

Comparing the effects of tailored behavioral feedback and descriptive social norms
intervention messages on excessive social media use

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Angela E. Rose

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Approved by:

Major Professor
Laura. A. Brannon

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Abstract

Excessive internet use can have various consequences such as low job performance, poor academic performance, and issues in interpersonal relationships. Previous research in the area has focused on treating this issue after it reaches the level of a diagnosable addiction disorder. However, it is important to understand whether excessive use can be discouraged and potentially reduced before users develop an addiction disorder. Currently, one of the most popular uses of the internet is social media; therefore, the current study specifically targeted excessive social media use. In an effort to discourage excessive social media use, two different message intervention approaches were implemented. A behavioral feedback message addressed excessive use at the individual level by providing information about the potential consequences from their current amount of social media use. A social norms message provided general information about the average adult's social media use. These interventions were compared to a control message (no information about excessive use) as well as a generic consequences message (general consequences one may experience from excessive use). Using a multiple regression analysis, the study found that those who read the behavioral feedback message were more likely to report that they believed that they spend too much time on social media. In contrast, a second multiple regression analysis found that those who read the social norms message were more likely to report that they intended to reduce their social media use in the future. In the domain of social media, it seems that behavioral feedback has more of an effect on attitudes, while social norms has more of an effect on intended future behavior. These findings do not indicate whether one type of intervention is more favorable than the other; rather, it seems that the two interventions may be working through different mechanisms, such that one may result in attitude change before behavior change, while the other may result in the opposite.

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Chapter 1 - Introduction

Overview

This research study was designed to evaluate the effectiveness of two distinct message interventions to reduce heavy social media use. Literature detailing social media use and the consequences of its overuse, including problematic internet use and subsequent internet addiction, is briefly reviewed. Following that, literature on the background of the two message interventions is discussed. The two types of messages this research focused on are the social norms approach, where the emphasis lies on social comparisons based on the behavior of others (e.g. “your peers are using social media for 15 hours per week”), and the tailored behavioral feedback approach, where the emphasis is on the behavior of the specific individual receiving the message (e.g. “your self-reported social media use behavior [how many hours you spend on social media per week] is equal to X amount of time total over the course of an entire year. This is equal to earning \$Y at a minimum wage job”). Given the social component of social media websites, it may be that individuals who receive a message encouraging them to compare their own behavior to that of their peers (i.e. the social norms approach) will be more inclined to reduce their behavior than those who receive tailored feedback messages. However, personalized messages that fit the individual specifically (i.e. the behavioral feedback approach) may be more effective due to how relevant and concrete the information is to that individual. In this research study, these two competing hypotheses and their strong and weak points are evaluated and discussed. Furthermore, the current study will implement an online survey to provide the messages about reducing social media use. As such, literature about using the internet to provide messages and interventions to individuals will also be reviewed. Next, the methodology and

results for the present study are described. Finally, conclusions, limitations, and future directions are discussed.

Internet Use

Over the last few decades, the popularity of the internet has grown exponentially. Access to information has never been more simplified than with the existence of large public databases, such as Wikipedia and search engines like Google or Bing. Shopping online has become common in recent years as well, with the growth of sites like Amazon and eBay making it easy for people to shop from home. The internet can even be the birthplace of small companies through platforms like Etsy or the creation of personal websites. One of the most notable uses of the internet for social psychologists may very well be the rise of social media networks, which provide a new avenue for people to communicate with one another. There are many active social networking platforms, including websites like Facebook, LinkedIn, and YouTube, as well as applications like Instagram, Twitter, and Snapchat. Social media websites are some of the most commonly used websites on the internet. A recent survey of U.S. adults conducted by Pew Research Center (2018) reported that 88% of adults aged 18 – 29 indicated they use at least one form of social media. This number decreases slightly for older age groups, falling to 78% of adults aged 30 – 49, 64% among those who are 50 – 64, and just 37% of those over 65. Furthermore, the social media websites adults reported using in this survey include YouTube, Facebook, Instagram, Pinterest, Snapchat, LinkedIn, Twitter, and WhatsApp. Of these eight sites, the most popular social media platforms were YouTube (73%) and Facebook (68%). There is substantial overlap between website use, where 73% of adults surveyed reported using more than one website at the same time. For example, of those who reported using YouTube, 81% also reported using Facebook. Concurrently, company reports suggest that Facebook had 1.4 billion

daily active users in 2017. YouTube is reported to have 30 million daily active users in 2018; however, YouTube does not require users to be logged in to use the platform while Facebook does, suggesting the number of users for YouTube could be substantially higher.

These social media websites can be a platform for users to engage with otherwise inaccessible individuals. Users can often easily share videos, photos, and experiences with friends and family members who may live in another state or country. In 2008, Raacke & Bonds-Raacke found that the primary motivation for using Facebook and MySpace was to create and maintain social connections and relationships. The subsequent research on motivations for using social media websites support this conclusion, while suggesting that relationship maintenance is the key factor driving people to use social media (Joinson, 2008; Kuss & Griffiths, 2011; Sheldon, 2008). Dunne, Lawlor, & Rowley (2010) found that the strongest factor driving social media use in teenage girls was impression management. However, other research suggests that there are several factors at play that may drive the use of different social media websites. For example, Mull & Lee (2014) found that young adults who used Pinterest were seeking creative projects and organization. Other reasons for using social media include passing time, self-expression, seeking information, and entertainment (Gülнар, Balçé, & Çakér, 2010).

Research on social media suggests positive outcomes; for example, social media is regarded as a valuable platform on which young adults can fulfill their need to belong and that this facilitates social engagement between individuals (Kin, Wang, & Oh, 2016). In some cases, interactions on social media can be even more fulfilling than personal interactions in an individual's physical environment (Papacharissi & Mendelson, 2011). Furthermore, individuals with high social anxiety tend to use Facebook more often, suggesting that it may be easier for

some people to fulfill a social need by using social media than in person (McCord, Rodebaugh, & Levinson, 2014).

The accessibility of the internet continues to grow, and with it, the number of people who use it daily. The internet can be a source of positivity and good, such as fostering small businesses, spreading knowledge, and providing a source of entertainment. However, too much of anything can become a bad thing, and this case is no different.

Problematic Internet Use

As the internet's popularity has grown, there has been an increasing concern for the psychosocial well-being of individuals who use it. In recent years, concern about problematic internet use (PIU) has grown substantially. PIU has been defined as the relationship between an individual's internet use, psychosocial well-being, and negative consequences at home, school, or work. Young (1998) describes the issue as an impulse-control disorder which can result in academic failure, lower work performance, and problems in social and intimate relationships. Within the last decade, the issue of PIU has evolved into a diagnosable internet addiction disorder. As social media websites are one of the most commonly visited in all age groups, it is important to examine the use of these websites specifically. Empirical work examining the use of social media networks has found that their primary use is to maintain social networks and relationships (Kuss & Griffiths, 2011). However, frequent use of social media websites was associated with a higher chance of being addicted to the internet (Kuss, Griffiths, & Binder, 2013). Furthermore, using social networking websites can become addicting when a person is lacking social connections and peer support outside of the internet (Turel & Serenko, 2012). As such, individuals may begin to rely more on social networking websites to relieve feelings of stress, depression, and loneliness. This reliance becomes an issue when it interferes with work or

school responsibilities, real-life relationships with peers or partners, or financial stability due spending money online. Individuals who experience these consequences but are unable to stop using the internet can be described as addicted.

The current study focuses on lowering problematic internet use before it becomes an addiction. In the binge drinking literature, interventions have been applied to lower alcohol consumption before it becomes a case of diagnosable alcoholism (Baer, Stacy, & Larimer, 1991; Carter & Kahnweiler, 2010; Neighbors, Larimer, & Lewis, 2004; Perkins and Berkowitz, 1986). In a similar fashion, interventions to reduce the use of the internet before complex issues arise may be a valuable avenue for preventing internet addiction and the problems associated with it from occurring; however, to the knowledge of the researcher, at this point in time, this avenue has remained unexplored.

The Traditional Approach

The traditional approach to reducing internet use has been through clinical treatment. This typically includes a series of personal or group therapy sessions over the course of a few months. Griffiths (2013) states that internet and social networking addictions are simple behavioral addictions that can be compared to other types of addictions, such as substance abuse or gambling addictions. As such, it is not a stretch to theorize that similar treatments may be utilized. One such treatment is to implement new coping strategies to deal with the root of the problem (e.g. loneliness, depression), which should result in less reliance on using the internet (Young, 1999). As such, cognitive-behavioral therapy (CBT) has been a popular choice of treatment for internet addiction (Cao, Su, & Gao, 2007; Li & Dai, 2009; Young, 2007). This treatment attempts to restructure the way the individual thinks about using the internet; for example, someone who is lonely may turn to the internet for social interaction but become reliant

on the internet to fulfill that need. This may lead to loss of other interpersonal relationships and more time spent on the internet, resulting in the individual suffering in their personal life relationships. This would typically be treated with CBT by tackling the loneliness in therapy while providing other methods of fulfilling that social need that may be healthier. Other treatment strategies have included medication and family therapy, but CBT has been the most efficacious at reducing time spent on the internet and depression levels associated with an individual's addiction (Winkler et. al, 2013). The most recent review on treatments for internet addiction included 13 studies and found that most studies continue to use CBT to treat the disorder (Zajac, Ginley, Chang, & Petry, 2017). However, these types of treatments are intended for individuals with a more severe addiction. With less severe addictions, it can be useful to simply nurture time management skills, such as introducing a schedule for using the internet (Young, 1999).

Internet addiction is a serious concern, especially with the growing popularity of social media websites. When an individual is clinically diagnosed with an addiction, it quickly becomes expensive and time-consuming to treat. However, like with any other addictive behavior, problematic internet use may be tackled head on and prevented from becoming a clinical addiction. The majority of research in the area of problematic internet use and internet addiction has focused on understanding the addiction and how to treat it, but little has been done to look at how we can help to discourage using the internet in unhealthy amounts that may put individuals at risk for addiction.

Social-Norms Approach

One such way of addressing problematic behavior before it becomes an addiction is using the social norms approach. The social norms approach focuses on bringing an individual's

behavior in line with the behavior of their peers by creating a message based on what is normal for that behavior. This allows for the individual to make social comparisons between the normal behavior and their own. An example of a social norms message targeting the behavior of using social media would be the following: “You might think that most college students spend 10 hours a week on social media websites. However, on average, a college student only spends 5 hours a week using social media.”

The social norms approach has been popularized in schools and colleges to discourage negative behaviors. As such, this approach is often used to target substance abuse behaviors such as using illicit drugs and binge drinking. College students often overestimate the extent to which their peers engage in some of these behaviors; for example, undergraduates typically overestimate the amount of alcohol their peers drink and drink to that level (Baer, Stacy, & Larimer, 1991; Carter & Kahnweiler, 2000; Perkins and Berkowitz, 1986). This overestimation results in false social norm beliefs held by the students that lead to more problem behaviors, which in this case is drinking. The strategy behind the social norms message is to correct the false belief by providing the individual with the accurate statistics behind the true social norm. Self-regulation theory suggests that students who believe alcohol use to be more widespread will adjust their behavior to drink a similar amount to what they perceive to be the norm (Haines & Spear, 1996). In a case where a student perceives the norm to be heavy drinking, they may feel pressured to drink more or that their heavy drinking is justified and as a result, drink heavily (Gomberg, Kessel-Schneider, & DeJong, 2001). They view their heavy drinking behaviors as the norm rather than inappropriate or unhealthy (Agostinelli, Brown, & Miller, 1995). Once exposed to the social norm of drinking, individuals who drink heavily often adjust their own behavior and drink less to align with the social norm (Neighbors, Larimer, & Lewis, 2004).

This is true of many social situations and as such, the social norms approach has been applied to other areas as well. For example, Goldstein, Cialdini, & Vriskevicius (2008) applied the social norms approach to conservation in hotel rooms by using a normative appeal centered around guests reusing their towels (e.g. “the majority of guests reuse their towels”). This study also found that the norms approach was most effective when describing behavior that occurs in the setting that most closely matches that of the individual receiving the message (e.g. “the majority of guests in this room reuse their towels”). Similarly, normative messages have been used to encourage people to vote (Gerber & Rogers, 2007). Additionally, social norms messages have been used to target smoking and tobacco use behaviors in a similar manner to alcohol consumption (Campo, Cameron, Brossard, & Frazer, 2004; Hohman, Crano, & Niedbala, 2016).

Another area where social norms have been found to be effective is in calorie consumption. Robinson, Harris, Thomas, Aveyard, & Higgs (2013) found that when compared to a control message with no food-related content, a social norms message about the junk food eating habits of other people resulted in participants choosing to consume a lower calorie snack. In this study, it was also found that the social norms message was not different from a health message containing content about the health benefits of choosing to eat a healthier snack. This suggests that social norms messages may be as effective as messages focusing on health benefits, providing two alternative routes to reducing unhealthy behaviors. However, further research by Robinson, Fleming, & Higgs (2014) found that social norms messages suggesting other people tend to eat more fruits and vegetables were more effective than health messages about the benefits of eating more fruits and vegetables. Participants in this study who were exposed to a social norms message consumed more vegetables at lunch than participants who were exposed to the health message. These effects were present for individuals who were considered “low”

consumers of fruits and vegetables in their day-to-day lives, but not those who were “high” consumers. The results of this study suggest that in cases where individuals fall farther from the social norm, norms messages may be more effective than general health messages. Individuals who are more closely aligned with the norm may not be as motivated to change their behavior to match the norm.

Traditionally, the method for using the social norms approach is to survey the students to determine their actual rate of behavior as well as their perceptions of the behavior. Then, using this information, a baseline of the behavior is created to use for the norm of that behavior. It is expected that a student who is exposed to this corrected norm will adjust their behavior to be more in line with the norm if they feel that their behavior does not align with the norm. While this approach can be effective at a generalized level, there are potential downfalls to this method. A social norms message is easy to convey to a large audience rather quickly, such as educating an entire college campus on the normative drinking habits. However, a person who does not drink as much as the norm may increase their drinking once they see that others are drinking more than they are. Another issue may be that students do not think that the norm applies to themselves due to different motivations for drinking. For example, a student in a particularly bad situation may drink heavily and believe they need to drink heavily to deal with their situation, whereas they may not believe other students have the same need. In this way, social norms messages lack the specificity needed to deal with any internal problems that are leading to the behavioral response. Thus, it may be prudent to consider another, more personalized approach as well.

Behavioral Feedback Approach

The behavioral feedback approach involves asking an individual about their own behavior and creating a message tailored to their behavior that addresses the key aspects of their behavior targeted for change. Then, the behavior may be translated into the equivalent behavior over a longer period of time or what the result would be if the individual engaged in a different behavior. For example, Pilling & Brannon (2007) used participants' self-reported weekly alcohol consumption to create a behavioral feedback message that presented information about the number of calories consumed and amount of money spent over an entire year. They found that participants who viewed these personalized messages about their behavior reported more favorable attitudes towards the message than those who viewed a control message or a social norms message. Similarly, a behavioral feedback message targeting the behavior of using social media would be written as follows: "You mentioned that you use social media for about 10 hours per week. That may not seem like much, but in terms of a year, you are spending 520 hours on social media. This is equivalent to making \$3,770 working a part-time job. Think of what you could do if you had earned that money or had used that extra time to study."

Tailoring to the individual person's behavior has been supported both in the communications and health literature, leading to increased compliance with the suggested health behavior. People not only tend to pay more attention to tailored messages but remember them more easily and consider them more trustworthy than generic messages (Rimal & Adkins, 2003). Murray-Johnson and Witte (2003) report that health messages should also be tailored to the stimuli relevant to the individual, such as their motivations for engaging in the behavior and their personal assessment of the situation. When a communicator creates tailored messages that target

personal factors like these, the message becomes more relevant to the individual, leading to acceptance of and compliance with the message.

Various aspects of a person's behavior can be targeted. The communicator can motivate the individual to alter their behavior by increasing the individual's perceived susceptibility to risk if they do not change the behavior. Alternatively, the communicator can focus on increasing the individual's perceived self-efficacy to alter their behavior by targeting their perceived barriers and concerns about adopting the new behavior. Messages can also be tailored to the individual's stage of behavior change. For example, when the targeted behavior is alcohol consumption, a communicator can ask whether or not the individual has considered reducing their alcohol consumption. If the answer is yes, a message can be created to encourage them to take action by starting to drink less. If the answer is no, a message can be created to encourage them to start thinking about reducing their consumption. This makes it possible to tailor a message to any behavior, as well as any beliefs or intentions related to the behavior.

Research suggests that tailoring health messages to an individual's behavior can increase the effectiveness of the message, making it more likely that the person will change their behavior. Buller, Borland, and Burgoon (1998) found that people who were at different stages in their intent to engage in sun-safe behaviors found different messages more appealing. These tailored messages were effective in that they motivated the people to increase their sun-safe behaviors; an outcome that may have been different if the same, generic message was used for everyone. In accordance with reactance theory, people who do not intend to change their behavior are likely to react against a message advocating for them to adopt a specific behavior over other alternatives because they feel that their personal freedom to choose is being infringed upon. This leads to individuals choosing to engage in a different behavior than the one being

advocated in the message. However, using weak, inductive language was shown to be more effective in increasing sun-safe behaviors for people who had no previous intentions to engage in those behaviors, suggesting that using a message that presents facts without drawing any clear conclusions is effective in avoiding the reaction from people who do not intend to change their behavior. On the other hand, messages with intense, deductive language were more effective with people who already intended to be sun-safe. Individuals who have already made their own decision are unlikely to feel that their freedom to choose is reduced, so making clear conclusions in the message reinforces their decision.

There is evidence that tailored messages are successful at increasing compliance with healthy behaviors in many areas. One of the most prominently researched areas is that of alcohol consumption. Miller, Sovereign, and Krege (1988) created messages by first gathering information from the participants by assessing areas of their alcohol-related behaviors, such as family history, life problems, drinking patterns, pathological symptoms, and alcohol dependence. A feedback session was then designed for the participant's concerns, perceptions of drinking, and reasons for wanting to change their behavior. This thorough approach decreased drinking behavior by 27%. Another study found that just one hour of advice and feedback tailored to the participant was as effective as a six-week educational class and discussion group, suggesting that even a small personalized intervention is as effective as long-term interventions (Baer, Marlatt, Kivlahan, Fromme, Larimer, & Williams, 1992). Furthermore, Pilling & Brannon (2007) found that these more personalized messages were favored by participants over less personalized messages, suggesting that individuals may be more open and have positive views towards these types of messages.

These types of tailored messages have been used in several different domains with promising results. For example, tailored messages have been found to be more effective than non-tailored messages in smoking cessation (Prochaska, DiClemente, Velicer, & Rossi, 1993; Strecher, Kreuter, Den Boer, Koblin, Hospers, & Skinner, 1994). In addition, tailored health messages have also been used to give feedback on dietary intake, as well as intentions, attitudes, and self-efficacy of weight loss (Brug, Glanz, Van Assema, Kok, & Van Breukelen, 1998). The tailored message had a significantly greater impact on reducing fat intake and increasing fruit and vegetable intake than a general nutrition message. Furthermore, receiving these tailored feedback messages increased individuals' self-monitoring adherence over a period of three months, suggesting that personalized interventions can have a lasting effect (Turk, Elci, Wang, Sereika, & Ewing, 2013). These types of messages were also successful in encouraging individuals to engage in more physical activity (Bull, Kreuter, & Scharff, 1999; Kreuter & Strecher, 1996; Rosen, 2000). This was especially effective when participants were motivated to change their behavior (Smeets, Kremer, & de Vries, 2007). Tailored feedback messages have also been utilized to encourage households to reduce their energy use, where households exposed to a tailored message saved significantly more gas, electricity, and fuel than households not exposed to the message (Abrahamse, Steg, Vlek, & Rothengatter, 2007). Overall, research on the behavioral feedback approach shows that it is useful in many applications and not specific to one type of behavior.

Using the Internet to Communicate Health Messages

As previously noted, the Internet is a great way to connect with people. For anyone who wants to communicate with people on a large scale, the internet can be used as an efficient and powerful tool. Billions of people use the internet daily and it is often cheaper to create and

distribute surveys, messages, or general information over the web. This can be a valuable opportunity for those who want to provide health information to otherwise inaccessible populations, such as those who cannot afford healthcare or those who are not comfortable seeing a clinician in person.

The efficacy of several different interventions delivered on the internet have been established. A recent literature review established that several internet-based interventions that have been developed to treat mental disorders have resulted in similar positive outcomes as face-to-face psychotherapeutic interventions while remaining cost-effective (Andersson & Titov, 2014). These internet-based interventions are similar to face-to-face interventions, including diagnosis, treatment, and follow-up phases. One such online intervention reduced unhealthy drinking habits in young men (Bertholet et al., 2015). Another study that examined abstinence from smoking during an incentivized online treatment program also found that smoking habits were reduced in the short-term (Dallery, Raiff, Kim, Marsch, Stitzer, & Grabinski, 2017). A third intervention involved delivering cognitive behavioral therapy online, which resulted in a reduction in symptoms of depression (Christensen & Griffiths, 2004). Given that the efficacy of established treatments being administered online is similar to those administered in person, it's likely that individuals will be receptive to health messages online as well. In addition, using the internet allows for an easier time tailoring messages to the individual user than using more general approaches, such as mass media messages or group programs.

A benefit to reading a health message online is remaining anonymous and thus avoiding embarrassment, stigmatization, or confrontation when presented with the message. Past research has found that students with drinking problems reported that they preferred an anonymous Internet-based alcohol use assessment than one administered face-to-face (Kypri, Saunders, &

Gallagher, 2003). Furthermore, it has often been suggested that people are more willing to disclose their behavior on a computer than in an interview (Duffy & Waterton, 1984). Using the internet may result in more accurate depictions of behavior and provide a safer space for individuals to admit that behavior. This may then encourage those who would not normally seek help to do so. The internet is a great potential avenue to communicate health information and administer treatment that comes at a low cost with a wider reach. Furthermore, it may be particularly useful in the context of reducing social media use considering that the target of these messages is already using the internet to access social media websites. Therefore, presenting messages about healthy social media use on the internet is the best way to reach individuals who may need to see the messages.

Hypotheses

The past research provides promising support for the efficacy of health messages to reduce unhealthy internet use behaviors. On one hand, the social norms approach appears viable in that it provides individuals with the means to make social comparisons between themselves and others. In the realm of social media, this may be particularly effective because the very nature of social media involves consuming information about others and their behavior. On the other hand, the behavioral feedback approach may be beneficial in that it provides individuals with examples of their own specific behavior and the consequences they may personally face. This is often the more effective approach in other realms, such as binge drinking and calorie consumption, and it may also be the case in social media use. The proposed study evaluated and compared the effectiveness of these two approaches in an exploratory manner, given that either of the two approaches had the potential to be more beneficial than the other. However, it was

expected that both the social norms and behavioral feedback messages would reduce excessive use of social media more than a control message.

Chapter 2 - Method

Participants

113 participants were recruited from the online data collection tool Amazon Mechanical Turk (MTurk) and compensated \$0.50 for completing the survey. Participants were only allowed to complete the survey if they reported that their current social media use was 20 hours or more per week. This minimum was designed to provide room for those who read the social norms message to choose to reduce their behavior, given that the norm is 15 hours per week, as well as more specifically target excessive users. 6 participants were removed for failing multiple attention checks (i.e., *“I can read, understand, and speak English.”*; *“The correct answer for this statement is option two. Choose option two for this question.”*; *“Which of the following types of websites did you read about?”*). Of the final 107 participants included in the study analyses, the average age was 35, 64% were female, and the majority were white.

Materials

The study survey was created and administered remotely through Qualtrics using an invitation link provided to MTurk users upon accepting the HIT (i.e., the task on MTurk). Participants were able to access and complete the survey on the internet from their computer or mobile device.

Pre-Test Measures

Pre-test measures were created to collect information about a participant’s current social media use and attitudes regarding their use (See Appendix A). Social media use was measured in the number of hours and minutes the participant spent on social media websites during a typical week; however, social media websites were not specifically defined for participants. Instead, participants were left to decide for themselves what websites they defined as purely spending

time on social media. This allowed for a broader measurement of their social media use, rather than restricting the data to a specific social media website which every participant may or may not use. In addition to reporting the amount of time they spent on social media, participants reported their current attitudes regarding their use of social media by answering the following four questions presented on a Likert scale (*1 = Strongly Disagree, 7 = Strongly Agree*): “*I should pay more attention to how much time I spend on social media.*”; “*I spend too much time on social media.*”; “*I intend to spend less time using social media websites.*”; “*I will consider spending less time on social media websites.*”.

Messages

Four messages were created for the purpose of this study (See Appendix B). Following each message were a set of three questions specific to the information in the corresponding message. These questions were designed as comprehension questions that participants were required to answer correctly before moving on to help ensure that the participant read the assigned message. This was regulated by a mechanism within Qualtrics such that until participants had indicated the correct answers to all three questions, they were not allowed to move on to the next page. Participants were presented the message and corresponding questions on the same page, allowing them to review the message as necessary.

Control. A control message contained general information about the purpose of social media with a neutral valence. This message was not intended to influence attitudes or behavior in any direction. The message read as follows:

“One of the main uses of the internet is social media websites. These websites create online networks of individuals who can keep in contact with each other over the internet and view updates to their lives. In the past, people would keep in contact

with friends and family through letters, postcards, or phone calls. Now, you can log into your social media website account and view image, video, and text updates, all without saying a word to the person posting the update. You can create and participate in groups online, allowing you to meet new people without leaving your home.

Past research has found that people find value in social media websites for many reasons, including:

- Fostering social relationships*
- Maintaining your reputation*
- Sharing updates about your life*
- Creating community groups”*

After reading the message, participants in the control condition were required to answer the following three questions correctly based on information presented in the message: “According to the message above, one of the main uses for the internet is:” (multiple-choice); “Which of the following reasons for using social media websites does not appear in the passage above?” (multiple-choice); “According to the message above, what types of updates can you view on social media? (Check the boxes of the 3 correct answers.)” (multiple-selection).

Generic Consequences. The generic consequences message contained additional information about potential negative consequences associated with excessive social media use. This message was intended to introduce some potential downsides to using social media as a general representation of what an individual might experience. The message read as follows:

“Past research has found that people find value in social media websites for many reasons, including:

- Fostering social relationships*
- Maintaining your reputation*
- Sharing updates about your life*
- Creating community groups*

However, there is concern about relying too heavily on social media websites for social interaction. Trading face-to-face social interactions for online social interactions can have negative outcomes for some people, including loneliness and depression. Too much of anything can become a bad thing, so it is important to be careful and monitor your own social media use.”

After reading the message, participants were required to give the correct answers to the following three questions: *“Which of the following reasons for using social media websites does not appear in the passage above?”* (multiple-choice); *“According to the message above, there is concern about relying too heavily on social media websites for:”* (multiple-choice); *“According to the message above, trading face-to-face interactions for online interactions can lead to: (Check the boxes of the 2 correct answers.)”* (multiple-selection).

Behavioral Feedback. In addition to the information provided in the general consequences message, the behavioral feedback message used information about participants’ current behavior (as reported in the pre-test measurement) translated into a variety of consequences for each individual’s behavior, resulting in a unique message for each participant. This message provided information about the participant’s own behavior and consequences in an

attempt to motivate participants to desire to make better use of their time. An example of this message would read as follows:

“Earlier, you reported that you spend XX hours on social media websites each week. Over time, this can really add up. For example, XX hours per week is the equivalent of spending XX hours over the course of one entire year. This is equal to XX days total over the course of one year. This amount of time is equal to:

- XX hours enjoying a hobby*
- \$XX at a minimum wage job*
- XX miles walked at a leisurely pace*
- XX calories burned for that number of miles walked*
- XX candy bars you could have eaten for that number of calories”*

To calculate these numbers for each individual, a set of formulas were implemented. First, to calculate the total time spent over the course of a year, participants’ original reports of their behavior over the course of one week were multiplied by 52 (i.e., the number of weeks in one year). Days per year was calculated using this total divided by 24 (i.e., the number of hours in a single day).

Enjoying a hobby. This was presented in hours per year based on the total hours per year, which was calculated by multiplying their weekly social media use by 52.

Earnings at a minimum wage job. This was presented as the number of dollars the participant could have earned by working a job at the 2019 federal U.S. minimum wage of \$7.25 per hour for the amount of time they reported spending on social media. To calculate this value, their total number of hours of social media use per year was multiplied by 7.25.

Miles walked at a leisurely pace. This was presented as the number of miles the participant could have walked at an average human pace of 3.5 miles per hour for the amount of time they reported spending on social media. To calculate this value, their total number of hours of social media use per year was multiplied by 3.5.

Calories burned for the number of miles walked. This was presented as the potential number of calories the participant could have burned if they had spent the time walking the previously calculated number of miles instead of being on social media. This was calculated by multiplying the previous value, *number of miles walked at a leisurely pace*, by 4, the amount of calories an average human burns by walking a mile.

Candy bars consumed for the number of calories burned. This was presented as the potential number of candy bars the participant could have eaten for the amount of calories previously calculated. This value was calculated by dividing the previous value, *amount of calories burned for that number of miles walked*, by 210, the calorie count in an average candy bar.

Finally, after reading the behavioral feedback message, participants were required to answer the following questions correctly based on the information presented to them about their own behavior: “*What is your total hours of social media use over the course of one year?*” (open-entry); “*In that time, how much money could you have earned?*” (open-entry); *In that time, how many calories could you have burned?*” (open-entry).

Social Norms. In addition to the information presented in the generic consequences message, the social norms message contained a statement about the average adult’s social media use and no personalized information. This additional statement reads as follows:

“You may be interested to know that on average, adults spend 15 hours a week on social media websites, which is equal to about 2-3 hours per day.”

After reading the social norms message, participants were required to provide the correct answers to the following questions: *“The message above provides information about the average use for which group of people?”* (multiple-choice); *“On average, how many hours per week do adults spend on social media?”* (open-entry); *“The weekly average is equal to about how many hours per day?”* (open-entry).

Post-Test Measures

Post-test measures were similar to the pre-test measures with language slightly changed to collect information about a participant’s intentions to use social media in the future (See Appendix C). In this measurement, social media use was measured in the hours and minutes the participant intended to spend on social media during a typical week in the future. The definition of social media websites remained the same throughout, where participants were able to report use based on what they considered to be a social media website. The attitudinal questions from the pre-measurement were included along with some distractor items, such as *“The internet enhances our daily lives.”*, intended to help mask the true focus of the study on social media websites. These were again measured on a 7-point Likert scale (*1 = Strongly Disagree, 7 = Strongly Agree*).

Design

A between-groups design was used where participants were randomly assigned to one of four conditions. Each condition was defined by the type of message participants were presented: a social-norms message, a behavioral feedback message, a generic consequences message, or a control message. The social-norms message described the typical user's time spent on social media, allowing the participant to make their own social comparisons to the average user. The behavioral feedback message translated the participant's reported use into a personalized report of how much time they spend on social media and potential consequences of their own specific behavior. The behavioral feedback message included time spent per year, the amount of money they could have earned working a minimum wage job during that time, the distance they could have walked at an average pace, the amount of calories they would have burned during that walk, and the amount of candy bars they could have consumed for that many calories. The generic consequences message presented information about the general potential negative consequences of using the internet excessively. The control message described some of the popular uses of social media but contained no information about the potential negative consequences, as it was not intended to influence the participant's amount of social media use in any direction. This design also included a pre- and post-test measure such that participants were asked to report their current behavior and attitudes before reading their assigned message, as well as their intended future behavior and attitudes after reading the message. This allowed for the comparison of message types to each other while covarying out any differences related to the level of participants' current use.

Procedure

Participants were recruited from MTurk, where they clicked on and chose to participate in the HIT. All those who began the HIT read and signed an online consent form before providing any data. To begin, participants were told that they would be assigned to read and provide information about their use regarding one of four types of websites (i.e., news websites, entertainment websites, social media websites, and shopping websites). This was designed to help reduce the number of participants who may have experienced demand and responded according to what they believed was the “right” response for the study. All participants were then told they had been assigned to read about social media websites and asked to report their current social media website use in hours and minutes per week as well as their current attitudes towards their social media use (See Appendix A). Those who reported a total of at least 20 hours of social media use per week were allowed to complete the entire survey. Any individuals who reported below 20 hours of social media use per week were stopped after the pre-measurement, told that they did not qualify to complete the survey, and asked to return the MTurk HIT. Participants who were able to continue further read one message about social media use depending on their random condition assignment (See Appendix B). Participants in the control message condition read a message consisting of some general information about social media including why and how people use it but received no information about the potential consequences of excessive use. Those in the generic consequences condition read about some potential negative consequences from spending too much time on social media. In the behavioral feedback message condition, participants read messages tailored to consequences they may experience based on their

individual reported time spent using social media (e.g. 20 hours per week on social media is the equivalent of spending 1,040 hours or 43 days per year and earning \$7,540 working at a minimum wage part-time job). Finally, those assigned to the social norms condition read information about the average adult's social media use (e.g., the average adult spends 15 hours per week on social media). Furthermore, after reading their assigned message, participants answered questions about the information presented in the message. Participants could not move on to the next step in the study until they answered each question correctly. These questions were presented on the same page as the message to allow participants to read the message as many times as necessary. Participants were then asked to report their future intentions to use social media websites and responded to the attitudinal questions a second time, with extra attitudinal questions added to help mask the focus of the research on social media use (See Appendix C). Finally, participants answered a short demographic survey (See Appendix D) and were debriefed on the intentions of the study (See Appendix E).

Chapter 3 - Results

Data Preparation

Data was collected from 113 participants who fell at or above the social media use cutoff of 20 hours per week. This cutoff was chosen to allow room for those in the social norms message condition to choose to lower their use, given that the social norm is 15 hours per week. The 20-hour cutoff also allowed more specific targeting of those excessive social media users who may be more likely to develop an addiction in the future. Furthermore, 6 participants were removed from the data for failing attention checks distributed throughout the survey (i.e., *“I can read, understand, and speak English.”*; *“The correct answer for this statement is option two. Choose option two for this question.”*; *“Which of the following types of websites did you read about?”*). The final analyses were conducted on the 107 remaining participants.

It is important to consider that the variable “hours per week” is, in essence, a time variable, meaning that there is a definitive floor effect where one cannot report a negative amount of time spent on social media. This floor is elevated with the cutoff being set at 20 hours per week, such that no participant can report spending less than 20 hours per week on social media. As such, the data are highly positively skewed, with an average of 30 hours per week. However, in the model used for the analysis of this data, model residuals were relatively normal, so a transformation was not performed on the skewed raw data. The raw attitudinal data (i.e., *“I spend too much time on social media”*) was also non-normal with model residuals that were relatively normal, so this variable was also not transformed. Additionally, both models were created with a multiple linear regression including the pre-measurement of the corresponding outcome variable as a covariate and the condition the participant was in to predict the post-measurement.

Intended Social Media Use

To analyze the primary outcome variable of future intended behavior, a multiple linear regression was conducted to predict intended social media use while covarying out previous social media use. This allowed the examination of whether the messages effected future intentions to use social media above and beyond participants base levels of use. The model included the baseline measure of social media use (the baseline measurement measured in hours per week), the type of message the participant read (i.e., control, generic consequences, social norms, or behavioral feedback), and their interaction for a full factorial model. This model was significant at $F(7,106) = 22.14, p < .001$. The results of this model can be found in Table 1 below.

The baseline measure of social media use was a strong predictor of future intended use, as expected of a covariate variable, $\beta = 0.85, SE = 0.07, p < .001$. The estimates for the control ($\beta = 1.61, SE = 1.28, p = .20$), generic consequences ($\beta = 1.17, SE = 1.29, p = .36$), and behavioral feedback ($\beta = 0.15, SE = 1.26, p = .90$) messages were not significant, suggesting those

Table 1. Results of a multiple regression of behavioral intentions

	β	SE	t	p
Intercept	-4.80	2.42	-1.99	.049*
Generic Consequences (GC)	1.18	1.29	0.91	.363
Social Norms (SN)	-2.95	1.29	-2.29	.024*
Behavioral Feedback (BF)	0.15	1.27	0.13	.900
Pre_Hours	0.85	0.08	11.10	<.001*
Pre_Hours*GC	0.30	0.13	2.25	.026*
Pre_Hours*SN	-0.39	0.15	-2.66	.009*
Pre_Hours*BF	0.10	0.14	0.74	.459

* Note: Control group is dummy coded as the comparison group.

messages do not have an effect on intentions to use social media in the future. The only significant message type was the social norms message, $\beta = -2.95$, $SE = 1.29$, $p < .05$. Further comparison tests showed that the social norms message was different from both the control message, $t(99) = 2.17$, $p = .03$, $d = 0.60$, and the generic consequences message, $t(99) = 1.95$, $p = .05$, $d = 0.54$. This indicates that participants who read the social norms message were more likely to intend to reduce their time on social media in the future than participants who read the control or the generic consequences message. However, the social norms message was not significantly different from the behavioral feedback message, $t(99) = -1.49$, $p = .13$. These

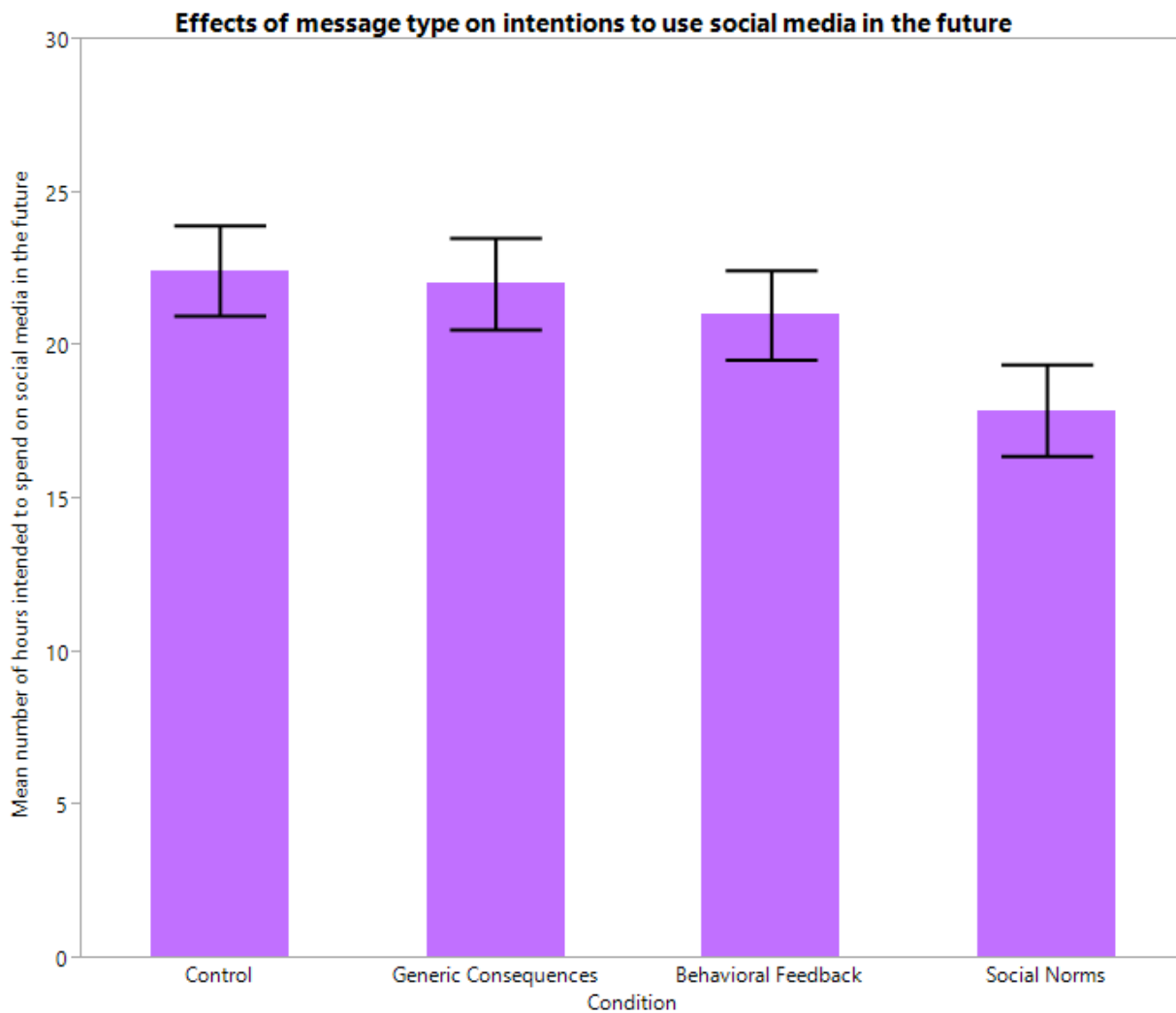


Figure 1. Group differences in intentions to use social media in the future

differences have large effect sizes, especially in response to a single message. Differences between the conditions are visualized in Figure 1 below, where the bars represent the adjusted mean response of each condition and the error bars represent the standard error.

Regarding the competing hypotheses about whether social norms may be more effective than behavioral feedback (due to the “social” nature of social media) or behavioral feedback may be more effective than social norms (due to the personalized nature of behavioral feedback), this suggests that neither one is necessarily better than the other. However, the social norms message condition was found to be significantly more effective than the control and generic consequences messages while the behavioral feedback showed no difference, suggesting that social norms may be more effective in the overall picture.

Furthermore, the interaction between the message type and current social media use was significant at $F(1, 106) = 3.04, p < .05$. This suggests a significant change in the slope for the

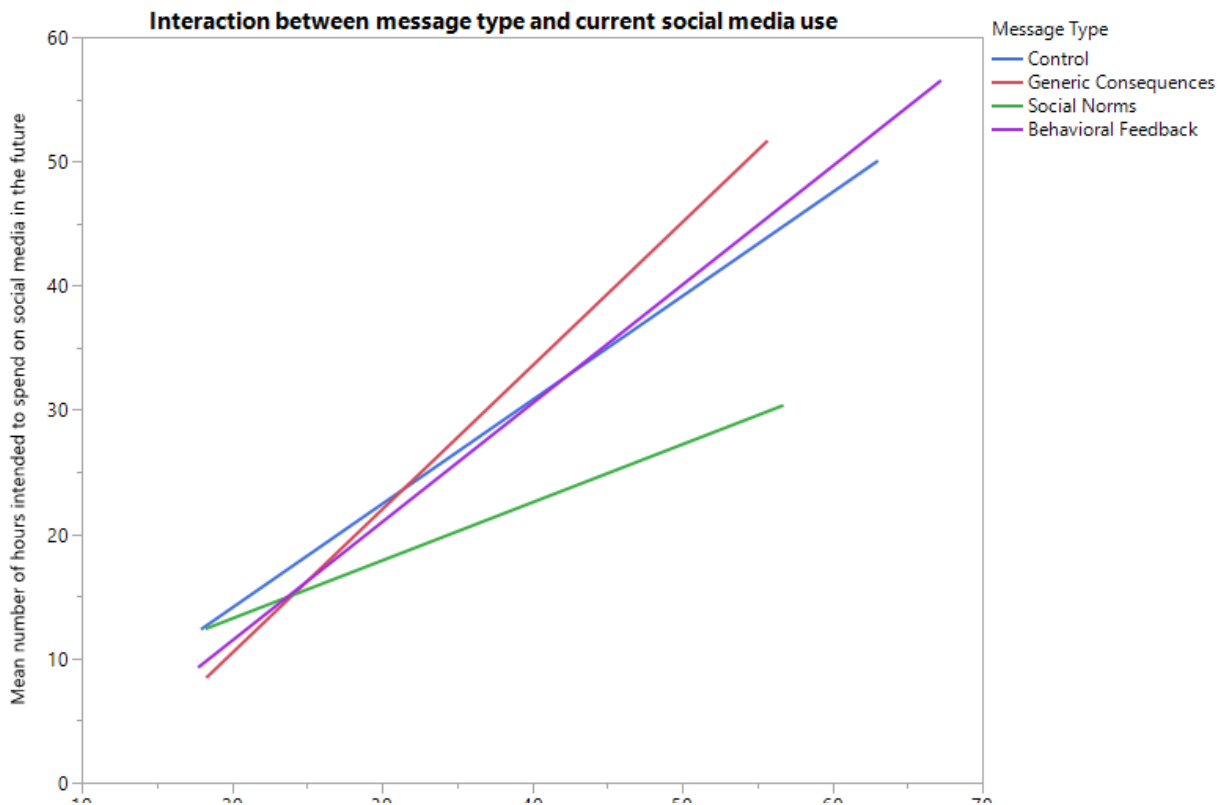


Figure 2. Interaction between message type and current social media use

social norms message depending on the covariate (baseline measurement of hours spent on social media per week). The effect was found to be significant for the generic consequences message, $\beta = .30$, $SE = 0.13$, $p = .02$, as well as the social norms message, $\beta = -0.38$, $SE = 0.14$, $p < .01$.

Further examination of this relationship demonstrated that at high levels of baseline social media use, those who read the generic consequences message may actually intend to increase their use, while those who read the social norms message intend to decrease their use. This creates an even larger difference between the generic consequences and social norms messages and suggests that the social norms message may have a stronger effect on those who are using social media more excessively, especially when compared to those who read a generic consequences message.

In terms of intended behavior change, the social norms message appears to be the only message that has a significant effect on future intentions to spend time on social media. The generic health message and the behavioral feedback message do not have significant effects, suggesting that those messages would not have an impact on behavioral change. These results only partially support the hypothesis that reading any health-targeted message is better than reading a control message (i.e., a message with no health information) because only one type of message was shown to be effective.

Attitudes Regarding Excessive Use

In addition to future intended behaviors, a secondary outcome variable of attitudes was examined to understand whether the messages changed participants' internal attitudes regarding their social media use. This second multiple regression analysis predicted participants' attitudes after reading the message using message type (i.e., control, generic consequences, social norms, behavioral feedback) and their attitudes before reading the message as a covariate. This attitude variable was measured by participants' responses to the statement "*I spend too much time on*

social media”, which was given with both the baseline and post-message measurement. The results of this model are presented in Table 2.

Overall, the model was significant, $F(7, 106) = 67.25, p < .001$. Parameter estimates indicated that previous attitudes were a significant predictor, as expected, $\beta = 0.87, SE = 0.04, p < .001$. The only other significant parameter estimate was that of the behavioral feedback condition, $\beta = 0.27, SE = 0.13, p < .05$. Further comparison tests indicated that the behavioral feedback message was different from the control message, $t(99) = 2.69, p = .01, d = 0.70$. This difference is visualized in Figure 2, where the bars once again represent the adjusted mean responses of each condition and the error bars represent the standard error. Again, it is important to note the large effect size in this difference given the manipulation being a single, brief intervention message. No other differences in means or slopes were found. These results indicate that after reading the behavioral feedback message, participants were more likely to believe

Table 2. Results of a multiple regression of attitudes regarding time spent on social media

Table 2				
<i>Multiple Regression of Attitudes Regarding Time Spent on Social Media</i>				
	β	SE	t	p
Intercept	0.79	0.21	3.60	<.001*
Generic Consequences (GC)	0.04	0.13	0.33	.741
Social Norms (SN)	-0.05	0.13	-0.41	.686
Behavioral Feedback (BF)	0.28	0.13	2.15	.034*
Pre_TooMuchTime	0.87	0.04	21.58	<.001*
Pre_TooMuchTime*GC	0.04	0.07	0.61	.541
Pre_TooMuchTime*SN	-0.02	0.07	-0.34	.733
Pre_TooMuchTime*BF	-0.04	0.07	-0.59	.557

*Note: Control group is dummy coded as the comparison group.

that they spent too much time on social media. However, this effect was not significant for the social norms message, suggesting that reading the social norms message did not significantly impact whether participants believed they spent too much time on social media. This suggests that behavioral feedback messages do have some attitudinal benefit over social norms messages.

Ultimately, the evidence does not clearly point to one type of message being more effective than the other; rather, it seems to suggest that these messages may be working effectively through different mechanisms.

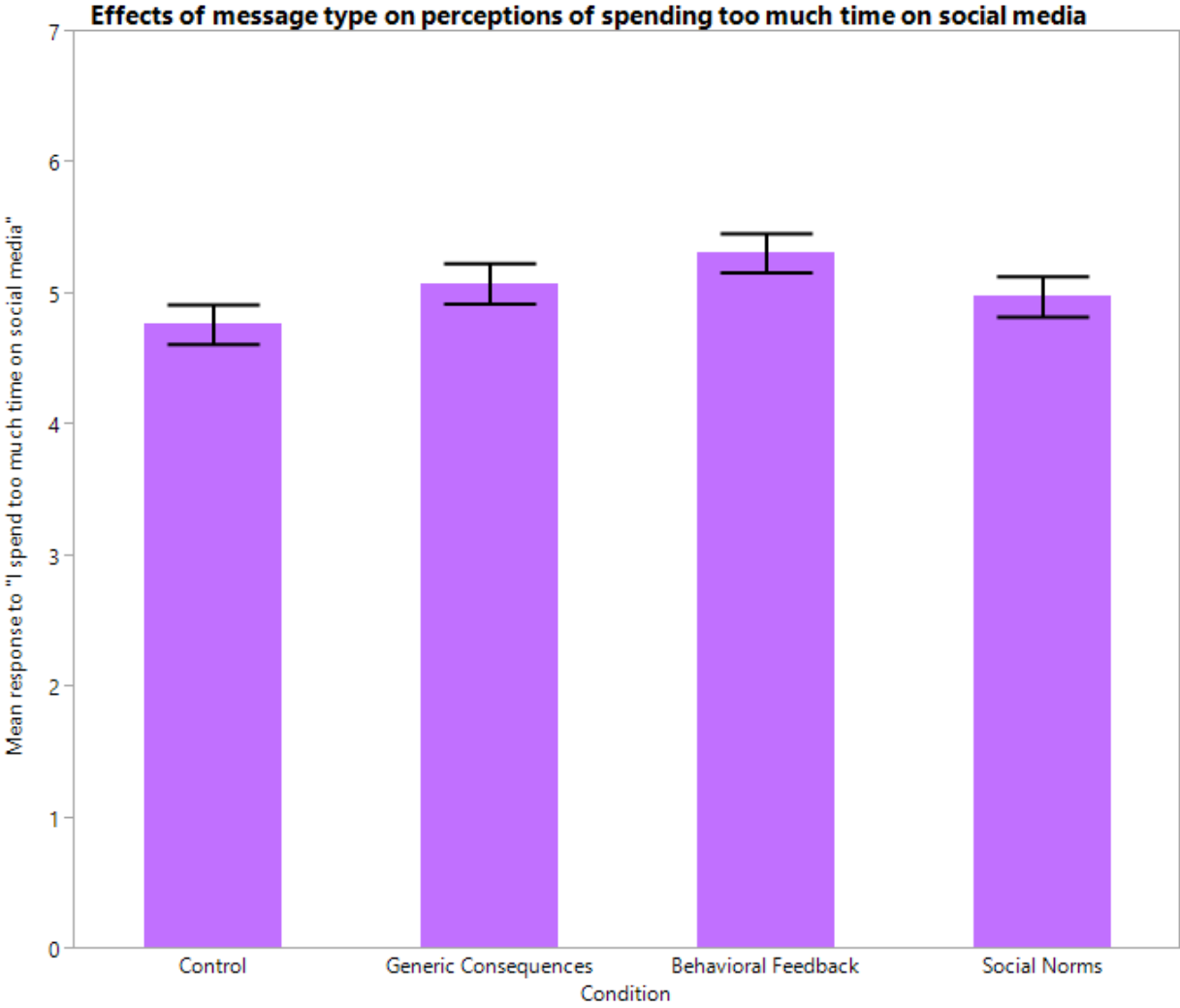


Figure 3. Group differences in perceptions of spending too much time on social media

Chapter 4 - Discussion

The goal of this study was to understand whether message interventions, specifically social norms and behavioral feedback messages, could be effective at reducing excessive social media use. Furthermore, another goal was to explore whether two aforementioned message types have similar efficacy or if one type was clearly more effective than the other. On the attitude measure, it was found that behavioral feedback was significantly different from the control, while social norms was not. This implies that reading a behavioral feedback message may change an excessive user's attitudes about their social media use, such that they become more aware that they are spending an unhealthy amount of time on social media. This effect does not seem to exist for those who read a social norms message. Interestingly, the messages demonstrate the opposite effect on behavioral intentions. For the intended future behavior measure, those who read the social norms message reported that they intended to use social media less in the future than those in the control group. Behavioral feedback, on the other hand, showed no difference when compared to the control group, suggesting that the behavioral feedback message was not having an effect on intended future behavior. At first, these findings seem contradictory because the attitude measure supports the behavioral feedback message, while the behavioral intentions measure supports the social norms message. Furthermore, it is traditionally expected that a change in attitudes precedes a change in behavior. Typically, this means that when someone is presented with an intervention message, it is more likely to observe an immediate change in attitude than an immediate change in behavioral intentions. However, in cases where a change in behavioral intention is observed, it is generally expected that the change should accompany a change in attitudes. In the context of these results, the behavioral feedback message demonstrates effects that one would traditionally expect: a difference in participants'

attitudes about their social media use, but no difference in how much they intend to use social media in the future. The surprising result is that of the social norms message, where participants expressed an intent to reduce their future social media use but did not show the expected accompanying difference in their attitudes regarding their use. There are several possible explanations for this difference in observations.

Firstly, there is a fundamental difference in the two message types – social norms presenting information about what others are doing versus behavioral feedback presenting information about what a person themselves is doing. Social media is inherently a highly social activity, where the most popular use is for individuals to post about themselves and read about other people. Thus, it could be that people who use it excessively (i.e., the population captured by this sample) may pay more attention about behavior of other people in general. As such, the results for the behavioral feedback message are still unsurprising. Participants in the behavioral feedback group were targeted with a message containing details of their own behavior, rather than that of others. These participants read about how much time, money, and energy they were spending on social media but received no information on how much others were spending. Again, considering that the study sample might mostly contain people who are more concerned about fitting in, those who only read about their own behavior, with no reference point that explains what others do, may not see a need for their behavior to change. It is possible that they actually perceive their behavior to be similar to the social norm. In other words, these may be people who could realize that they are using social media a lot but believe that others are using it just as much. This would explain why those in the behavioral feedback group reported an attitude change such that after reading their behavioral feedback message, they believed that they spent too much time on social media but did not intend to reduce their behavior in the future.

On the other hand, the results for the social norms group, while surprising, could be explained well by this defining characteristic of the sample. If excessive users do, in fact, place more emphasis on what others are doing, it is possible that the people included in this study are more sensitive to social norms and would demonstrate a stronger desire to fit in. This may result in a quick decision to use social media less in the future for the sake of adhering to the behavioral norm, with a change in their attitudes regarding their use potentially following at a later point. If this is the case, it would explain how the social norms message affected behavioral intentions without affecting attitudes because participants may not necessarily need to internalize an attitude change before exhibiting a desire to change their behavior. In other words, the social norms message may have provided information that was more valuable to an excessive user than the behavioral feedback message. The information about what others were doing may have impacted intended behavior because excessive users may be more likely to want to follow social norms without being overly concerned with how they personally feel about their behavior. Given that engaging in social media is such a socially driven behavior, it is easy to see that the more often someone uses it, the more emphasis they may begin to place on understanding what others do and fitting in with others rather than caring what they are doing on their own.

Another possible reason for the lack of an effect on intended future behavior following exposure to the behavioral feedback message is the broadness of the behavioral feedback message. The message contained information about money, time, caloric intake, and exercise, but it is possible that people do not believe that their social media use has a direct impact on these rewards. Furthermore, a person could be multitasking while using social media, which could lead them to believe they are not actually missing out on the rewards presented in the message. For example, a person who uses social media at work may not believe that they are

missing out on a monetary reward because they are actually earning money and being on social media at the same time. It could also be the case that a person uses social media when they would not be doing something productive anyway, such as when they are watching TV. In both of these potential cases, the time a participant has spent on social media may not be “lost” time. Therefore, reading the behavioral feedback message may have little effect on behavioral intentions simply because the rewards and activities presented in the message do not line up with the participants’ specific patterns of social media use. However, the change in attitudes expressed by the behavioral feedback group is valuable, as it is always possible that their change in attitudes may lead to a behavioral change at a later point in time.

In conclusion, there is an interesting contrast between the two types of health intervention messages. Social norms seems to be more immediately effective on intended future social media use, while behavioral feedback is more immediately effective on attitudes regarding social media use. This may be due to the nature of the messages, with social norms placing emphasis on how others use social media and behavioral feedback placing emphasis on how the self uses social media, combined with the nature of social media, which is very much about observing the behavior of others. However, this is not sufficient evidence to choose one type of message over the other without considering other factors. If the goal is to have individuals internalize a need for a change in their excessive social media use, it seems best to use a behavioral feedback message to affect their attitudes regarding their use. If the desire is to quickly reduce one’s intended future social media use, it may be best to use a social norms message. Each message comes with other pros and cons in terms of cost and distribution that should also be taken into account. For example, behavioral feedback messages come at a higher cost and take more time to distribute as they require input from each person and are then generated for that person’s specific

behavior. Social norms messages are cheaper and quicker to distribute because they are a single message that many people can be exposed to at any time. It is also important to note that these changes came in response to a brief, one-time message. However, the effect sizes for these differences were relatively large. The effects may be even stronger or different with multiple readings of the messages, which means that the behavioral feedback message may have the potential to reduce future intentions to use social media and the social norms message may have the potential to change attitudes regarding one's social media use. Individuals may also express more intent to change their future social media use when given more time to consider the messages and the effects of their current social media use. As such, it is possible that both messages may result in affecting behavioral attentions and attitudes when presented multiple times or considered more in-depth for a longer period of time.

Limitations

There are a few limitations of this research study that are important to address. Firstly, using a sample of Amazon Mechanical Turk workers has downsides. MTurk workers can be more susceptible to careless responding due to feeling that the amount they are being compensated is not worth the time they are spending on the assessment. However, attention checks were included throughout this study to help remove those who were not paying close attention. It is also possible that the MTurk workers who participated in this research study have participated in other research studies in the past, leading them to glean information about the true nature of the study and answer survey questions with bias. Additionally, the lack of restriction regarding social media websites is thought to be a strength by allowing more people to report more of their behavior. However, it is possible that this lack of definition for participants creates variability that may be unaccounted for in that some participants may have counted in website A

while other participants did not. It is also possible that participants' estimates of their time spent on social media websites were sometimes inaccurate. However, what remains important is that these participants recognized that they were engaging in social media website activity, regardless of whether these websites were defined by themselves or by others, and that they indicated, through their estimates, that they were using it in excessive amounts.

Future Directions

The results of this study do not clearly indicate whether social norms or behavioral feedback is the better message type to use. Social norms looked promising in that participants intended to use social media less in the future, but behavioral feedback seemed promising in that participants started to believe they spent too much time on social media. To test the proposed theory that the social norms effect might be driven by excessive social media users placing more value on how their behavior aligns with the behavior of others, a future study could include a measure of self-monitoring, or the extent to which an individual monitors and controls their own behavior according to situational cues on what is socially appropriate (Snyder, 1974). For example, those who are more closely monitoring the appropriateness of their social behavior may be more likely to respond to the information about the social norm, using the norm as an indicator of socially acceptable behavior. In a past study, Miller & Brannon (2015) found that high-self monitors intended to drink fewer drinks when they received a social norms message than when they received a more personalized message, suggesting that high self-monitors are more responsive to messages containing information about the behavior of others. Similarly, it's likely that high self-monitors would respond more greatly to the social norms information about social media use, while low self-monitors may be more likely to respond to the behavioral feedback information. Given that a main focus of social media is observing the social behavior of

others, it's possible that excessive social media users could be mostly high self-monitors, driving the resulted effect of the social norms message. Furthermore, it may be helpful to ask participants how much time they believe others are spending on social media before they read the social norms message. It's possible that they believe the social norm to be higher and may be using that to inform their excessive behavior. This would allow for the better understanding of whether these excessive users actually are paying closer attention to others' behavior and trying to fit in.

Additionally, it may be interesting to combine approaches, such as using a personalized message that includes information about the social norm, to affect both individuals' attitudes and intended behavior. It's possible that these approaches may complement one another in an additive function, such that using both behavioral feedback and social norms information may create a message with a stronger effect than either message type alone. Alternatively, it may be that behavioral feedback and social norms are acting in entirely unique ways, such that combining them may diminish the effects of either message type, essentially canceling out and resulting in no effect at all. For example, if an individual's social media use falls below the social norm, they may think they should increase their use to match the use of other people. However, at the same time, the behavioral feedback information about their personalized potential consequences may lead them to feel the need to reduce their use. This could result in observing no difference overall, even if each approach is still having an individual effect.

Furthermore, it may be interesting to present the messages to participants multiple times. Providing participants with the message multiple times may help keep thoughts of their excessive social media use and its potential consequences salient. Typically, people tend to change their attitudes before changing their behavior. Thus, allowing for more time or including

reminders may facilitate a deeper processing of the message and allow the participant to consider more carefully whether making a behavioral change might be beneficial for them.

Another future study could implement more accurate ways of measuring time spent on social media. For example, some mobile phone operating systems can measure the amount of time a specific application spends on the screen. This would reduce any potential issues that come with participants giving their best estimation of social media use. It could also open up easier opportunities to measure actual behavior after the message intervention, where participants could simply send in a report of their use, rather than relying on participants' reported intended behavior.

Conclusion

Behavioral feedback and social norms messages are both promising interventions for reducing excessive social media use. Behavioral feedback was more successful regarding attitudes, such that the message influenced individuals to believe that they do spend too much time on social media. Once an individual has internalized this belief, they may be more likely to decide to make a change in their behavior later on. These personalized messages may be helpful to present to excessive users to inform them about how much time they are actually wasting, while understanding that the intention to actually change their social media use may come later on. On the other hand, social norms was more successful at influencing behavioral intentions, such that after reading the message, individuals reported that they planned to use social media less in the future. These norms messages would be helpful to inform excessive users about how much others are using social media so that they can reference this point when thinking about their own behavior and whether they want to change to fit in. Several theories suggest that if these users implement their plans to use social media less often, it's possible that their attitudes

about their excessive use could change to mirror their new behavior. According to self-perception theory, individuals partially come to understand their internal attitudes and emotions by observing their own behavior, so individuals may realize that their attitudes about social media have changed once they start using social media less (Bem, 1972). Alternatively, cognitive dissonance theory suggests that individuals tend to desire consistency between what they think and what they do and in the case of inconsistency between beliefs and actions, individuals can experience psychological discomfort (Festinger, 1962). Therefore, if an individual starts using social media less, they may change their attitude to become consistent with that behavior to alleviate any potential discomfort due to the difference between their attitude and their behavior.

Overall, both approaches seemed to be effective, which suggests that when discussing social media use with an excessive user, it would be viable to use either a behavioral feedback or a social norms message to begin to effect some change for that user. While further research may reveal more about the situations in which either message may become more effective than the other, there is currently no clear answer.

Chapter 5 - References

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Appendix A - Pre-Test Questions

1. Please indicate which social media websites you actively use, if any.
 - a. Instagram
 - b. Facebook
 - c. Pinterest
 - d. YouTube
 - e. WhatsApp
 - f. Snapchat
 - g. Twitter
 - h. LinkedIn
 - i. Other
 - j. I do not use any social media websites

2. Earlier, you reported that you use [*participant's selected choices for question 1*]. Please tell us **how much time you currently spend using these social media websites** during a typical week by **entering your most accurate estimate of the number of hours and minutes you spend each day in the boxes below**. For example, if you spend **2 hours and 30 minutes** using social media websites on Mondays, you would enter **2** in the first box (**hours**) and **30** in the second box (**minutes**) next to Monday.

	The number of hours you spend on social media websites each day.	Any minutes you spend in addition to the number of hours.	I do not use any social media websites on this day.
Monday			
Tuesday			
Wednesday			
Thursday			
Friday			
Saturday			
Sunday			
Weekly Total			

Appendix B - Message Content by Condition

Control Message

In this study, you have been selected to read about how social media websites affect our lives and why we use them. Please read the following information about social media websites for more information on this topic.

One of the main uses of the internet is social media websites. These websites create online networks of individuals who can keep in contact with each other over the internet and view updates to their lives. In the past, people would keep in contact with friends and family through letters, postcards, or phone calls. Now, you can log into your social media website account and view image, video, and text updates, all without saying a word to the person posting the update. You can create and participate in groups online, allowing you to meet new people without leaving your home.

Past research has found that people find value in social media websites for many reasons, including:

- Fostering social relationships
- Maintaining your reputation
- Sharing updates about your life
- Creating community groups

Please answer the following questions using information from the above passage.

1. According to the message above, **one of the main uses for the internet is:**
 - a. Entertainment
 - b. Shopping
 - c. Social media
 - d. News

2. Which of the following reasons for using social media websites **does not appear in the passage above?**
 - a. Maintaining your reputation
 - b. Creating community groups
 - c. Sharing updates about your life
 - d. Attracting consumers to your business
 - e. Fostering social relationships

3. According to the message above, **what types of updates can you view on social media?** (Check the boxes of the **3** correct answers.)
 - a. Image
 - b. Text
 - c. Event
 - d. Political
 - e. Video

Generic Consequences Message

In this study, you have been selected to read about how social media websites affect our lives and why we use them. Please read the following information about social media websites for more information on this topic.

Past research has found that people find value in social media websites for many reasons, including:

- Fostering social relationships
- Maintaining your reputation
- Sharing updates about your life
- Creating community groups

However, there is concern about relying too heavily on social media websites for social interaction. Trading face-to-face social interactions for online social interactions can have negative outcomes for some people, including loneliness and depression. Too much of anything can become a bad thing, so it is important to be careful and monitor your own social media use. Please answer the following questions using information from the above passage.

1. Which of the following reasons for using social media websites **does not appear in the passage above?**
 - a. Maintaining your reputation
 - b. Creating community groups
 - c. Sharing updates about your life
 - d. Attracting consumers to your business
 - e. Fostering social relationships

2. According to the message above, **there is concern about relying to heavily on social media websites for:**
 - a. Shopping
 - b. News updates
 - c. Entertainment
 - d. Social interactions

3. According to the message above, **trading face-to-face interactions for online interactions** can lead to: (Check the boxes of the **2** correct answers.)
 - a. Homelessness
 - b. Depression
 - c. Poverty
 - d. Loneliness
 - e. Drug abuse

Behavioral Feedback Message

In this study, you have been selected to read about how social media websites affect our lives and why we use them. Please read the following information about social media websites for more information on this topic.

Past research has found that people find value in social media websites for many reasons, including:

- Fostering social relationships
- Maintaining your reputation
- Sharing updates about your life
- Creating community groups

However, there is concern about relying too heavily on social media websites for social interaction. Trading face-to-face social interactions for online social interactions can have negative outcomes for some people, including loneliness and depression. Too much of anything can become a bad thing, so it is important to be careful and monitor your own social media use.

Earlier, you reported that you spend XX hours on social media websites each week. Over time, this can really add up. For example, XX hours per week is the equivalent of spending XX hours over the course of one entire year. This is equal to XX days total over the course of one year. This amount of time is equal to:

- **XX hours enjoying a hobby**
- **\$XX at a minimum wage job**
- **XX miles walked at a leisurely pace**
- **XX calories burned for that number of miles walked**
- **XX candy bars you could have eaten for that number of calories**

Please answer the following questions using information from the above passage.

1. What is your **total hours of social media use over the course of one year?** _____
2. In that time, **how much money could you have earned?** _____
3. In that time, **how many calories could you have burned?** _____

Social Norms Message

In this study, you have been selected to read about how social media websites affect our lives and why we use them. Please read the following information about social media websites for more information on this topic.

Past research has found that people find value in social media websites for many reasons, including:

- Fostering social relationships
- Maintaining your reputation
- Sharing updates about your life
- Creating community groups

However, there is concern about relying too heavily on social media websites for social interaction. Trading face-to-face social interactions for online social interactions can have negative outcomes for some people, including loneliness and depression. Too much of anything can become a bad thing, so it is important to be careful and monitor your own social media use.

You may be interested to know that on average, adults spend 15 hours a week on social media websites, which is equal to about 2-3 hours per day.

Please answer the following questions using information from the above passage.

1. The message above provides information about **the average use for which group of people?**
 - a. **Children**
 - b. **Teenagers**
 - c. **Adults**
2. On average, **how many hours per week do adults spend on social media?** _____
3. The weekly average is equal to about **how many hours per day?** _____

Appendix C - Post-Test Questions

Thank you for reading the informational message.

We would like to know **how much time you intend to spend in the future using social media websites** on the internet over the course of a typical week.

Please tell us how much time **you intend to spend in the future using social media websites**, such as the ones you listed earlier, during a typical week by **entering the number of hours and minutes you spend each day in the boxes below**.

For example, if you **intend to spend 2 hours and 30 minutes** using social media websites on **future** Mondays, you would enter **2** in the first box (**hours**) and **30** in the second box (**minutes**) next to Monday.

	The number of hours you intend to spend on social media websites each day.	Any minutes you intend to spend in addition to the number of hours.	I do not intend to use any social media websites on this day.
Monday			
Tuesday			
Wednesday			
Thursday			
Friday			
Saturday			
Sunday			
Weekly Total			

Finally, please answer the following questions regarding your beliefs about the internet and the types of websites mentioned earlier in the study.

You may see some questions that are similar to ones you answered earlier in the study; however, we ask that you simply respond to these questions a second time. Please take some time to answer each question honestly and to the best of your ability.

Please indicate to what extent you agree or disagree with each of the following statements.

1	2	3	4	5	6	7
(Strongly Disagree)						(Strongly Agree)

1. The internet enhances our daily lives.

2. I should pay more attention to how much time I spend on social media.
3. I spend too much time on social media.
4. I intend to spend less time on using social media.
5. I will consider spending less time on social media.
6. People have told me I spend too much time online.
7. Watching the news channel on TV is a better source of information than news websites.
8. The correct answer for this statement is option two. Choose option two for this question.
9. Online shopping is more convenient than shopping in stores.
10. Entertainment websites are more enjoyable than other forms of entertainment.

Appendix D - Demographic Questionnaire

Below are a few demographic questions. If you wish, you may choose not to answer a question by leaving it blank.

1. What is your age? _____
2. What is your current education?
 - a. Less than high school
 - b. High school graduate
 - c. Some college
 - d. 2 year degree
 - e. 4 year degree
 - f. Professional degree
 - g. Doctorate
3. What is your sex?
 - a. Male
 - b. Female
 - c. Prefer not to say
4. What is your ethnicity? Please choose all that apply.
 - a. White
 - b. Black or African American
 - c. Hispanic of Latin origin
 - d. American Indian or Alaska Native
 - e. Asian
 - f. Native Hawaiian or Pacific Islander
 - g. Other
 - h. Prefer not to say
5. What is your current employment status?
 - a. Employed full time
 - b. Employed part time
 - c. Self-employed
 - d. Unemployed looking for work
 - e. Unemployed not looking for work
 - f. Retired
 - g. Student
 - h. Disabled

Earlier in the study, **you were assigned to read an informational passage about one type of website**. Please recall **which type of website you read an informational passage about**.

1. Which of the following types of websites did you read about?
 - a. News websites
 - b. Entertainment websites
 - c. Social media websites
 - d. Shopping websites

Appendix E - Debriefing Message

Thank you for participating in this study. This research is important to the literature on health messaging and website use, specifically the use of social media websites. The goal of this study is to examine how certain messages affect intentions of using social media in the future. As such, every participant was assigned to read information about social media websites. It should be understood that there were no “right” or “wrong” answers.

If you have any questions about this study or psychological research in general, you are welcome to contact the graduate student, Angela Rose, at angelarose@ksu.edu, or the faculty member, Dr. Laura Brannon, at lbrannon@ksu.edu.

If you have any questions about the ethical content of this study, do not hesitate to contact Dr. Rick Scheidt, Chair of Committee Research Involving Human Subjects at 785-532-3224.

Thank you for your participation. Your survey completion code is: XXXXXX Copy and paste this code into MTurk to receive credit for completing our survey. When you have copied your code, click next to submit your survey.