ORIGINAL ARTICLE

Are Norms of Disclosure of Online and Offline Personal Information Associated with the Disclosure of Personal Information Online?

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This study investigated whether norms of self-disclosure of one's online and offline identity are linked to online disclosure of personal and intimate information. We expected online disclosure of personal and intimate information to be associated with norms of online disclosure. Secondary analysis of the 2006 Pew and American Life Survey of parents and teens data set was conducted to test the study's hypotheses. A weak relationship emerged between adherence to norms supporting the disclosure of offline and online personal information. Supporting theories of computer-mediated communication, our findings show a strong relationship between adherence to norms of online identity disclosure and the disclosure of personal information online through the posting of personal photos, videos, and an online profile.

Privacy is recognized as a general human need. Different societies at different historical periods have chosen from a wide range of social and technological measures, applied with varied degrees of intensity, to create buffers fostering privacy in their social communications (Katsh, 1989). Rapid technological developments with the creation of large databases and the ability to gather information online created the need for a reconstruction of the privacy concept.

The huge growth in computer-mediated communication (CMC) deployment and use and the creation of cost-effective, large-volume information-storage devices have made storing, analyzing, and using information obtained by digital shadows a convenient option for governmental and commercial organizations alike. The distribution and abuse of this information can create serious repercussions for many Internet users, which may not be immediately noticeable and whose source may be hard to locate. This concern is particularly serious for selected groups of the

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population. The increased use of the Internet by adolescents has created social anxiety that young individuals may be disclosing personal information that might be used for harassment and abuse (Hinduja & Patchin, 2008; Mesch, 2009).

This situation created the need for a broader definition of privacy. Burgoon et al. (1989) suggested a broader concept of privacy, covering such dimensions as the physical (personal physical space) and the psychological (the individual's ability to control the input/output of the cognitive system, to form personal values, and to share intimacy), as well as social communication (the individual's ability to control his/her interaction with his/her surroundings) and information (the individual's ability to determine the quality and quantity of information he/she shares with others).

The concept of privacy is variously defined, but consensus exists that privacy is about personal information, its control, and its disclosure (Altman, 1977; Joinson & Paine, 2007; Tufecki, 2008). Thus, with the increase in the use of the Internet, interest has also increased in the notion of self-disclosure, a key area affected by the use of CMC (Bargh, McKenna, & Fitzimmons, 2002). Self-disclosure is a dimension of privacy. It has been defined as the amount of information unknown to others that the user decides to make common knowledge (Joinson & Paine, 2007) and the degree of user identifiability, that is, the ability of others to identify the virtual user as the real-world person (Gandy, 2000). A user's identifiability level is determined by a combination of his/her own decision to disclose details connecting his/her virtual identity with his/her real one and by his/her choice of technological and social frameworks in the CMC medium.

Interpersonal communication involves a gradual process of self-disclosure of personal information. Self-disclosure is required to establish trust and mutual understanding in interpersonal relationships. In the field of communication, two theoretical perspectives have been used to study online environments. Early studies emphasized differences between CMC and face-to-face (FtF) communication and the implications for self-disclosure. Social presence theory (Short, Williams, & Christie, 1976) and media richness theory (Daft & Lengel, 1986) are concerned with how successfully media convey a sense of the participants being socially present. CMC provides less social presence than FtF and phone communication. When social presence is low, messages are more likely to be impersonal and unemotional, and self-disclosure online is expected to be lower than in FtF communication. Similarly, media richness theory evaluates the interpersonal communication according to the extent that the technology used allows for communication cues. In this framework, mediated communication is at the lean end of the scale, whereas FtF communication is at the rich end of the scale. Telephone communication ranks between these two poles (Walther, 1996). Compared with FtF communication, nonverbal cues tend to be absent in CMC, leading some to conclude that without nonverbal cues, communicators face difficulties in the interpretation and understanding of the messages. In CMC, individuals develop an idealized perception of the other, which tends to be more inaccurate than in FtF communication (Sproull & Kiesler, 1991).

A second theoretical view, the generative approach, relies on the interaction of users' social needs and the perceived technological features of the Internet and suggests that in online environments, new norms of self-disclosure and social interaction emerge. Bargh et al. (2002) emphasized the centrality of perceived anonymity in the online environment. The relative anonymity and the lack of the usual gating features for the establishment of close relationships (e.g., physical appearance) reduce the perceived risks of disclosing personal information (Bargh et al., 2002). Similarly, the social identity deindividuation effects (SIDE) model argues that in the absence of FtF cues and prior personal knowledge, communicators engage in an overattribution process and create stereotypical impressions of their partners, which rely on increased self-disclosure (Spears & Lea, 1994). In addition, when comparing CMC and FtF communication, the lack of social and communication cues in the former implies that online communication takes place under conditions of greater uncertainty than in the latter. Online uncertainty needs to be reduced for the creation of opportunities for interpersonal communication, shared understanding of messages, and interpersonal trust. The need for communicators in online environments to reduce uncertainity and create trust leads individuals to be more willing to disclose personal information to support the continuation of online communication. Studies that have investigated the use of self-disclosure relying on uncertainty reduction theory found that individuals disclose significantly larger amounts of personal information in CMC than in FtF communication (Walther, 2002). In addition, significantly higher levels of spontaneous self-disclosure were found in CMC compared with FtF meetings (Joinson, 2001). Furthermore, it appears that the tendency to disclose more personal information online is not restricted to communication purposes and is common in any online behavior. Studies on teens with a profile in social networking sites (such as Facebook and Myspace) found that 56% posted their photo, 38% their first name, and 81% their city of residence (Hinduja & Patchin, 2008). Among college students, the percentages of disclosure of real names was much higher (Tufecki, 2008). While in FtF environments much of the information about others can be gathered from visual observation, online environments require purposeful disclosure of personal information to reduce uncertainty and to overcome the lack of contextual and personal information.

These theoretical frameworks provide alternative predictions about whether norms about the self-disclosure of online and offline identities are linked to online disclosure of personal and intimate information. Previous studies have investigated the disclosure of personal information in the online environment only and in experimental settings with nonrepresentative samples. This study was designed to overcome these limitations and to investigate the relationship between norms about the self-disclosure of online and offline identities and how they are linked to the online disclosure of personal and intimate information. The study used a representative sample of young American adolescents to test its hypotheses.

The role of privacy

Privacy, understood as the preservation of anonymity, may serve important social and psychological functions for individuals. First, using identity as an instrument for self-expression—stating one's nickname, age, or gender (or providing information hinting at those factors, such as choosing a gender-specific nickname)—allows the CMC user to experiment with his/her identity in ways impossible in the real world. A survey of 600 children and young adults (Valkenburg, Schouten, & Peter, 2005) found that more than 50% of them had experimented with posting alternative identities in CMC (presenting themselves as an actual person they knew or creating an imaginary persona with different looks, behavior, and attitudes). Second, the use of anonymity allows individuals to create multiple identities by using more than one virtual personality. The CMC multipersonality facilitates the postmodern experience of a "potential space" or a "virtual laboratory," in which the individual can test different aspects of his or her personality (Turkle, 1995). Finally, anonymity can promote a state or feeling of equality because of the diminished online recognizability of social indicators such as gender, race, socioeconomic status, and age (Brashers, Adkins, & Meyers, 1994; Ried, 1991). Social characteristics such as age, gender, race, and socioeconomic status are barriers that deter individuals from forming relationships in everyday life. Internet anonymity facilitates the formation of social ties among the communicators based on shared interests, before they know how much social similarity they share.

At the same time, it is important to recognize that self-disclosure has important social and psychological aspects. First, as children move to adolescence and expand their social circle of friends, self-disclosure becomes an instrument for enhancing the communication, intimacy, and understanding between them and their peers (Jourard, 1971; Laurenceau, Barret, & Pietromonaco, 1998). According to the penetration theory of relationship formation, gradual self-disclosure is a critical element in friendship formation as individuals reveal more and more intimate information to each other, a process necessary for the formation of a dyadic boundary and the creation of a shared identity among friends (Altman & Taylor, 1973; Taylor & Altman, 1987). Second, in a social group, self-disclosure can contribute to strengthening trust among members and establishing group identity (Galegher, Sproull, & Kiesler, 1998). Third, self-disclosure can serve as an uncertainty-reducing mechanism, one of the fundamental needs in social interaction (Berger & Calabrese, 1975; Heath & Bryant, 2000, p. 153). The higher the uncertainty level in a social interaction, the lower the ability of the social players to predict future behavior—a stress-inducing element that leads to difficulty in relationship formation and ineffective communication patterns (West & Turner, 2000).

CMC and self-disclosure of personal information

Various perspectives suggest that the online environment exercises a generative or disinhibitive effect that encourages the disclosure of personal information. Rheingold

(1993) maintains that: "The medium will be, by its nature, a place where people will find themselves exposing more than they would have . . . ." The implication is that the online environment has a generative effect, leading to the formation of norms different from those about self-disclosure offline.

A number of CMC characteristics have been suggested as conducive to this norm generation. The medium's relative anonymity has been associated with flexible norms of online disclosure, which facilitate searching and finding others with shared marginalized social identities. Sobel (2000, p. 1522) maintains that: "This anonymity allows the persecuted, the controversial, and the simply embarrassed to seek information—and disseminate it—while maintaining their privacy and reputations in both cyberspace and the material world." McKenna and Bargh (2000) argue: "Under the protective cloak of anonymity on the Internet, individuals can admit to having marginalized or nonmainstream proclivities that they must hide from the rest of the world. Thus in the online environment they can find others who share a marginalized identity." This view coincides with Noelle-Neumann's (1974) model of "Spiral of Silence," which postulates that self-disclosure will diminish in the presence of a perceived unfavorable "climate of opinion" in the social surroundings, for fear of social isolation (Glynn & Park, 1997; Kim, Han, Shanahan, & Berdayes, 2004; Neuwirth, 2000; Willnat, Lee, & Detenber, 2002). The perceived anonymity offered by CMC reduces the danger of future isolation and thus prompts individuals to engage in a higher level of self-disclosure.

The concept of CMC media anonymity as a factor that creates higher levels of self-disclosure (Joinson, 2001) had been examined in many empirical studies. Joinson (2003) studied patterns of romantic confessions by young adults (a behavior with many intense affective future outcomes) and found a greater willingness to confess romantic intentions by e-mail than FtF.

The enhanced self-disclosure in CMC is often explained by the hyperpersonal communication model, which posits that CMC facilitates more intimate communication than FtF. Two structural attributes of CMC encourage individuals to engage in more intimate exchanges in the CMC setting. The first is reduced nonverbal cues, and the second is the controllability of CMC or asynchronous communication. Walther (1996) argued that because of CMC's reduced nonverbal cues and controllability, individuals become absorbed in the communication task. As for the lack of social cues, the absence of common FtF visual hints in CMC may create a situation where the social counterparts in the CMC environment are perceived as a missing presence—"voices with one's consciousness." This situation can create a fusion process of the two social presences (Suler, 2004). The other person's perception may be partly formed by internal consciousness factors that can include highly biased impressions of the social counterpart based on wishes, hopes, and needs (Walther, 1996). Fewer nonverbal cues and greater controllability reduce people's inhibitions when interacting through CMC, perhaps leading to a disinhibitive effect that in turn may lead to increased online self-disclosure. Disinhibition refers to the loss of constraints that a person experiences when behavior is no longer controlled by

concerns about self-presentation or judgments by others (Joinson, 1999). In CMC research, disinhibition is often considered a precursor of online self-disclosure.

Furthermore, the lack of social cues may lead to a dehumanization perception (especially in textual CMC) of unseen countersocial players and may create the feeling of communicating with a nonhuman subject (even when the CMC users are intellectually aware of their human counterparts). Given that CMC has been empirically associated with higher levels of self-disclosure (Des Jarlais et al., 1999; Epstein, Barker, & Krotil, 2001; Lessler, Caspar, Penne, & Barker, 2000), a claim could be made that the lack of cues is one factor accounting for CMC's high self-disclosure levels (Suler, 2004).

According to CMC theories, the Internet through its disinhibition and anonymity effects will be positively associated with the disclosure of personal information. Thus, we expect that:

> H1: Norms about the disclosure of information online will be positively associated with the actual disclosure of personal information online.

Many of the empirical studies on patterns of self-disclosure in CMC settings compared the disclosure level with that in FtF social interactions. Parks and Floyd (1996), in their study of relationship formation over CMC using a series of surveys, reported a much higher rate of self-disclosure in CMC settings than in FtF communication. Similar empirical findings were reported by McKenna and Bargh (1998), who used content analysis of discussion group messages, and by Hua and Craig (2007) in their study of online journals ("blogs"). Joinson (2001) studied comparative levels of self-disclosure in both textual CMC and FtF communication transcripts using content analysis and experimental settings. The study showed higher levels of self-disclosure in CMC. The addition of visual elements to the CMC in the experimental setting reduced disclosure to the FtF level. Further research by Tidwell and Walther (2002) using in-depth content analysis of controlled experimental communications also found higher levels of disclosure and personal-question asking in the CMC setting.

A study of young adults who used social networking sites found that participants felt that in these sites, their disclosure of personal and identifying information was greater than it was in general. While they reported that privacy was important to them, they posted online identification information such as their e-mail address and a personal picture. A multiple regression analysis revealed that disclosure was significantly predicted by the need for popularity and levels of online trust (Christofides, Muise, & Demarais, 2009).

> H2: According to the CMC generative perspective, norms of disclosure of FtF information will not be associated with norms of online information disclosure.

The generative approach implicitly implies that intensity of exposure to the Internet is associated with the dissociation between norms of online and offline disclosure of information. Individuals need to become immersed in the online communication task, in order to perceive the other according to internal consciousness factors,

including biased impressions of the other, which generate a perception of trust that leads to different norms of disclosure of online information. It is very likely that the intensity of Internet use partially underlies this process (Suler, 2004; Walther, 1996).

> H3: According to CMC theories, online information disclosure is associated with intensity of Internet usage, so the higher the use of the Internet, the higher the disclosure of information online.

The theories and findings of many studies point to CMC's generative effects on social norms and behavior. However, as most of these studies were conducted in online settings, and did not compare online and offline norms of disclosure and behavior, it is not clear whether the effects of CMC are indeed generative or reflect offline personality or individual characteristics moving from real life to online behavior. Other arguments support a reflective rather than a generative effect. One example concerns lack of technological expertise. Weisband and Kiesler (1996) postulate that a lack of technological expertise may lead users to underestimate the risk factors of exposure associated with CMC. More importantly, others have argued for a disassociation effect: A split between the individual and his/her virtual representation in the CMC setting may create a dissociation effect that may contribute to the overrepresentation of personality traits not usually expressed in nonvirtual everyday life (Amichai-Hamburger, 2005). An overrepresented tendency to extroversion may be manifested as higher levels of self-disclosure (Suler, 2004). Some see beyond the CMC's medium effect and consider self-disclosure as implying personality differences between individuals either as a direct consequence of a preexisting tendency to extroversion (Suler, 2004) or indirectly through the effect of intervening variables (e.g., loneliness: Leung, 2002). Supporting this argument, a recent study with adolescents found a strong correlation between online and offline self-disclosure ($rp = .71$), suggesting that perceptions of online communication determine not only self-disclosure but also personality characteristics such as private and public self-consciousness. Only adolescents who perceived reduced nonverbal cues and control over time during instant messaging (IM) as more relevant were more likely to feel uninhibited when using IM and would disclose more personal information (Schouten, Valkenburg, & Peter, 2007).

Age and self-disclosure

Age is also an important variable to consider. During adolescence, social involvement increases, accompanied by a tendency to disclose personal information. Research shows that during adolescence, young people develop the ability to maintain truly intimate relationships, based on openness, honesty, and self-disclosure. Research suggests that during adolescence, the trend toward greater disclosure to friends than to parents begins: in early adolescence with girls and in middle adolescence with boys. This rise in self-disclosure to peers, but not to parents, plays an important role in development, giving young people the social resources that help them deal with issues of concern to them at any point in their lives (Buhrmester & Prager, 1995).

Subrahmanyam, Garcia, Harsona, Li, and Lipana (2009) studied the Weblogs of 201 adolescents. Given that self-disclosure to peers increases in adolescence (Buhrmester & Prager, 1995) and that blogs provide adolescents with a means for peer communication, these authors expected adolescents to use their blog entries as a vehicle for self-disclosure. Accepting the thesis that online and offline worlds are related, they predicted that the adolescent blog authors would self-disclose about important concerns, including sexuality, identity, peers, and romantic relationships. They further expected that older adolescents would produce more text on identity than younger adolescents, while the latter would refer more to families than the former. They found that blog authors used usernames, age, and location to provide basic identity information about themselves. Younger bloggers were more likely to provide pictures than older bloggers.

> H4: Disclosure of personal information is associated with age, so the younger the user, the less he/she will disclose online information.

Gender and self-disclosure

Gender is another important variable associated with self-disclosure. Among adults, several studies point to a higher disclosure rate among women than men (e.g., Murstein & Adler, 1995; Papini Farmer, Clark, Micka, & Barnett, 1990), whereas other research has suggested that the differences between men and women are negligible (e.g., Hinson & Swanson, 1993; Sprecher & Hendrick, 2004). When considering gender effects in the context of adolescent disclosure (usually as part of a wider exploration of adolescent intimacy), evidence suggests gender differences in both the self-disclosure quantity and quality (Shulman, Laursen, Kalman, & Karpovsky, 1997).

Studies of college students in the online environment reported nonconclusive findings with either a greater likelihood of lower disclosure rates for females or no gender differences (e.g., Barak & Gluck-Ofri, 2007). In studies that compared self-disclosure in FtF and online communication, adolescent females were reported to be more inclined than males to self-disclose (e.g., Camarena, Sarigiani, & Petersen, 1990). Specifically, while women disclosed the same amount of personal information online and in FtF communication, males were more likely to disclose more personal information in FtF communication than in an online environment (Cho, 2007). The explanation for gender differences in self-disclosure is attributed to variations in gender socialization. While men are traditionally taught to exercise restraint in sharing their feelings, women are expected to be more expressive and open in their communication. In this case, women place more importance on uncertainty reduction and the formation of online trust than males, and for this reason, disclose more (Cho, 2007; Dindia & Hallen, 1992).

> H5: Disclosure of online information is dependent on gender, so girls will disclose more online information than boys.

Method

Data source and sample

The study's hypotheses were tested by a secondary analysis of the 2006 Pew Internet and American Life Survey of parents and teens. This data set is particularly appropriate for this study, as it was drawn from a representative sample of American youth and is probably the only known data set that includes measures of privacy norms and online behavior in the survey.

The Parents & Teens 2006 Survey was sponsored by the Pew Internet and American Life Project, a nonpartisan and nonprofit organization that collects data and provides information on the issues, attitudes, and trends shaping America and the world. The Project produces reports exploring the impact of the Internet on families, communities, work and home, daily life, education, health care, and civic and political life. The purpose of the Parents & Teens 2006 Survey was to describe patterns of parental and teen use of the Internet. The Teen Survey consists of 109 items and includes items on computer and technology usage, ownership, general perception of the Internet, social/after school activities, privacy issues, reasons for engaging in social networking sites, and perceived effects of Internet usage.[1]

Data were obtained through telephone interviews with a nationally representative sample of 935 U.S. teens aged 12–17 and their parents. The survey was conducted by Princeton Survey Research Associates. As many as 10 attempts were made to contact every sampled phone number. Calls were conducted at different times of the day and the week to maximize the chances of making contact with the potential respondents. The response rate for the sample was 46%. Overall, 935 parents and teens participated in the study but only 790 had access to the Internet and they are the subsample on which this study is based.

In order to provide a robust test of the study's hypotheses, a number of multivariate analyses were conducted. Initially, we were interested in the differential effect of the norms about self-disclosure of one's online and offline identities on online behavior such as posting a photo, video clip, or a profile online. This analysis was conducted for all the teens reporting being online ($n = 790$). The assumption was that online behavior, even if the information posted is not about the person itself, represents a dimension of self-disclosure. Posting a visual object is not accidental and is a statement by the actor about himself or herself. Like hanging pictures on one's wall at home or in the office, posting a picture, a profile, or a video clip parallels Goffman's idea of impression management and communicates desired impressions. However, the wording of the items on the survey did not capture the extent to which information posted was personal or the extent to which the information was not available only to "close friends." To overcome this limitation, we conducted two additional multivariate analyses using the subsample of teens who reported having a profile online ($n = 487$). In the first step, we predicted an association between posting personal information in the online profile and norms of disclosure of information. In the second step, using the subsample of teens who reported having a profile online

($n = 487$), we explored the association between providing access to information posted online most of the time and norms disclosure of information.

Variable descriptions and measurements

Norms about the disclosure of offline personal information
These variables were measured by asking adolescents if it was all right to share three pieces of personal information—"your last name," "the name of your school," and "your home phone number"—with someone they had just met at a party or social gathering. Possible answers were "yes" (coded 1) and "no" (coded 0).

Norms of disclosure of online personal information
These variables were measured similarly by asking adolescents if it was all right to share three pieces of personal information—"your IM screen name," "your e-mail address," and "your blog or link to your blog"—with someone they had just met at a party or social gathering. Possible answers were "yes" (coded 1) and "no" (coded 0).

Online behavior
In order to measure this concept, teens were asked three questions: "Have you ever uploaded a photograph online where others can see it?"; "Have you ever uploaded a video file online where others can watch it?"; and "Have ever created your own profile online that others can see?" Possible answers were "yes" (coded 1) and "no" (coded 0).

Online disclosure of personal information
Respondents who indicated that they had an online profile were presented with 11 items and asked to indicate the kinds of information they posted in their profile. Items included "a photo of yourself," "photos of your friends," "your first name," "your last name," "your school name," "the city where you live," "your phone number," "your IM screen name," "your e-mail address," and "a link to your blog." From the items, a scale was created by summing up the responses to all the items. As the distribution of the variables was skewed, we transformed the scale to a dummy variable in which 0 indicated no posting of any of this information and 1 indicated a yes response to at least one item.

Access to online information
In order to measure this concept, teens who reported having a profile online were asked three questions: "Think about the site on which you post photos. How often, if ever, do you restrict who has access to those photos?" The same question was asked about a site on which the teen had uploaded a video clip. Responses were combined into two categories. "Never" was coded 1 and "only sometimes" or "most of the time" was coded 0. In addition, teens who had an online profile were asked to indicate the extent to which their profile was visible. A profile visible to anyone was coded 1 and one visible "only to friends" or "not visible" was coded 0. All three variables were introduced separately into the analysis as dummy variables.

Sociodemographic variables

Age was measured as a continuous variable based on the adolescents' self-report; gender was measured as a dummy variable, where 1 indicated male. For parents' education, parents were asked to indicate their formal education as less than high school, high school, some college, or college graduate. For marital status, parents indicated married—coded 1—or other—coded 0. For frequency of Internet usage, possible answers were "several times a day," "about once a day," "3–5 days a week," "1–2 days a week," "every few weeks," and "less often." This variable was introduced into the analysis as continuous.

Results

Participant characteristics

Adolescent participants in the study were on average aged 14.66 (*SD* 1.70), equally divided between genders. Of the 935 participants, 94.8% were Internet users. Of these, 63.5% reported using the Internet on a daily basis (at least once a day). Regarding norms about the disclosure of one's online and offline information, Table 1 presents the distribution of the percentages reporting agreement.

Although there is variation according to the item, in general teens express willingness to provide personal information to individuals they meet at social gatherings. For example, almost half of the teens (48%) indicated it was all right to tell an unknown person their last name. A large majority was willing to provide the name of their school (71%), but only 20% were willing to give out their home phone number. Regarding norms supporting disclosure of identity information online, about half indicated it was all right to reveal their IM screen name and almost half (45%) were willing to disclose their e-mail address. About a third were willing to disclose the link to their personal blog. Regarding actual disclosure of personal information online, 55% had a personal profile in a social networking site and 48%

Table 1 Percentage of Youth Reporting Privacy Norms and Online Disclosure Behavior

Proportion	Variable
All right last name	.48
All right school	.71
All right home phone	.20
All right e-mail address	.45
All right IM screen name	.54
All right link to my blog	.38
I have a personal profile	.55
I have a personal photo in the Web	.48
I have a video clip online	.14

Note: t test for differences according to gender.

had posted a photo on the Web accessible to all. Video clips were posted by a much smaller percentage of the respondents (14%).

How are social norms about the disclosure of offline and online identity information associated? How are these norms associated with online behavior? To answer these questions, we conducted a correlation analysis of the study's variables. The results are presented in Table 2.

According to H1, it was expected that norms of online information disclosure would be associated positively with actual online behavior. Having a profile online is positively correlated with a willingness to provide one's e-mail address, IM screen name, and the link to one's personal blog. Having posted a photograph on the Web is positively and statistically significantly correlated with a willingness to provide one's e-mail address, IM screen name, and the link to one's personal blog. The same results were found for posting a video clip on the Web.

The findings provide some support for CMC theories about the generative effects of the media and the use of specific norms of online behavior. Further support for this argument would require us to find no correlation between the norms about the disclosure of offline information and online behavior and a correlation between the norms about the disclosure of online identity information and online behavior.

A number of correlations do support this possibility. First, there are only two small, negative, and significant correlations between norms about offline identity disclosure and the scale of disclosure of information online. The willingness to disclose one's last name is negatively correlated with the online disclosure of personal information ($-.08$), and the willingness to provide one's home phone number is also negatively correlated to disclosing online personal information ($-.08$). Although statistically significant, these correlations are very low, indicating a very small association between norms about the disclosure of personal information and the disclosure of information about one's online identity. Furthermore, positive and statistically significant correlations exist between norms about the disclosure of one's online identity and disclosure of personal information online. The willingness to disclose one's e-mail address was positively correlated with the online disclosure of personal information (.19), whereas the willingness to provide one's IM screen name was positively correlated with the scale of online disclosure of personal information (.31). The correlation between the willingness to provide the link to one's blog is also positively correlated with the willingness to disclose online personal information (.27). The willingness to provide one's last name and home phone number has a small negative correlation with providing access to a photo and video clip. However, these three items have a strong and positive correlation with the scale of one's online disclosure of personal information.

In the next step, we conducted a more refined test of the hypotheses. First, we investigated the extent to which the norms about the disclosure of personal information FtF and online are associated with online behavior such as posting photographs and video clips online and having a personal profile. Second, for those who reported having an online profile, we tested the extent to which

Table 2 Study Variables' Correlation Matrix

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. All right last name	1.0											
2. All right school name	.31**	1.0										
3. All right home phone number	.15**	.13**	1.0									
4. All right e-mail address	.10**	.09**	.17**	1.0								
5. All right IM screen name	.05	.11**	.09**	.47**	1.0							
6. All right link to my blog	.06	.09**	.11**	.45**	.47**	1.0						
7. Self-disclosure	−.08**	.006	−.08**	.19**	.31**	.27**	1.0					
8. No restriction of photos	−.07*	.006	−.09**	.19**	.26**	.20	.50**	1.0				
9. No restriction of profile	−.04	−.01	−.12**	.16**	.07*	.15**	.51**	.39**	1.0			
10. No restriction of video	−.08*	−.11**	−.04	.07*	.06*	.03	.14**	.16**	.03	1.0		
11. Frequency of use	−.05	.01	−.08*	.23**	.13**	.16**	.28**	.29**	.19**	.06	1.0	
12. Age	.03*	.05*	.05	.09**	.04**	.06**	.06*	.06*	.05	−.007	.11**	1.0

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

Table 3 Logistic Regression Models Predicting Online Behavior

	Posted a Photo			Posted a Video			Posted a Profile		
	B	SE	Odds	B	SE	Odds	B	SE	Odds
White	0.04	0.26	1.04	−0.82	0.29	.43**	−0.25	0.26	0.77
Married	−0.31	0.21	0.73	−0.52	0.25	.59*	−0.32	0.21	0.72
Parental education	0.01	0.05	1.01	0.11	0.07	1.12	0.01	0.05	1.01
Child's age	0.23	0.05	1.26**	0.004	0.06	1.04	0.24	0.05	1.27**
Gender (male = 1)	−0.44	0.17	0.64*	0.99	0.23	2.71**	−0.10	0.17	0.90
Frequency of use	0.47	0.07	1.61**	0.18	0.09	1.20*	0.35	0.06	1.43**
All right last name	0.06	0.18	1.06	−0.35	0.23	0.70	−0.30	0.17	0.73
All right school	0.04	0.19	1.04	−0.51	0.24	0.60	−0.30	0.19	0.92
All right home phone	−0.36	0.23	0.67	−0.18	0.29	0.83	−0.08	0.22	0.68
All right IM screen	0.54	0.19	1.71**	0.59	0.27	1.81*	−0.38	0.19	2.25**
All right e-mail	0.50	0.19	1.66*	0.27	0.25	1.31	0.81	0.20	1.02
All right blog	0.73	0.20	2.09**	0.31	0.25	1.37	0.02	0.20	1.94**
Constant	−6.20	0.91	0.002**	−2.80	1.14	0.06*	−4.84	0.86	0.008
Chi square	205.4			63.26			164.44		164.44
−2 LL	831.86			579.07			852.24		852.24
N	749			749			749		

IM = instant messaging; LL = log likelihood.
*$p < .05$. **$p < .01$.

these norms affected the disclosure of personal information in an online personal profile and the extent to which these norms were associated with access to this information.

The next question is the extent to which the norms about the disclosure of offline information are associated with online behavior when controlling for teens' other social and demographic characteristics. The results of a logistic regression analysis are presented in Table 3.

According to the results, norms about disclosure of one's offline identity were not associated with posting a photograph, a video, or a profile online. All three measures of norms about the disclosure of online information were associated with posting information online, indicating that the likelihood of having a photograph in a public online space was greater when the adolescent was willing to provide his/her e-mail address, IM screen name, and the link to his/her blog. For adolescents who reported having a public profile, we investigated the association between norms about the disclosure of one's offline information and the disclosure of personal information online (Table 4).

The results indicated that the norms supporting providing online information are positively associated with posting personal information online. Individuals who had a personal profile online and indicated that was it all right to give to a stranger

Table 4 Logistic Regression: Predicting Likelihood of Online Posting of
Personal Information

	B	SE	Odds
White	−0.19	0.26	0.82
Married	−0.42	0.21	0.65
Parental education	0.03	0.05	1.03
Child age	0.26	0.05	1.30**
Gender (male = 1)	−0.20	0.17	0.81
Frequency of use	0.35	0.06	1.43**
All right last name	−0.33	0.17	0.71
All right school	0.008	0.19	1.008
All right home phone	−0.38	0.22	0.68
All right IM screen	0.81	0.19	2.26**
All right e-mail	0.06	0.20	1.05
All right blog	0.59	0.20	1.81**
Constant	−5.40	0.87**	
Chi square	171.71		
−2 log likelihood	856.02		
N	411		

IM = instant messaging.
*$p < .05$. **$p < .01$.

they met for the first time their IM screen name and the link to their personal blog
were more likely to post personal information online. Thus, H1 was supported.

At this point, it can be argued that posting personal information is only a
necessary but not sufficient condition because access to this information can be
restricted. Therefore, we conducted a further analysis to test the association between
the norms about the disclosure of online information and providing public access to
information posted online. The results are presented in Table 5.

The first model presents the results of open access to photographs posted online.
The results indicate that most of the norms about the disclosure of one's offline
personal identity are not associated with providing public access to a photo. The
only exception is the willingness to provide one's home address, which is negatively
associated with providing public access to an online photo. At the same time, the
willingness to give a stranger one's IM screen name and the link to one's personal
blog are positively associated with providing public access to an online photo.

The second and third models yield similar results. The willingness to provide
information about one's school is negatively associated with providing access to a
video clip, and the willingness to provide one's home address is negatively related
to providing public access to one's online profile. At the same time, the willingness
to provide one's IM screen name and a link to a personal blog are associated with
providing access to a personal profile but not a video clip. The findings provide
support for H1.

Table 5 Logistic Regression Models Predicting Open Access to Personal information

	Photos			Video			Profile		
	B	SE	Odds	B	SE	Odds	B	SE	Odds
White	0.25	0.26	1.29	−1.31	0.34	0.26**	−0.02	0.27	0.97
Married	−0.05	0.20	0.94	−0.43	0.32	0.65	0.08	0.22	1.09
Parental education	0.07	0.05	1.0	0.09	0.09	1.09	0.02	0.05	1.02
Children age	0.08	0.05	1.09	−0.06	0.09	0.93	0.09	0.05	1.1
Gender (male = 1)	−0.40	0.17	0.66*	1.18	0.30	3.28**	−0.12	0.18	0.88
Frequency of use	0.39	0.07	1.48**	0.14	0.11	1.16	0.27	0.07	1.31**
All right last name	−0.18	0.17	0.83	−0.49	0.31	0.61	0.03	0.18	1.03
All right school	0.05	0.18	1.05	−0.81	0.30	0.44*	−0.14	0.19	0.86
All right home phone	−0.47	0.22	0.62*	−0.52	0.42	0.59	−0.78	0.26	0.45**
All right IM screen	0.55	0.19	1.74**	0.52	0.35	1.68	0.50	0.21	1.64**
All right e-mail	0.32	0.19	1.38	0.52	0.33	1.68	−0.14	0.20	0.86
All right blog	0.40	0.19	1.49*	−0.16	0.34	0.84	0.45	0.20	1.57**
Constant	−4.1	0.86*		−1.65	1.47		−4.06	0.92*	
Chi square	119.7			46.97			61.43		
−2 LL	891.0			371.08			813.81		
N	312			304			314		

IM = instant messaging; LL = log likelihood.
*$p < .05$. **$p < .01$.

H2 predicted that the norms of FtF information disclosure would not be associated with online information disclosure norms. The correlations between the norms supporting the disclosure of personal and online identity information were low or nonsignificant. For example, the correlation between the willingness to provide one's last name and e-mail address was .10 and that between the willingness to provide one's school name and e-mail address was .09. At the same time, the correlation between the willingness to provide one's last name and IM screen name and that between the willingness to provide one's last name and the link to one's personal blog were nonsignificant. No indication appears here as to any association between the norms of disclosure of one's offline personal identity and of one's online identity. Thus, we conclude that H2 was supported.

According to H3, online information disclosure should be associated with the intensity of Internet use, so the greater the use of the Internet, the greater the disclosure of information online. The results support the hypothesis. Positive and statistically significant correlations were found between frequency of Internet use and the three measures of norms about the disclosure of online identity information. Positive, statistically significant correlations were found between frequency of Internet use, the measure of disclosure of personal information online, and the lack of restriction in accessing a photo, profile, or video clip that was posted online. Intense use of the Internet was found to be a predictor of online behavior (Table 3). Frequent users

Table 6 *t* Test for Differences According to Gender

	Boys	Girls
All right last name	0.57	0.38**
All right school's name	0.78	0.64**
All right home phone number	0.27	0.12**
All right e-mail address	0.47	0.42
All right IM screen name	0.56	0.52
All right link to my blog	0.42	0.34*
I have a personal profile	0.51	0.58*
I have a personal photo in the Web	0.44	0.53**
I have a video clip online	0.18	0.10**

IM = instant messaging.
*$p < .05$. **$p < .01$.

were more likely than less frequent users to post a photo online and to have posted a video and a profile online. Furthermore, frequency of Internet use was positively associated with the likelihood of posting personal information online (Table 4) and the likelihood of predicting open access to personal information posted online (Table 5). Thus, we conclude that the results support H3.

H4 predicted that age would be positively associated with the disclosure of online information. According to the correlation matrix, norms about the disclosure of personal information are associated with age. Positive correlations were found between age and the willingness to disclose one's last name and school name, as well as one's e-mail account, IM screen name, and personal blog. Age also has a positive correlation with the online disclosure of personal information and the lack of restriction in accessing photos. While the correlations are positive, their magnitude is small, indicating weak support for the hypothesis at the bivariate level.

In the multivariate analysis, age was positively associated with online behavior. The older the adolescent, the greater the likelihood of his/her posting a photograph and a profile online. However, age was not associated with posting a video online (Table 3). For adolescents who reported having a public profile, age was positively associated with the likelihood of online posting of personal information (Table 4). At this point, it can be argued that posting personal information is only a necessary but not sufficient condition because access to this information can be restricted. Therefore, we conducted a further analysis and results are presented in Table 5. Age was not associated with providing public access to photos, video, and a personal profile online.

Gender differences
H5 expected that norms of personal information disclosure might differ according to gender. Table 6 presents the results of a *t* test for reported proportions according to gender.

As expected, boys were more supportive of norms that approve of disclosing offline identity information. A higher percentage of boys than girls believed it was all right to disclose their last name, their school's name, and their home phone number to people they met for the first time at a party or a social gathering. Results for norms supporting disclosure of information about their online persona, however, were different. The percentages of boys and girls who believed that it was all right to disclose online personal information such as e-mail address and IM screen name were similar and not statistically significantly different from one another. The only statistically significant difference was the proportion of respondents who thought it was all right to give someone they had just met the link to their personal blog. A higher percentage of boys than girls believed that it was all right to do so.

As for online behavior, the results indicate gender differences in the disclosure of information online. The proportion of girls with an online profile who had posted a photograph in an online space where anyone could see it was higher than the proportion of boys. While a smaller proportion of respondents had posted a video clip online, boys were more likely than girls to do so. Thus, the *t* test revealed that boys were more supportive of norms that approve disclosing one's offline identity information. While boys and girls were equally likely to reveal their online identities, girls were more likely to disclose online information (Table 6).

The multivariate results of predicting online behavior show that girls are more likely than males to have posted a photo and a video online (Table 3). Yet, for the ones having a profile online, no gender differences were found in the likelihood of posting personal information online (Table 4). Regarding providing public access to personal information, the effects of gender are not clear-cut (Table 5). Men are less likely than women to allow public access to the photo they posted but are more likely than women to provide public access to a video clip. No gender differences were found regarding access to a personal profile. Thus, the evidence for H5 is mixed.

Discussion

The study of online disclosure has become an important topic as the public becomes increasingly aware of the potentially negative effects of disclosing personal information online. Previous CMC studies, conducted mainly in experimental situations or observations of the disclosure of personal information on social networking sites, provide some support for existing CMC theories, indicating a greater likelihood that individuals will disclose intimate and personal information online.

However, a gap exists in the literature that this research has attempted to fill: the link between social norms and online behavior. Previous studies have not compared norms about the disclosure of offline identity information with those pertaining to the disclosure of online identity information. As most previous studies did not compare norms of offline identity information disclosure with norms of online identity information disclosure, it was not made clear if online spaces generate new norms of privacy disclosure or reflect the norms of particular groups of individuals who, due to their personality traits, tend to disclose more information online. Using a large

sample of American adolescents, this study compared norms about the disclosure of both online and offline identities. It also investigated the differential effects of these norms on online behavior. The findings provide strong support for the generative effects of CMC and fill this gap in the research literature.

The results indicate that the disclosure of online identity information is associated with a generative effect of the media. Norms of offline identity information disclosure were not related to norms of online identity disclosure, indicating that they are not associated with online behavior. Our findings indicate that young adults have two different sets of norms that are not related: one that indicates when, and under what circumstances, identification information may be disclosed to others and the other regarding what details of one's online identity to disclose. Furthermore, the most important and significant result of this study is that norms of online identity disclosure are associated with online behavior and the disclosure of personal information online.

Another important finding is that online social norms are associated with age. The older the adolescent, the more likely he/she believes that it is acceptable to publicize his/her e-mail account, IM screen name, and link to his/her blog. Norms about the disclosure of online identity information were associated to the frequency of using the Internet. The likelihood of providing one's IM screen name, e-mail address, and a link to a blog was positively associated with frequency of Internet use. Frequency of use was also positively associated with disclosure of personal information online.

Results on gender indicate that boys are more supportive of norms of disclosure of offline identity information but no gender differences were found in norms of disclosure of online identity. In addition, girls are more likely than boys to post a photo online and to provide access to anyone of the photo they posted. Boys are more likely than girls to post a video online and to provide access to the video. However, no gender differences were found in the likelihood of posting personal identity information online. Taken together, these results support previous studies that show minor differences with males more likely to disclose personal information FtF than women and almost no differences in disclose of information online. The lack of a gender effect in disclosing personal identity information online suggests that socialization processes of gender socialization, in which men are traditionally taught to exercise restraint in sharing their feelings and women are expected to be more expressive and open, is more salient in FtF behavior and less in online behavior (Cho, 2007; Dindia & Hallen, 1992).

The results of this study have interesting theoretical implications. They provide solid support for the idea that online realms in general and CMC in particular constitute a separate normative realm. Participation in the online environment and disclosure of personal information was positively associated with norms of disclosure of online identity and in most cases not associated with norms of disclosure of offline identity information. It seems that privacy behavior in online environments differs from FtF behavior and supporting the generative perspective can create a separate set of norms about the disclosure of personal information, at least partially unrelated to the norms of everyday behavior. In keeping with previous arguments, the findings can

be explained in terms of Internet users' perceptions that participation in the online environment is relatively anonymous and encompasses few social cues (Schouten et al., 2007). These characteristics of the online environment appear to encourage individuals, in particular, young adolescents, to develop a different set of norms that link the apparent anonymity and the lack of social cues described by CMC theory with online behavior. An additional explanation is the need for uncertainty reduction in the online environment. Apparently, the need for communicators in online environments to reduce uncertainty and create trust leads individuals to develop a separate set of norms of disclosure of personal information (Walther, 2002).

Study limitations

Our study has some limitations as well. The study focused on the concept of privacy and self-disclosure in the United States. It is very likely that the concept of privacy and self-disclosure has different meanings in different cultures. Studies with a cross-cultural design are required in order to understand the role of culture in the definition of the disclosure of personal information and its implications for communication theory and research.

In addition, the data analysis was based on an already existing data set, so the number of measures of norms about the disclosure of online and offline information was limited. Future studies should include a larger list of items to measure these norms. A more suitable and comprehensive list will allow a deeper understanding of the normative realms that are relevant to online behavior. Finally, only online behavior was measured in this data set. Therefore, testing our hypotheses was limited to a short list of online behaviors. Furthermore, we could not investigate the relationship between the norms about online identity disclosure of one's online identity and behaviors in a FtF context.

Note

1   The survey instrument and data are in the public domain and can be downloaded from www.pewinternet.org.

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披露在线和离线个人信息的规范与在线披露个人信息之关系

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【摘要 :】

　　本研究探讨在线和离线的身份自我披露规范是否与在线披露个人隐私信息相联系。我们预期网络上对个人隐私信息的披露与网上披露信息的规范有关。本文利用 2006 年 Pew 和美国生活调查对父母和青少年的调查数据进行二次分析来检验本研究假设。遵守离线披露个人信息规范和在线披露个人信息之间的相关性较弱。研究结果支持以电脑为媒介的传播理论，显示遵守网上身份信息披露规范和通过个人照片、视频发布和网上个人资料的方式进行个人信息的网上披露之间有强烈的关系。

Les normes de révélation d'informations personnelle en ligne et hors ligne sont-elles associées à la révélation d'informations personnelles en ligne?

Gustavo S. Mesch & Guy Beker

Cette étude a cherché à savoir si les normes d'auto-révélation de son identité en ligne et hors-ligne sont liées à la révélation en ligne d'informations personnelles et intimes. Nous nous attendions à ce que la révélation en ligne d'informations personnelles et intimes soit associée à des normes de révélation en ligne. Une analyse secondaire des données du Pew and American Life Survey de 2006 auprès de parents et d'adolescents fut menée afin de tester les hypothèses de l'étude. Une faible association est apparue entre l'adhérence aux normes appuyant la révélation d'informations personnelles hors ligne et en ligne. En appui aux théories de la communication médiée par ordinateur, nos résultats montrent une forte association entre l'adhérence aux normes de révélation d'identité en ligne et la révélation d'informations personnelles en ligne par la publication de photos et de vidéos personnelles et par la publication d'un profil en ligne.

Stehen Normen der Offenlegung von persönlichen Informationen online und offline im Zusammenhang mit der Offenlegung von persönlichen Informationen online?

Gustavo S. Mesch & Guy Beker

Die Studie untersucht, ob Normen der Offenlegung der eigenen Online- und Offline-Identität mit der Offenlegung von persönlichen und intimen Informationen online im Zusammenhang stehen. Wir erwarten, dass die Offenlegung von persönlichen und intimen Informationen online im Zusammenhang steht mit Normen der Offenlegung online. Wir führten Sekundäranalysen des Pew and American Life Survey von 2006 mit Daten von Eltern und Teenagern durch, um die Hypothesen der Studie zu testen. Es zeigte sich eine schwache Beziehung zwischen der Beachtung von Normen, die die Offenlegung von persönlichen Informationen offline und online stützte. Im Einklang mit Theorien zu computervermittelter Kommunikation zeigen unsere Ergebnisse eine starke Beziehung zwischen der Beachtung von Normen zur Offenlegung der Online-Identität und der Offenlegung von persönlichen Informationen online durch das Veröffentlichen von persönlichen Fotos, Videos und Online-Profilen.

온라인과 오프라인에서의 개인적 정보의 노출이 온라인상에서의 개인적 정보 노출과

연계되는 것이 규범적인가에 대한 소고

Gustavo S. Mesch & Guy Beker

요약

본 연구는 개인의 온라인 그리고 오프라인상에서의 자기 신원의 노출 규범이 개인적

정보의 온라인 노출과 연계되어 있는지를 연구한 것이다. 우리는 온라인상에서의 개인적

정보의노출이 오프라인 노출의 규범과 연계되어야 할 것으로 기대했다. 부모들과

십대들에 대한 2006년 Pew와 American Life 조사를 2차적으로 분석함으로써, 연구의

가설들을 테스트하였다. 온라인 상에서의 개인적 정보와 오프라인의 노출을 지지하는

규범들간에는 의외로 약한정도의 관계가 나타났다. 컴퓨터 매개 커뮤니케이션의 이론을

지지하는 것으로, 우리의 발견들은 온라인 신원 노출의 규범과 개인의 사진과 비디오와

프로파일을 포스트 하는 것으로서의 온라인 상에서의 개인적 정보 노출과는 강한 관계가

있음을 보여주고 있다.

Están las Normas de la Revelación de Información Personal Online y Offline
Asociadas con la Revelación de Información Personal Online?

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Resumen
Este estudio investigó si las normas de auto revelación de la identidad online y offline están
vinculadas con la revelación de información personal e íntima online. Suponíamos que la
revelación de información personal e íntima estaría asociada con las normas de revelación
online. Un análisis secundario del grupo de datos de la Encuesta del 2006 de Pew y Vida
Americana de padres y adolescentes fue conducido para poner a prueba las hipótesis del estudio.
Una relación débil emergió entre la adherencia a las normas que apoyan la revelación offline y la
información personal online. Apoyando las teorías de los medios de comunicación mediados por
la computadora, nuestros hallazgos muestran una relación fuerte entre la adherencia a las
normas de revelación de la identidad online y la revelación de información personal online a
través de la colocación de las fotos personales, los videos y el perfil online.
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