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Identity Shift in Computer-Mediated Environments

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The present study uses a public commitment framework to examine how computer-mediated self-presentations can alter identities. Participants were asked to present with one of two traits, extroversion or introversion, in public or private computer-mediated communication. Public presentations were online, whereas private presentations took place in a text document. Only participants that presented themselves publicly internalized the trait presentation, suggesting that identity shift took place. Public self-presentations also contained more certain and definite forms of language than private self-presentations, suggesting that audiences evoke a more committed form of self-presentation. The findings in this research have important implications for the self-construction of identity online, particularly for individuals that use the Internet as a tool for public self-presentation, such as dating sites, social network sites, or blogs. Also, the findings highlight opportunities for theoretical development on identity construction as a function of computer-mediated communication.

A long tradition of research in social psychology suggests that there is a link between the act of self-presentation and creating one's self-concept (Bem, 1972; Fazio, Effrein, & Felander, 1981; Gergen, 1965; Jones, Rhodewalt, Berglas, & Skelton, 1981; Rhodewalt & Agustsdottir, 1986; Shlenker & Trudeau, 1990). Indeed, in a review of this literature, Baumeister (1982) notes that "self-construction" is a primary motivation of self-presentation. Often people

enact self-presentation behavior to "create, maintain, or modify" an image that reflects one's ideal self (p. 3).

A key factor in determining self-construction is the public nature of the self-presentation. Several studies suggest that one's awareness of an audience, or sense of "publicness," augments the effect of self-presentation on identity (Kelly & Rodriguez, 2006; Tice, 1992; Schlenker, Dlugolecki, & Doherty, 1994). For example, whereas tripping on a deserted sidewalk might lead a person to curse the sidewalk, tripping in front of a large crowd of people might lead a person to view her- or himself as clumsy. This process, known as "public commitment," assumes that individuals become committed to self-presentations they make publicly (Schlenker, 1980; Schlenker et al., 1994). We refer to this outcome as "identity shift."

With the rise of computer-mediated forms of self-presentation, an important question to consider is whether mediated self-presentations can similarly shape our identities. Since its advent, the Internet has been an arena for public self-presentation. However, the experience of being public on the Internet may be unique given the mediated nature of the interaction. Unlike face-to-face communication, someone online can access a potentially enormous but anonymous audience with ease. A blogger knows that anyone with an Internet connection can view his or her self-presentation, and personal profiles on social networking sites (e.g., Facebook and Myspace) are specifically designed to provide information about the self to millions of other people. The question is, does acting a certain way online alter concepts of the self. That is, does our online behavior influence how we view ourselves offline?

The Internet provides certain features that may influence the nature of self-presentations in important ways. For example, relative to offline self-presentations, self-presentation online is more easily modified, which allows for the presentation of more selective versions of the self (Bargh, McKenna & Fitzsimmons, 2002; Ellison, Heino, & Gibbs, 2006; Walther, 1996). Internet users also may express previously unexpressed aspects of identity (McKenna & Bargh, 1998) or even act out new identities (Hancock, 2007; Turkle, 1995). This research makes it clear that self-presentation acts do take place online; yet, it is unclear how those acts shape individual identity. Given the amount of control individuals have in creating online presentations, it is especially important to know if online versions of the self are able to influence offline self-concepts.

In light of these issues, we examine whether being public online magnifies the effect of the relationship between self-presentation and identity. The present study examines this question by comparing the effects of private versus public computer-mediated self-presentations on self-concepts.[1] Given the textual nature of computer-mediated self-presentations, we also use computerized linguistic analysis to explore the qualitative differences in private and public online self-presentations in an effort to understand the linguistic features associated with public commitment.

SELF-PRESENTATION EFFECTS ON IDENTITY

Research on self-presentation stems from early theory on self-construction. Goffman (1959) brought self-presentation behavior to the forefront of social science research in his book, *The Presentation of Self in Everyday Life*. In this work, Goffman develops the notion of dramaturgy as a metaphor for all social interaction—with each player taking the role of either performer, audience, or outsider. Prior to Goffman, symbolic interactionists had long proposed that identity is shaped through a lifetime of social behavior as individuals continuously evaluate the self from the imagined perspective of others (Cooley, 1902; Mead, 1934). Later, self-perception theory described how concepts of the self arise from self-observation (Bem, 1972).

More recently, the effect of self-presentation on identity has been well established in work in social psychology (Kelly & Rodriguez, 2006; Rhodewalt & Agustsdottir, 1986; Shlenker & Trudeau, 1990; Tice, 1992). Self-presentation has been linked to changes in different types of self-knowledge, such as the self-concept (Tice, 1992), self-appraisals (Schlenker & Trudeau, 1990), and a sense of personal autonomy (Schlenker & Weigold, 1990). By asking an individual to present a particular aspect of self, such as introversion or extroversion, researchers found that they could manipulate how individuals came to view themselves in that particular domain (Fazio et al., 1981; Rhodewalt & Agustsdottir, 1986).

As noted above, this effect is enhanced when the self-presentation is conducted publicly. By manipulating awareness of being public, or a sense of publicness, researchers have demonstrated that public self-presentations are more strongly linked to identity formation than those performed privately (Kelly & Rodriguez, 2006; Tice, 1992; Schlenker, 1994). For example, Tice (1992) manipulated how public participants felt, or the *publicness* of a self-presentation, by varying the presence of an audience and the inclusion of participants' personal information (e.g., name, hometown, etc.). Participants asked to portray an introverted or extroverted person systematically reported actually possessing the assigned trait to a greater degree after self-presenting in the public condition relative to the private condition; that is, participants internalized the assigned trait when they performed their self-presentation publicly.

This approach to studying the effects of public self-presentations has been applied in a more recent study by Kelly and Rodriguez (2006). In this study, participants gave two conflicting self-presentations on video tape, one introverted and the other extroverted. Participants were told that only one of the two self-presentations would be viewed by others. Of the two presentations, only the presentation that participants were told would be made public became integrated into participants' self-concepts.

The fact that publicness magnifies self-presentation effects on self-concept has been explained by the concept of "public commitment." Schlen-

ker and colleagues (1994) describe public commitment as the process by which individuals obligate themselves to a particular identity during the act of public self-presentation. Stemming from a social need to maintain consistent internal and external states, individuals internalize public behavior, including behavior that is artificially induced. In particular, public commitment stems from "the establishment and recognition of a unit relationship between the self and something else" (p. 21). This obligation results in a person's taking on the presented identity as part of a more permanent sense of self. It is important to note that the relationship need not be established through physical presence, but can be an imagined (Schlenker & Wowra, 2003) or expected state of becoming identifiable (Kelly & Rodriguez, 2006; Tice, 1992). This is particularly relevant for investigations of mediated self-presentation, as cues to mediated publicness may be less apparent than in face-to-face contexts.

MEDIATED SELF-PRESENTATIONS AND IDENTITY SHIFT

The above review demonstrates that self-presentations can shape our self-concepts and that publicness can enhance this effect. To what degree does this relationship hold in computer-mediated contexts? Consider first the nature of self-presentation online. Research to date has examined self-presentation in a variety of mediated contexts, including personal Web sites, such as Web pages, dating sites, and blogs (Dominick, 1999; Ellison et al., 2007; Papacharissi, 2002; Stern, 2004). Content analyses have identified multiple modes of online of self-presentations, including appeals to creativity, expressiveness, and sharing of personal information (Papacharissi, 2002). Others have found that online self-presentations tend to portray strategies of ingratiation and competence, suggesting that individuals want to facilitate social relationships while trying to impress others (Dominick, 1999). In all, self-presentation appears to be a highly deliberate process. In fact, Stern (2004) parallels the process of building personal Web pages to the real-world act of identity construction in that each component of the site appears to be carefully decided upon to create a particular impression of the self.

In addition to assessing particular strategies of self-presentation, researchers have explored the Internet as a medium for accurately conveying information about the self between sender and receiver. For example, in their study of Web site self-presentation, Vazire and Gosling (2004) found that audiences' judgments of a Web site's author tended to correlate highly with the author's self-reported personality. The ability of audiences to accurately infer personality as it is presented on personal Web pages further supports the notion that computer-mediated contexts provide substantive evidence of individual identity (Machilek & Schutz, 2006; Vazire & Gosling, 2004). In all, research concerned with online self-presentation has demonstrated

that the Internet provides opportunities to present one's self using multiple strategies (Dominick, 1999; Papacharissi, 2002), with a relatively high degree of accuracy (Marcus et al, 2006; Vazire & Gosling, 2004).

Although the process of self-presentation online appears to be in many ways similar to face-to-face self-presentation, the nature of how publicness is experienced online remains the subject of substantial debate. Some research suggests that perceptions of others are decreased in computer-mediated interactions (Short, Williams, & Christie, 1976), yet other research suggests that the presence of others can be salient and have measurable effects on behavior (Douglas & McGarty, 2001; Walther, 1996).

Early work in computer-mediated communication (CMC) emphasized the lack of cues in online interactions, particularly visual and audio information. For example, social presence theory (Short et al., 1976) suggests that the depth and quality of interactions are related to the amount of cues to the presence of the other. Social presence theory, along with other theories that emphasize a cues filtered-out (CFO) perspective (see Culnan & Markus, 1987), have assumed that without common access to visual and audio information, awareness of others decreases. Consistent with this idea, Dubrovsky, Kisler, and Sethna (1991) have suggested that decreased cues might cause individuals to forget the audience altogether when presenting online. If it is true that the presence of others is less salient online, then self-presenting online might reduce the sense of publicness, which in turn should attenuate the impact of publicness on identity formation demonstrated in previous face-to-face studies.

More recent research, however, has proposed that despite the lack of cues online, people may be keenly aware of the presence of others during mediated self-presentations. Theories such as Social Identification/De-Individuation (SIDE; Lea & Spears, 1995; Spears & Lea, 1994) suggest that people can exaggerate impressions of audiences by overinterpreting the few available cues online and that the presence of an audience to which a person is identifiable can have important effects on strategies of self-presentation. SIDE argues because of a lack of cues online, a minimal amount of information (e.g., name) makes an otherwise anonymous interaction able to activate social identity, which can have a measurable impact on interaction behavior. For example, Douglas and McGarty (2001) observed that when a person is identifiable (e.g., name and e-mail) to an ingroup audience, behavior becomes more normative and can lead to increased stereotyping of outgroup members. This line of research suggests that a sense of awareness of others is possible despite the lack of cues and that being publicly identifiable to that group is an influential factor in determining interaction.

Considered together, previous research suggests that people use the Internet to explore different aspects of the self (Chan, 2002; Dominick, 1999; Ellison et al., 2007; Papacharissi, 2002; Stern, 2004; Yurchison, 2005) and that despite a lack of cues, individuals can perceive themselves as being

public online (Douglas & McGarty, 2001). This should be especially true in online contexts dedicated to self-presentations that are communicated to a wide audience, such as blogs and social networking sites (e.g., Facebook or MySpace). To the best of our knowledge, however, no empirical research has examined the effect of these public forms of self-presentation on identity shift.

The primary objective of the present study was to examine how public self-presentations impact online perceptions of the self. To examine this question, we employ a 2 (Private/Public Self-Presentation) × 2(Introversion/ Extroversion Self-Presentation) design adapted from previous studies (e.g., Kelly & Rodriguez, 2006; Tice, 1992). In each of the publicness conditions, participants were instructed to self-present as an extrovert or an introvert. Participants self-presented either privately (in a Word document) or publicly (in a blog post). We expected that participants in the public condition would internalize the self-presentation after posting on a blog and participants in the private condition would not internalize after writing in a text document. That is, following self-presentation in the public condition, participants presenting as extroverts were expected to rate their self-concept as more extroverted than introvert-presenting participants. In contrast, following self-presentation in the private condition, extrovert and introvert presenting participants were not expected to demonstrate identity shift.

LINGUISTIC ANALYSES OF SELF-PRESENTATIONS

Substantial research suggests that language can reflect underlying psychological effects and provide insight into cognitive operations (for review, see Pennebaker, Mehl, & Niederhoffer, 2003). For example, computerized text analysis has uncovered consistent patterns in language style based on age (Pennebaker & Stone, 2003), psychological health (Mehl, 2004), and deception (Hancock, Curry, Goorha, & Woodworth, 2008). Further, some specific linguistic categories, such as pronouns, have been implicated in multiple realms including dominance relations, depression, deception, and social bonding (see Chung & Pennebaker, 2007). In the present study, we take advantage of the fact that language reflects psychological effects in two ways. First, previous research has found that personality traits are reflected by unique patterns of certain linguistic features in text-based communication. In particular, extroverts use more language associated with positivity (e.g., "agree," "brilliant," "charming," etc.) and sociability (e.g., "chat," "encourage," "families," etc.; Oberlander & Gill, 2006). As such, we would expect participants assigned to portray extroverts to use more positive and social language than participants assigned to portray introverts.

Second, according to public commitment theory, a sense of publicness should increase the individual's sense of commitment to the performed

identity. Given that language reflects psychological effects, participants in the public conditions should use language that echoes a sense of commitment to the presentation, such as language related to certainty (e.g., "absolutely," "forever," "always"). We, thus, predicted that participants in the public conditions should produce more language related to certainty in their language use than participants in private conditions.

METHODS

Overview

The experiment was described to participants as "the detection of personality traits in others' self-descriptions" (Tice, 1992, p. 439). Participants were asked to participate in an interview that would be used by psychology graduate students who were testing their own abilities to detect personality traits. The self-presentation consisted of the portrayal of an introverted or extroverted person while answering four questions. The questions included a discussion of pastimes with friends, family vacations, current extracurricular activities, and the most important thing learned in college. In keeping with Tice's original design, participants were encouraged to think of experiences in both their past and present that were consistent with the assigned trait and to rely on those examples when answering questions. After it became clear that participants understood the directions, they were given the choice to proceed or withdraw from the study if they felt unable to present the given trait.

Participants

Forty-four female and 34 male participants were drawn from introductory communication courses. Participants participated in the study for course credit. Two male students refused to portray the assigned trait, leaving the final number of male participants at 32.

Procedure

All participants completed consent forms privately and were then told the cover story. After filling out the consent form, participants were given an overview of the study and then led to a private computer terminal.

Private Condition. Participants in the private condition were told that they would be typing their responses to questions in a text document. The experimenter opened a new text document in the presence of the participant, who was then instructed that after answering all four questions, the docu-

ment should be saved using only the participant's identification number and then closed. Participants were explicitly told that the experimenter would not read the answers to the questions, but that they would be analyzed at a later date by a single graduate student from the psychology department.

In addition to writing in a text document, participants in the private conditions were discouraged from using any identifying information throughout the course of the interview. After completing the interview and closing the text document, participants used a buzzer to signal to the experimenter that they had finished with the self-presentation task. The experimenter re-entered the room and provided participants with follow-up self-report measures.

Public Condition. Participants in the public condition were told that their answers to the four questions would be posted to a public blog site. They were told that the experimenters were using a blog because it would make future analysis by a psychology graduate student more convenient and that the experimenter would not be reading the posts (see Tice, 1992). This made the explicit directive about the audience consistent in both private and public conditions. The experience of an additional audience was then inferred from the fact that participant's would be posting online. In order to ensure that participants understood the public accessibility of a blog, all participants were asked whether or not they knew what a blog was. Regardless of their answers, participants were informed that a blog is "essentially just like an online diary. People use them to post information about themselves online." The experimenter then opened a Web browser to the blog site to demonstrate that the experiment would be taking place online. The blog used in this experiment was found at www.expressingpersonality.blogger. com, and was titled, "Expressing Personality Study." Mock blog posts had been created and posted to add to the authenticity of the site.

Following the procedure developed by Tice (1992), participants in the public condition were asked to begin the interview by providing demographic information, including name, age, major, hometown, and dorm. Participants were told that after completing the interview, they should make any desired edits and then select the "publish" button. Upon doing so, the updated blog became visible in a new screen so that participants would view their responses as it would appear online. This was done to reinforce the fact that the blogs would be accessible to online audiences. Once they had posted to the blog, participants signaled to the experimenter using a buzzer. At this point, all blog posts were removed immediately by an experimenter in an adjacent room.

Measures

Self-Report. Following the interviews, the participants were told that for future analysis a "true" rating of participants' personalities was re-

quired. All self-ratings were done privately and and identification numbers were provided rather than participants' names. The measure of identity shift consisted of 10 bipolar items assessing intro/extroversion, each on an 11-point scale: *talkative-quiet, unsociable-sociable, friendly-unfriendly, poised-awkward, extraverted-introverted, enthusiastic-apathetic, outgoing-shy, energetic-relaxed, warm-cold,* and *confident-unconfident* (Tice, 1992; Fazio et al., 1981). This measure was given to participants before the manipulation check on publicness to avoid inserting unwanted demand characteristics.

Participants completed a manipulation check designed to address how Internet self-presentations differ in the experience of publicness from presentations in a text document. Participants were asked: "To what extent do you think your presentation in this experiment is publicly identifiable? Do you think anyone might recognize you or know what you said during your presentation (including the graduate student evaluator)?" Answers were given on a 5-point scale, with endpoints: 1 = *not at all publicly identifiable*, 5 = *highly publicly identifiable* (Tice, 1992).

After completing the scales, participants were debriefed. During debriefing, participants were told about the expected effects of self-presentation on self-concept in each of the audience conditions. In an attempt to counter any self-concept shift, and in keeping with Tice's (1992) procedure, participants were asked to remember three instances when they had behaved in a manner *opposite* from the assigned trait. The concept of perseverance (Tice, 1992) was also discussed with participants in order to mitigate the likelihood of a persevering shift in self-concept.

Linguistic Analysis. The Linguistic Inquiry and Word Count (LIWC; Pennebaker, Francis, & Booth, 2001) text analysis program was used to assess the language used in the self-presentations. LIWC analyzes texts on a word-by-word basis and compares words from the text against a dictionary of words divided into 74 psychologically relevant dimensions (e.g., words related to affect, words related to the senses, etc.). LIWC tallies the number of words in each linguistic category and divides the tally by the total number of words in the text to create a proportion. The proportion for each category is the LIWC output.

In the present analysis, the transcripts were preprocessed according to guidelines in Pennebaker et al. (2001) to ensure that LIWC would be able to correctly recognize and categorize words. Preprocessing consisted of first verifying that spelling and punctuation was accurate and consistent throughout the transcripts of the total word count. Linguistic analysis served two functions in the present paper. First, the linguistic analysis served as a manipulation check on the trait manipulation. Participants assigned to the extrovert condition were expected to produce more terms related to extroversion (e.g., friends, happy, social) in their self-presentation than introverts (Oberlander & Gill, 2006). Second, the linguistic analysis was used

to analyze the proportion of words in the self-presentations that reflected a sense of commitment to the presentation. To do so, we explored language that reflected certainty (e.g. absolutely, always, very).

RESULTS

Manipulation Check

Publicness Manipulation. To assess the impact of perceptions of being "in public," participants were asked to rate how "publicly identifiable" they felt on a scale of 1 (*not at all identifiable*) to 5 (*highly identifiable*). As predicted, a *t* test indicated that participants in the private (text document) condition felt less identifiable ($M = 2.12$, $SE = 0.16$) than participants in the public (blog) condition ($M = 3.16$, $SE = 1.28$), $t(74) = 3.89$, $p < .01$.

Trait Manipulation. An analysis of the texts of the self-presentations revealed that participants assigned to the introverted and extroverted conditions produced different types of language content. As shown in Table 1, *t* tests revealed that relative to participants assigned to the introvert condition, extroverts produced more words overall, $t(70) = -2.11$, $p < .05$, more emotional terms (e.g., "happy," "anxious," "emotional"), $t(70) = -2.48$, $p < .05$, and more social terms (e.g. words like "family," "friends," "party"), $t(70) = -3.09$, $p < .01$. This pattern of results is consistent with previous research differentiating the language of extroverts and introverts (Oberlander & Gill, 2006), suggesting that participants enacted the self-presentations they were assigned.

TABLE 1 Linguistic Profiles Across Self-Presentation and Trait Conditions for Personality and Audience Variables

	Private				Public			
	Introvert		Extrovert		Introvert		Extrovert	
	M	SE	M	SE	M	SE	M	SE
Personality variables								
Word count	291.44	50.96	423.95	49.60	400.18	52.43	482.56	50.96
Affect terms %	3.01	0.34	4.15	0.33	3.54	0.35	4.06	0.34
Social terms %	9.23	0.55	11.02	0.55	8.80	0.57	10.39	0.55
Audience variables								
Certainty %	1.08	0.18	1.29	0.18	1.61	0.19	1.54	0.18

Note. Means for linguistic categories (Affect, Social, and Certainty) represent the percent of total words produced on average per individual.

Change in Self-Concept

Self-Report. The primary measure of self-concept shift was the 10-item scale used by Tice (1992) and adopted from Fazio et al. (1981). Participants were asked to indicate "the degree to which you actually possess" the assigned trait. A single score for extroversion was calculated for each participant by summing the scores for the ten 11-point bipolar items. The lowest possible score was 10 (*highly introverted*) and the highest possible score was 110 (*highly extroverted*). A significant interaction between audience and assigned trait confirmed our hypothesis $F(1,75) = 7.12$, $p < .01$ (see Figure 1). In the public condition, in which self-presentations were enacted on a blog, participants that acted introverted reported being significantly less extroverted ($M = 63.27$, $SE = 4.36$) than participants that acted extroverted ($M = 76.68$, $SE = 4.25$), $t(37) = -2.07$, $p < .05$. In contrast, in the private condition, in which self-presentations were enacted in a text document, participants that acted introverted ($M = 80.63$, $SE = 4.25$) were not significantly less extroverted than participants that acted extroverted ($M = 71.35$, $SE = 4.14$) , $t(39) = 1.67$, *ns*. Consistent with the public commitment hypothesis, these data suggest that the internalization of introverted and extroverted traits as a function of self-presentations occurred only when performed publicly.
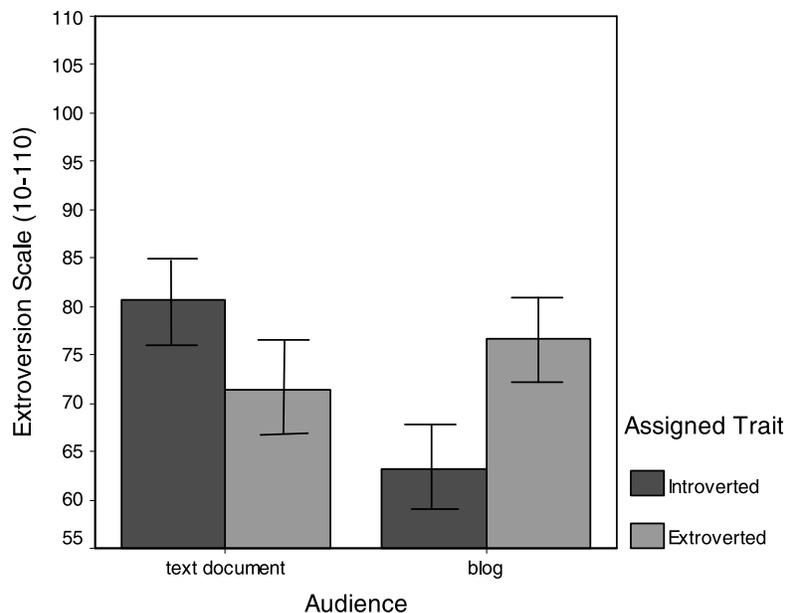

FIGURE 1 Participants' self-report ratings of extroversion following self-presentation in private (text document) and public (blog) conditions [error bars represent standard error].

Publicness and Commitment in Language

The linguistic differences across the private and public self-presentations were examined to assess the impact of audience on self-presentation content. As described in Table 1, participants in the public condition used more certainty words (e.g., "absolutely," "always," "forever") than people in the private condition, $t(70) = -2.18$, $p < .05$. Consistent with a public commitment framework, the data suggest that public self-presentations ($M = 1.58$, $SE = 0.12$) increased the participants' commitment to their self-presentation relative to private presentations ($M = 1.19$, $SE = 0.13$).

An exploration of the linguistic differences as a mechanism of public commitment was assessed using a causal steps analysis for mediation (Barron & Kenny, 1986). Causal step mediation is a four-step analysis used to determine a mediating factor through calculation of correlations between independent, dependent and mediating variables. Because our primary outcome measure of trait internalization results in high scores for assigned extroverts and low scores for assigned introverts along the same scale, we performed the mediation analysis independently for each trait condition.

The first step in the mediation analysis regressed participants' trait assessment on the publicness of the trait presentation ($0 =$ private, $1 =$ public). For participants assigned to portray introverts, as expected, publicness predicted introverted identity shift ($b = -15.04$, $p < .01$). The second step in the mediation analysis assessed the ability of publicness to predict differences in the mediating variable, linguistic certainty. This relationship was also significant ($b = 18.79$, $p < .05$). The third step examined whether the mediating variable, linguistic certainty, predicted changes in trait assessments. This relationship was not significant ($b = 5.02$, $p < ns$), indicating that certainty terms do not mediate the relationship between publicness and self-concept change for individuals portraying introverts. The same analysis was conducted on the data in the extrovert condition. This analysis failed in the first step ($b = 5.02$, $p < ns$), indicating that linguistic certainty did not predict trait assessment in the extroverted conditions.

DISCUSSION

The primary purpose of this study was to examine identity change in the context of online self-presentation. We describe this effect as evidence of identity shift. Participants were asked to present themselves as an introvert or extrovert in a private text document or in a public blog post. Participants assigned to portray introverts in public rated themselves as introverted, whereas participants assigned to portray extroverts in public rated themselves as extroverted. In contrast, participants in the private conditions did not reveal a pattern of trait internalization. In all, self-presentations in the online,

public condition caused participants to shift their identities to become more consistent with their behavior. These results are consistent with previous findings on the effects of publicness on identity change following face-to-face self-presentation (Kelly & Rodriguez, 2006; Tice, 1992).

A primary contribution of this research is that it points to the important implications of online self-presentations as a medium for facilitating identity construction. Our results indicate that making one's self identifiable on a publicly accessibly blog can generate a new self-concept based on that self-presentation. Given that there are millions of active blogs on the Internet, it is probable that identity construction takes place online every day. Some bloggers report being personally aware of a heightened sense of self-discovery while blogging (Blood, 2004). Our findings suggest that when people walk away from the keyboard they may take with them aspects of the online self-presentation.

This type of effect also has been observed in virtual environments, in which participants interact in a graphical space. For example, individuals using attractive or tall avatars tend to be more socially intimate or confident, respectively, than individuals with unattractive or short avatars, even in follow-up interactions (Yee & Bailenson, 2007). These findings support the notion that individuals internalize online representations in mediated environments and that mediated identity shifts can result in influences on "real-world" behaviors. Future research can begin to examine these effects in other Internet environments, including social networking sites, dating sites, or video sites, testing when and how mediated self-presentation impacts the self in a measurable way.

The present research also elaborates on what it means to be public online. The data demonstrate that presenting oneself in a mediated context that includes a) the potential of an audience and b) demographic information, which is typically the case for blogs, engenders a sense of being public. It is important to note that previous studies using this paradigm have confounded the two manipulations of audience and demographic information (e.g., Kelly & Rodriguez, 2006; Tice, 1992). We chose to replicate this procedure as closely as possible, including both publicness manipulations, to allow for cross-study comparison. Future research, however, will benefit from teasing apart the impact of these factors (audience versus identifying information) on creating a sense of publicness. For instance, one line of inquiry that may be promising is to determine whether the impact of publicness on identity shift increases as the size of the audience increases. As noted above, the audience for an online self-presentation is virtually unlimited and it will be important to learn if larger identity shifts are associated with larger audiences or whether audience has a binary effect.

Finally, these results suggest a new direction for theoretical development in CMC research. Currently, most CMC theory that explores publicness and self-presentation behavior emphasizes social identity or interpersonal out-

comes. Instead of treating the Internet solely as an outlet for social interaction, the Internet also should be considered as an outlet for self-construction. Walther (1996) notes that interpersonal interactions that take place online may lead actors to generate self-fulfilling prophecies through interpersonal feedback; however, the public commitment approach to identity shift does not require interpersonal interaction. As such, Schlenker's public commitment framework (1994) may be particularly well suited for this genre of communication, in which people present themselves to audiences without necessarily interacting with them, and may inform future theoretical development in CMC. For example, do email communications qualify as "public" exchanges and how might they compare to the effects of presenting on a blog? Indeed, if we take seriously the role of self-perceptions in determining subsequent behaviors (Tice, 1992), it will be important consider the self in future CMC research.

An additional implication of demonstrating identity change following self-presentation is that online presentations may be constructed with a heightened intentionality not available offline (Walther, 1996). According to the hyperpersonal model, online communication is more asynchronous, editable, and cue-reduced than face-to-face communication. These features allow online users to re-allocate cognitive resources such that self-presentations can become more selectively constructed than they would be offline (Walther, 1996). Research has demonstrated that Internet users take advantage of technological affordances to present idealized versions of the self in their online self-presentation (Ellison et al., 2007). Our findings suggest that the idealized versions of the self presented online may reinforce "actual" self-perceptions unrelated to the mediated interactions. In other words, not only can people take advantage of online anonymity to explore new aspects of the self (Bargh et al., 2002; McKenna & Bargh, 1998; Turkle, 1995), they also can take advantage of the public nature of the Internet to help *realize* idealized concepts of self.

One question that remains is to what degree might these short-term changes in introversion/extroversion lead to more permanent changes in identity? Most theory on personality assumes that personality is a stable trait (Mischel, 1968). Some theories, however, acknowledge that personality can be expressed as a temporary state, dependent on context (McNeil & Fleeson, 2006). These results, in conjunction with previous findings, suggest that if a given self-presentation was repeatedly enacted publicly, gradual long-term shifts in self-concept could occur (Rhodewalt & Agustsdottir, 1986; Schlenker, 1986). Repeatedly posting extroverted pieces to a blog could potentially lead to a subtle, but permanent shift in the perceptions of one's level of extroversion. One also might imagine that repeated and consistent efforts to present one's self as artistic, insightful, or politically astute, to name a few themes common in blogs, also might bring about subtle shifts in identity. Additional research is necessary to know how naturalistic self-presentations correspond

to self-presentations in the lab. For instance, a longitudinal study of self-concept shift in blogs that naturally evoke a particular self-presentation, such as on topical blogs, would perhaps clarify this question.

Exploratory Linguistic Analyses

A secondary objective of the present study was to examine the linguistic content of the self-presentations. We found that linguistic indicators reflected appropriate representations of the assigned traits. Extroverts used more social and emotional language than introverts regardless of the publicness condition. This would suggest that a qualitative difference in the amount of introverted or extroverted content of the self-presentation was not the key to determining the effects of public commitment on identity.

We also analyzed differences in language that may reflect commitment to the self-presentation by exploring the use of linguistic certainty markers during self-presentation. Consistent with predictions, the linguistic analysis revealed that participants in the public conditions used a higher rate of certainty words than participants in the private conditions. Surprisingly, however, a causal step analysis demonstrated no mediating relationship between the use of certainty language and an individual's sense of being publicly identifiable. One possible explanation for this lack of correlation is the fact that language is an implicit variable and ratings of publicness are an explicit variable. Further research is necessary to determine if language that reflects certainty is related to identity change, or whether it is an extraneous variable associated with mediated public behavior (see Tanis & Postmes, 2007).

Further research is needed to understand the mechanisms underlying public commitment. On the one hand, public commitment emphasizes the role of external awareness as a driving feature of the phenomenon. This approach to identity construction is consistent with long standing theories in social psychology (Cooley, 1902; Mead, 1934; Goffman, 1959). Yet, the cognitive revolution at the end of the last century prompted an emphasis on the microlevel processes that mediate social stimuli, identity, and behavioral response. As noted over two decades ago by Tetlock and Manstead (1985), sound social psychological research should incorporate explanations of both internal and external processes in order to fully appreciate psychological processes.

CONCLUSION

The data and analysis presented here suggest that online self-presentations have the power to change our identities. This finding has potentially important and wide-ranging implications for any Internet user that communicates

with others online. The use of the Internet as a form of personal expression is steadily becoming more common and it underlies a reconceptualization of a "new," user-driven Internet (e.g., "Web 2.0,"; Grossman, 2006). The Internet, unlike face-to-face or other mass mediated forms of expression, does not require either the privilege of traditional mass media or the time and energy that comes of having a physical audience. On the Internet, anyone can access a mass media audience for any purpose. And, although it would be absurd for a person to pay for a television advertisement of today's lunch special or to organize a town hall meeting to discuss the baby's first step, such banalities range side-by-side with insights, opinions, and creative expression all across the World Wide Web. As Rosenbloom (2004) puts it, to present one's self online, all one needs is "a computer, Internet access, and an opinion" (p. 41). Given that online self-presentations can be both remarkably self-disclosive or deceptive (Hancock, 2007; Joinson, 2001), the present study suggests that as people turn to the Internet to express their interests, confess personal histories, or present themselves to future romantic partners, the end result may be subtle shifts in self-perceptions of identity that may in turn influence future social interaction.

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NOTES

1. Although many different terms have been employed to refer to the notion of self-concept, the nuances of the term are not the focus of this study (see Swann, Chang-Schneider, & McClarty, 2007) for a thorough review of the construct). We explore changes in a particular self-concept, which we consider to be a component of a more global self-view. However, because "self" often is understood as "identity" in Internet research, we use the terms synonymously.

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