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How Does Self-Presentation Concern Relate to Language Use in Online Social Networking?

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HOW DOES SELF-PRESENTATION CONCERN RELATE TO LANGUAGE USE IN ONLINE SOCIAL NETWORKING?

by

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Abstract

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Millions of people worldwide use online social networking sites (SNSs) such as Facebook and Twitter for interpersonal interaction and self-presentation. Theories of computer-mediated communication suggest that SNSs offer unique affordances and pose complex challenges to self-presentation (particularly in audience management) compared to face-to-face settings. One of the most fundamental ways in which people present themselves to others is through the use of language. The goal of the present work is to better understand language use in online self-presentation by exploring how the degree of concern people have about their self-presentation relates to their word choices in SNS posts (i.e., status updates and tweets).

This study addressed three specific research questions. First, do people with greater self-presentation concern (SPC) differ from people with lower SPC in their use of words related to style, affect, and specific topics? Second, how do personality traits (i.e., the Big Five) mediate the relationships between SPC and language? Finally, does reminding people about specific types of audiences in their social networks (i.e., social vs. professional audiences) influence their language use and the amount of time they spend creating a post? To address these questions, I recruited Facebook and Twitter users to complete an online survey where they shared their most recent SNSs posts and wrote a new post under different audience reminder conditions. They also completed measures of SPC and personality. I used Linguistic Inquiry and Word Count (LIWC2007) to measure the language in participants' posts along dimensions of style (i.e., pronouns), affect (i.e.,

emotion words and swear words), and topic (i.e., achievement, money, religion, and sexuality).

The results revealed that SPC was not significantly related to language use along these dimensions. Although SPC was related to certain personality traits, these traits did not mediate the relationships between SPC and language use. Finally, reminding participants about social and professional audiences did not affect their language use or the amount of time they spent creating their posts. These results carry important implications for theoretical frameworks of online self-presentation and provide directions for future research on SPC and language use.

Table of Contents

List of Tables

How Does Self-Presentation Concern Relate to Language Use in Online Social Networking?

Remote communication using computers and other electronic devices, more generally referred to as computer-mediated communication (CMC), is now a highly prevalent means of interpersonal connection. Widespread availability of personal electronics and high-speed communication networks (i.e., wireless Internet and cellular services) in nations such as the United States has enabled people to heavily adopt these technologies for social purposes. Virtually all young adults (aged 18-29 years) and more than 80% of all adults in the United States use the Internet (Zickuhr & Madden, 2012). A large majority of Americans have high-speed Internet connections in their homes (Zickuhr & Smith, 2013), and the emergence of smart phones and tablet computers (Duggan & Smith, 2013; Rainie & Smith, 2013; Smith, 2013) affords users with relatively ubiquitous mobile access to the Internet. The use of e-mail and social networking sites (SNSs) are among the most prevalent online activities for users in the United States (Brenner & Smith, 2013; Madden & Zickuhr, 2011). Globally, SNSs such as Facebook and micro-blogging services such as Twitter have attracted hundreds of millions of active users (Fiegerman, 2012; Fowler, 2012). Facebook remains the most popular social networking service among American adults, but many people use multiple social networking services to connect with others (Duggan, Ellison, Lampe, Lenhart, & Madden, 2015). Text messaging (a.k.a. "texting") is another highly popular form of CMC, especially among the young. An overwhelming majority of adults in the United States own cell phones or smart phones (Smith, 2013), and most of them (97% of young adults) report using their phones for text messaging (Duggan, 2013).

Computer-mediated settings are distinct from face-to-face (FTF) settings in several ways. McKenna and Bargh (2000) offer four factors to distinguish between online and FTF interactions: anonymity, geographic distance, physical cues, and time. First, the potential for anonymous communication is far greater in online compared to FTF contexts. Second, FTF communication requires people to be in close geographic proximity to each other whereas CMC can occur over vast distances. Third, many physical cues that are normally present in FTF settings—such as visual appearance, facial expression, body language, and tone of voice—are largely absent in CMC. Finally, FTF communication requires interlocutors to attend to the interaction at the same time, but this is not necessarily true in CMC. In text-based CMC such as e-mail and text messaging, people may send messages even when the recipients are not available to view them. There are forms of CMC, however, that require communicators to be present at the same time. These include real-time voice and video conferencing services such as Skype. For the purposes of this paper, I will focus on CMC that does not require temporal co-presence (i.e., asynchronous CMC).

An important part of interpersonal interaction in both FTF and online settings is how people convey information about themselves to others. People are generally concerned with how others perceive them and will try to influence these perceptions through a number of processes known as "self-presentation" or "impression management" (Leary & Kowalski, 1990). Some early perspectives on communication media were pessimistic about the potential of CMC for effective self-presentation and personal communication. For instance, media richness theory (Daft & Lengel, 1986) suggests that the communicative effectiveness or "richness" of a communication medium

depends on the number of cues and the immediacy of feedback (i.e., synchrony) that it offers. According to this perspective, rich media like FTF interaction enables more personal communication than less rich media like text-based CMC. Social presence theory (Short, Williams, & Christie, 1976) posits that people interacting using text-based channels will have less interpersonal awareness than people interacting FTF. Others have hypothesized that the absence of social context indicators such as location, occupation, age, and gender lead people to become self-absorbed and less concerned about the impressions they make on others (Sproull & Kiesler, 1986). These "reduced cues" (a.k.a. "cues-filtered-out") theories of communication suggest that CMC is not well-suited for social and self-presentational purposes. Despite this, CMC has become a widely popular, socially engaging set of technologies that are used regularly for self-presentation. And SNSs in particular have become dominant platforms for self-presentation in the digital age.

An important aspect of self-presentation, especially in the age of social media, is how people use language to present themselves. We convey much about who we are, what we think, and what we feel through our word choices. Tausczik and Pennebaker (2010) note that psychologists as early as Sigmund Freud have used language to form impressions of others and that words "are the medium by which cognitive, personality, clinical, and social psychologists attempt to understand human beings" (p. 25). In the early days of language analysis, human raters would manually code language from sources such as written narratives from thematic apperception tests (e.g., Murray, 1971) and transcribed voice recordings (e.g., Gottschalk & Gleser, 1969). However, in CMC, much of the language that people produce is automatically saved and can be searched and

collected with relative ease (e.g., boyd, 2010). Because of this, researchers now have countless corpora of natural human language at their disposal. Some of these datasets can contain hundreds of millions of words (e.g., Schwartz et al., 2013), so the development and use of computerized text analysis techniques has become increasingly important. There are a number of advanced techniques such as latent semantic analysis (e.g., Landauer, Foltz, & Laham, 1998), topic modeling (e.g., Blei, 2012), and Coh-Metrix (McNamara, Graesser, McCarthy, & Cai, 2014) used in many natural language processing and text evaluation applications. However, much of the research in the realm of personality and self-presentation has employed simple word-counting tools such as Linguistic Inquiry and Word Count (LIWC; Pennebaker, Chung, Ireland, Gonzales, & Booth, 2007) to analyze language use at the lexical level.

LIWC is a computer program created by James Pennebaker and his colleagues (Pennebaker & Francis, 1996; Pennebaker, Francis, & Booth, 2001) which calculates the percentage of words in a document that fall into specific categories (e.g., positive and negative emotion words). The program works by comparing the document to a set of pre-constructed dictionaries (with each category having its own dictionary) and counting the number of words in the document that are present in each dictionary. The creators of LIWC originally intended to simply count positive and negative emotion words, but they quickly expanded the number of categories to 80 (Tausczik & Pennebaker, 2010). These include basic linguistic categories (e.g., pronouns, articles, adverbs), social categories (family, friends, humans), affective categories (e.g., positive and negative emotion), cognitive categories (e.g., insight, certainty, tentativeness), perceptual categories (seeing, hearing, feeling), biological categories (e.g., body, health, sex), relativity (motion, space,

time), topics (e.g., work, money, religion), and speech categories (assent, nonfluencies, fillers). The dictionaries for these categories were originally constructed and validated by groups of independent judges in the early 1990s but have been updated as recently as 2007 (for in-depth descriptions of the validation processes see Pennebaker et al., 2007; Tausczik & Pennebaker, 2010). Thus, a major appeal of LIWC to the present work is its ability to analyze not only stylistic dimensions of language use (e.g., pronouns, adjectives, etc.), but also psychologically meaningful dimensions.

Some limitations to word counting tools like LIWC are worth noting, however. First, since all of LIWC's categories consist of pre-constructed word lists, there may be words that—despite being appropriate for a particular category—are not counted by the program. One can also argue that there are some categories in LIWC that are so large that they lack precision. For instance, there are over 400 words in the positive emotion LIWC dictionary, which includes varied terms such as "wisdom", "pride", and "carefree". And unlike negative emotion words—which contain the subcategories of anxiety, anger, and sadness—there are no subcategories of positive emotion words. Finally, LIWC scores do not take factors such as syntax or negation into account (although there is a separate negation category). So the sentence "I am very happy" would receive the same positive emotion score as the sentence "I am not happy" despite expressing the opposite sentiment.

Although word counting methods do pose some limitations, researchers have successfully employed these techniques to study language use in the area of personality and self-presentation. In one of their earliest investigations, Berry, Hiller, Mueller, and Pennebaker (1997) directly examined relations between LIWC categories and

impressions formed by others. First, the researchers videotaped short interviews in which college student participants talked about themselves. Then another group of participants watched the videos and judged the interviewees on a number of traits which were combined into impressions of competence, dominance, and warmth. The videos were also transcribed and analyzed across seven LIWC dimensions: positive and negative emotion words, present tense, cognitive processes, self-reference, negation, and unique words. The results showed that LIWC categories were predictive of all three impression traits above and beyond factors such as gender, physical attractiveness, and non-verbal expressiveness. More specifically, negative emotion words were indicative of lower competence and warmth, while positive emotion words indicated lower dominance.

In a later study, Pennebaker and King (1999) conducted LIWC analyses on several different types of writing samples, including diary entries from substance abuse patients, school writing assignments, academic paper abstracts, and responses from thematic apperception tests. In addition to finding that LIWC scores were generally reliable within individuals, they found links between word categories and personality characteristics. For example, positive emotion words were positively correlated with extraversion and agreeableness, and negatively correlated with neuroticism. Negative emotion words were positively related to neuroticism and negatively related to agreeableness. More recently, researchers have examined the relation of LIWC categories to more micro-level (i.e., item-level) personality characteristics and behavior (Fast & Funder, 2008). These researchers discovered that many LIWC categories—but especially certainty and sexuality words—were significantly related to both self-reported characteristics and characteristics rated by acquaintances. Overall, this literature

demonstrates that lexical aspects of language (as measured via LIWC) may be important both in the presentation of our personalities and the impressions we impart to others.

Given the prominence of online SNSs as avenues of self-presentation and the importance of language use in impression formation, the overarching goal of the present work is to better understand language as a means of self-presentation in the social networking realm. A relatively unexplored question in this area is how self-presentation concern (hereafter abbreviated as SPC) might influence language use on SNSs. As I will describe later in this paper, online social networking presents users with particular communicative affordances and audience dynamics that make concern about one's self-presentation particularly relevant. For instance, will users take greater advantage of these affordances if they are more concerned about how they present themselves? Will users with greater concern curb their language use given sensitive audiences such as family members, employers (e.g., Smith & Kidder, 2010), or even law enforcement (e.g., Kilburn, 2011) could potentially see what they post? My aim is to investigate such issues and gain a deeper understanding of language use in self-presentation in the social networking era.

In the first major section of this paper, I will provide an overview of traditional perspectives on self-presentation that are primarily based on FTF interaction. Then I will describe and evaluate several theoretical perspectives relevant to understanding self-presentation in CMC and online social networks. I will conclude the literature review with descriptions of research that specifically examines how language use on SNSs relates to self-presentation and personality. After the literature review, I will present my hypotheses with regards to the following research questions:

RQ1: Do SNS users who have high SPC differ from users who have lower concern in their language use in terms of style, affective expression, and topic choices?

RQ2: How are the relationships between SPC and language use mediated by other personality traits?

RQ3: Does increased awareness of particular audiences (e.g., friends vs. employers) influence SNS users' language use?

Literature Review

Traditional perspectives on self-presentation. The most heavily cited framework for understanding FTF self-presentation is the dramaturgical metaphor that Goffman (1959) describes in his book *The Presentation of Self in Everyday Life*. Goffman (1959) likens everyday self-presentation to the enactment of stage performances in which audiences are carefully managed. He specifies three settings relevant to self-presentational performances: the frontstage, the backstage, and the outside. The frontstage is the physical setting that contains the audience for a particular self-presentation. Thus, when people enter the frontstage, they must perform the appropriate "character" for that particular audience. The backstage is a setting where people do not have to maintain their frontstage performances. It is where people may "step out of character" and even "knowingly contradict" the performances they give in the frontstage (Goffman, 1959, p. 112). The backstage often serves as a place where colleagues who share the same frontstage may socialize (e.g., teachers in a faculty lounge). The frontstage and backstage are often physically adjacent, meaning that barriers between the two settings need to be carefully maintained to prevent audiences from viewing backstage behavior. Finally, the outside refers to places other than the front and backstage where

unintended audiences may reside. To Goffman (1959), a crucial part of self-presentation is segregating audiences and minimizing intrusions by people from the outside. When outsiders do intrude on a performance, he suggests that people must quickly adjust the performance to make the outsiders feel as if they are part of the intended audience.

In giving these performances, Goffman (1959) asserts that people will generally present themselves in ways that conform to ideal standards. Whatever kind of character people are trying to present, they will try to present an ideal version. To create ideal impressions in others, people must not only adopt certain norms but also avoid behaviors that contradict the ideal character. Since performances are not always perfect, there will often be differences between the impressions that people attempt to create and the impressions that are actually formed. Goffman refers to these as performances that are "given" and performances that are "given off". He views self-presentation as a product of performance. From this perspective, self-presentation is not simply the expression of a character; the character is an end result of expression.

Theorists have proposed a number of different motives or functions of self-presentation. Goffman (1959), for example, generally viewed self-presentation as a means of controlling audiences' reactions and their treatment of the self. Baumeister (1982) proposes two primary functions of self-presentation: a) to gain favor with an audience in order to obtain some material or social reward and b) to construct, maintain, or modify one's public image to align with one's ideal self. He describes these two functions more simply as motives to impress either a specific audience or "others in general" (Baumeister, 1982, p. 4). Others differentiate self-presentational motives to be viewed favorably from motives to avoid disapproval. Arkin (1981) makes this distinction

and suggests that people may adopt either an "acquisitive" or "protective" self-presentational style for any given situation. The acquisitive style reflects a desire to achieve success and social approval whereas the protective style stems from the motivation to avoid failure and social disapproval. People engaging in a protective style may present themselves in an overly modest, compliant, or neutral way. Factors that influence self-presentational style include characteristics of the audience (e.g., are they critical or not?), the context of the interaction, and individual differences such as social anxiety and self-esteem (Arkin, 1981).

Drawing from these theories, Leary and Kowalski (1990) present a two-component model that describes motives and processes of impression construction. According to this model, the primary motives of self-presentation are a) to maximize rewards and minimize costs for material and social outcomes, b) to regulate self-esteem, and c) to create an identity. However, they suggest that awareness of others' impressions is preattentive in most situations, meaning that people do not consciously monitor these impressions unless the situation calls for it. In most everyday situations, people may perform habitual self-presentational behaviors (e.g., fixing one's clothes or hair) without a conscious motivation (Leary & Kowalski, 1990). Situations that involve motivated self-presentation arise when impressions are highly relevant to one or more goals (namely rewards, self-esteem, and identity formation), when people highly value these goals, and when there inconsistencies between people's public self-images and their desired self-images.

The impression construction component of Leary and Kowalski's (1990) model includes several factors that determine the kinds of self-presentations that people will

construct. The main determinant in impression construction is self-concept. According to Leary and Kowalski (1990), people want to avoid deception and accurately present positive qualities about themselves. People also self-present to convey desired images (i.e., the person they want to be) and avoid undesired images (i.e., the person they do not want to be). One constraining factor, however, is the expectancy to have an image consistent with one's social role (e.g., occupation). The values and preferences of audiences also constrain self-presentation to the extent that alignment with the audience is important to a particular goal. Lastly, self-presentation is influenced by the perceptions people have about others' current impressions of them and impressions others are likely to form in the future. People constrain their behavior to fit with the information that others currently have or are likely to receive.

Finally, Altman and Taylor's (1973) social penetration theory outlines processes of self-presentation in the context of interpersonal relationship development. This theory pertains to all levels of interpersonal relationships from casual acquaintanceships to romantic partnerships. The term "social penetration" refers to the progression from relatively shallow and superficial levels of self-disclosure to relatively intimate levels of self-disclosure as relationships develop. Social penetration theory suggests that relationships will typically follow this progression from non-intimate to intimate self-disclosures in a gradual, systematic fashion. It also specifies two dimensions of self-disclosure along which people can progress: depth and breadth. Depth refers to the degree of intimacy or detail that people may reveal about a particular facet of their lives, while breadth is the range of facets that they are willing to discuss. Close relationships,

therefore, are characterized by more intimate and multi-faceted self-presentations between partners.

Social penetration theory adopts a reward versus cost model to determine how far a particular relationship will progress. People will assess the rewards and costs of their present self-disclosers and will forecast the outcomes of future interactions with their relationship partners. If the perceived outcomes are positive—meaning that the rewards outweigh the costs—people will move to more intimate self-disclosures. If people perceive these outcomes as costly, they may begin to regress in their level of self-disclosure (depenetration) and eventually end the relationship. In other words, people will take into account the outcomes of their past interactions and their predictions for future interactions to determine how intimately to present themselves.

Self-presentation in CMC.

Social information processing theory. The early reduced cues perspectives (Daft & Lengel, 1986; Short et al., 1976; Sproull & Kiesler, 1986) suggest that CMC is inherently limited in its capacity to transmit social information, making it impersonal and ill-suited for self-presentation. Walther (1992) was among the first communication researchers to challenge these perspectives by exploring the processes through which CMC users exchange information for the purposes of impression and relationship formation. He argues that people are motivated to affiliate with each other and that communication—in all forms—serves this motive. Specifically, his approach examines how interpersonal exchanges progress along various dimensions of "relational communication" including intimacy, formality, dominance, and task-orientation (Burgoon & Hale, 1984; 1987). Social information processing (SIP) theory posits that, in

CMC settings where cues that would normally be present in FTF are absent, users will be motivated to adapt to the information that is available in order to achieve more personal levels of relational communication.

Walther (1992) outlines a number of assumptions and processes that underlie SIP theory. First, as mentioned above, is the assumption that people are motivated to affiliate with others. People are affected by the same relational motivators in CMC as they would be in other communication settings, and interpersonal communication serves social functions even in task-oriented situations. Second, relational communication progresses as people form impressions of one another. They form such impressions by decoding verbal and nonverbal information that is encoded and transmitted by others over the course of their interactions. However, in the case of text-based CMC, communicators may only have verbal-textual information available to encode and decode. In the absence of nonverbal cues, people will adapt to use whatever cues are available in order to form impressions of others. Specifically, Walther (1992) draws from equilibrium theory (Argyle & Cook, 1976; Argyle & Dean, 1965) to suggest that CMC users will adapt their textual-verbal encoding strategies and may substitute nonverbal cues with textual cues (e.g., emoticons, punctuation, and lexical surrogates).

Because CMC ostensibly has fewer cues that users may utilize to interpret social information, another assumption is that information exchange and processing will take longer in CMC compared to FTF. Communicators in text-based CMC are tasked with encoding both relational and task-oriented information into a single information stream (i.e., their typed messages), whereas FTF communicators may encode information into verbal and nonverbal streams. Therefore, impression formation in CMC depends on there

being a sufficient amount of time and opportunity for users to exchange messages. People decode and process the social information that accumulates over time to form better impressions of others as they exchange more messages. From the SIP perspective, it is not so much a matter of how well (or how much) people can form impressions over CMC, but more a matter of how long it takes.

In his initial empirical investigations of SIP, Walther (1993; Walther & Burgoon, 1992) assigned previously unacquainted undergraduate participants to groups of three and had them collaborate either FTF or through CMC on three different decision-making tasks over the course of several weeks. Participants in the FTF condition met in a classroom on several different occasions to work on the tasks while those in the CMC condition collaborated remotely using an asynchronous, text-based conferencing system. Following the completion of each task, participants completed a questionnaire assessing each group member's personal traits (i.e., their impression development) and levels of relational communication. The results showed that impressions became increasingly developed over time in the CMC condition, and by the end of the third task they began to approach the level of impression development by FTF participants. In contrast, FTF participants achieved a relatively high level of impression development at the end of the first task and remained stable for the duration of the study. In terms of relational communication, CMC participants changed over time along several dimensions including increased intimacy and decreased formality, decreased dominance, and decreased task-orientation. Interestingly, however, the CMC and FTF conditions were similar on many of the relational communication measures even after the first task. A similar pattern of results emerged when recordings and transcripts of these discussions were coded by

independent observers (Walther, 1995). Participants' communication over CMC became more relational over time to approach FTF levels, and in some cases CMC was comparable to FTF quite early in the discussions.

Early research also shows this process of relational development in CMC outside of the laboratory. Parks and Floyd (1996) surveyed a large sample of Usenet newsgroup users and asked them about their online relationships and their use of newsgroups. A majority (60%) of users reported forming personal relationships through their newsgroup postings, and about half of these relationships were considered "highly developed" (Parks & Floyd, 1996, p. 92) in terms of interdependence, breadth, depth, understanding, and commitment. Importantly, users who had formed online relationships read their newsgroups more often, had been posting on their newsgroups for a longer period of time, and posted more frequently than users who had not formed relationships. In other words, there seemed to be a positive relation of time and posting frequency with friendship development.

The research described thus far generally supports the notion that interpersonal impressions and affiliation will develop over time in CMC interactions. The original account of SIP (Walther, 1992), however, does not explain the fact that CMC and FTF interlocutors experienced similar levels of relational communication in their initial interactions. SIP theory predicts that CMC users would require more time to achieve these levels of communication. These results prompted the investigation of anticipated future interaction (AFI) as a potential mediator within the SIP framework. In this context, AFI is simply the degree to which previously unacquainted (or "zero-history")

communicators expect to meet and interact again after having an initial interaction (e.g., Walther, 1994).

Similar to his previous study, Walther (1994) told groups of undergraduate participants they would collaborate on three tasks over course of several weeks. Some of the participants were told that their group members would be the same for all three tasks (long-term group) while others were told that they would have different group members for each task (short-term group). After engaging in the initial group interaction, participants rated their relational communication as well as their anticipation of future interaction with their group members. Two general findings emerged. First, CMC participants' rating of AFI was higher in the long-term group compared to the short-term group, but the AFI rating for FTF participants were not. This suggests that FTF participants may have expected future interaction despite being assigned to a short-term group. Second, regression analyses revealed that AFI generally predicted greater levels of relational communication, and communication medium (CMC vs. FTF) held little predictive power after AFI was taken into account. In light of this, Walther (1994) posits that AFI plays an important role in SIP by moderating people's motivation to affiliate. People who do not expect to interact with each other in the future should be less inclined to affiliate, resulting in less effort toward relational communication and impression development.

Other researchers have expanded on the role of AFI in the development of relational communication in CMC. For instance, Ramirez (2007) investigated the effects of initial impression valence and AFI on later CMC interactions. Pairs of participants engaged in an initial chatroom interaction and were told they would have a second

interaction two weeks later either with the same partner or a different partner (in reality the partner was always the same for both interactions). To manipulate initial impression valence, one of the participants in each dyad was secretly instructed to give off either a good or bad impression during the first interaction. Following each interaction, participants completed ratings of relational communication. The findings indicated that AFI affected relational communication in the first interaction, but the initial impression valence determined relational communication in the subsequent interaction regardless of AFI. Therefore, affiliation motivation may be modulated not only by AFI, but also by early interaction outcomes. In a different series of studies, Ramirez, Zhang, McGrew, and Lin (2007) examined differences between communicators and non-communicating observers (i.e., "lurkers") in their appraisal of relational messages. Some participants engaged in dyadic discussions in a chatroom while other participants simply observed the discussions. Additionally, both communicators and observers were either informed or not informed that they would meet and interact with discussion members at a later time. After the discussion, all participants rated the relational communication of the communicators. They found that observers perceived lower levels of relational communication than communicators, but only under conditions of AFI. Thus, when participants expected no future interaction, the communicators attributed the same relational tone to the discussion as the observers. They also discovered that participants in the no-AFI condition who actually did interact with their partners a second time showed increases in intimacy and decreases in task-orientation across interactions.

As one of the earliest theoretical frameworks for understanding impression formation in CMC, SIP theory provides a good starting point for examining self-

presentation in online contexts. It was among the first theories to challenge the inherently impersonal nature of CMC assumed by earlier perspectives (Daft & Lengel, 1986; Short et al., 1976; Sproull & Kiesler, 1986). The evidence from SIP studies indicates that text-based CMC does not necessarily limit the extent to which people can relate to others (and in doing so, present aspects of themselves). Instead, CMC may limit the speed of information exchange and affect expectations about the likelihood of future interactions. Under conditions where future contact is expected, CMC users achieve personal levels of communication in a relatively short amount of time. A limitation of SIP theory and the present data is that it primarily models relational development starting from zero-history interactions and speaks less toward communication processes in established relationships. This is perhaps another reason why SIP theory is a fair starting point for this discussion.

Hyperpersonal theory. As an extension to SIP, Walther (1996) developed a theory of hyperpersonal communication which he defines as "CMC that is more socially desirable than we tend to experience in parallel FTF interaction" (p. 17). Given the lower bandwidth for exchanging social information (Walther, 1992), it may seem counterintuitive to think that text-based CMC can facilitate more desirable social interactions than FTF settings. However, Walther (1996) suggests that some of the features of CMC that we may intuitively perceive as limiting actually serve as affordances for crafting desired self-presentations. The two primary features of CMC that afford hyperpersonal interactions are a) the reduction of cues and b) asynchrony of communication. These features are described in more detail below. Together they enable more controlled and strategic transmission of personal information which Walther (1996; Walther & Burgoon, 1992) refers to as "selective self-presentation." This framework

posits that hyperpersonal interactions occur when message senders use selective self-presentation to create highly desirable impressions which result in idealization by the message receivers. These idealizations may generate positive, reinforcing feedback to the senders, creating a hyperpersonal "intensification loop" (Walther, 1996, p. 28).

In regards to the first affordance feature of hyperpersonal theory, Walther (1996) argues that the informational cues that people have access to in CMC (i.e., verbal-textual language cues) are much more controllable than the physical, nonverbal cues normally present in FTF interactions. It is considerably easier to choose our words carefully than to alter our physical appearance, body language, and other nonverbal behavior in the ways we desire. In addition, the absence of physical cues might alleviate concerns about appearance and nonverbal behavior and direct more attention toward the more context-relevant information streams that people can control (Walther, 1996). This enhanced controllability allows people to be more deliberate and strategic in the information they present. One should not assume, however, that this increased level of control is exercised only through language and textual choices. Although this may be true for purely text-based channels, the studies I review below reveal how selective self-presentation can apply to non-linguistic elements of today's online environments.

While the reduction of cues sharpens CMC into elements that are more easily controlled, the asynchrony of CMC gives people the time and opportunity to exert that control. In order for FTF interactions to occur, the people involved need to be both physically and temporally co-present (e.g., McGrath, 1991), and during these interactions, people expect relatively immediate responses to their conversational turns. In other words, FTF interactions require some coordination and self-presentation must

occur on the spot. However, in asynchronous CMC, interlocutors do not necessarily need to attend to their conversations simultaneously. People can choose when to devote their time and attention to asynchronous exchanges and, presumably, will do so when it is convenient for them (Walther 1996). More importantly, asynchronous CMC does not require the same immediacy of responding as FTF interactions. Depending on the type of channel and the social-relational context, users may take minutes, hours, days, weeks, etc. to respond. Therefore, asynchronous CMC affords people more time to think about, construct, and edit their messages before sending them, resulting in more deliberate and desirable presentations.

Researchers have since applied hyperpersonal theory in a variety of domains including support groups (e.g., Turner, Grube, & Myers, 2001), self-esteem (e.g., Gonzales & Hancock, 2011), and cyberbullying (e.g., Farrell, 2013). Necessarily, I limit the following literature review to empirical studies pertinent to self-presentation issues in CMC. To begin, evidence for selective self-presentation is apparent in some qualitative research. Henderson and Gilding (2004) conducted qualitative interviews with 17 frequent online chatters who reported a number of hyperpersonal processes. Specifically, these people appreciated the asynchrony of online chat, as it allowed them time to think about and edit what they wanted to say. They also reported being aware of exaggerated self-presentations by themselves and others and felt they were able to self-disclose more online compared to FTF. In fact, the researchers noted that the participants interviewed online tended to self-disclose more than those who did FTF interviews. Others have employed focus group studies and found that undergraduates use different kinds of CMC because it gives them control over their social interactions (Madell & Muncer, 2007).

These students believe that channels like IM and text messaging are beneficial for managing emotions, concealing information, and articulating themselves effectively because they have time to think about their messages.

Experimental studies have demonstrated these hyperpersonal aspects of CMC in self-presentational contexts. In one experiment by Hancock and Dunham (2001), participant dyads engaged in a figure description task either FTF or through IM, and afterward partners rated each other on a number of personality items. Although participants in the IM condition judged fewer items compared to those in the FTF condition, the IM participants made more intense attributions on the items that they were able to judge. Put another way, IM participants conveyed greater depth about certain aspects of their personalities but did not cover as wide a range (or "breadth") of personality characteristics as FTF participants did.

Another study had students make a relatively imposing or unimposing request to a professor by either sending an e-mail or leaving a voice mail message on an answering machine (Duthler, 2006). Judges then coded the messages for the presence of politeness markers including phrases intended to establish rapport (positive politeness) and phrases that conveyed recognition of the senders' impingement (negative politeness). The results revealed that students created more polite messages over e-mail compared to voice mail when making an imposing request, implying that the timing affordances for constructing e-mail messages allowed for more personable requests.

In another study, Walther (2007) had undergraduates use an online conferencing system to compose messages intended for various receivers, and the participants' computer screens were continuously recorded so that the message composition process

could be analyzed. He found that time spent composing and the frequency of message edits both correlated positively with the relational tone (i.e., intimacy of relational communication) of the finished messages. Additionally, the relation between composition time and editing behavior was stronger for participants who were more mindful of the impressions they were creating.

To explore the interplay of cues and synchrony, Nowak, Watt, and Walther (2005) had groups of undergraduates collaborate on a long term course project using a variety of mediated communication channels. Some groups used high-cue channels that included audio and video, while others used text-only chat and message boards. Also, the members within each group worked on their projects either at the same time (synchronous) or at different times (asynchronous). After completing their projects, the students rated their group members on a number of dimensions including attribution certainty (i.e., knowing their attitudes and values), credibility, and sociability. Those who collaborated in text-only (low-cue) channels expressed more certainty about their group members and perceived them as more credible and sociable. Interactions between cues and synchrony showed that text-only asynchronous groups experienced more certainty and conversational effectiveness compared to the other groups.

One implication of hyperpersonal theory is that CMC may be particularly beneficial to people—such as the socially anxious—who have trouble presenting themselves desirably in FTF interactions. To test this notion, High and Caplan (2009) had pairs of unacquainted undergraduates engage in a socially-oriented interaction either FTF or through IM. They found that participants who interacted over IM with socially anxious partners tended to perceive their partners as less anxious and experience greater

conversation satisfaction compared to those who interacted FTF. The opposite pattern was true for those with partners low in social anxiety: the FTF condition produced lower perceptions of partner anxiety and greater satisfaction. Other evidence shows that socially anxious individuals may prefer reduced-cues communication channels to more cue-laden ones. Reid and Reid (2007) discovered that people high in social anxiety preferred using their cell phones for texting rather than voice calling and were more likely to endorse the use of text messaging to enhance self-presentation.

It might be the case, however, that socially anxious individuals only enhance their self-presentation in CMC if they recognize its affordances. In a large sample of adolescents, Schouten, Valkenburg, and Peter (2007) examined the relations between social anxiety, online self-disclosure, and perceptions of CMC's affordances. A structural equation model showed that perception of affordances played a complex mediational role. Specifically, greater appreciation of CMC's reduced cues and controllability determined how disinhibited socially anxious adolescents felt online, and greater disinhibition predicted more online self-disclosure. However, an experiment by Feaster (2010) produced slightly different findings. In this study, undergraduate participants recalled an embarrassing interaction or an imposition when their desired self-presentation was threatened and then rated how preferable different communication channels (FTF, phone, e-mail, and IM) would have been in that situation. Participants also completed a measure of social anxiety and rated the level of expressive information control afforded by each channel. Social anxiety was positively related to preference for e-mail and IM and negatively related to preference for FTF in self-presentation threatening situations.

Interestingly, the relations between social anxiety and preference for the CMC channels remained after controlling for perceived expressive control.

Researchers have also examined hyperpersonal effects in the self-presentations of online daters. For example, qualitative interviews with members of an online dating site showed that they were very deliberate in constructing their dating profiles by taking time to fix mistakes and carefully analyze their word choices (Ellison, Heino, & Gibbs, 2006). The same researchers conducted a large survey of Match.com members and asked about their self-disclosure strategies as well as their perceived success in online self-presentation (Gibbs, Ellison, & Heino, 2006). They found that more intentional and positive self-disclosure was positively linked to perceived success in self-presentation, while more honest self-disclosure was negatively related to self-presentational success. This indicates that people who were deliberate in making positive—but perhaps less honest—self-disclosures tended to think their attempts at self-presentation were more successful. Toma, Hancock, and Ellison (2008) investigated inaccuracies in online daters' self-presentations by comparing the figures of height, weight, and age that participants had posted on their dating profiles to their actual values which were verified by in-person measurement. Their results indicated that online daters frequently had slight discrepancies in their profiles that were consistent with gender-specific relational goals; men over-represented their height and woman under-represented their weight. Importantly, participants seemed aware of these discrepancies, suggesting that their exaggerations were not only selective, but also strategic.

More recently, researchers have uncovered hyperpersonal phenomena in the realm of social networking. For instance, an experiment manipulating Facebook profiles

demonstrates how selective self-presentation can impact potential friendship formation (Wang, Moon, Kwon, Evans, & Stefanoe, 2010). The researchers presented participants with a Facebook profile page containing either an attractive picture, an unattractive picture, or no picture at all. Participants were more willing to make friends and interact with a person whose profile contained no picture compared to a profile with an unattractive picture. Careful cue presentation in online profiles may also affect basic personality attributions. Van Der Heide, D'Angelo, and Schumaker (2012) created mock Facebook profiles with varying profile pictures and biographical descriptions and had participants rate the social orientation (introversion vs. extraversion) of the profile owner. When the personality contents of the picture and description were mismatched (e.g., an extraverted-looking picture with an introverted-sounding description), the valence of the picture had a bigger impact on personality judgment, suggesting that people may turn to visual information to resolve self-presentational discrepancies.

Others have investigated relations between self-presentation, self-disclosure, and privacy concerns in social networking. Krasnova and colleagues administered a survey to a large sample of German SNS users that assessed their self-disclosure, perceived informational control, and perceived privacy risks in their use of online social networks (Krasnova, Spiekermann, Koroleva, & Hildebrand, 2010). Their structural equation model showed that people who felt they had more control over their personal information tended to see less privacy risk in using online social networking, which in turn predicted greater self-disclosure. They did not, however, find a significant relation between participant's desire for favorable self-presentations and their level of self-disclosure. These results oppose those of Tufekci (2008) who surveyed American college students

and found that online privacy concerns were generally unrelated to the information that students provided on their Facebook and Myspace profiles. Students concerned about undesired audiences tended to control the visibility of their profiles, but this did not deter them from posting information about interests, political and religious views, and relationship status.

Hyperpersonal theory has proven extremely influential in our understanding of how people use CMC to present themselves. This perspective characterizes reduced cues and asynchrony as affordances that people use to their advantage in crafting self-presentations. With greater control over the process of selective self-presentation, CMC users can more strategically and effectively create desired impressions than they would be able to in FTF interactions. The evidence reviewed here suggests that users are generally aware of the strategies that CMC affords, and the self-presentational benefits that CMC provides may be especially favorable for socially anxious users. Although this perspective was conceived with purely text-based CMC in mind, it still applies to more modern venues of online self-presentation such as social networking and online dating profiles. Researchers have only just begun to elucidate how people may strategically employ non-textual cues such as photos. As CMC channels continue to become more dynamic and incorporate more multimedia, their self-presentational affordances will also change. Whether such changes will facilitate or hamper selective self-presentation may depend on the cues that are supported and the degree to which users can control those cues.

Warranting. One intriguing issue in online self-presentation is the negotiation of the "online self" in relation to the "offline self". To what extent do our online personas

match our offline ones, and what processes regulate the connection between the two? In an early review of CMC theories, Walther and Parks (2002) raise this issue while discussing the relational consequences of shifting from CMC to FTF interactions. Drawing from the writings of Stone (1995), they offer the concept of warranting as a means of understanding the connection between virtual selves and the physical self. One may define a warrant as something that reliably assures or guarantees authenticity. Walther and Parks (2002) suggest that although "it is a commonplace to warrant a relatively stable identity to a physical entity" in FTF interactions (p. 551), this is not necessarily true in online settings. It may not be necessary in certain interpersonal environments—such as anonymous CMC—to ensure that self-presentations are "authentic" reflections of the actual physical person.

Walther and Parks (2002) outlined a few basic principles for conceptualizing and studying warranting. One is that the degree of consistency (warrant) between online presentations and the offline self is best viewed as a continuum. Similarly, communication channels may be characterized as continuous and dynamic in the degree to which they warrant such consistency. The less a channel warrants consistency, the greater freedom people will have to create inconsistent self-presentations. This does not necessarily mean that people should be more motivated to construct divergent presentations in these settings. In fact, those who maintain relative consistency may have to grapple with the problem that audiences may take the setting into account when judging their authenticity. In other words, people may be more skeptical of self-presentational authenticity when the communication channel warrants less consistency. Given this potential dilemma, people can try to reduce skepticism by presenting

warranting information. The effectiveness of warranting information in conveying authenticity is determined by "the receiver's perception about the extent to which the content of that information is immune to manipulation by the person to whom it refers" (Walther & Parks, 2002, p. 552). They suggest that warranting information can come in the form of corroboration by social contacts and publically available information records.

Since online dating profiles are presumably a precursor to FTF contact, they are particularly good examples of an online context in which some degree of warranting is necessary. Processes of warranting are evident in some of the previously mentioned investigations of online dating (Ellison et al., 2006; Toma et al., 2008). These online daters described strategies for representing themselves accurately and establishing the credibility of their profile claims while still giving off desirable impressions. Such strategies included using narrative descriptions rather than listing personality features and posting photos that corroborated their textual descriptions. Also, those who misrepresented themselves in attributes such as height and weight did so modestly, likely because they realized that large discrepancies would be harder to reconcile upon meeting potential partners FTF. Thus, in an online dating context, users employed warrants to establish self-presentations that were "realistic and honest enough that subsequent face-to-face meetings were not unpleasant or surprising" (Ellison et al., 2006, p. 429).

Because social networks may serve as a source of warranting information (Walther & Parks, 2002), much of the research on warranting has examined SNSs. In one experiment, Walther and colleagues presented participants with a mock Facebook profile that contained a wall posting from a different user that varied based on evaluative content and the physical attractiveness of the poster (Walther, Van Der Heide, Kim, Westerman,

& Tong, 2008). Specifically, the posts either cast the profile owner in a positive light or a negative light. Participants rated profile owners as more competent, credible, socially appealing, and even more physically attractive when the wall posts were positive rather than negative. This demonstrates that observers may give weight to information provided by others in forming impressions of a target, even if that information is only a small part of the total information available. This study, however, did not directly compare information provided by others to information generated by the profile owners.

To study this issue more closely, the same researchers conducted a series of replications using this mock profile paradigm (Walther, Van Der Heide, Hamel, & Shulman, 2009). They provided participants with Facebook profiles in which the profile information (owner-generated) was either consistent or inconsistent with wall posts (other-generated) in regards to the profile owner's personality (i.e., extraversion) and physical attractiveness. For personality judgments, owner-generated information appeared to have the most influence. Participants judged the owner as more extraverted when the profile information conveyed extraversion and the wall posts conveyed introversion compared to introverted profile information and extraverted wall posts. However, the opposite pattern of results occurred for judgments of physical attractiveness. Wall posts implying attractiveness produced higher attractiveness ratings than owner-generated profile information. These mixed results suggest different aspects of self-presentation may be more or less influenced by warranting information.

Other research has looked at reactions to perceived inconsistencies in online self-presentation. DeAndrea and Walther (2011) asked participants to search their Facebook profiles of friends and acquaintances (as well as their own profile) to find information

they felt was inconsistent with how they viewed the person (or themselves). After picking out this information, they wrote explanations for why the person presented him/herself in a misleading way. The results showed differences in the kinds of explanations that participants gave for their own inconsistencies compared to the inconsistencies of others. In particular, they used more reasoning to explain their own discrepancies (e.g., "it's a hassle to update the information") but made more internal causal attributions for others (e.g., "they are insecure"). Such results explicate the potential consequences of constructing an inconsistent presentation in a warranting situation in terms of the impressions others form.

Warranting provides an intriguing twist to the hyperpersonal perspective discussed earlier. CMC may give us great control over how we present ourselves, but warranting tempers our efforts by keeping our virtual presentations grounded in our physical reality. Perhaps with the exception of completely anonymous environments, CMC calls for at least some degree of connection between the person depicted on the screen and the person sitting behind the screen. This is especially true in situations where eventual FTF contact is expected (e.g., online dating) and when other users are present who can corroborate or disconfirm the authenticity of particular presentations (e.g., SNSs). However, the current empirical evidence on warranting in social networking is limited. The experimental studies reviewed here (Walther et al., 2009; Walther et al., 2008) mainly demonstrate how observers negotiate inconsistencies between self-presentations and warranting information to form impressions. They say less about how people might account for warranting in crafting desirable self-presentations or utilize warranting information to prove their authenticity. Thus, there is still more research to be

done to examine how people create balanced and validated personas through social networking. An issue closely tied to warranting is how people manage self-presentations across interconnected social networks. This issue is discussed within the final perspective presented here: the networked publics perspective.

Self-presentation in networked publics. With the emergence of social media and widespread adoption of social networking services such as Facebook and Twitter, people are increasingly using "one-to-many" modes of online interaction. Thus far, CMC researchers have given the most attention to channels such as e-mail, IM, and text messaging which primarily involves interactions between two people. In one-to-many CMC, people display their posted messages and content to networks of other users (i.e., social networks). These social networking channels, therefore, offer different self-presentational dynamics than one-to-one channels. The conceptualization of social networking channels as "networked publics" (e.g., boyd, 2010) provides a useful framework for understanding processes of self-presentation in such channels.

According to boyd (boyd, 2010; boyd & Marwick, 2011), networked publics are the public spaces provided by networked technologies as well as the communities created from these spaces. In other words, they are not only places where people gather for public discourse, but they are also communities in and of themselves. There are four general features of networked publics that boyd (2010) describes as relevant to how people exchange information and conduct themselves in these spaces: persistence, searchability, replicability, and scalability. Persistence simply refers to the fact that the information people post is automatically saved (often indefinitely). This persistent information is also searchable via online tools (e.g., search engines), making it easy to find after it is posted.

Replicability means that original content can easily be copied, altered, and reposted by others. Finally, scalability is the potential for information to be distributed to a large number of people. In social networking channels, original content is made visible to immediate members of posters' social networks. For example, status updates and wall posts in Facebook appear on friends' news feeds. Similarly, Twitter users have a constantly updating feed that displays tweets from users they are following. The potential for visibility is further enhanced due to the persistence, searchability, and replicability of information, as these features enable others to broadcast content beyond the social networks of the original posters. The "share" and "retweet" functions in Facebook and Twitter respectively allow users to quickly and easily disseminate information across different social networks.

The potential for widespread exposure of content posted in networked publics has particularly strong implications for audience perception and management. For any given self-presentation, identifying one's audience may be less straightforward on SNSs compared to one-to-one CMC or FTF settings (boyd, 2010). You might know who is in your social network, but it is difficult to predict which members of your network will actually view a particular post or how that post will be shared. Because of this ambiguity, boyd (2010) argues that people in networked publics instead construct imagined audiences. In the absence of positively identifiable audiences, imagined audiences may serve as a guide for determining appropriate self-presentational behavior. The scalability of social networks also complicates audience management by connecting social contexts that would normally be separate from one another, which boyd refers to as "context collapse" (Baym & boyd, 2012; boyd, 2010). Close friends, family members, coworkers,

employers and other social groups often connect to individuals using the same social networking services. Context collapse means that the information that people broadcast in networked publics may permeate these different social contexts simultaneously. This may present challenges to self-presentation as people may otherwise behave differently within these different contexts. Thus, successful self-presentation relies on how people handle ambiguous audiences that may potentially span different social contexts.

Qualitative research by boyd (e.g., boyd, 2007; boyd & Marwick, 2011) describes some of the audience management strategies that young people employ when presenting themselves in networked publics. In her early research on teenage MySpace users, boyd (2007) found that teens established a variety of privacy measures to prevent unwanted audiences (i.e., parents and other adults) from accessing their profiles. These measures included posting fake identifying information (name, location, and age), restricting profile access to people on their friends list, and creating alternate profiles for posting content that the teenagers do not want their parents to discover. Apart from these more direct efforts to manage audiences, these teenagers publicly ranked their "best" friends on MySpace as a means of expressing their intended audience. By presenting a sample of their intended audience, boyd suggests that teenagers assert the implicit social norm that outsiders should not view and judge their MySpace profiles (boyd, 2007; boyd & Marwick, 2011).

Teenage Facebook users also used a number of strategies for managing audiences (boyd & Marwick, 2011). Although teenagers considered direct privacy measures such as blocking and "defriending" others, strong social norms discouraged these practices. Instead, teenagers turned to more private channels (e.g., text messaging) for intimate

disclosures. They also used entirely separate social networking services—such as Twitter and MySpace—to address different social circles. Within Facebook, however, these users sometimes employed more indirect strategies which involved in-jokes and cultural references. Personal and cultural references essentially encrypted messages so that only people who understood the references would be able to understand the posters' true meanings. But this strategy was not foolproof, because outsiders could still make comments after misinterpreting such messages or even attempt to decrypt the meaning of these messages.

Other work has examined audience management and self-presentation through Twitter. Marwick and boyd (2010) posed questions to Twitter users—who varied in their number of followers from very few to hundreds of thousands—about their perceptions of their audiences and the strategies they used to appeal to their audiences. Users with a relatively small number of followers characterized their use of Twitter as active diary-keeping targeted toward their friends as well as themselves (i.e., thinking out loud). Some users appeared to idealize their imagined audiences by assuming that their audiences were very similar to themselves. On the other hand, users with large numbers of followers viewed their audiences essentially as fan-bases or communities centered on them. Many of these users established a number of personally and professionally relevant categories of tweets to appeal to their broader audiences, realizing that individual tweets will not appeal to everyone. And in fact, balancing personal and professional disclosure was an important strategy that these users employed to maintain widespread appeal as well as authenticity. Users viewed personal disclosures as more authentic than tweets aimed at self-promotion. Personal disclosures, however, were tempered by a "lowest-

common-denominator philosophy" (Marwick & boyd, 2010, p. 126) of audience perception, meaning that all disclosures must be appropriate for the most sensitive members (family, employers, etc.) of one's imagined audience. They did this by selectively avoiding certain topics such as sex, romantic relationships, criticism of employers, and social/political controversies. Therefore, users maintained some level of awareness about the multiplicity of their audiences in order to make strategic personal disclosures that did not offend others or compromise themselves professionally.

A more in-depth examination of highly-followed Twitter users (i.e., celebrities) reveals that they may use public interactions over Twitter to contribute to their celebrity images (Marwick & boyd, 2011). Drawing directly from Goffman's (1959) concepts of frontstage and backstage, Marwick and boyd (2011) suggest that celebrities employ interactions with followers and other celebrities to provide apparent glimpses into their backstage. They use personal disclosure, pictures, and direct acknowledgment of followers to foster impressions of authenticity and intimacy with fans. Additionally, their Twitter conversations with other celebrities may give followers the perception of a backstage view when, in reality, such conversations may be managed quite strategically (i.e., frontstage performances; Marwick & boyd, 2011, p. 151).

As the role of online social networking in people's everyday lives continues to expand, it is increasingly important for researchers to understand how people manage themselves in these virtual spaces. The present conceptualization of networked publics by boyd (2010) offers a good foundation for understanding basic self-presentational issues in online social networks: people have the potential for broader and more ambiguous arrays of observers. The research described here shows that people go beyond the privacy

settings built into social networking services in order to manage their self-presentations in light of these audience issues. They rely on social norms to develop their imagined audiences and encrypt their language with personal and cultural references. People are often mindful of more sensitive onlookers such as employers and family members and tend to avoid topics that are inappropriate or might offend them. The findings reviewed here provide excellent descriptions of naturalistic social networking behavior; however, the study of networked publics could benefit from more experimental research. Such research could give deeper insight into the perception and management of audiences in social networking and inform the development of new audience-management features for these services.

Personality, self-presentation, and language use on SNSs. Social networking sites offer a number of different avenues for self-presentation, many of which I have touched on previously in this paper. For example, people can manage impressions using profile elements, post pictures of themselves, share articles that reflect their interests, and even perform non-verbal actions such as "liking" posts. One question that the social networking researchers have examined is to what extent these kinds of behaviors reflect individuals' personalities. A great majority of the literature has focused on the Big Five personality traits of extraversion, agreeableness, conscientiousness, neuroticism, and openness (see John, Naumann, & Soto, 2008), as well as narcissism. For example, Lee, Ahn, and Kim (2014) conducted a survey in which college students reported the frequency of various Facebook behaviors and completed several personality measures. The results showed that extraversion was positively related to posting photos and status updates, in addition to liking, sharing, and commenting on others' posts. They also found

that narcissism was positively related to posting status updates, and neuroticism and conscientiousness were negatively related to posting comments. Other self-report studies have found positive links between extraversion and Facebook activities (Michikyan, Subrahmanyam, & Dennis, 2014) and between narcissism and posting status updates (Winter et al., 2014). This suggests that more outgoing and narcissistic individuals may engage in some self-presentational behaviors more frequently, while more anxious and conscientious individuals may engage in certain behaviors less frequently.

Seidman (2013) investigated relations between personality traits and the use of Facebook to achieve self-presentational goals. Specifically, participants reported how frequently they used Facebook (e.g., posting status updates, posting photos, and updating one's profile) to express their actual self (who they really are), hidden self (what they are uncomfortable expressing FTF), and ideal self (who they would like to be). Extraversion and agreeableness positively predicted expression of the actual self, conscientiousness negatively predicted expression of the hidden and ideal self, and neuroticism was positively related to all three self-presentational goals. Thus, Seidman (2013) suggests that conscientious individuals may take a relatively cautious approach while neurotic individuals may take a riskier approach to their online self-presentations. In a similar study, Michikyan et al. (2014) examined personality traits and the extent to which Facebook users presented their real self, ideal self, and false self (e.g., being someone they are not). They found that neuroticism was a positive predictor of presentation of the ideal self and false self, but did not find a significant relationship between extraversion and presentation of the actual self.

Although SNSs offer people many different ways to present themselves, posting messages is still one of the most common and fundamental means of self-presentation on sites like Facebook and Twitter. Therefore, researchers may gain valuable insight into self-presentational processes by studying how people use language in their messages. For instance, Carr, Schrock, and Dauterman (2012) conducted a speech act analysis (e.g., Nastri, Pena, & Hancock, 2006; Searle, 1969) of Facebook status updates collected from university students. The most common speech acts present in status updates were expressives (i.e., the expression of feeling toward someone or something), followed by assertives (i.e., statements of fact or attempts to impart impressions). This analysis suggests that people use status updates primarily for "expressing emotions and presenting facets of themselves" (Carr et al., 2012, p. 187).

Like with other self-presentational behaviors, much of the previous research in this area has attempted to link language use on SNSs to various personality traits. In one investigation, Winter and colleagues (2014) measured Facebook users on a number of personality traits and had them provide the text of their three most recent status updates. Independent coders then rated the status updates on several dimensions, including depth of self-disclosure, emotional disclosure, self-promotion, and mass suitability (i.e., the degree to which messages appealed to many audiences). The results showed that individuals high in narcissism tended to post more intimate self-disclosures and self-promoting content, while extraversion was unrelated to the depth of self-disclosure. Emotional disclosure was unrelated to narcissism and extraversion. Additionally, the researchers assessed participants' self-presentation self-efficacy (i.e., confidence in one's ability to create positive impressions in FTF situations), which was negatively related to

the mass suitability of status updates. This last result indicates that individuals who are confident in their ability to present themselves may be less likely to tailor their posts to the lowest-common-denominator.

Others have employed word-level analysis tools, such as LIWC, to find links between personality and language on Facebook. Golbeck, Robles, and Turner (2011) collected text from the profiles of Facebook users (specifically from status updates, About Me, and "blurb" sections) and had these users complete several personality measures. The different text types were compiled for each participant and analyzed using LIWC. Most notably, agreeableness was positively related to the number of affective words—and more specifically, positive emotion words—present in profile texts. Conscientiousness was positively related to social words, but negatively related to swear words. They also found a significant positive association between neuroticism and anxiety words. Sumner, Byers, and Shearing (2011) found similar patterns in a LIWC analysis for Facebook users' biographies, wall posts, and photo comments. In this analysis, extraversion, agreeableness, and conscientiousness were all positively related to the use of positive emotion words, while conscientiousness was also negatively related to swear and negative emotion words. Neuroticism correlated positively with several types of negative affect words, including swear, negative emotion, anxiety, anger, and sadness. In addition, openness was positively associated with negative emotion words and several classes of words related to sensitive topics (i.e., money, religion, and death). In a large-scale study of status updates from over 75,000 Facebook users, Schwartz and colleagues conducted analyses using both LIWC and an open-vocabulary approach (Schwartz et al., 2013). The LIWC analysis produced results similar to previous studies. Notably,

extraversion, agreeableness, and conscientiousness were positively associated with positive emotion words and negatively associated with negative emotion words. Agreeableness and conscientiousness were negatively correlated with swear words, and neuroticism was most strongly associated with negative emotion words. Their open-vocabulary approach revealed that individuals high in extraversion tended to use clusters of social terms (e.g., "party", "boys", "girls"), while clusters of negative affect (e.g., "depressed", "lonely", "stressed") and swear terms were prevalent among people high in neuroticism.

Researchers have also examined relationships between personality traits and language use on Twitter. Qiu, Lin Ramsay, and Yang (2012) had Twitter users complete Big Five personality measures and then collected the tweets these users posted over a one month span. In addition to the self-reported personality measures, multiple raters examined the participants' tweets and judged their personalities along the Big Five dimensions. They found that the raters were able to accurately judge agreeableness and neuroticism—but not extraversion, conscientiousness, or openness—based on the language of participants' tweets. A LIWC analysis demonstrated links between self-reported personality and language use similar to those found in Facebook studies. Specifically, extraversion was positively correlated with social and positive emotion words, and negatively correlated with articles. The researchers also examined correlations between LIWC categories and personality traits assessed by the raters to determine what cues influenced their judgments. Third person singular pronouns, perceptual, and assent words were positive indicators of extraversion. Swear words and certain classes of

negative emotion words were negative indicators of agreeableness and conscientiousness, but positive indicators of neuroticism.

Taken together, the literature on personality and language use in social media shows that the language people use on Facebook and Twitter may be indicative of their personality. Less research has directly examined how SPC relates to language use. In the previously mentioned study by Sumner, Byers, and Shearing (2011), participants were asked how concerned they were with privacy issues, but this measure was not significantly related to any LIWC categories. More recently, Bazarova, Taft, Choi, and Cosley (2013) collected Facebook status updates, wall posts, and private messages from university students and asked them to report how concerned they were about their self-presentation for each message. The researchers then used LIWC to examine the emotional expression in language across these different types of messages. Overall, status updates tended to have similar numbers of positive emotion words but significantly fewer negative emotion words than wall posts and private messages. However, when participants reported having greater SPC, their status updates tended to have more positive emotion words. Interestingly, SPCs were not related to negative emotion words in status updates. These results suggest that, in general, people tend to express less negative emotion in their more public messages (i.e., status updates) compared to wall posts and private messages which serve more as one-on-one exchanges. Put another way, people may be less inclined to use negative language in their public self-presentations than they would in more private conversations. These findings also show that people may express more positive emotion in their status updates if they are especially concerned about making a good impression.

Research Questions and Hypotheses

The general aim of the present research is to gain further insight into how SPC relates to language use on SNSs such as Facebook and Twitter. In perhaps the only study to date that has directly examined SPC and language use, Bazarova and colleagues (2013) examined the level of concern Facebook users had when posting specific messages. It stands to reason that communication channels with different relational dynamics and presumed audiences (i.e., private messages vs. public status updates) would evoke different degrees of concern. However, I am primarily interested in public communication channels such as status updates and Twitter posts. Presently, I wish to study more global feelings of concern that people may have when presenting themselves on these sites. Thus, I will study SPC as an individual difference rather than a situational state. This brings me to my first research question:

RQ1: Do SNS users who have high SPC differ from users who have lower concern in their language use in terms of style, affective expression, and topic choices?

When using a word counting approach such as LIWC, selecting which word categories (i.e., dependent variables) to study is an important step. The simplest approach would be to test all the categories that your program of choice measures. Since LIWC measures dozens of language dimensions, such an approach runs the risk of finding many significant results purely due to chance. Instead, I have chosen to examine three general aspects of language use that are relevant to self-presentation: style, affective expression, and topic choice.

Style includes first person and third person pronouns. Researchers have posited that pronouns may serve as lexical markers of directed attention, group affiliation, and

self-focus (e.g., Pennebaker, Mehl, & Niederhoffer, 2003; Tausczik & Pennebaker, 2010). Specifically, use of first person singular pronouns is indicative of self-focus, while the use of first person plural pronouns indicates greater focus on one's identity within a group. Individuals who are more concerned about their self-presentation may be more inclined to post about themselves and their involvement in groups, and they may be less likely to post about others (i.e., third person pronouns).

The second aspect of language use, affective expression, includes positive and negative emotion words, as well as swear words. Researchers have previously established positive and negative emotion words as important in both impression formation (e.g., Berry et al., 1997) and SPC (Bazarova et al., 2013). Pinker (2007) notes that swearing serves powerful emotional functions, and the use of swear words in social networking is closely tied to Big Five personality traits such as neuroticism, agreeableness, and conscientiousness (e.g., Qiu et al., 2012; Schwartz et al., 2013). According to hyperpersonal theory, SNSs afford users the ability to selectively control their affective expression through their word choices. Users who are especially concerned about their self-presentations may take advantage of such affordances to avoid negative expression and present more positive aspects of themselves to achieve more ideal self-presentations. Therefore, people higher in SPC may be more likely to use positive emotion words and less likely to use negative emotion and swear terms.

The final set of word categories reflects specific topics relevant to self-presentation, including achievement, money, religion, and sexuality. First, from a hyperpersonal perspective, individuals high in SPC may be more likely to post about their successes and accomplishments to impart positive impressions to others. The use of

achievement words should directly reflect these types of posts. Second, I expect that people high in SPC may be less likely to discuss sensitive or taboo topics such as money, religion, and sexuality. These word categories are related to traits like extraversion, agreeableness, and conscientiousness (e.g., Schwartz et al., 2013). Furthermore, hyperpersonal theory would suggest that users with a more protective self-presentational style (e.g., Arkin, 1981) may selectively avoid such topics to avoid giving off negative impressions. Overall, my hypotheses for RQ1 may be summarized as:

H1: Users with higher SPC will use more first person pronouns, positive emotion words, and achievement words in their Facebook status updates and Twitter posts than users with lower SPC. Additionally, users with higher SPC will use fewer third person pronouns, negative emotion words, swear words, and words related to sexuality, money, and religion than users with lower SPC.

My second research question deals with SPC in relation to the Big Five personality traits of extraversion, agreeableness, conscientiousness, neuroticism, and openness:

RQ2: How are the relationships between SPC and language use mediated by other personality traits?

Given that researchers have extensively used language to predict Big Five traits in Facebook and Twitter, it is perhaps likely that these traits account for language use above and beyond SPC. Although researchers have yet to directly examine the relations between SPC and personality, similar constructs such as self-monitoring have been linked to traits such as extraversion and neuroticism (e.g., Furnham, 1989). Additionally, I suspect that individuals who are concerned about their self-presentations may also tend to

be more agreeable and conscientious than those who are less concerned about their self-presentations. Therefore, my hypothesis for RQ2 is as follows:

H2: Agreeableness and conscientiousness will be positively related to SPC and will partially mediate its effects on language use.

For my final research question, I systematically examined audience management and hyperpersonal aspects of language use:

RQ3: Does increased awareness of particular audiences (e.g., friends vs. employers) influence SNS users' language use?

Previous work by boyd (e.g., Marwick & boyd, 2010; 2011) has shown that SNS users may employ various strategies—such as appealing to the lowest-common-denominator—to address to their imagined audiences. Additionally, hyperpersonal theory suggests that people will take advantage of CMC's affordances to enhance their self-presentations. Walther (2007) examined variables such as editing time and relational communication in response to various audiences in online conferencing, but no studies have looked at language use in response to different audiences in social networking. Presently, I wish to determine if simply increasing one's awareness of a particular audience with a simple reminder will affect their language use. To do this, I asked participants to create a message that they might post to Facebook/Twitter and randomly assigned them to receive one of three different reminders about their potential audience. They were reminded about either a social audience (friends and family), professional audience (employers, teachers, etc.), or they received no reminder at all. I hypothesized that these reminder conditions would affect participants' messages in the following ways:

H3: Users exposed to a professional reminder will use more first person pronouns, positive emotion words, and achievement words, and fewer third person pronouns, negative emotion words, swear words, and words related to sexuality, money, and religion than users exposed to a social reminder or no reminder. Additionally, users exposed to a professional reminder will spend more time creating their messages than users exposed to a social reminder or no reminder. I also expect these effects to be greater for users with higher SPC.

Method

Participants

This study included participants from two distinct populations: workers from Amazon Mechanical Turk (AMT) and undergraduate psychology students. These two populations were chosen because they are both commonly employed in psychological research but are not often examined in parallel. By recruiting from both populations, the generalizability of the results is increased. Additionally, there are notable demographic differences between these two populations which may have implications for the present study. Specifically—based on pilot work and numerous other studies—participants recruited from AMT tend to be older and have greater variability in age compared to undergraduate samples (e.g., Mason & Suri, 2012). Therefore, recruiting from this population allowed me to examine potential developmental differences in SPC and language use that would not be possible with a relatively age-restricted undergraduate sample.

Amazon Mechanical Turk (AMT). Amazon Mechanical Turk is a service that allows "requesters" (i.e., researchers) to recruit users (known as "workers") on demand to

complete online tasks in exchange for payment. One notable feature of AMT is that requesters may leave feedback ratings for workers reflecting the quality of work they provided on a task. These feedback ratings give requesters the option to only recruit workers who have established histories of completing tasks as instructed. For this study, I only recruited workers who had a 95% or better feedback rating in order to obtain high quality of responses. Additionally, I only recruited workers who reside in the United States to help ensure that most participants were English speakers. Since it is common for a large number of AMT workers to sign up for and complete tasks within a short period of time (in some cases within just a few minutes), recruitment occurred in three waves to ensure that not all participants were recruited on the same day of the week and time of day. Specifically, the recruitment waves occurred on a Tuesday, Friday, and Saturday at varied times of day (i.e., morning, afternoon, and evening) in April 2015. All AMT participants were paid $1.50 for their participation.

A total of 103 Facebook users and 101 Twitter users from AMT participated in the study. However, a few of these participants completed both the Facebook and Twitter versions of the study. In these cases, only the first version of the study that the participants completed was included in the final data reporting and analyses. This resulted in a final total of 100 Facebook users and 94 Twitter users from AMT. There were slightly more men (58%) than women in this sample. Participants' ages ranged from 18 to 66 (M = 31.26, SD = 9.71). A large majority of these participants (83%) identified their race as White/Caucasian. See Table 1 for a detailed breakdown of demographic characteristics.

Table 1

Demographic Characteristics of Amazon Mechanical Turk and Undergraduate Samples

	Sample	
	AMT	Undergraduates
	Frequency (%)	Frequency (%)
Gender		
Male	112 (58%)	26 (22%)
Female	82 (42%)	91 (78%)
Race		
Asian	18 (9%)	2 (2%)
Black/African American	10 (5%)	40 (34%)
Native American/Alaskan Native	2 (1%)	0 (0%)
Pacific Islander/Hawaiian Native	0 (0%)	0 (0%)
White/Caucasian	161 (83%)	67 (57%)
Other	3 (2%)	8 (7%)
Hispanic/Latino		
Yes	12 (6%)	8 (7%)
No	182 (94%)	109 (93%)

Note. Age was not reported by one AMT participant and one undergraduate participant.

Undergraduates. Sixty Facebook users and 58 Twitter users from the University of Memphis undergraduate psychology participant pool also completed the study. These undergraduate participants were recruited over a period of several weeks in March and April 2015. The study was posted online via the university's psychology research portal (SONA Systems) and open to all students in the participant pool (provided they had a Facebook or Twitter account). The participants were given credit towards completion of their course research requirement in exchange for their participation. One participant completed both versions of the study, so only the data from the version completed first was included in the final data reporting and analyses. This resulted in a final total of 59 Facebook users and 58 Twitter users from the undergraduate population. Unlike the AMT sample, a large majority of the undergraduate participants (78%) were women. The age range among the undergraduates was 18 to 52 (M = 20.22, SD = 3.76). Most of these participants identified their race as either White/Caucasian (57%) or Black/African American (34%). Table 1 shows a more detailed breakdown of demographic characteristics

Measures

Self-presentation concern. Self-presentation concern was assessed using a 4-item measure adapted from Bazarova et al. (2013). The original measure assessed SPC for individual Facebook messages and demonstrated high inter-item reliability (α = .96; Bazarova et al., 2013). I adapted this measure to assess global SPC over Facebook/Twitter. The items were worded such that Facebook users were asked about their concerns over Facebook and Twitter users were asked about their concerns over Twitter (see Appendix A). Two items asked participants how concerned they are about

how they present themselves on Facebook/Twitter and about what others on Facebook/Twitter might think of them. Participants answered on a Likert scale ranging from 1 (*not concerned at all*) to 5 (*very concerned*). The other two items asked participants how important it is that they convey desirable impressions of themselves on Facebook/Twitter and how important it is to make a good impression on others over Facebook/Twitter. They answered these items on a Likert scale ranging from 1 (*not important at all*) to 5 (*very important*).

Big Five Inventory. Extraversion, agreeableness, conscientiousness, neuroticism, and openness were assessed using the Big Five Inventory (BFI; John, Donahue, & Kentle, 1991; John, Naumann, & Soto, 2008). The BFI consists of 44 total items: 8 each for extraversion and neuroticism, 9 each for agreeableness and conscientiousness, and 10 for openness (see Appendix B for a complete list of items). These items were presented in a predetermined random order that was the same for each participant. Each item is a characteristic that completes the statement "I am someone who". Example items include "is outgoing, sociable" (extraversion), "is generally trusting" (agreeableness), "does a thorough job" (conscientiousness), "worries a lot" (neuroticism), and "has an active imagination" (openness). Participants were asked to indicate the extent to which they agree or disagree with each item using a Likert scale ranging from 1 (*disagree strongly*) to 5 (*agree strongly*).

Social networking information. Participants were asked to provide information about the size of their online social networks as well as their use of Facebook/Twitter. For social network size, Facebook users reported the number of Facebook friends they have and Twitter users reported the number of followers they have. For social network

use, participants were asked how often they check Facebook/Twitter to view posts and how often they create posts (i.e., status updates/tweets) by selecting one of six response options ranging from "more than 10 times per day" to "once a month or less" (see Appendix C for a list of all response options).

Procedure

The study took place entirely online. Participants signed up for and completed the study from their own computers. There were two different versions of the study advertised to participants: one for Facebook users and one for Twitter users. The description of the study clearly stated that participants should only sign up if they have a personal Facebook/Twitter account. Once participants signed up for the study, they were directed to an external website containing the study survey. I created the survey and published it on the Internet using Qualtrics survey software (www.qualtrics.com). Before participants began the survey, they first saw a page containing a consent form. They were not able to continue with the survey until they had checked a box to affirm that they had read the consent form and agreed to participate.

The survey consisted of three main parts: a post creation task, a post reporting task, and demographic/personality items. The order of presentation of these three parts was randomized across participants. Additionally, for the post creation task, participants were randomly assigned to one of three conditions which are described in detail below.

Post creation task. In the post creation task, participants were asked to compose a status update/tweet that they would post to Facebook/Twitter. Specifically, they were given the following instructions: "In the text box below, we would like you to write a status update/tweet about yesterday. In other words, if you wanted to make a post on

Facebook/Twitter about your day yesterday, what would you post? Write your message as if it really were going to be posted on Facebook/Twitter."

The next part of the instructions was different depending on the condition to which the participants were randomly assigned. In the "no reminder" (NR) condition, there was no additional information in the instructions. In the "social reminder" (SR) condition, there was a statement designed to remind participants of potential social audiences. Specifically, the statement said, "Keep in mind that friends and family members might see what you post on Facebook/Twitter." Finally, in the "professional reminder" (PR) condition, there was a statement designed to remind participants of potential professional audiences. This statement said, "Keep in mind that employers, co-workers, and teachers might see what you post on Facebook/Twitter." Appendix D contains the full instructions for each condition.

Post reporting task. In this task, participants were asked to provide the text of up to five of their most recent status updates/tweets on Facebook/Twitter. They were presented with five free response text boxes and asked to copy and paste the text of their most recent status updates/tweets into each box, beginning with the most recent. The instructions explicitly told participants to only paste the text of the original post and not to include the text of any additional comments posted by themselves or others. Twitter users were instructed to not include retweets or replies posted to others. For each post, participants were also asked to indicate the topic of the post by selecting one or more topics from a list below the text box. The topic options were personal event, social event, work/school event, humor, news, and other. In addition, participants were also asked to

indicate whether each post included a picture and/or URL by checking boxes below each text box (see Appendix E).

Demographic and personality items. In this section, participants first reported their age, gender, race, and whether or not they consider themselves to be Hispanic or Latino (see Appendix F for a complete list of demographic items and response options). Then they completed the social networking information items, SPC measure, and the BFI.

End of survey and retest measure. After the participants completed all three parts of the survey, they were presented with a debriefing statement consisting of a paragraph that explained the purpose of the study in more detail (see Appendices G and H to see informed consent forms and debriefing statements respectively). The final screen contained a message thanking the participants for their time. There was also a message informing participants that the researchers would like the participants to complete a short follow-up survey approximately two weeks later. This follow-up survey was employed to assess the test-retest reliability of the SPC measure. A two week interval was chosen in part due to the time constraints of the research and the fact that previous research has demonstrated little difference in the test-retest reliabilities of personality traits between a two week interval and a longer (i.e., two month) interval (e.g., Chmielewski & Watson, 2009). Participants were asked to provide their e-mail address if they were interested in completing the follow-up survey.

For AMT participants, the follow-up survey was posted to AMT approximately two weeks after they completed the original survey. The undergraduate participants received an e-mail containing a link to the follow-up survey two weeks after they

completed the original survey. All participants were presented with the same SPC measure that they completed before. After completing this measure, a final page appeared with a message thanking the participants for their time. Participants from AMT were paid an additional $0.30 for completing the follow-up survey. The undergraduate participants who completed the follow-up survey were entered into a drawing for a $20 Amazon gift card. On average, it took participants approximately 15 min to complete the main the study and one minute to complete the follow-up survey.

Results

Descriptive Statistics and Preliminary Analyses

Social networking information. There was a substantial amount of variability in the size (i.e., number of Facebook friends/Twitter followers) of participants' social networks, especially among AMT participants. Participants from AMT had social network sizes ranging from 0 to 28900 (M = 470, SD = 2167), and social network size for undergraduates ranged from 0 to 3550 (M = 699, SD = 625). One AMT Facebook user, three AMT Twitter users, and two undergraduate Twitter users reported social network sizes of zero. The frequency distributions for both samples were heavily skewed due to outliers. Therefore, within each sample, values for social network size greater than three standard deviations above the mean were removed prior to any further analyses. This resulted in two outliers being removed from each sample and adjusted average social network sizes of 282 (SD = 417) and 657 (SD = 538) for AMT and undergraduate participants respectively.

Although AMT and undergraduate participants differed greatly in the size of their social networks, they were more similar in their viewing and posting behavior. Table 2

provides a breakdown of viewing and posting frequency across the two samples. A large majority of AMT (73%) and undergraduate participants (67%) reported using Facebook/Twitter to view posts from others at least once per day, and most of these people reported viewing their social networks one to four times per day. Approximately 17% of participants in both samples reported posting to their social networks at least once per day. However, the modal responses suggest that AMT participants tended to post a bit more frequently than undergraduates overall.

Table 2

Frequency of Viewing and Posting on Social Networks

	Sample			
	AMT		Undergraduates	
Frequency	Viewing	Posting	Viewing	Posting
10+ times per day	14%	1%	20%	3%
5-10 times per day	15%	4%	14%	4%
1-4 times per day	44%	12%	33%	10%
A few times per week	21%	38%	19%	23%
A few times per month	5%	24%	8%	26%
Once a month or less	2%	22%	7%	33%

Post reporting task. In order to develop a more comprehensive understanding of the data from the post reporting task, I generated descriptive statistics on the information

that participants provided about their posts, specifically, the kinds of topics participants posted about and the presence of pictures and URLs. In total (after ruling out blank posts and nonresponses) the participants in this study provided 1,478 posts: 947 from AMT participants and 531 from undergraduates. Table 3 displays the percentage of posts within each sample that pertained to specific topics, contained pictures, and contained URLs (as indicated by the participants in the post reporting task).

Table 3

Percentage Social Network Posts by Topics, Presence of Pictures, and Presence of URLs

	Sample	
Topic	AMT	Undergraduates
Personal Event	44%	49%
Social Event	14%	25%
Work/School Event	7%	14%
Humor	21%	20%
News	13%	6%
Contained picture	31%	30%
Contained URL	25%	13%

Note. Topics are not mutually exclusive.

Although participants could select multiple topics for each post, by far the most common topic reported was personal event (e.g., thoughts, daily experiences, and announcements about activities), which made up 44% and 49% of posts by AMT

participants and undergraduates respectively. Participants in both samples also made substantial amounts of humor posts (just over 20% for both groups). However, undergraduates posted about social events (e.g., public events, holidays, and salutations) and work/school events more than the AMT participants, while AMT participants posted more about news than undergraduates. To see if there were any prevalent topics not covered by the five provided topics, I manually inspected the text written in participants' "other" responses. The two most common topics that participants wrote as an "other" response pertained to sports/games and popular media (i.e., music, movies, and television). However, each of these topics made up less than 5% of participants' posts within each sample. Finally, the amount of posts containing pictures was similar across both samples (approximately 30%), but AMT participants had more posts containing URLs (25%) compared to undergraduates (13%). The types of URLs that participants posted varied widely and included articles, contests, promotions, and multimedia (e.g., videos and music). A breakdown by SNS revealed that Facebook and Twitter users were generally similar in their posting of topics, pictures, and URLs.

Inter-item reliability of individual difference measures. In order to ensure that the individual SPC and BFI items formed coherent measures, I conducted an inter-item reliability analysis using Cronbach's alpha. The inter-item reliability of the SPC items was high among both the AMT (α = .95) and undergraduate (α = .90) participants. The ratings for the four items were summed to create a total SPC score for each participant. An examination of means and frequency distributions of the SPC scores revealed that the scores were comparable across the AMT (M = 11.79, SD = 4.81) and undergraduate (M = 12.01, SD = 4.84) samples.

All Big Five personality measures demonstrated adequate inter-item reliability across both the AMT and undergraduate samples with Cronbach's alphas ranging from .73 to .91 (see Table 4 for complete listing of inter-item reliability statistics). Items corresponding to each personality trait were averaged for each participant. The average personality scores for the AMT participants were 3.02 (*SD* = 0.99) for extraversion, 3.82 (*SD* = 0.73) for agreeableness, 3.85 (*SD* = 0.72) for conscientiousness, 2.58 (*SD* = 0.92) for neuroticism, and 3.69, (*SD* = 0.70) for openness. The average scores among the undergraduates were 3.26 (*SD* = 0.78) for extraversion, 3.85 (*SD* = 0.60) for agreeableness, 3.65 (*SD* = 0.58) for conscientiousness, 3.02 (*SD* = 0.75) for neuroticism, and 3.56, (*SD* = 0.58) for openness.

Table 4

Inter-Item Reliabilities of Self-Presentation Concern (SPC) and Big Five Traits

	Sample	
Measures	AMT	Undergraduates
Self-Presentation Concern (4)	.95	.90
Extraversion (8)	.91	.82
Agreeableness (9)	.85	.74
Conscientiousness (9)	.87	.73
Neuroticism (8)	.89	.80
Openness (10)	.87	.75

Note: Numbers in parentheses indicate the number of items used in each measure.

Test-retest reliability of SPC measure. Previously, researchers (Bazarova et al., 2013) assessed SPC in the context of individual messages and posts. In the present study, I wished to examine a more global assessment of SPC (i.e., an individual difference measure). In order to validate SPC as an individual difference measure, I analyzed the test-retest reliability of responses on the SPC measure from the main study and follow-up surveys. A total of 100 participants (83 AMT workers and 17 undergraduates) who completed the main study also completed the follow-up survey. On average, these participants completed the follow-up survey (i.e., retest measure) 16 days after completing the initial measure from the main study. The correlation between the initial SPC scores and retest SPC scores was .75. Although this is somewhat lower than the two week test-retest reliabilities of BFI measures (.78 to .84) reported by Chmielewski and Watson (2009), it is still acceptably stable over time based on the .70 minimum suggested by previous researchers (e.g., Nunnally, 1978; Viswesvaran & Ones, 2000) Individual item test-retest correlations ranged from .60 to .73.

Correlational analysis: demographic and individual difference measures. To get a sense of how the demographic and individual difference variables in this study relate to each other, I constructed a Pearson correlation matrix with these variables for both the AMT and undergraduate samples. The results are presented in Tables 5 and 6 for AMT participants and undergraduates respectively. Since the social network viewing/posting behavior items used an ordinal response scale, I analyzed these items separately using Spearman correlations and will discuss those results in the next section.

Table 5

Pearson Correlations for Amazon Mechanical Turk Sample

	1.	2.	3.	4.	5.	6.	7.	8.
1. Age	-							
2. Gender	.02	-						
3. Self-Presentation Concern	.15*	.08	-					
4. Extraversion	.09	-.06	.04	-				
5. Agreeableness	.21**	.04	-.03	.23**	-			
6. Conscientiousness	.15*	.06	.03	.21**	.37**	-		
7. Neuroticism	-.22**	.24**	.15*	-.47**	-.42**	-.53**	-	
8. Openness	.06	-.03	.00	.30**	.15*	.10	-.08	-

Notes. *$p < .05$. **$p < .01$.

Gender coded as 1 = Male, 2 = Female.

Table 6

Pearson Correlations for Undergraduate Sample

	1.	2.	3.	4.	5.	6.	7.	8.
1. Age	-							
2. Gender	-.25	-						
3. Self-Presentation Concern	.09	.04	-					
4. Extraversion	-.03	.00	.21*	-				
5. Agreeableness	.10	.04	.07	.15	-			
6. Conscientiousness	.18	.09	.13	.27**	.47**	-		
7. Neuroticism	-.15	.42**	.00	-.27**	-.26**	-.32**	-	
8. Openness	-.04	.16	.00	.10	.43**	.24*	.16	-

Notes. *$p < .05$. **$p < .01$.

Gender coded as 1 = Male, 2 = Female.

Beginning with demographic variables, age had a modest positive correlation with agreeableness and negative correlation with neuroticism among AMT participants. Age also had weak positive correlations with SPC and conscientiousness in this sample. Not surprisingly, these relationships were not present in the more age-restricted undergraduate sample. Across both samples, however, gender was significantly related to neuroticism such that women tended to report higher levels of neuroticism compared to men. This finding corroborates previous studies showing that women tend to score higher on neuroticism than men (e.g., Costa, Terracciano, & McCrae, 2001). Correlations among the BFI personality traits were generally consistent across both samples and in-line with findings from previous research (e.g., Van der Linden, te Nijenhuis, & Bakker, 2010), although there were some exceptions. Extraversion was not related to agreeableness or openness among the undergraduates, and conscientiousness and openness were not correlated in the AMT sample.

Most pertinent to the main research questions, however, are the relations between the BFI personality traits and SPC. Among AMT participants, there was a slight positive correlation between SPC and neuroticism ($r = .15$, $p = .03$). Among the undergraduate participants, SPC was significantly positively related to extraversion ($r = .21$, $p = .02$). There were no other significant correlations between SPC and the BFI traits.

Correlational analysis: social networking information. Pearson correlations revealed that social network size was generally unrelated to demographic and personality characteristics, with one notable exception. Social network size was significantly related to extraversion in the undergraduate sample ($r = .30$, $p < .01$), indicating that undergraduate participants who were more extraverted tended to have larger social

networks. Surprisingly, social network size was unrelated to SPC in both samples, and an inspection of the scatterplots did not reveal any non-linear trends. These results run counter to my expectation that people with larger social network audiences would have greater SPC.

The social network viewing/posting behavior item responses were coded on a 6-point scale where 1 indicated "more than 10 times per day" and 6 indicated "once a month or less". Thus, lower values on this scale indicate greater frequency of viewing and posting to SNSs. Because the response options were on an ordinal scale, I used Spearman correlation coefficients to examine the relationships between these items and the variables from the previous correlational analysis. The results revealed that both AMT ($\rho = .33$, $p < .01$) and undergraduate participants ($\rho = .50$, $p < .01$) who viewed their social networks more frequently also posted more frequently. Additionally, frequency of viewing was also significantly related to social network size such that both AMT ($\rho = -.19$, $p = .01$) and undergraduate participants ($\rho = -.21$, $p = .02$) with larger social networks tended to check them more frequently. There was a weak but significant relationship between posting frequency and social network size among AMT participants ($\rho = -.15$, $p = .04$) but not undergraduates.

Interestingly, viewing/posting behavior was related to SPC and extraversion for AMT participants, but not for undergraduates. Participants from AMT who had higher SPC tended to view their social networks ($\rho = -.16$, $p = .02$) and create posts ($\rho = -.21$, $p < .01$) more often than those with lower SPC. Additionally, more extraverted AMT participants tended to post more often than those who were less extraverted ($\rho = -.23$, $p <$

.01). There were no other significant relationships between viewing/posting behavior and BFI traits.

Discussion. The descriptive data revealed some interesting similarities and differences in the social networking behavior of the AMT participants and undergraduates. Although undergraduates tended to have larger social networks than AMT participants, social network size varied tremendously in both samples. Overall, both groups of participants frequently used Facebook and Twitter to view and create posts, but one third of the undergraduate students posted messages relatively infrequently (i.e., once a month or less). In both samples, nearly half of participants' posts were about personal events, and nearly one third of their posts contained pictures. However, AMT participants posted more about news and posted more URLs than undergraduates, suggesting that AMT workers perhaps use SNSs to disseminate and comment about news to a greater degree than college students.

The preliminary analyses revealed several important aspects of the SPC measure. First, although the test-retest reliability of SPC was acceptable for the purposes of this study, it was not as reliable over a two week period as personality traits examined in previous research (e.g., Chmielewski & Watson, 2009). Given that the inter-item reliability of SPC was quite high, it may be the case that SPC is more susceptible to transient measurement error due to day-to-day variability in people's psychological and emotional states (Chmielewski & Watson, 2009). Also, recall that the initial SPC measure was presented along with several other measures in a long survey, whereas the retest measure was presented in a short survey by itself. Therefore, it is possible that these different contexts influenced participants' responses.

Second, the correlational analyses showed that SPC was related to the BFI personality traits in unexpected ways. Due to the potential for diverse audiences (i.e., context collapse) in social networking, it is reasonable to expect that people with greater SPC would also be more agreeable as they attempt to appeal to the lowest common denominator in their audiences. Additionally, Hyperpersonal theory would suggest that people concerned about their online self-presentations may take advantage of CMC's affordances to exercise greater care and control over how they present themselves. Thus, I expected that people high in SPC would also tend to be more conscientious. However, SPC was unrelated to agreeableness and conscientiousness. Instead, SPC was positively related to neuroticism in the AMT sample and extraversion in the undergraduate sample. However, the strength of these relationships was modest in both cases. This, along with the fact that the results were inconsistent across samples, warrants caution in drawing conclusions about the relationships between SPC and these personality traits. I will explore this issue more deeply in the RQ2 analysis.

Finally, the correlational analyses also revealed how SPC related to participants' social network size, as well as their viewing and posting behavior. Drawing from the networked publics perspective, one might expect people with large, diverse social networks to have more concern about how they present themselves due to a potentially greater range of imagined audiences. Contrary to expectations, SPC was unrelated to social network size, indicating that SNS users with large audiences do not necessarily have greater concern than users with smaller audiences. Social network viewing and posting behavior, however, was related to SPC. In the AMT sample, participants with high SPC tended to view their social networks and make posts more often than those with

low SPC. This may possibly reflect a more proactive or acquisitive approach to self-presentation by AMT participants with greater concern. On the other hand, SPC was unrelated to the viewing and posting frequency of the undergraduate participants, suggesting that SPC does not influence undergraduates' amount of engagement in their social networks.

Analyses of Research Questions

Language data preparation. My primary analyses are based on language measures derived from the text participants provided in the post reporting and post creation tasks. Table 7 displays some example status updates and tweets that participants provided in these tasks. Due to the fact that LIWC is based on pre-constructed dictionaries, a number of data cleaning measures were taken to ensure the best possible results. The data cleaning procedures I describe here were applied to the language data collected from both the post creation task and the post reporting task. First, all text indicative of a non-response (e.g., "none" or "n/a") was deleted and treated as missing data in the final analyses. Then, all URLs, non-standard keyboard characters (e.g., symbols such as hearts), and system text (e.g., timestamps) was removed from the text. Next, hashtags were converted into regular words (e.g., "#great" to "great") and phrases were expanded into discrete words (e.g., "#thisisgreat" to "this is great"). Finally, the text underwent a spell checking procedure which involved correcting basic typographical mistakes (e.g., "comptuer" to "computer") and expanding shorthand (e.g., "cuz" to "because"). After the data were cleaned, texts from the post reporting were combined within participants to create a single text for each participant. This was done because

individual Facebook/Twitter posts are fairly short and produce sparser LIWC scores when analyzed as separate texts.

Table 7

Example Posts from Post Reporting and Post Creation Tasks

Post Type	Post Text
Post Reporting Task	
Facebook	"Well guys, it turns out I'm pretty bad at Smash Bros"
Twitter	"Chilling with my big sis today since I finally have an off day. #RestDay"
Post Creation Task	
Facebook	"Ugh! So tired of being sick! It's like our house is full of germs :("
Twitter	"Working on a huge paper, I'll need more coffee than this"

I conducted word count analyses using LIWC2007 (Pennebaker et al., 2007). By default, LIWC scores are a percentage reflecting the number of words in the category present in the text relative to the total number of words in the text. Scores were generated for each word category for each participant. For the purposes of this study, the scores for the "I" and "We" LIWC categories were combined to create a total first person pronoun score. Similarly, the "SheHe" and "They" LIWC categories were combined to create a total third person pronoun score. In order to simplify data interpretation, I converted the

raw LIWC scores to word counts by multiplying the LIWC scores by the total number of words in each text. For data from the post reporting task, I divided these word counts by the number of posts that each participant provided. Therefore, these measures represent the number of words per post for each category. Tables 8 and 9 display the averages for each language category in the post reporting and post creation tasks respectively.

Table 8

Average Number of Words per Post by Language Category in the Post Reporting Task

	Sample	
	AMT	Undergraduate
Language Category	Mean (SD)	Mean (SD)
Total Word Count	14.55 (19.41)	14.08 (13.38)
First Person Pronouns	1.71 (2.44)	1.94 (2.02)
Third Person Pronouns	0.24 (0.55)	0.21 (0.35)
Positive Emotion Words	0.75 (0.84)	0.92 (0.91)
Negative Emotion Words	0.14 (0.25)	0.20 (0.22)
Swear Words	0.04 (0.11)	0.02 (0.08)
Achievement Words	0.21 (0.31)	0.13 (0.23)
Money Words	0.13 (0.24)	0.11 (0.23)
Religion Words	0.03 (0.08)	0.04 (0.10)
Sexual Words	0.25 (0.35)	0.32 (0.38)

Table 9

Average Number of Words by Language Category in the Post Creation Task

	Sample	
	AMT	Undergraduate
Language Category	Mean (SD)	Mean (SD)
Total Word Count	15.59 (10.94)	13.49 (10.09)
First Person Pronouns	1.82 (1.89)	1.70 (1.85)
Third Person Pronouns	0.13 (0.48)	0.10 (0.47)
Positive Emotion Words	1.11 (1.10)	1.09 (1.22)
Negative Emotion Words	0.24 (0.50)	0.16 (0.43)
Swear Words	0.02 (0.14)	0.03 (0.18)
Achievement Words	0.27 (0.52)	0.15 (0.44)
Money Words	0.29 (0.60)	0.13 (0.43)
Religion Words	0.06 (0.26)	0.04 (0.20)
Sexual Words	0.31 (0.68)	0.29 (0.49)

Research question 1 (RQ1).

Analysis. My first research question (RQ1) asked if SNS users who have high SPC differ from users who have lower concern in their language use. To address this question, I constructed a series of multiple regression models; one for each language variable. The dependent variables were the words per post measures (derived from the procedure described in the Language Data Preparation section) from the post reporting

task corresponding to the style, affect, and topic dimensions. The style dimension consisted of first person pronouns and third person pronouns. The affect dimension consisted of positive emotion words, negative emotion words, and swear words. Finally, the topic dimension included words related to achievement, money, religion, and sexuality. Prior to analysis, I examined the frequency histograms for each dependent variable to check for skewed distributions. The data for all measures were positively skewed, mainly due to a disproportionate number of zero values (i.e., sparse data). To account for this, I transformed the language measures into simple binary-coded variables which indicated whether each language category was present (1) or not (0). Then I constructed a logistic regression model for each binary-coded language measure, resulting in nine models for each sample.

In each model, I entered SPC, age, gender, and SNS (i.e., Facebook or Twitter) as fixed effects. Age and gender were included in the models as control variables due to the wide age variability in the AMT sample and gender imbalance in the undergraduate sample. Gender was contrast coded with 1 = female and -1 = male. Similarly, SNS was contrast coded with 1 = Facebook and -1 = Twitter. Raw SPC scores were transformed into *z*-scores (by sample) to make the results more readily interpretable. An SPC x SNS interaction term was also included as a fixed effect to examine whether the effect of SPC is different for Facebook users compared to Twitter users. Due to the considerable number of models and predictors within models, the possibility of finding significant effects simply due to chance (i.e., Type I error) is a concern in the present analyses. Holm-Bonferroni adjustments (Holm, 1979) were applied to ensure the family-wise Type I error rate for the fixed effects within each model did not exceed .05.

The SPC fixed effect was not significant in any of the models (all *p*-values > .05). There were also no significant SPC x SNS interactions. In the AMT sample, there were marginal effects of SPC ($B = 0.79$, $p = .10$) and the SPC x SNS interaction ($B = -0.80$, $p = .10$) for religion-related words. These trends suggest that AMT participants with higher SPC were slightly more likely to use religion-related words than those with lower SPC, and this effect was slightly greater for Twitter users compared to Facebook users.

Although there were no significant effects of SPC, there were a few noteworthy results from these models. There was a significant effect of SNS for negative emotion words among the AMT participants ($B = 0.44$, $p = .02$), indicating that Facebook users were more likely to post negative emotion words than Twitter users. For the undergraduates, there was a significant effect of gender on sexual words ($B = 0.85$, $p = .01$) and a marginal effect of gender on third person pronouns ($B = .67$, $p = .07$), suggesting that women were more likely to use these words compared to men.

Discussion. Research question 1 addressed how SPC is related to language use in Facebook and Twitter posts across several word categories. I predicted that SNS users with higher SPC would use more first person pronouns, positive emotion words, and achievement words compared to those with lower SPC. I also predicted that users with higher SPC would use fewer third person pronouns, negative emotion words, swear words, and words related to money, religion, and sexuality. The results did not support these hypotheses. Across both the AMT and undergraduate samples, there were no significant relationships between SPC and any of the word categories. Additionally, there were no significant interactions between SPC and SNS, indicating that there were no significant relationships between SPC and language use that were specific to either

Facebook or Twitter users. Since the regression models also controlled for age and gender, it is unlikely that these results are attributable to demographic imbalances in the samples.

There are a number of possible reasons why the results failed to support the hypotheses. First, it is possible that the frequencies of some word categories were too low to detect differences in the present samples. With the exception of first person pronouns, the average number of words per post for all other categories was less than one (see Table 8). Words from some categories, particularly swear and religion words, were quite scarce. Well over 80% of participants had no posts containing swear or religion words. Even using logistic regression to predict the mere presence or absence of these categories, these types of words may not be prevalent enough in the present samples to detect any potential effects of SPC. However, it is likely the issue is not simply a lack of statistical power, considering that there were significant effects of gender and SNS for some of these categories.

Also, low statistical power does not necessarily explain the lack of results for the more prevalent word categories (i.e., first person pronouns and positive emotion words). For instance, previous work (i.e., Bazarova et al., 2013) found a significant relationship between message-specific SPC and positive emotion words in a sample size comparable to the present undergraduate sample (and substantially smaller than the present AMT sample). The present study failed to replicate this finding using a more global measure of SPC. Therefore, it is possible that users' global levels of concern do not have the same ability to predict language use as their situational (i.e., message-specific) concerns.

Another possibility is that demand characteristics introduced by the study may have caused participants to selectively exclude certain posts while completing the post reporting task. If participants made any recent posts that they were uncomfortable sharing in the survey, they may have chosen to leave those posts out of their responses. Posts that participants may have intentionally omitted could potentially be systematically linked to certain word categories such as negative emotion words, swear words, or words related to sensitive topics.

Research question 2 (RQ2).

Analysis. My second research question (RQ2) asked how the relationships between SPC and language use are mediated by other personality traits. Just as with RQ1, I addressed this question by constructing a series of multiple regression models and following the test of mediation steps recommended by MacKinnon, Fairchild, and Fritz (2007). Specifically, this involves assessing the relationship between the independent variable (SPC) and the mediator (e.g., a BFI trait), and the relationship between the mediator and the dependent variable (i.e., language category). Mediation is evident if both of these relationships are significant (MacKinnon, Fairchild, & Fritz, 2007).

The correlational analysis for SPC and the BFI traits described previously revealed significant bivariate relationships between SPC and neuroticism among AMT participants, and between SPC and extraversion among undergraduates. In order to determine if these relationships still hold after controlling for the variables used in RQ1 (namely age, gender, and SNS), I created two regression models. The fixed effects in both models were identical to those used in the RQ1 analysis. This time, however, the dependent variables were neuroticism and extraversion for the AMT and undergraduate

samples respectively. Both of the dependent variables were converted to *z*-scores prior to analysis. The SPC fixed effect was significant in both models. This demonstrates that SPC is significantly related to neuroticism ($B = 0.18$, $p = .01$) and extraversion ($B = 0.20$, $p = .03$) within the respective samples after controlling for age, gender, and SNS.

To examine the relationships between the potential mediators (i.e., neuroticism and extraversion) and language use, I constructed a series of logistic regression models very similar to those from the RQ1 analysis. The dependent variables were the same as those from RQ1: binary-coded language measures from the post reporting task. The fixed effects included age, gender, SNS, and potential mediator (neuroticism for the AMT sample and extraversion for the undergraduate sample). Gender and SNS were coded in the same way as in the RQ1 analysis. Neuroticism and extraversion scores were converted to *z*-scores prior to the analysis. I applied Holm-Bonferroni adjustments within each model to control the family-wise Type I error rate.

There were no significant effects of neuroticism or extraversion in any of the models (all p-values > .05). There was a marginal relationship between extraversion and sexual words ($B = 0.54$, $p = .06$), suggesting that more extraverted undergraduates were slightly more likely to use sexual words than those who were less extraverted.

Discussion. Research question 2 asked how the relationships between SPC and language use are mediated by BFI personality traits. I hypothesized that agreeableness and conscientiousness would positively correlate with SPC and would partially mediate its effects on language use. Contrary to these hypotheses, the preliminary correlational analysis showed that agreeableness and conscientiousness were both unrelated to SPC. Instead, neuroticism was positively related to SPC in the AMT sample, and extraversion

was positively related to SPC in the undergraduate sample. The present analysis demonstrated that these two relationships remained significant after controlling for age, gender, and SNS. This suggests that the relationships between SPC and these personality traits are not necessarily attributable to age variation or gender imbalance within the two samples.

However, it is still unclear why the relationships between SPC and personality differed across AMT participants and undergraduates. It is possible that other demographic differences between the samples, such as race, may explain the difference in results. For instance, a large majority of AMT participants identified as White/Caucasian while a substantially greater proportion of undergraduate participants identified as Black/African American. To explore this potential explanation, I constructed additional models including race as a control variable. The results did not change after controlling for race, so it appears that differences in race may not explain these findings. Therefore, it may be the case that demographic differences not assessed in this study (e.g., education level or familiarity with technology) may underlie the discrepant findings across samples to some degree.

Another possible explanation is that the two samples may have differed in their BFI trait scores, resulting in different relationships between personality and SPC. To examine this possibility, I conducted Welch's *t*-tests comparing the AMT participants and undergraduates on each of the BFI traits. These tests revealed that the AMT and undergraduate samples did, in fact, differ on extraversion ($t(287) = -2.35$, $p = .02$), conscientiousness ($t(284) = 2.60$, $p = .01$) and neuroticism ($t(281) = -4.52$, $p < .001$). Specifically, the undergraduates scored higher on extraversion and neuroticism and lower

on conscientiousness than the AMT participants. It is worth noting that, because neuroticism was also negatively correlated with age in the AMT sample, the difference in neuroticism between these participants and the undergraduates may be partially due to age. In addition, the standard deviations for extraversion and neuroticism among the undergraduates (0.78 and 0.75 respectively) appeared lower than in the AMT sample (0.99 and 0.92 respectively). Thus, differences in the scores and variability of these personality traits may also help explain the different relationships with SPC across the samples.

Although SPC was related to extraversion and neuroticism, these two personality measures were not significantly related to any of the language measures. Thus, the hypothesis that personality traits would mediate the relationships between SPC and language use was not supported. The present study also failed to replicate previous work linking personality traits to language use in social networking. In particular, these studies found that greater extraversion was associated with more positive emotion words and fewer negative emotion words, while greater levels of neuroticism were associated with more negative emotion and swear words (e.g., Qiu et al., 2012; Schwartz et al., 2013; Sumner et al., 2011). In this study, extraversion and neuroticism were not significantly related to these word categories.

One possible reason why the present study failed to replicate these findings is that the previous studies all examined only one SNS (either Facebook or Twitter), while the present study examined language use from both Facebook and Twitter. To investigate this issue further, I ran another set of regression models which were identical to the original RQ2 models, except that an extraversion/neuroticism x SNS interaction term was

included. The only significant finding was a neuroticism x SNS interaction for swear words (B = -0.63, p = .03), indicating that AMT participants high in neuroticism were more likely to use swear words on Twitter, but not Facebook. Therefore, differences between Facebook and Twitter only partially explain the lack of findings.

Other differences with past studies that may account for the present results include the types of texts that were analyzed, as well as differences in statistical power. First, some of the previous studies included text from other parts of participants' social networking profiles (e.g., the About Me section). The types of words that people use in their status updates may be different from what they use in their profiles. Second, one particular study analyzed an extremely large corpus collected from tens of thousands of Facebook users (Schwartz et al., 2013). Thus, it may be the case that there are more subtle relationships between language use and personality that require much larger sample sizes to detect.

Research question 3 (RQ3).

Analysis. My final research question (RQ3) was whether increased awareness of particular audiences (e.g., friends vs. employers) would influence language use on Facebook and Twitter. I addressed this question by constructing a series of multiple regression models in a manner similar to the RQ1 and RQ2 analyses. The dependent variables were the language measures from the post creation task corresponding to the style, affect, and topic dimensions. The language data from the post creation task had distributions similar to the data from the post reporting task. Therefore, these measures were converted into binary-coded variables which indicated whether each language

category was present (1) or not (0). I constructed a logistic regression model for each language measure, resulting in nine models for each sample.

In addition to the language variables, I also analyzed the amount of time that participants spent on the post creation task as a dependent variable. Response time was measured as the total number of seconds each participant spent on the post creation task page of the survey before moving on to the next page. On average, AMT participants spent 66 seconds (*SD* = 70) and undergraduates spent 87 seconds (*SD* = 263) on the task. In order to eliminate outliers, response times greater than three standard deviations from the mean were removed prior to analysis. This resulted in response times from four AMT participants and one undergraduate being removed and adjusted average response times of 58 (*SD* = 40) and 63 (*SD* = 50) seconds respectively. An examination of frequency distributions showed that response times were positively skewed. Therefore, a natural log transformation was applied to the response times prior to analysis, resulting in normal distributions. I then constructed a Gaussian regression model for the transformed response time measure for each sample.

In all of these models, I included age, gender, SNS, and SPC as fixed effects using the same coding as the RQ1 analysis. Just as with the previous analyses, SPC scores were transformed into z-scores. The three reminder conditions (no reminder, social reminder, and professional reminder) were dummy coded with no reminder serving as the reference group. These dummy coded variables were entered as fixed effects in the models and used to test the main effect of reminder condition. Condition x SPC terms were also entered as fixed effects to determine if the effect of condition depends on SPC.

Holm-Bonferroni adjustments were again applied within each model to control the family-wise Type I error rate.

There were no significant effects of SPC or condition in any of the models (all p-values > .05). Additionally, there were no significant condition x SPC interactions. However, there were two notable results in the AMT sample. First, there was a significant effect of SNS on first person pronouns ($B = 0.84$, $p < .001$), revealing that Facebook users were more likely to use first person pronouns in the post creation task than Twitter users. Second, age was significantly related to third person pronouns ($B = 0.07$, $p = .04$), suggesting that older AMT participants were more likely to use third person pronouns than younger participants.

Discussion. Research question 3 asked if increasing participants' awareness of particular audiences would influence the types of words they used in online social networking. I predicted that reminding participants about professional audiences (employers, teachers, and coworkers), in comparison to social audiences (friends and family), would increase their use of first person pronouns, positive emotion words, and achievement words and decrease their use of third person pronouns, negative emotion words, swears, and words related to money, religion, and sexuality. I also expected that participants exposed to the professional reminder would spend more time creating their posts, and that these effects would be greater for participants with higher SPC. The results did not support these hypotheses. The reminder conditions had no effect on language use or response time. There were also no significant interactions between the conditions and SPC.

There are several possible reasons why the experimental conditions failed to elicit effects. First, it is possible that the experimental manipulations and the nature of the task were simply not powerful enough to influence participants' responses. Recall that the experimental manipulation was a single sentence at the end of the instructions reminding participants that a particular audience (i.e., social vs. professional) may see what they post to Facebook/Twitter. A single sentence embedded in the instructions may have been too subtle to get participants to take these audiences into consideration as they crafted their posts. And although the instructions explicitly stated that participants should write their message as if it would actually be posted to their social networks, participants may have discounted audience concerns, knowing that the message would not be made public. In other words, the artificial nature of the task may have eliminated any potential audience concerns that participants might otherwise have when making real posts.

Second, the context of the task and the study setting may have constrained participants' word choices. In an attempt to elicit responses that were as natural as possible, the instructions told participants to write about the day they had yesterday. A manual inspection of the responses revealed that participants did—for the most part—write messages that resembled real posts in response to this prompt. However, this specific context may have constrained what participants wrote about which, in turn, affected their language use. For example, if told to write about your day yesterday, you may be very likely to write about yourself (e.g., something you did or something that happened to you) as opposed to others. This constraint may directly influence the use of pronouns. And in fact, the data from Tables 8 and 9 show exactly that. Third person pronoun use (i.e., talking about others) was noticeably lower in the post creation task

relative to the post reporting task. It is also possible that the study introduced demand characteristics that influenced the content of participants' messages. For instance, participants may have intentionally avoided using swear words or writing about negative events and sensitive topics. This was not apparent in the data, however, as the use of negative emotion words, swear words, and words related to money, religion, and sexuality were comparable across the post creation task and post reporting task (see Tables 8 and 9).

Finally, it is possible that there was not enough data to detect any potential effects of the experimental conditions or SPC. Each participant created only one post in this task, with each post having a total count of 13-15 words on average (see Table 9). There may not be enough variability in language use within single posts to detect more subtle effects, especially considering the potential constraints discussed above.

General Discussion

Online social networking services like Facebook and Twitter currently play a prominent role in how people present information about themselves to others. These platforms offer complex affordances and challenges to communication that make SPC a potentially important factor in how people use language. The goal of this work was to gain a better understanding of online self-presentation by examining how SPC relates to language use on Facebook and Twitter. Specifically, this study addressed three main questions. First, do SNS users who have high SPC differ from users who have lower concern in their language use in terms of style, affective expression, and topic choices? Second, how are the relationships between SPC and language use mediated by

personality traits? And finally, does increased awareness of particular audiences influence SNS users' language use?

Contrary to my predictions, the results showed that SPC was unrelated to participants' use of pronouns, affective terms, and words relating to particular topics. In regards to the second research question, SPC was related to the Big Five personality traits in unexpected ways. Specifically, SPC was unrelated to agreeableness and conscientiousness, and instead was related to extraversion and neuroticism. However, there was no evidence that these personality traits mediated the relationships between SPC and language use. Finally, presenting participants with reminders about social and professional audiences did not affect their language use or the amount of time they spent creating posts.

AMT and Undergraduate Samples

Recruiting participants from two commonly employed yet distinct populations allowed me to discover some intriguing differences between AMT workers and undergraduate students in terms of their online social networking and self-presentation. A notable point of interest, as alluded to previously, is the difference in age variation between these two populations, which allows the examination of potential developmental differences. For the AMT participants, there was a slight positive relationship between age and SPC, indicating that older participants had greater concern than younger participants. It may be the case that SPC increases as people age, but this relationship may also be attributable to a cohort effect. Young people may be more familiar with SNSs, and in turn may have less concern about how they conduct themselves through social media.

There were also differences between AMT and undergraduate participants in how SPC related to social networking behavior. Specifically, more frequent viewing and posting to one's social network predicted greater SPC among AMT participants but not undergraduates. This suggests that AMT participants with greater concern about their self-presentations were more active and engaged with their social networks relative to those with less concern. A more active approach to social networking parallels Arkin's (1981) acquisitive self-presentational style. It is possible that, among AMT participants, individuals with greater SPC may be more likely to adopt an acquisitive style.

Theoretical Implications

Although the results of this study did not support my hypotheses, they carry important theoretical implications and provide many interesting directions for future work. Despite some limitations that may have contributed to the lack of significant relationships (see the discussions in the previous sections), the fact that SPC was unrelated to language use in this study suggests that people's level of concern may not necessarily influence their self-presentational behavior. In other words, people who are more concerned about their self-presentations may not necessarily exert more conscious or effortful control over what they post compared to people who are less concerned. According to hyperpersonal theory, asynchronous CMC provides affordances that give users the time and ability to think about and edit their messages before posting them. Hyperpersonal theory would predict that users who are especially concerned about conveying ideal impressions would very likely take advantage of these affordances to create more idealized messages. The present study does not support this prediction. Not

only was SPC unrelated to the types of words people used, it was also unrelated to the amount of time participants spent composing their messages in the post creation task.

However, it is possible that SPC might influence other aspects of language and communication not captured by the collection of word categories examined in the present analyses. For instance, people with high SPC might be more vigilant about using proper grammar, fixing spelling mistakes, and avoiding slang or "Internet lingo." It may also be the case that SPC influences other aspects of online self-presentation, such as profile information. This seems especially likely considering that past research demonstrates hyperpersonal processes (i.e., idealized self-presentations) in online dating and Facebook profiles (e.g., Ellison et al., 2006; Van Der Heide et al., 2012; Wang et al., 2010). Further work in this area is needed to discover how SPC may affect different facets of online self-presentation.

The relationships between SPC and personality traits, however, raise further questions about SPC and hyperpersonal processes. I expected SPC to correlate positively with conscientiousness and agreeableness. Conscientious individuals tend to be more careful and detail oriented and agreeable individuals tend to be considerate and amicable. These traits seem to closely mirror certain aspects of hyperpersonal communication, namely the care taken in constructing messages and the desire for idealized self-presentations. The fact that SPC was unrelated to these two traits may imply that SPC is not necessarily connected to hyperpersonal processes. To the best of my knowledge, no previous studies have directly examined possible links between Big Five personality traits and hyperpersonal communication, so this implication is tentative. More direct

investigations of personality and hyperpersonal communication are required in order to better understand this issue.

The present results also have implications for the networked publics perspective, particularly with regard to audience management. As this framework outlines, SNS users may potentially deal with large and diverse audiences which include members from many different social contexts (family, coworkers, etc.). Presumably, as the size of one's social network increases, these audience management issues are amplified, and this may affect one's concern about self-presentation. In this study, however, the number of Facebook friends and Twitter followers participants had was unrelated to SPC. So users with larger and potentially more complex audiences do not appear to have greater SPC than users with smaller audiences. A related issue is the idea that the actual audience for any given post (i.e., who actually reads it) is often ambiguous, forcing users to present to imagined audiences (boyd, 2010). The social and professional reminder conditions in the post creation task essentially served as cues with the goal of invoking particular imagined audiences. However, these reminders did not influence participants' responses in the post creation task. As mentioned in the earlier discussion, the nature of the task may have caused participants to disregard the reminders as they constructed their imagined audiences and their messages. But taken together, the results of this study suggest that potential audience concerns are not necessarily linked to SPC or language use. In other words, concern about one's audience and concern about one's self-presentation may be distinct issues in online self-presentation.

Future Directions

There are numerous potential avenues of research that can branch from this study. As mentioned previously, this study is the first attempt to explore SPC as an individual difference measure, and the results indicate that there is still much to learn about this construct. Given the inconsistent pattern of relationships to the Big Five traits across the AMT and undergraduate samples, the relationships between SPC and personality deserve further examination with a larger, more general sample. Specifically, because the present study was advertised as a study about Facebook/Twitter use, there is a possibility of selection bias that may have affected the present findings. Additionally, future work should investigate how SPC is related to other individual difference measures with implications in online self-presentation. In particular, two worthwhile individual difference measures to examine would be social anxiety and self-monitoring (i.e., the extent to which people adapt their behavior in response to different cues and social situations; Lennox & Wolfe, 1984). Social anxiety has previously been linked to hyperpersonal processes (e.g., High & Caplan, 2009), and recent research has revealed that self-monitoring is related to certain language categories in Facebook (He, Glas, Kosinski, Stillwell, & Veldkamp, 2014). Also, considering that researchers have studied SPC as a situational measure (Bazarova et al., 2013) and now as an individual difference measure, future researchers may want to explore the stability of SPC across longer periods of time (e.g., months as opposed to weeks) and across different contexts. For instance, people who use both Facebook and Twitter may have different levels of concern across these two SNSs.

Some of the main limitations of the current study stemmed from the difficulties in attempting to capture natural self-presentational behavior in a less-than-natural survey setting. As discussed earlier, effectively invoking audience awareness in a true experimental design proved particularly challenging in the context of a survey task. Because audience dynamics play such a prominent role in self-presentation theory, alternative experimental methods in this vein are worth exploring. Advances in computer software development and the open use of application programming interfaces (APIs) allow researchers and programmers to create applications that extract content directly from SNSs. For example, researchers have recently utilized such applications to obtain massive corpora from Facebook containing millions of words from tens of thousands of users (e.g., Schwartz et al., 2013). Similarly, researchers could potentially build applications that deliver experimental manipulations (such as audience reminders) directly to participants' social networking applications in order to examine their effects on real posting behavior. A further step would be to go beyond simple textual reminders and use the API to retrieve information from specific members of participants' social networks and present this to participants as they are about to create a new post. Although there are serious ethical concerns to consider when implementing these kinds of applications, methods such as this may provide a much deeper understanding of online self-presentation and may also directly inform the future design considerations of SNS developers.

Closing Words

We currently find ourselves in an era where computer technology mediates many of our interpersonal interactions. Online social networking is an important part of our

everyday lives, and the way we present ourselves on these sites impacts both our social and professional relationships with others. The level of concern we have about our online self-presentations and how these concerns might guide our behavior is still relatively unexplored, but this study serves as an important step toward a comprehensive understanding of these processes. Our degree of concern may not necessarily affect our word choices, but it may meaningfully relate to other aspects of self-presentation. As research on social media use continues to expand, there will be more opportunities to learn about the roles that social concern and language play in the presentation of self online.

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Appendix A

Self-Presentation Concern Items

Facebook Version

How concerned are you about the way you present yourself on Facebook?

Not concerned at all				Very concerned
1	2	3	4	5
○	○	○	○	○

How important is it for you to make a good impression on others over Facebook?

Not important at all				Very important
1	2	3	4	5
○	○	○	○	○

How important is it for you to convey desirable impressions of yourself on Facebook?

Not important at all				Very important
1	2	3	4	5
○	○	○	○	○

How concerned are you about what others on Facebook might think of you?

Not concerned at all				Very concerned
1	2	3	4	5
○	○	○	○	○

Twitter Version

How concerned are you about the way you present yourself on Twitter?

Not concerned at all				Very concerned
1	2	3	4	5
○	○	○	○	○

How important is it for you to convey desirable impressions of yourself on Twitter?

Not important at all				Very important
1	2	3	4	5
○	○	○	○	○

How concerned are you about what others on Twitter might think of you?

Not concerned at all				Very concerned
1	2	3	4	5
○	○	○	○	○

How important is it for you to make a good impression on others over Twitter?

Not important at all				Very important
1	2	3	4	5
○	○	○	○	○

Appendix B

Big Five Inventory

Here are a number of characteristics that may or may not apply to you. For example, do you agree that you are someone who *likes to spend time with others*? Please select a response next to each statement to indicate the extent to which **you agree or disagree with that statement.**

I am someone who...

	1 Disagree strongly	2 Disagree a little	3 Neither agree nor disagree	4 Agree a little	5 Agree strongly
Is talkative	○	○	○	○	○
Tends to find fault with others	○	○	○	○	○
Does a thorough job	○	○	○	○	○
Is depressed, blue	○	○	○	○	○
Is original, comes up with new ideas	○	○	○	○	○
Is reserved	○	○	○	○	○
Is helpful and unselfish with others	○	○	○	○	○
Can be somewhat careless	○	○	○	○	○
	1 Disagree strongly	2 Disagree a little	3 Neither agree nor disagree	4 Agree a little	5 Agree strongly
Is relaxed, handles stress well	○	○	○	○	○
Is curious about many different things	○	○	○	○	○
Is full of energy	○	○	○	○	○
Starts quarrels with others	○	○	○	○	○
Is a reliable worker	○	○	○	○	○
Can be tense	○	○	○	○	○
Is ingenious, a deep thinker	○	○	○	○	○
Generates a lot of enthusiasm	○	○	○	○	○
	1 Disagree strongly	2 Disagree a little	3 Neither agree nor disagree	4 Agree a little	5 Agree strongly

Has a forgiving nature	◯	◯	◯	◯	◯
Tends to be disorganized	◯	◯	◯	◯	◯
Worries a lot	◯	◯	◯	◯	◯
Has an active imagination	◯	◯	◯	◯	◯
Tends to be quiet	◯	◯	◯	◯	◯
Is generally trusting	◯	◯	◯	◯	◯
Tends to be lazy	◯	◯	◯	◯	◯
Is emotionally stable, not easily upset	◯	◯	◯	◯	◯
	1 Disagree strongly	2 Disagree a little	3 Neither agree nor disagree	4 Agree a little	5 Agree strongly
Is inventive	◯	◯	◯	◯	◯
Has an assertive personality	◯	◯	◯	◯	◯
Can be cold and aloof	◯	◯	◯	◯	◯
Perseveres until the task is finished	◯	◯	◯	◯	◯
Can be moody	◯	◯	◯	◯	◯
Values artistic, aesthetic experiences	◯	◯	◯	◯	◯
Is sometimes shy, inhibited	◯	◯	◯	◯	◯
Is considerate and kind to almost everyone	◯	◯	◯	◯	◯
	1 Disagree strongly	2 Disagree a little	3 Neither agree nor disagree	4 Agree a little	5 Agree strongly
Does things efficiently	◯	◯	◯	◯	◯
Remains calm in tense situations	◯	◯	◯	◯	◯
Prefers work that is routine	◯	◯	◯	◯	◯
Is outgoing, sociable	◯	◯	◯	◯	◯
Is sometimes rude to others	◯	◯	◯	◯	◯
Makes plans and follows through with them	◯	◯	◯	◯	◯
Gets nervous easily	◯	◯	◯	◯	◯
Likes to reflect, play with ideas	◯	◯	◯	◯	◯

Appendix C

Social Networking Information Items

Facebook Version

How many Facebook friends do you have? (please check your Facebook profile and provide an exact number)

How often do you check Facebook to view posts and other content?

- More than 10 times per day
- 5 to 10 times per day
- 1 to 4 times per day
- A few times per week
- A few times per month
- Once a month or less

How often do you post status updates on Facebook?

- More than 10 times per day
- 5 to 10 times per day
- 1 to 4 times per day
- A few times per week
- A few times per month
- Once a month or less

Twitter Version

How many Twitter followers do you have? (please check your Twitter profile and provide an exact number)

How often do you check Twitter to view posts and other content?

- More than 10 times per day
- 5 to 10 times per day
- 1 to 4 times per day
- A few times per week
- A few times per month
- Once a month or less

How often do you make posts (tweets) on Twitter?

- More than 10 times per day
- 5 to 10 times per day
- 1 to 4 times per day
- A few times per week
- A few times per month
- Once a month or less

Appendix D

Post Creation Task Instructions

Social Reminder Condition (Facebook Version):

In the text box below, we would like you to write a status update about yesterday. In other words, if you wanted to make a post on Facebook about your day yesterday, what would you post? Write your message as if it really were going to be posted on Facebook. Keep in mind that friends and family members might see what you post on Facebook.

Professional Reminder Condition (Facebook Version):

In the text box below, we would like you to write a status update about yesterday. In other words, if you wanted to make a post on Facebook about your day yesterday, what would you post? Write your message as if it really were going to be posted on Facebook. Keep in mind that employers, co-workers, and teachers might see what you post on Facebook.

No Reminder Condition (Facebook Version):

In the text box below, we would like you to write a status update about yesterday. In other words, if you wanted to make a post on Facebook about your day yesterday, what would you post? Write your message as if it really were going to be posted on Facebook.

Social Reminder Condition (Twitter Version):

In the text box below, we would like you to write a tweet about yesterday. In other words, if you wanted to make a post on Twitter about your day yesterday, what would you post? Write your message as if it really were going to be posted on Twitter. Keep in mind that friends and family members might see what you post on Twitter.

Professional Reminder Condition (Twitter Version):

In the text box below, we would like you to write a tweet about yesterday. In other words, if you wanted to make a post on Twitter about your day yesterday, what would you post? Write your message as if it really were going to be posted on Twitter. Keep in mind that employers, co-workers, and teachers might see what you post on Twitter.

No Reminder Condition (Twitter Version):

In the text box below, we would like you to write a tweet about yesterday. In other words, if you wanted to make a post on Twitter about your day yesterday, what would you post? Write your message as if it really were going to be posted on Twitter.

Appendix E

Post Reporting Task

Facebook Version (response fields shown only for first post)

In the text boxes below, we would like you to provide the text of your 5 most recent Facebook status updates. Please copy and paste the original text from each status update post, **BUT DO NOT INCLUDE ADDITIONAL COMMENTS POSTED BY YOURSELF OR OTHERS**. We only want the text of the initial post. Please enter only one status update per box. Additionally, please indicate the topic(s) that each status update falls into, and if the status update contained a picture or URL using the check boxes below each text box.

Please enter the text of your most recent status update here

What was the topic of the status update above? (check all that apply)

- ☐ Personal event
- ☐ Social event
- ☐ Work/School event
- ☐ Humor
- ☐ News
- ☐ Other (please specify)

Check these boxes if the status update above contained a picture and/or URL:

- ☐ This status update contained a **PICTURE**
- ☐ This status update contained a **URL (HYPERLINK)**

Twitter Version (response fields shown only for first post)

In the text boxes below, we would like you to provide the text of your 5 most recent posts (tweets) on Twitter. Please copy and paste the original text from each post, **BUT DO NOT INCLUDE ADDITIONAL COMMENTS POSTED BY YOURSELF OR OTHERS**. We only want the text of the initial post. **Please do not include re-tweets or replies that you have posted to others**. Please enter only one post per box. Additionally, please indicate the topic(s) that each tweet falls into, and if the tweet contained a picture or URL using the check boxes below each text box.

Please enter the text of your most recent tweet here

What was the topic of the tweet above? (check all that apply)

- [ ] Personal event
- [ ] Social event
- [ ] Work/School event
- [ ] Humor
- [ ] News
- [ ] Other (please specify)

Check these boxes if the tweet above contained a picture and/or URL:

- [ ] This tweet contained a **PICTURE**
- [ ] This tweet contained a **URL (HYPERLINK)**

Appendix F

Demographic Items

What is your age?

What is your gender?

- Male
- Female

Which of the following best describes your race?

- Asian
- Black / African American
- Native American / Alaskan native
- Pacific Islander / Hawaiian native
- White / Caucasian
- Other (please specify)

Do you consider yourself Hispanic or Latino?

- Yes
- No

Appendix G

Informed Consent Forms

Informed Consent Form for AMT Participants (only Facebook version shown)

Information and Consent Form for Participation in Research

Investigators: David Kovaz, M.A. and Roger Kreuz, Ph.D. of The University of Memphis.

Purpose of the research: The purpose of this research is to examine how people use social networking sites such as Facebook for various social purposes.

What you will be asked to do: You will be asked to answer some basic questions about yourself. You will also be asked to provide your most recent status updates from Facebook.

Potential risks or discomforts: To the best of our knowledge, the things you will be doing have no more risk of harm than you would experience in everyday life.

Potential benefits: The researchers and others may benefit by expanding collective knowledge about Facebook use.

Compensation: You will receive a payment of $1.50 for participating.

Withdrawing from the research: Participation in this study is completely voluntary. You may withdraw from the study at any time, without consequence.

Regarding the information collected: Information provided for the study will be kept confidential and secure within the limits of the law. Digital data will be stored on password protected computers and backed up using secure cloud storage. All data will be stored in a locked room. Study results will be used for the purposes of scientific publication and your identity will be carefully protected. Participant data will be collected and coded using a unique identification number and no names will be identified in any report. Any personally identifying information (such as an e-mail address) will be removed from the data prior to analysis. Your identity and any material that may identify you will not be revealed in any published or oral presentation of this study. You will be able to receive a copy of the results at the conclusion of the study if you wish.

Whom to contact with questions: If you have questions regarding this study, please contact David Kovaz at dmkovaz@memphis.edu. If you have questions regarding research participants' rights, Beverly Jacobik, Administrator for the University of Memphis Institutional Review Board for the Protection of Human Subjects can be contacted via e-mail at irb@memphis.edu or by phone at 901-678-2705.

By checking the box below, I indicate that I have read and thoroughly understand each of the points outlined in this page and that I freely and willingly consent to participate in the current study. I also understand that the University of Memphis does not have funds budgeted for compensation for injury, damages, or other expenses and does not provide reimbursement for such injuries. I understand that by agreeing to participate in this research I do not waive my legal rights. Finally, by checking the box below I affirm that I am at least 18 years of age.

☐ I am at least 18 years of age and agree to participate in this study.

Informed Consent Form for Undergraduate Participants (only Facebook version shown)

Information and Consent Form for Participation in Research

Investigators: David Kovaz, M.A. and Roger Kreuz, Ph.D. of The University of Memphis.

Purpose of the research: The purpose of this research is to examine how people use social networking sites such as Facebook for various social purposes.

What you will be asked to do: You will be asked to answer some basic questions about yourself. You will also be asked to provide your most recent status updates from Facebook.

Potential risks or discomforts: To the best of our knowledge, the things you will be doing have no more risk of harm than you would experience in everyday life.

Potential benefits: The researchers and others may benefit by expanding collective knowledge about Facebook use.

Compensation: You will receive a one half hour research participation credit for participating.

Withdrawing from the research: Participation in this study is completely voluntary. You may withdraw from the study at any time, without consequence.

Regarding the information collected: Information provided for the study will be kept confidential and secure within the limits of the law. Digital data will be stored on password protected computers and backed up using secure cloud storage. All data will be stored in a locked room. Study results will be used for the purposes of scientific publication and your identity will be carefully protected. Participant data will be collected and coded using a unique identification number and no names will be identified in any report. Any personally identifying information (such as an e-mail address) will be removed from the data prior to analysis. Your identity and any material that may identify you will not be revealed in any published or oral presentation of this study. You will be able to receive a copy of the results at the conclusion of the study if you wish.

Whom to contact with questions: If you have questions regarding this study, please contact David Kovaz at dmkovaz@memphis.edu. If you have questions regarding research participants' rights, Beverly Jacobik, Administrator for the University of Memphis Institutional Review Board for the Protection of Human Subjects can be contacted via e-mail at irb@memphis.edu or by phone at 901-678-2705.

By checking the box below, I indicate that I have read and thoroughly understand each of the points outlined in this page and that I freely and willingly consent to participate in the current study. I also understand that the University of Memphis does not have funds budgeted for compensation for injury, damages, or other expenses and does not provide reimbursement for such injuries. I understand that by agreeing to participate in this research I do not waive my legal rights. Finally, by checking the box below I affirm that I am at least 18 years of age.

☐ I am at least 18 years of age and agree to participate in this study.

Appendix H

Debriefing Statements

Facebook Version:

Thank you for completing the study! We would now like to tell you more about the purpose of the study.

The main purpose of this study is to examine how people use language on social networking sites like Facebook. More specifically, we want to know how the kinds of words that people use in their status updates are related to their self-presentation concerns and other aspects of their personality. We also want to know if presenting certain kinds of information will affect the language that people use when making a post to Facebook.

Twitter Version:

Thank you for completing the study! We would now like to tell you more about the purpose of the study.

The main purpose of this study is to examine how people use language on social networking sites like Twitter. More specifically, we want to know how the kinds of words that people use in their tweets are related to their self-presentation concerns and other aspects of their personality. We also want to know if presenting certain kinds of information will affect the language that people use when making a post to Twitter.

IRB Approval Letter

Subject: IRB Approval 3649

From: Institutional Review Board <irb@memphis.edu>

To: "David M Kovaz (dmkovaz)" <dmkovaz@memphis.edu>, "Roger J Kreuz (rkreuz)" <rkreuz@memphis.edu>

Body:

Hello,

The University of Memphis Institutional Review Board, FWA00006815, has reviewed and approved your submission in accordance with all applicable statuses and regulations as well as ethical principles.

PI NAME: David Kovaz

CO-PI:

PROJECT TITLE: Self-presentation concern in Facebook and Twitter

FACULTY ADVISOR NAME (if applicable): Roger Kreuz

IRB ID: #3649

APPROVAL DATE: 3/27/2015

EXPIRATION DATE:

LEVEL OF REVIEW: Exempt

Please Note: Modifications do not extend the expiration of the original approval

Approval of this project is given with the following obligations:

1. If this IRB approval has an expiration date, an approved renewal must be in effect to continue the project prior to that date. If approval is not obtained, the human consent form(s) and recruiting material(s) are no longer valid and any research activities involving human subjects must stop.

2. When the project is finished or terminated, a completion form must be completed and sent to the board.

3. No change may be made in the approved protocol without prior board approval, whether the approved protocol was reviewed at the Exempt, Exedited or Full Board level.

4. Exempt approval are considered to have no expiration date and no further review is necessary unless the protocol needs modification.

Approval of this project is given with the following special obligations:

Thank you,

James P. Whelan, Ph.D.

Institutional Review Board Chair

The University of Memphis.

Note: Review outcomes will be communicated to the email address on file. This email should be considered an official communication from the UM IRB. Consent Forms are no

longer being stamped as well. Please contact the IRB at IRB@memphis.edu if a letter on IRB letterhead is required.