and the IIS scores were utilized separately in the statistical analyses for the study.

The interpersonal interaction scale followed the format of the MTUAS, and had two sub-scales. The first sub-scale was the face-to-face interaction sub-scale and has eight items that were rated on the same 10-point frequency response scale as the MTUAS with points ranging from 1 being “never” to 10 being “all the time.” An eleventh point labeled “not applicable to me” was added to the frequency scale for this sub-scale to account for any items or relationships that may not apply to every participant. Any item that a participant marked as “not applicable” was eliminated from their measure and this item elimination was accounted for in the final score. The items in this sub-scale included “How often do you talk to your friends face to face?” and “How often do you talk about your school concerns with someone face to face?” The second sub-scale was the friends sub-scale and had four items that are rated on 9-point numerical scale ranging from 1 being “0” to 9 being “41+”; the items in this sub-scale included “How many friends do you have?” and “How many people would you share anything with?”

Similar to the MTUAS, the ratings for each item on the IIS were summed to create the participant’s sub-scale score. Likewise, sub-scale scores were summed to create the overall score; the IIS score for this study was a summation of all items listed on this instrument. Lower scores on the IIS suggested lower frequency of interpersonal interaction in a face-to-face setting; higher scores suggested the participant was engaging in more frequent face-to-face interpersonal interaction.
Procedure

The current study was conducted as a between-subjects experimental design. When participants arrived for the study, they were randomly assigned to one of the three treatment groups. Participants completed the study individually and were brought into the research lab in which the study occurred. The participant was told that he/she was participating in a study on task completion; this mild deception in the study description was used to help eliminate participants’ social desirability responses relating to empathy. The participant was informed of his/her rights as a participant, and was given informed consent forms to sign after this discussion (Appendix H). After completing these forms, participants began their assigned condition treatment.

There were three treatment groups in this study, with each participant being randomly assigned to only one of the three treatments. In the social media experimental group, the participant was asked to sit in front of the computer at the computer desk with the social media screen shots already on the screen. The participant was instructed to scroll through all the social media screen shots and read each post. The interpersonal experimental group used mild deception to engage the participants in interpersonal interaction. In this treatment group, the real participant and the confederate participant were asked to sit at a table facing the researcher. These two “participants” were instructed that they would be completing a listening task. Each participant drew a random number from a box and was told that whoever draws the number one would be assigned as the talker and the number two would be assigned as the listener; however, the number drawing was controlled in such a way that allowed the confederate participant to always draw the number that assigned the talking role. Once both participants had drawn a number, each role’s instruction was given. The researcher instructed the participant (confederate) who drew the talker role to spend two to three minutes introducing themselves and talk a bit
about their experience at school; the researcher instructed the participant who drew the listener role to quietly and respectfully listen to the talking participant. Once instruction had been given, the confederate then began the previously scripted and memorized discussion of her life issues, including the struggle to adjust to college life, issues with past friends and new friends, and poor introductory course grades. These same issues were presented to the participants in the social media group as social media posts. After the confederate completed her discussion as the talker role, the researcher instructed the participants to complete the remaining measures. In the control group, the participant was instructed to sit at a desk in the room. The participant was given one word find puzzle to complete and was instructed to work at his/her own pace on the puzzle.

After the respective treatments had been completed, participants completed the ERQ state empathy measure, the QCAE trait empathy measure, the MTUAS social media usage measure, and the corresponding IIS interpersonal interaction measure in that order. Finally, participants completed a short demographics form that included items addressing sex, age, year in school, and ethnicity (Appendix I). After completing these instruments, participants were debriefed. Debriefing included offering a detailed explanation of what occurred during the study as well as an overview of the deception that was utilized. Participants were also given an opportunity to ask questions or provide feedback to the researcher; participants were given contact information for the experimenter in case further questions or concerns arose. Some participants were offered credit in undergraduate psychology courses as compensation for participation, at the discretion of specific psychology professors.
CHAPTER 4
RESULTS

Means and standard deviations for both dependent variable measures and both covariate
measures were assessed. Means and standard deviations for the ERQ (Batson & Coke, 1981)
state empathy measure and the QCAE (Reniers et al., 2011) trait empathy measure, presented
separately by treatment group condition, can be found in Table 1. Means and standard deviations
for the MTUAS (Rosen et al., 2013) social media use scale and the IIS interpersonal scale,
separated by treatment group condition, can be found in Table 2.

The original planned analyses to address the three hypotheses included a correlational
matrix and a one-way multivariate analysis of covariance (MANCOVA). This original analysis
plan was adjusted because preliminary correlations showed that the QCAE trait empathy measure
was not related to the other state empathy dependent variable nor to the two covariate variables
(MTUAS measure of average social media use, IIS measure of average interpersonal face-to-face
time). These preliminary analyses also showed that only one covariate variable, the IIS
interpersonal measure, had a significant relationship with the ERS state empathy measure.
Because of these findings, a one-way analysis of variance (ANOVA) and a one-way analysis of
covariance (ANCOVA) were used alongside the original correlational matrix to address the
hypotheses. This correlational matrix can be found in Table 3.

Prior to conducting these planned analyses, assumptions of the normality of the data were
checked. When considering the assumptions for the one-way ANOVA, a possible violation of
homogeneity of variance was detected. However, many researchers consider this statistic to be
robust, even when homogeneity of variance is violated, if all treatment groups have
approximately the same number of participants in them (Field, 2013). Because this was the case
for this study, the one-way ANOVA did not violate any assumptions. Assumptions of normality
were also considered for the one-way ANCOVA. Again, a possible violation of the homogeneity of variance was detected; however, because group sizes were again approximately equal, this analysis is considered robust despite this violation. All other assumptions of normality for all analyses were met.

Hypothesis one stated, “participants with higher typical social media use, as evidenced by higher MTUAS scores, would display lower trait empathy, as evidenced by lower total scores on the QCAE measure. The sub-components of the QCAE were also be explored.” To test this hypothesis, the correlational matrix was assessed for significant correlations among the variables. Because there was no significant correlation between the QCAE trait empathy scores and the MTUAS social media score nor the IIS interpersonal measure, hypothesis one was not supported by this data. The subscales within the QCAE were also assessed; there was a significant correlation between the MTUAS social media use scores and the Affective Empathy subscale scores of the QCAE, $r(108) = 0.195, p = 0.041$.

Hypothesis two stated “participants who were experimentally exposed to social media would display lower state empathy levels as compared to participants who were assigned to interpersonal interaction or control conditions, as evidenced by lower scores on the Emotional Response Questionnaire. Participants subjected to the interpersonal interaction experimental group would display the highest state empathy levels.” To test this hypothesis, a one-way between-subjects ANOVA was performed on the ERQ state empathy scores to assess whether significant differences on the ERQ scores existed between the three treatment conditions (social media group, interpersonal group, and control group). The result was significant, $F(2,107) = 49.506, p < .001, \eta^2 = 0.48$, indicating that there was a significant difference in state empathy scores across the three treatment conditions. The directions of the mean ERQ scores for each of the three treatment conditions indicate that participants in the interpersonal group displayed the
highest state empathy scores of the three groups, participants in the social media group displayed lower state empathy scores, and participants in the control group displayed the lowest state empathy scores. These data partially supported hypothesis two; while the interpersonal group displayed the highest scores as predicted, the lowest scoring group was the control group instead of the social media group. A Bonferroni’s post hoc comparison was also performed with this one-way ANOVA to assess any significant differences between pairs of the three treatment groups. This post hoc test is recommended when a relatively smaller number of groups is used and is considered to be a relatively conservative post hoc method as compared to other statistics (Field, 2013). Post hoc comparisons using the Bonferroni’s test indicated that the mean score for the interpersonal condition \( (M = 18.333, SD = 3.443) \) was significantly different than the social media condition \( (M = 15.343, SD = 3.316) \) at the \( p < .01 \) level \( (p = .004) \). The mean score for the control condition \( (M = 9.857, SD = 4.309) \) was also significantly different at the \( p < .001 \) level from both the interpersonal and social media conditions.

Hypothesis three was an exploratory hypothesis that stated “differences among the three conditions in both state and trait empathy was explored when typical social media use is controlled for with the MTUAS and IIS serving as the covariate variable(s).” Because only the IIS interpersonal measure showed a significant relationship to the ERQ state empathy measure, and the ERQ state empathy measure and QCAE trait empathy measure did not display a significant relationship with each other, only the ERQ and IIS measures were used in this analysis. To explore this hypothesis, a one-way between-subjects ANCOVA was performed on the ERQ state empathy scores to assess whether significant differences existed among the three treatment conditions when typical face-to-face interaction time, as measured by the IIS interpersonal measure, was controlled for. The result was significant, \( F(2,106) = 46.144, p < \)
.001, $\eta^2 = 0.49$, indicating a significant difference in state empathy scores among the three treatment conditions after typical face-to-face interaction time was controlled for.

Table 1.  
*Mean and Standard Deviations for ERQ and QCAE Empathy Measures Across Treatment Group (N=110)*

<table>
<thead>
<tr>
<th>Treatment Condition</th>
<th>ERQ $M$</th>
<th>ERQ SD</th>
<th>QCAE $M$</th>
<th>QCAE SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interpersonal Group</td>
<td>18.333</td>
<td>3.443</td>
<td>95.515</td>
<td>10.721</td>
</tr>
<tr>
<td>Social Media Group</td>
<td>15.343</td>
<td>3.316</td>
<td>92.143</td>
<td>10.472</td>
</tr>
<tr>
<td>Control Group</td>
<td>9.857</td>
<td>4.309</td>
<td>92.405</td>
<td>9.887</td>
</tr>
</tbody>
</table>

*Note.* ERQ = Emotional Response Questionnaire, QCAE = Questionnaire for Cognitive and Affective Empathy

Table 2.  
*Mean and Standard Deviations for MTUAS and IIS Measures Across Treatment Group (N=110)*

<table>
<thead>
<tr>
<th>Treatment Condition</th>
<th>MTUAS $M$</th>
<th>MTUAS SD</th>
<th>IIS $M$</th>
<th>IIS SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interpersonal Group</td>
<td>7.946</td>
<td>1.962</td>
<td>7.890</td>
<td>2.129</td>
</tr>
<tr>
<td>Social Media Group</td>
<td>7.340</td>
<td>2.116</td>
<td>7.081</td>
<td>2.217</td>
</tr>
<tr>
<td>Control Group</td>
<td>7.489</td>
<td>1.863</td>
<td>6.945</td>
<td>1.707</td>
</tr>
</tbody>
</table>

*Note.* MTUAS = Media and Technology Usage and Attitudes Scale, IIS = Interpersonal Interaction Scale
Table 3.

*Bivariate Correlations for Main Outcome Variables and Covariate Variables (N = 110)*

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ERQ Scores</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. QCAE Scores</td>
<td></td>
<td>.121</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Affective Empathy QCAE Subscale Scores</td>
<td>.065</td>
<td>.679***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Cognitive Empathy QCAE Subscale Scores</td>
<td>.117</td>
<td>.875***</td>
<td>.240*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. MTUAS Scores</td>
<td>.087</td>
<td>.141</td>
<td>.195*</td>
<td>.058</td>
<td></td>
</tr>
<tr>
<td>6. IIS Scores</td>
<td>.218*</td>
<td>.185</td>
<td>.187</td>
<td>.121</td>
<td>.318**</td>
</tr>
</tbody>
</table>

* *p < .05
** *p < .01
*** *p < .001
Previous research has shown that technology, and specifically social media, has a relationship with and possible effect on a number of aspects including academic success, relationships, and overall life satisfaction (Krasnova, Wenninger, Widjaja & Buxmann, 2013; Kross, Verduyn, Demiralp, Park, Lee et al., 2013; Rosen, 2013). In addition, the idea of an overall increase in social and relational issues in society has been supported (Kennedy & Ruggles, 2014; Xu, Kochanek, Murphy & Arias, 2014; Duggan, 2014; Konrath et al., 2011). The purpose of the current study was to compare the effects that social media interaction and face-to-face interaction had on empathy. Specifically, participants’ state empathy and trait empathy levels were assessed when type of interaction was manipulated experimentally and typical day-to-day social media use was controlled. Participants were subject to one of three treatment conditions including a social media interaction, a face-to-face interaction with a confederate, or a word puzzle completion. Scores of state empathy and trait empathy were compared among groups to assess any empathy level differences; also, average social media use and average face-to-face interaction were utilized as covariate variables.

The first hypothesis, that participants with higher typical social media use would display lower levels of trait empathy, was not supported. The participants’ QCAE total score that measures trait empathy did not show a significant correlation with the MTUAS total score that measures typical social media use.

The second hypothesis, that participants who were experimentally exposed to the social media treatment would display lower state empathy levels than participants exposed to the interpersonal interaction or control treatments, was supported by the findings. Participants subject to the social media treatment scored significantly lower on the ERQ state empathy
measure than participants subject to the face-to-face interaction treatment. However, those in the social media group did not display lower state empathy scores than participants in the control condition, as was predicted. The post hoc tests that were performed showed that state empathy scores from all three condition groups were significantly different than the other two groups.

Hypothesis three, an exploratory analysis that looked at the differences in empathy across groups when typical social media use and typical face-to-face interaction were controlled for, displayed significant results. Because of the relationships represented in the original correlational matrix, only the ERQ state empathy measure scores were used as the dependent variable and only the IIS interpersonal measure scores were used as the covariate variable. Participants in each treatment group displayed significantly different levels of state empathy when typical face-to-face interaction was controlled for.

**Explanation of Results**

There are many possible explanations as to why the first hypothesis was not supported. One explanation could be related to the pervasiveness of social media use in society, and specifically in the college student population. The most recent data suggests that the vast majority of college students access multiple social media platforms on a daily basis (Duggan et al., 2015). This sheer amount of social media use may actually affect the sample variance that is necessary for any research study; in other words, the student sample used in this study may not display much difference in how much time they spend on social media, resulting in a lack of clear differences to examine in research.

Another explanation could regard the measures that were used in this study. While the MTUAS (Rosen et al., 2013) measure of typical social media use was a previously created and studied tool, the IIS measure of typical face-to-face interaction was created only for the current study. Even though the format of the IIS was an exact match to the format of the MTUAS, the
questions that were created for this new measure may not demonstrate adequate psychometric properties. Furthermore, it may be that neither the MTUAS nor IIS measure was well suited for the application of this study. The MTUAS was originally a general measure of attitudes toward and use of many different forms of technology including television, computers, and radios. It may be that the two subscales of the MTUAS that were used in this study were better designed for a broader research scope.

A third explanation can be found in the history of social media development and previous personality trait research. While very early versions of social media platforms were first created in the 1990’s, experts in the field generally agree that the social media tools that most closely resemble today’s versions were first used in 2004 with the creation of Facebook (Liu, 2014). Even then, the widespread use of social media did not occur until the late 2000’s (Lenhart, Purcell, Smith & Zickuhr, 2010). This means that college students today will have had, at most, ten years of experience using social media consistently. In terms of personality trait changes and effects, this is a relatively short time. Most experts in personality research agree that personality traits, such as trait empathy, are quite stable and remain relatively unchanged over time (Derlega, Winstead & Jones, 2004). It could be that the effect social media is having on people’s trait empathy levels is not yet detectable. If this is true, it could mean that the college student participants represented in this study have not yet displayed the trait changes that are in the process of occurring with their consistent social media use.

A final explanation for these non-significant results could involve the measurement of the variables used in this correlation. Both of these variables, the MTUAS (Rosen et al., 2013) measure of typical social media use and the IIS measure of typical interpersonal interaction, were measured after the participant completed the treatment intervention. It is possible that the intervention tainted the data that was subsequently collected. However, it is important to note the
reason for this methodological design. All questionnaires were given to the participant after the initial intervention; this is because the researcher sought to keep the true nature of the study hidden from the participant so as to collect data unaffected by social desirability effects. Though there then was a small chance of tainting the data, it seemed more germane to protect the empathic nature of the study from the participant.

As a final point regarding hypothesis one, it is important to note a significant but small correlation. In the correlational matrix, a significant positive relationship between the affective empathy sub-scale of the QCAE (Reniers et al., 2011) and the MTUAS (Rosen et al., 2013) typical social media use measure was found $r(110) = .195, p < .041$. This was the only significant relationship that was detected between social media use and empathy in this study. However, this relationship occurred only within the affective sub-scale of the trait empathy measure, and was not found in the cognitive empathy sub-scale. This could mean that social media is related to a vicarious experience of emotion but does not involve a cognitive modeling of another person’s feelings. Most interestingly, it was a positive relationship, meaning as social media use increases, so does affective empathy levels. This direction was not predicted in this study, as this seems to show higher empathy is related to more social media use. However, again, this only occurred in the affective sub-scale, and could be explained by social nature of social media. Though this activity is not in a face-to-face setting, it still involves some of the same social skills that are present in any human interaction, thus its relationship to empathy remains present but in an attenuated form.

The second and third hypotheses, regarding changes in state empathy levels when different treatment conditions were applied and when typical face-to-face interaction was controlled for, were supported by the data. These results support previous research that has been done and offer a number of important interpretations regarding societal social media use. A
number of previous studies seem to point to the conclusion that technology use affects empathy levels (Dooley, Pyzalski & Cross, 2009; Duggan, 2014). Furthermore, social media use has been shown to have a number of undesirable relationships with decreased life satisfaction (Krasnova et al., 2013; Kross et al., 2013), increased narcissism (Twenge & Campbell, 2009; Twenge et al., 2008), decreased emotional closeness to friends (Pollet, Roberts & Dunbar, 2011), and an erosion of quality relationships (Richardson & Hessey, 2009). The results of this study follow and build upon these previous findings and display the effect that social media use can also have on empathy; the results demonstrate that social media elicits a less empathic response from users as compared to the same conversation in a face-to-face setting. This could be due to the lack of empathic proximity in a social media context; in other words, when a person uses social media to interact with other people, he or she has no physical interaction or in-person “closeness” that is often necessary in the process of empathy. Also, the opportunity to read facial expressions or notice other nonverbal expressions is not present on social media. This lack of empathic proximity could be the variable responsible for resulting lack of empathy toward the speaker.

An alternate theory for these significant results can be demonstrated by the direction and order of the treatment group means for the ERQ (Batson & Coke, 1981) state empathy measure. It was predicted that the interpersonal treatment group would display the highest state empathy, the control group the second-highest, and the social media group the lowest. The results did show the interpersonal group to have the highest state empathy, but instead, the social media group displayed the second-highest instead of the control group. This could be because most people do not necessarily experience an empathic response towards a word search puzzle. Or, it could be that social media does not decrease empathy, but instead does not increase it as much as a face-to-face situation does. If social media does in fact reduce a person’s empathy levels, it would have been expected that the social media group would display lower empathy than the base line
levels, the control group. This was not the case for this study, which could suggest that social media remains a social activity, naturally requiring empathy in participation, but it simply does not elicit the same levels of empathy as a real-life person or face-to-face interaction does. While the end result of this alternate theory remains the same, it is important to note this slight difference in the process of empathic responses. This difference could direct future research and also offer more detailed insight into the nature of online relationships.

**Limitations**

It is important to consider the possible limitations within the present study to accurately interpret the results as well as provide a foundation for future research. Many of the limitations have to do with the participant sample that was used. Approximately 70.9% (78 participants) identified as Caucasian, whereas only 29.1% (32 participants) identified as any of the other three ethnicities represented. Also, approximately 80.0% (88 participants) identified as female, whereas 20.0% (22 participants) identified as male. This skew in the sample of participants that were represented in this study is a limitation. While these percentages do accurately represent the college student population at the University of Central Missouri, they may not be accurate for other colleges or universities around the country or for the general population. However, there has been research that demonstrates the gender differences in empathy that suggests women tend to be more empathic than men (Rueckert & Naybar, 2008; Toussaint & Webb, 2005). This research offers stability to the significant results found in this population sample despite the gender skew.

Another limitation of this study was the convenience sample of college student participants. While the range of ages of the participants was 18 to 45, approximately 89.1% (98 participants) were between the ages of 18 and 22. Again, this is representative of a college population, but does not characterize an accurate sample of the general population. However, it is
also important to note that the age group that uses social media the most is 18 to 24 year-olds (Duggan et al., 2015). Therefore, the participants used in this study were a good sample of social media users, but application to other age groups should be done with caution.

A final limitation of the present study involves the measures that were used to assess participants’ typical social media use and typical interpersonal interaction. While the MTUAS measure of typical social media use was previously created and strong reliability and validity of this measure had been displayed, this particular instrument was originally created as an overall measure of attitudes and uses of all types of technology, not just social media. Even though only the two social media subscales were used in the present study, it may be that this measure was not designed for such a specific research application. Furthermore, the IIS measure of typical face-to-face interaction was only created for this study. Reliability and validity of this measure have not been previously assessed. Because of this, this new IIS measure may have not been appropriate to use in this type of research. It is also worth noting that measuring one’s average daily face-to-face interaction time is difficult to do. Because most people spend the majority of their day around others, it could be that participants found it difficult to estimate this amount of interaction and they may have reported this inaccurately due to this bias.

**Future Research**

One recommendation for future research would be to conduct a replication of this study within the general population. A limitation of this study was the college student population sample, and this replication would widen the possible application of the results to more age groups. Furthermore, future research could compare trait empathy levels across a number of generations alive today to examine any age-differences that exist within this construct. Another recommendation would be to utilize a different measure of typical social media use and typical face-to-face interaction. The MTUAS and IIS measures that were used in this study were self-
report based measures that may have been subject to certain biases. If a different measure was used, these biases could possibly be avoided. For example, future research could utilize a more precise measurement of social media use such as having participants actually time their average social media session. An extrapolation of this average time could then be applied to produce a more accurate measurement of typical social media use.

Another direction for future research could include an extension of this study. Because of the significant results that were found with the state empathy levels of participants, future research could more closely focus on this piece of the study. A future study could utilize two or three factors of independent variables instead of just the one factor of treatment condition. For example, different social stories could also be manipulated and participants could be subject to a story that involves divorce, a friend’s suicide, a personal mental disorder, or other social issues alongside the factor that would manipulate the treatment groups (social media, interpersonal, control). This extrapolation could offer more focused results about variables that affect state empathy levels and could display important results about how people share such personal and important life events.

Finally, the results of this study implicate the importance of empathic proximity, or the physical presence that is often necessary for empathy. Future research should delve deeper into this variable and how it affects state empathy levels. Suggestions could include manipulating the amount of empathic proximity, for example having treatment conditions that utilize social media, a text, a telephone call, a Skype conversation, and an in-person interaction. Another possibility could involve researchers manipulating the level of relationship the speaker has to the listener, for example, comparing conversations between friends, romantic partners, and strangers. All of these research directions could offer forward progress in the current understanding of empathy and social media use.
Conclusion

In summary, the present study investigated the effect that social media has on state empathy and trait empathy. Both social media interaction and face-to-face interaction were examined and compared. Prior to the current study, there were many studies that demonstrated relationships between social media use and academic or other relational outcomes, and many studies used a correlational design to do so. There were also a number of experts and researchers that alluded to the lack of empathy that often is displayed on social media, but there was little experimental research to support those claims. Results from the present study indicated that social media does elicit less of an empathic response from those who are the consumers of a personal story as compared to the same story being shared in a face-to-face setting. Despite the limitations to this study, these results warrant further research and reveal the social and relational significance that social media can have.
REFERENCES


Twenge, J., Konrath, S., Foster, J., Campbell, K., & Bushman, B. (2008). Further evidence of an increase in narcissism among college students. *Journal of Personality, 76* (4), 919-928.


APPENDIX A
So much homework, professors always giving out assignments.
4/12/15, 9:46 AM

Definitely don’t have time for hw this week – so much going on.
#busy
4/12/15, 9:47 AM

Grades aren’t the greatest, guess I’ll need to do that extra credit after all.
4/12/15, 9:47 AM
Placed with a random roommate at UCM – all of my high school buds went elsewhere.

4/12/15, 9:47 AM

My roommate has her own schedule, and own friends. I hardly ever see her. #whereareyou

4/12/15, 3:48 AM

Hangin’ in my friends room instead of my own.
SOCIAL MEDIA AND EMPATHY

Free time in college? Much better than free time in high school.

Mo and my bro – even though he’s still in high school we get along for the most part!

Well, parents getting a divorce – told my brother and I this summer. What will we do for holidays now?

Met a new guy through mutual friends at UCM, he seems pretty cool! First date this weekend!!
Appendix B

Interpersonal Experimental Condition: Confederate Script

Hi, I’m Emily. I’m from Sedalia and I’m currently a freshman here at UCM. I’m enjoying some of my classes here I guess, I’m mostly doing my gen eds right now. Like, algebra, and Comp 1 class, stuff like that. I’m trying to get my gen eds out of the way. It seems like the classes I’m in are harder than the classes I was in during high school. And there’s more homework now too, which sucks trying to find time to do. I’m so busy and it seems like my professors are constantly giving more assignments. Anyone else feel like that? My grades aren’t the greatest right now, but I think with some extra credit I’ll be fine. High school to college classes was a change. Ummm, what else? I was placed with a random roommate that I didn’t know before coming here because none of my friends from high school came to UCM. One of my old friends was planning on coming to UCM too but backed out at the last minute. She decided to go to Mo West. So anyway, like I said I got a random roommate then. I hardly ever see my roommate, she has her own friends. And we are on very different schedules, so it’s kind of awkward. So I try to hang out in my other friends’ rooms as much as I can, you know? It just makes it easier. But I like the friends I’ve made here a lot, one of them is from St. Louis and the other is from here in Warrensburg I guess. We have some classes together and always go to the dining hall at the same time. And we always hang out on the weekends together too, and hang out in the union. So I’m glad I’ve met them. Free time at UCM has been a lot more fun than free time was in high school. Umm, I get along with my family for the most part. I have one younger brother who is still in high school. My parents are getting a divorce though – they told my brother about it over the summer. It’s difficult to understand, I have no idea what we will do for holidays now. But anyway, I met this new guy here at UCM, he seems pretty cool. We met through some mutual friends, and we are going on our first date this weekend. Umm, yeah I guess that’s about all I can think of, is that good?
APPENDIX C

Word Search Puzzle

E T S G F X H L A I C W U I B
D P E C D B R P U H Q O G Z W
W P R M W A H D O R F A F U C
Q P A C L Z X R K L Z Y J Q Q
V O L P J E U M H K R K L P K
O G E Q E S H C C V M D W G G
W L S J S R L I D H K P Z Y Y
O P A E T U J P H T S D K N H
A C E Q U H F B N E Q O Q C B
Y A W S J X X E D E Y V H Q V G
C K G A Y R J V F Z Z I Y C V
N S G K Z R O B U L P V G A M
E A R T H B Q R R E W A R D Q
C P Q O A F S F E J P Q W W T
N K X V Y M C J J C P D Z R

Find the seven words in this box;
circle them in the puzzle:

ABOVE   CHORUS
DRAWER   EARTH
HELMET   PAPER
WEASEL
APPENDIX D

**On a scale of 1 to 5, please rate how strongly you feel the following emotions towards the talker:**

<table>
<thead>
<tr>
<th>Emotion</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concerned</td>
<td>______</td>
</tr>
<tr>
<td>Warm</td>
<td>______</td>
</tr>
<tr>
<td>Empathic</td>
<td>______</td>
</tr>
<tr>
<td>Compassionate</td>
<td>______</td>
</tr>
<tr>
<td>Softhearted</td>
<td>______</td>
</tr>
</tbody>
</table>

1 = does not at all describe how I feel  
2 = describes how I feel a little bit  
3 = neutral  
4 = describes how I mostly feel  
5 = describes how I feel extremely well
### APPENDIX E

People differ in the way they feel in different situations. Below you are presented with a number of characteristics that may or may not apply to you. Read each characteristic and indicate how much you agree or disagree with the item by ticking the appropriate box. Answer quickly and honestly.

<table>
<thead>
<tr>
<th></th>
<th>Strongly agree</th>
<th>Slightly agree</th>
<th>Slightly disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I sometimes find it difficult to see things from the 'other guy’s' point of view.</td>
<td></td>
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<tr>
<td>2. I am usually objective when I watch a film or play, and I don’t often get completely caught up in it.</td>
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<tr>
<td>3. I try to look at everybody’s side of a disagreement before I make a decision.</td>
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<tr>
<td>4. I sometimes try to understand my friends better by imagining how things look from their perspective.</td>
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<tr>
<td>5. When I am upset at someone, I usually try to ‘put myself in his shoes’ for a while.</td>
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<tr>
<td>6. Before criticizing somebody, I try to imagine how I would feel if I was in their place.</td>
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<tr>
<td>7. I often get emotionally involved with my friends’ problems.</td>
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<tr>
<td>8. I am inclined to get nervous when others around me seem to be nervous.</td>
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<tr>
<td>9. People I am with have a strong influence on my mood.</td>
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<tr>
<td>10. It affects me very much when one of my friends seems upset.</td>
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<tr>
<td>11. I often get deeply involved with the feelings of a character in a film, play or novel.</td>
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<tr>
<td>12. I get very upset when I see someone cry.</td>
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<tr>
<td>13. I am happy when I am with a cheerful group and sad when the others are glum.</td>
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<tr>
<td>14. It worries me when others are worrying and panicky.</td>
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<tr>
<td>15. I can easily tell if someone else wants to enter a conversation.</td>
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<td>16. I can pick up quickly if someone says one thing but means another.</td>
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<tr>
<td>17. It is hard for me to see why some things upset people so much.</td>
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<tr>
<td>18. I find it easy to put myself in somebody else’s shoes.</td>
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<tr>
<td>19. I am good at predicting how someone will feel.</td>
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<tr>
<td>20. I am quick to spot when someone in a group is feeling awkward or uncomfortable.</td>
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<tr>
<td>21. Other people tell me I am good at understanding how they are feeling and what they are thinking.</td>
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<tr>
<td>22. I can easily tell if someone else is interested or bored with what I am saying.</td>
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<tr>
<td>23. Friends talk to me about their problems as they say that I am very understanding.</td>
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<tr>
<td>24. I can sense if I am intruding, even if the other person does not tell me.</td>
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<tr>
<td>25. I can easily work out what another person might want to talk about.</td>
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</tbody>
</table>
26. I can tell if someone is masking their true emotion.
27. I am good at predicting what someone will do.
28. I can usually appreciate the other person’s viewpoint, even if I do not agree with it.
29. I usually stay emotionally detached when watching a film.
30. I always try to consider the other fellow’s feelings before I do something.
31. Before I do something I try to consider how my friends will react to it.
APPENDIX F

Do you have a social media account?

☐ Yes – continue on to question 1

☐ No – do not answer any further questions on this page

How often do you do each of the following activities on social networking sites such as Facebook, Instagram, Twitter, etc.? Check the appropriate box.

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Once a Month</th>
<th>Several Times a Month</th>
<th>Once a Week</th>
<th>Several Times a Week</th>
<th>Once a Day</th>
<th>Several Times a Day</th>
<th>Once An Hour</th>
<th>Several Times an Hour</th>
<th>All the Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Check your Facebook page or other social networks.</td>
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<tr>
<td>2. Check your Facebook page or other social networks from your smartphone.</td>
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<tr>
<td>3. Check social networks at work or school.</td>
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<tr>
<td>4. Post status updates.</td>
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<td>5. Post photos.</td>
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<tr>
<td>7. Read postings.</td>
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<td>8. Comment on postings, status updates, photos, etc.</td>
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<tr>
<td>9. Click “Like” or “Favorite” to a posting, photo, etc.</td>
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</tbody>
</table>

Please answer the following questions about your Facebook and other online friends. Check the appropriate box.

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1-50</th>
<th>51-100</th>
<th>101-175</th>
<th>176-250</th>
<th>251-375</th>
<th>376-500</th>
<th>501-750</th>
<th>751+</th>
</tr>
</thead>
<tbody>
<tr>
<td>10. How many friends on Facebook do you have?</td>
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</tbody>
</table>
11. How many of your Facebook friends do you know in person?

12. How many people have you met online that you have never met in person?

13. How many people do you regularly interact with online that you have never met in person?
APPENDIX G

How often do you do each of the following activities in a face-to-face setting? Check the appropriate box.

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Once a Month</th>
<th>Several Times a Month</th>
<th>Once a Week</th>
<th>Several Times a Week</th>
<th>Once a Day</th>
<th>Several Times a Day</th>
<th>Once an Hour</th>
<th>Several Times an Hour</th>
<th>All the Time</th>
<th>NOT APPLICABLE TO ME</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Talk to your roommate face to face.</td>
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<tr>
<td>2. Talk to your sibling or cousin face to face.</td>
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<tr>
<td>3. Talk to your friend face to face.</td>
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<tr>
<td>4. Talk to your parent face to face.</td>
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<tr>
<td>5. Talk to your significant other face to face.</td>
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<td>6. Talk about your school concerns with someone face to face.</td>
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<tr>
<td>7. Talk about your relationship, friendship, or family concerns with someone face to face.</td>
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<tr>
<td>8. Talk about your other life concerns with</td>
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<td></td>
</tr>
</tbody>
</table>
Please answer the following questions about your friends you have met in person. Check the appropriate box.

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1-2</th>
<th>3-5</th>
<th>6-10</th>
<th>11-15</th>
<th>16-20</th>
<th>21-30</th>
<th>31-40</th>
<th>41+</th>
</tr>
</thead>
<tbody>
<tr>
<td>9. How many friends do you have?</td>
<td></td>
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<td></td>
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<td></td>
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<tr>
<td>10. How many good friends do you have?</td>
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<tr>
<td>11. How many best friends do you have?</td>
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<tr>
<td>12. How many people would you share anything with?</td>
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</tbody>
</table>
APPENDIX H

CONSENT FORM

Identification of Researchers: This research is being done by Kristin Whited, a graduate student in the Department of Psychological Science at the University of Central Missouri.

Purpose of the Study: The purpose of this study is to examine task completion effects.

Request for Participation: I am inviting you to participate in a study examining your reactions to completing one of three assigned tasks. It is up to you whether you would like to participate. If you decide not to participate, you will not be penalized in any way. You can also decide to stop at any time without penalty. If you do not wish to answer any of the questions, you may simply skip them.

Exclusions: You must be at least 18 years of age to participate in this study.

Description of Research Method: This study involves completing one of three assigned tasks, including a computer task, a listening task, or a puzzle task. Lastly, you will be asked to complete a questionnaire about your emotions and answer questions about your demographics. This study will take between 20 - 30 minutes to complete. At any point, you may contact the researchers (contact information provided below) to ask questions. Please note that we cannot give you your individual results as no identifying information is recorded on the surveys and we do not know which one is yours once it is turned in.

Privacy: All the information that will be collected is confidential.

Explanation of Risks: The risks associated with participating in this study are similar to the risks of everyday life.

Explanation of Benefits: You will benefit from participating in this study by getting firsthand experience in psychological research. You may also enjoy completing the questions. You may also complete this study for research participation credit if approved by course instructor.

Questions: If you have any questions about this study, please contact Kristin Whited. She can be reached at kmw72390@ucmo.edu. If you have any questions about your rights as a research participant, please contact the Human Subjects Protection Program at (660) 543-4621.

If you would like to participate, please indicate by signing below.

I have read this letter and agree to participate.

Your Name (Printed): ____________________________________________________________________________________

Your Signature: ______________     _____________

Date: __________________
APPENDIX I

Demographics

Please answer the following questions:

What is your age in years __________

What is your year in school:
☐ Freshman
☐ Sophomore
☐ Junior
☐ Senior

What is your sex:
☐ Male
☑ Female
☐ Intersex

What is your racial/ethnic identity:
☐ Asian/Pacific Islander/Asian Indian
☐ Black/African American
☐ Middle Eastern
☐ Native American
☐ Latino/Hispanic
☐ White/Caucasian
☐ Other
☐ Prefer not to answer