



Regulating privacy in interpersonal online communication: The role of self-disclosure



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ABSTRACT

Establishing privacy is a key demand in interpersonal online communication. Do people regulate their privacy through self-disclosure regarding specific interlocutors and privacy contexts? One hundred and fifty-seven participants answered an inquiry in a 2 (communication situation: public vs. private) × 2 (interlocutor's self-disclosure: high vs. low) × 2 (inquiry length: short vs. long) between-participants design. Results showed that participants were aware of the degree of privacy in the context and sensitive to the interlocutor's self-disclosure. However, they did not adapt their communication behavior to this awareness. We conclude that awareness of privacy is necessary, but insufficient for regulating privacy.

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1. Introduction

Self-disclosure is an important interpersonal mechanism in establishing and maintaining interpersonal relationships (Derlega, Winstead, & Greene, 2008). However, when communicating with strangers, people need to evaluate whom to trust and when to self-disclose. In online interactions, these questions refer primarily to the effort undertaken to “keep private information confidential” (Green, 2007, p. 44), that is, to keep one's privacy. Privacy can be described as a need to control access to the self from others (Altman, Vinsel, & Brown, 1981; Petronio, 2002; Westin, 1967). Access refers to the physical person as well as to information on the self.

1.1. On the interplay between privacy and self-disclosure

Revealing and concealing of private information are dialectical, i.e. opposing processes. There are multiple models in different disciplines attempting to explain how people can deal with this dialectic. Most models propose a calculation of the benefits and risks of self-disclosure (e.g., Afifi & Steuber, 2009; Omarzu, 2000). Benefits include self-expression, self-clarification, social validation, relationship development, and social control (Derlega & Grzelak, 1979). However, revealing information poses a risk as it creates

vulnerability towards the recipient of the information. The sharing of information demonstrates a willingness to be vulnerable and is therefore interpreted as an offer of trust.

Including the idea of a benefit-risk-calculation, Sandra Petronio (2002) has posed a widely recognized theory for the regulation of privacy: The *Communication Privacy Management* (CPM) theory provides a comprehensive framework on how to coordinate and manage privacy in close relationships. The premise is that people have the feeling of owning information about themselves setting a boundary around private information. Based on rules derived from cultural background, gender, motivation, context and the risk-benefit ratio, people decide on whether or not to share information extending the boundary ownership to others. Boundary permeability determines the degree of access, utilizing the metaphor of thin vs. thick walls to separate public from private information. Hence, the extent of the shared information is influenced by the discloser, the recipient, and the specific context of the conversation (see Ignatius & Kokkonen, 2007, for a review). In the following, we will summarize empirical results that illustrate (1) *who* discloses (2) *what* (3) *to whom* and (4) *under what circumstances*. We will start with a short review of each research area including specifications for online communication settings (for a review comparing online and offline self-disclosure see Nguyen, Bin, & Campbell, 2012).

1.2. On the occurrence of self-disclosure

1.2.1. Who engages in self-disclosure?

People differ in their propensity to self-disclose (cf. Wheeless & Grotz, 1976). Certain personality traits (e.g., introversion/

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extraversion, Peter, Valkenberg, & Shouten, 2005), characteristics (e.g., social anxiety, Liu, Ang, & Lwin, 2013; gender, Dindia & Allen, 1992), as well as a general tendency to trust others (Steel, 1991) have been shown to impact the degree of self-disclosure. Empirical studies suggest further that emotional state influences desire and scope of self-disclosure. On the one hand, good mood, as a promoter of cooperative behavior, can lead to higher self-disclosure (Forgas, 2011; Wakefield, 2013). On the other hand, psychological distress facilitates people's tendency to talk more about themselves (e.g., Stiles, Shuster, & Harrigan, 1992).

In online environments negative experiences and risk beliefs have shown to raise concerns about one's privacy further impacting the intention to self-disclose online (Bansal, Zahedi, & Gefen, 2010). Nonetheless, people disclose private information, even when they are concerned about their privacy. This has been described as the privacy paradox (Barnes, 2006; Norberg, Horne, & Horne, 2007). This discrepancy could be due to the higher and more immediate benefits of self-disclosure in comparison to the perceived risk (e.g., Acquisti, 2004). In other words, social interactions require some kind of self-disclosure, but the amount and quality can be regulated.

1.2.2. What do people self-disclose?

Self-disclosure can vary on three dimensions: Duration, breadth, and depth (cf. Cozby, 1973). In text-based communication, *duration* refers to the length of the self-disclosure and is measured by the amount of utterances starting with a personal pronoun in first person (e.g., "I have a problem"). *Breadth* describes the range of different contents addressed (cf. Barak & Gluck-Ofri, 2007), that is, personal information or facts (e.g., demographic data), a thought or an opinion (e.g., political beliefs), and feelings (e.g., to be happy). In all three content areas the self-disclosure can vary in its *depth*, that is, the intimacy of disclosed content. Although these dimensions help to categorize the personal information, they do not help in determining what counts as private information. While some researchers focus on self-disclosure of very intimate information (e.g., when sharing a secret, Kelly & McKillop, 1996), others consider any kind of information on the self to be private (e.g., telling one's age, Barak & Gluck-Ofri, 2007). We conceptualize self-disclosure as the latter, because any personal information can be misused and thus is possibly risky. Self-disclosure can further lead to rejection and is risky even under anonymity. Note that self-disclosure can also include information about others.

1.2.3. To whom do people self-disclose?

The recipient of the self-disclosure plays an important role. If people like a person (Collins & Miller, 1994) or perceive somebody as a trustworthy recipient (Wheeless & Grotz, 1977), they are more likely to disclose information. The relation between self-disclosure and closeness to a recipient is u-shaped: People tend to disclose more information about themselves either when they do not know the interlocutor or when they are talking to an intimate friend (cf. Dindia, 2002). Following the principle of reciprocity (cf. Jourard, 1971) people's own self-disclosure can vary depending on previous self-disclosure by the interlocutor: If one person self-discloses, the other one is more likely to say something about herself in return (e.g., Barak & Gluck-Ofri, 2007; McAllister & Bregman, 1985). However, this does not simply represent a tit-for-tat strategy (cf. Dindia, 2002). It can be interpreted as a form of acceptance of what is appropriate in a given situation (Chaikin & Derlega, 1974) and can lead to a positive perception of the interlocutor (cf. Sprecher, Treger, Wondra, Hilaire, & Wallpe, 2013).

In online communication information about the interlocutor is transmitted on fewer dimensions as face-to-face (cf. Clark & Brennan, 1991). The question of "who is the recipient?" is more difficult to answer and thus the regulation of privacy exacerbated. Different online media thereby provide different channels

of information (e.g., visual vs. auditory vs. text). When it comes to text-based communication, the message itself provides the most important information about the communication partner (Jucks & Bromme, 2011).

1.2.4. Under what circumstances do people self-disclose?

An important factor which influences the level of privacy in online communication is the degree of anonymity or in the words of a famous cartoon: "On the Internet, nobody knows you're a dog" (Steiner, 1993). Under circumstances of anonymity people tend to self-disclose more (e.g., Joinson, 2004), because anonymity reduces the perceived risk of self-disclosure (cf. Bargh & McKenna, 2004). In terms of the CPM theory (cf. Petronio, 2002) anonymity functions as an artificial boundary (i.e., subjectively perceived but not necessarily objectively provided) between discloser and recipient (for a review on anonymity in online interactions see Christopherson, 2007).

The main context factor influencing privacy is the question of how many people have access to the conversation. In some online situations the question of possible overhearers is more prevalent compared to others. Interlocutors in e-mail communication, for example, can determine actively who is participating in the conversation. In comparison to other online communication media, people thereby feel rather private (Frye & Dornisch, 2010). In contrast, online forums often have multiple actors and audiences. Although different online platforms vary greatly in the extent of privacy features provided, most forums are public and privacy is therefore low. The one-to-one interactions between interlocutors in online forums are only pseudo-private: The boundary between private and public communication is blurred, that is, it is often unclear who can gain access to the conversation. Similarly to the function of anonymity, the blurring between public and private communication can reduce the perceived risk of self-disclosure. Furthermore, online information often remains retrievable for a long time and is therefore more likely to be accessible to more people than initially intended (cf. the digital baggage, Solove, 2007). In terms of the CPM theory (cf. Petronio, 2002) the question of overhearers refers to boundary permeability. All people that have access to the conversation gain control over the information shared. The risk of self-disclosure is thereby clearly higher when disclosing in public for two reasons: First, groups are more difficult to control than individuals; and, second, trusting a group means having to trust more people and there is always the possibility that the group contains at least one untrustworthy recipient (cf. Moll, Pieschl, & Bromme, 2013).

1.3. Rationale of the study

Self-disclosure and privacy hold a dialectic relationship that needs to be regulated. In interpersonal online communication settings where people exchange information and experiences with strangers, the boundaries between privacy and publicity cannot be explicitly negotiated (e.g., "I have HIV, but please do not tell anybody else."). Hence, privacy must be regulated implicitly through self-disclosure. Do users regulate the extent of self-related information in different online contexts and with regard to different interlocutors? To answer this question we manipulated two factors: (a) the characteristics of the interlocutor (i.e., low vs. high self-disclosure) and (b) the circumstances of the online communication setting (i.e., private vs. public communication).

For a successful regulation of privacy people need to sensitively assess privacy from the given information (research question 1) and adapt their own self-disclosure behavior to it (research question 2). Following previous research, adapting means that people reciprocate self-disclosure from the interlocutor, but disclose less

information about themselves when communicating in a public online forum compared to a private e-mail.

2. Method

2.1. Participants

We recruited one hundred and sixty-three participants online via faculty e-mailing lists from a large German university. They received a 5€ Internet shop voucher for completing the experiment. We carried out the experiment online using EFS Survey@. Data from six participants were excluded from analyses for the following reasons: Four participants were eliminated because they took over 73 min, which was more than two standard deviations above the average time to complete the experiment ($M = 31.05$ min, $SD = 18.93$). When asked whether they had concentrated in full when performing the experiment, one participant stated that his data should not be used; and, in a follow-up suspicion check, one participant guessed correctly that the purpose of the study was to investigate the role of self-disclosure. The final sample contained 157 participants (125 females) aged 17–43 years ($M = 22.62$, $SD = 2.98$) and predominantly students (94.9%). All were either native German speakers (98.1%) or had answered the inquiry in fluent German. Participants did not differ significantly between conditions in terms of age, all $F_s(1, 149) \leq 2.82$, $p \geq .10$, gender, all $\chi^2(1, N = 157) \leq 2.40$, $p \geq .30$, or profession, all $\chi^2(2, N = 157) \leq 1.51$, $p \geq .21$. Hence, these variables were not considered in further analyses.

2.2. Design and material

Participants were informed that they would take part in a project in which students can exchange information and advice anonymously with peers. In the experimental online environment, they were asked to answer an inquiry from a student of unspecified gender asking for help in reducing her or his procrastination behavior. Procrastination is the behavior of postponing intended actions despite possible negative consequences, and it is something with which most students are familiar (cf. Steel, 2007).

In a $2 \times 2 \times 2$ between-participants design, we varied whether the communication situation was public or private, whether the inquiry contained a low or high degree of self-disclosure, and whether the inquiry was short or long. The *privacy* manipulation of the communication situation was operationalized through different media settings. Participants received the student's inquiry via private e-mail (in the following referred to as *e-mail condition*) or a public online forum (*forum condition*). We conveyed the privacy level in both the instructions and the visual design of the communication setting (see [Appendices A and B](#)). In both conditions, we made clear that the communication was anonymous. We included the *self-disclosure* (referred to as *low vs. high SD condition*) in the respective conditions through personal expressions of positive and negative emotions such as "I feel very bad" or "I am very proud of myself". Hence, information on the background of the procrastination behavior was held constant and could therefore not account for possible effects. Because inserting expressions of self-disclosure simultaneously increased the total amount of words, we also systematically varied the *length of the inquiry* (*short vs. long inquiry condition*, for manipulation of self-disclosure and length, see [Appendix C](#)).

2.3. Procedure

The experimental design resulted in eight different inquiries of which each randomly assigned participant answered one. The subsequent procedure did not differ between participants regardless of

condition. After answering the inquiry, they completed a questionnaire on their perception of the interlocutor. Then participants were asked to indicate their own disposition to trust others and to disclose private information online, their attitude toward and usage of different communication media, as well as their own procrastination behavior. As a suspicion check, we asked participants to guess the purpose of the study. Finally, we collected demographic information on the participants and asked for their current mood. At the end of the experiment, participants were debriefed and thanked for their participation. To receive reimbursement, participants could enter their e-mail address on the final page of the online questionnaire, which we stored separately from experimental data.

2.4. Dependent measures

Measures constituted three sets of variables: (1) Participants' perception of the context, (2) their perception of the interlocutor, and (3) their text-based answer to the inquiry. Items and measures mostly originated from previous studies in this field to obtain a comparable and valid assessment. If necessary, we translated items into German and adopted them to the current context. We provide reliability measures below.

(1) *Perception of the context*. We assessed participants' perception of privacy with two items (cf. Frye & Dornisch, 2010), that is, "The conversation is private" and "The conversation is read by further recipients". We assessed both items on a 7-point scale ranging from 1 (*I strongly disagree*) to 7 (*I strongly agree*). Reliability was good (Cronbach's $\alpha = .86$).

(2) *Perception of the interlocutor*. If not noted otherwise, measures assessing participants' perception of the interlocutor were rated on a 5-point scale ranging from 1 (*I strongly disagree*) to 5 (*I strongly agree*).

Perceived self-disclosure. We measured participants' impression of their interlocutor's self-disclosure behavior with six items (Cronbach's $\alpha = .86$) such as "The person discloses much about herself," or "The person encloses her emotions openly".

Perceived trustworthiness. We translated a scale measuring trustworthiness in organizational contexts by Mayer and Davis (1999) and adapted it to the interpersonal communication context. Based on the integrative model of trust (cf. Mayer, Davis, & Schoorman, 1995), the scale contained three subdimensions: Five items measured *ability* (e.g., "The person is successful in things she is trying to do"; Cronbach's $\alpha = .65$); five items measured *benevolence* (e.g., "The person is concerned about the well-being of others"; Cronbach's $\alpha = .73$). Six items measured *integrity* (e.g., "The person endeavors to treat others fairly"), but reliability of this scale was weak with Cronbach's $\alpha = .53$.

Perceived distress. As the inquiry was problem-based, that is, somebody asking for help, we wanted to assess the perception of the interlocutor's distress. We created two items asking for different aspects of distress (i.e., "The person is suffering from their problems" and "The person will get professional help"). Reliability was not sufficient thus both items are analyzed separately.

Liking. Self-disclosure and liking can mutually influence each other (Berg & Archer, 1983). We translated and implemented two items from Berg and Archers' study into German: "I like the person" and "I would like to get to know the person". We assessed both items (Cronbach's $\alpha = .78$) on the original 9-point scale ranging from 1 (*disagreement*) to 9 (*agreement*).

(3) *Communication behavior*. Two independent coders analyzed participants' text-based response to the interlocutor (inter-rater reliability was sufficiently high, $.64 \leq$ Cohen's $\kappa \leq .91$). The focus of our analyses was on the extent of self-disclosure. To gain insight into the content, we further assessed the emotions addressed and the advice given by participants concerning the interlocutor's procrastination behavior.

Self-disclosure. We measured self-disclosure according to its length, breadth and depth (for a similar coding scheme see Barak & Gluck-Ofri, 2007). In text-based communication settings, length of self-disclosure is measured by the amount of self-disclosure statements and determined by first-person pronouns in the inquiry.

We rated *breadth* manually on three dimensions: information, thoughts, and emotions. Information tapped all kinds of information about the self (e.g., on demographics or personal characteristics). Thoughts covered the self-disclosure of thoughts, evaluations, hopes, or desires (e.g., “I harm myself with my procrastination behavior”). Self-disclosure of emotions referred to all kinds of emotions concerning the self (e.g., “I am frustrated”). We assessed scores based on whether self-disclosure occurred in the inquiry separate for each dimension on a dichotomous scale with 0 (*no*) and 1 (*yes*). In addition, breadth was analyzed by calculating an overall sum score of all three variables ranging from 0 (*no self-disclosure at all*) to 3 (*self-disclosure on all three dimensions*).

We further coded *depth* of self-disclosure separately for the dimensions on three intimacy levels: No self-disclosure of personal information, self-disclosure on a specific behavioral level (e.g., “I have procrastinated on my last exam”) and self-disclosure on a generalized character level (e.g., “I am always procrastinating”).

Emotion. As our manipulation concerned self-disclosure of emotions, we coded the extent to which participants referred to emotions. We measured the amount of emotions by the number of times participants addressed an emotion. To get an impression of the content, we further classified emotions as either positive (e.g., happiness) or negative (e.g., anxiety).

Advice. An important content-related aspect of the inquiry is the advice participants give on how to deal with the procrastination behavior. We used a qualitative content analysis to identify the five most frequently given types of advice measured by proportion of participants who gave the advice.

2.5. Control measures

As outlined, self-disclosure is not only influenced by the context and the specific interlocutor, but also by characteristics of the discloser. We therefore assessed participants' propensity to self-disclose online, their general tendency to trust others, mood, as well as their usage of online media. Focusing on the topic of procrastination in our study, we further assessed participants' own procrastination experience.

Propensity to self-disclose online. We assessed participants' propensity to self-disclose with an adapted version of the Revised Self-disclosure Scale (Wheeless, 1978; Wheelless & Grotz, 1976). We translated ten items tapping the three facets depth, honesty, and amount in an online context (cf. Blau, 2011) into German. We assessed the items on a 5-point scale ranging from 1 (*strong disagreement*) to 5 (*strong agreement*), for example, “I do not often talk about myself online”. Reliability of the scale was good (Cronbach's $\alpha = .81$). Participants did not differ between conditions, all $F_s(1, 149) \leq .94, p \geq .33$, hence, propensity to self-disclose was not considered in further analyses.

Propensity to trust. We assessed participants' propensity to trust others with an eight-item-scale taken from the German version of the revised NEO personality inventory (NEO-PI-R: Ostendorf & Angleitner, 2004; see also Costa & McCrae, 1992), which operationalizes propensity to trust as a dimension of agreeableness (e.g., “I believe that most people generally have good intentions”); Cronbach's $\alpha = .83$). Participants did not differ between conditions, all $F_s(1, 149) \leq 2.52, p \geq .11$, hence, propensity to trust was not considered in further analyses.

Mood. We measured participants' mood using a semantic differential item ranging from 1 (*sad*) to 10 (*happy*) (cf. Forgas,

2011). Because mood did not differ between conditions, all $F_s(1, 149) \leq 1.41, p \geq .24$, it was dropped from further analyses.

Usage of online media. We asked participants about their use of computers and time spent on the Internet in an open format (in hours per day). They reported an average daily use of computers for 3.24 h ($SD = 1.69$) and the Internet for 2.66 h ($SD = 1.54$). Online media use did not differ between conditions, all $F_s(2, 148) \leq 1.11, p \geq .33$.

Procrastination experience. Although procrastination experience is not generally associated with self-disclosure, it could influence participants' extent of self-disclosure in the context of our study. We understand experience as a combination of knowledge and behavior. We assessed knowledge about procrastination with two items (Cronbach's $\alpha = .67$): “I know a lot about procrastination behavior” and “I know a lot about treatments for procrastination” on a 5-point scale ranging from 1 (*no previous knowledge*) to 5 (*very high previous knowledge*). We assessed behavior with a questionnaire on academic procrastination developed by Helmke and Schrader (2000). Five items measured general procrastination behavior (e.g., “I usually postpone starting tasks until the last minute”; Cronbach's $\alpha = .88$) on a 5-point scale ranging from 1 (*I strongly disagree*) to 5 (*I strongly agree*). We further asked for current procrastination behavior with five items directed to the frequency of the behavior in the last two weeks. We measured items on a 5-point scale ranging from 1 (*never*) to 5 (*permanently*), for example, “Taking a break from studying to do something else” (Cronbach's $\alpha = .82$). Participants did not differ between conditions in their previous knowledge, all $F_s(2, 148) \leq 1.55, p \geq .22$, as well as in general and current procrastination behavior, all $F_s(5, 145) \leq 0.85, p \geq .52$, and all $F_s(5, 145) \leq 1.03, p \geq .40$, respectively.

3. Results

Unless indicated otherwise, we conducted 2 (medium: e-mail vs. forum) \times 2 (self-disclosure: low vs. high) \times 2 (length of inquiry: short vs. long) multivariate analyses of variance (MANOVA). All statistical tests were two-tailed and alpha was set at 5% except when noted otherwise.

3.1. Preliminary analyses

Lilliefors tests of the normality and homoscedasticity of our data for all dependent variables indicated that most data were not normally distributed. Hence, we additionally conducted analyses with winsorized values (i.e., trimmed for statistical outliers) to back up our results with more robust estimators (Erceg-Hurn & Miroseovich, 2008). Unless noted otherwise, the significance and direction of results did not differ from the results obtained with the original values reported here.

3.2. Perception of the context

To assess participants' perception of the context in which the conversation was set, we asked them to indicate how private they felt. The 2 \times 2 \times 2 MANOVA for both privacy items showed a large main effect of medium, $F(2, 148) = 15.8, p < .001, \eta_p^2 = .18$, indicating that participants perceived the conversation in the e-mail condition “to be more private” ($M = 5.03, SD = 0.21$) than in the forum condition ($M = 3.66, SD = 0.23$), and that the conversation would more likely “not read by other recipients” in the e-mail condition ($M = 4.74, SD = 0.21$) in comparison to the forum condition ($M = 3.09, SD = 0.21$). The MANOVA further showed a small but significant main effect of length of inquiry, $F(2, 148) = 3.35, p = .04, \eta_p^2 = .04$, driven by participants' perception that the conversation would be “read by other recipients” when they received the long inquiry ($M = 3.6, SD = 0.23$) compared to the short inquiry ($M = 4.25,$

$SD=0.23$). No further main effect or interactions were found, all $F_s(2, 148) \leq 2.52, p \geq .08$. Using winsorized data, we also found a significant interaction between self-disclosure and medium, $F(2, 148)=3.1, p=.048$. Separate contrasts showed that only participants receiving the low-SD inquiry significantly perceived the “conversation to be more private” when communicating in the e-mail ($M=5.13, SD=0.30$) compared to the forum condition ($M=3.18, SD=0.26$), $F(2, 75)=14.24, p<.001$.

3.3. Perception of the interlocutor

3.3.1. Self-disclosure

A $2 \times 2 \times 2$ MANOVA revealed a medium sized and significant main effect of self-disclosure, $F(6, 144)=2.32, p=.04, \eta_p^2=.09$. In other words, the interlocutor was perceived to “disclose emotions more openly” in the high-SD condition ($M=3.83, SD=0.10$) compared to the low-SD condition ($M=3.54, SD=0.1$). There was also a significant interaction between self-disclosure and medium, $F(6, 144)=2.52, p=.02, \eta_p^2=.10$. Separate contrasts indicated that participants in the forum condition agreed more strongly that the interlocutor “entrusts others” when the inquiry included a low amount of self-disclosure, $F(6, 68)=2.49, p=.03, \eta_p^2=.18$. In contrast, the marginally significant effect for participants in the mail condition indicated that they perceived the high-SD interlocutor as more entrusting, $F(6, 71)=2.16, p=.06, \eta_p^2=.15$. No further main effects or interactions were found, all $F_s(6, 144) \leq 1.79, p \geq .11$.

3.3.2. Trustworthiness

Participants perceived the interlocutor in the short inquiry to be more “successful in things the person is trying to do,” as indicated by a significant main effect of inquiry on the five *competence* items, $F(5, 145)=3.27, p=.01, \eta_p^2=.10$. The three-way interaction between medium, self-disclosure, and inquiry did not reach standard levels of significance, $F > 2.24, p > .05$. No further effects were found, all $F_s(5, 145) \leq .89, p \geq .49$. The MANOVA for the five *benevolence* items revealed a significant main effect of self-disclosure, $F(5, 145)=2.47, p=.04, \eta_p^2=.08$. The interlocutor was perceived as more “concerned about the well-being of others” in the low-SD condition than in the high-SD condition. No further effects were found, all $F_s(5, 145) \leq 1.88, p \geq .10$. Concerning the six items of the subscale *integrity*, we found no significant main effects or interactions, all $F_s(6, 144) \leq 1.83, p \geq .10$. This scale was not sufficiently reliable and, hence, the lack of differences between experimental groups is not discussed further.

3.3.3. Perceived distress

The $2 \times 2 \times 2$ analysis of variance showed a marginal significant main effect for self-disclosure indicating that participants in the high-SD condition agreed to a higher extent that “The person suffers from their problems”, $F(1, 149)=3.68, p=.06$. We found no further significant main effects or interactions on this item, all $F_s(1, 149) \leq 1.82, p \geq .18$. Participants in the high-SD condition as well as participants in the forum condition further agreed that the interlocutor “will get professional help”, as indicated by a significant main effect of self-disclosure, $F(1, 149)=6.79, p=.01, \eta_p^2=.04$ and a main effect for medium, $F(1, 149)=5.05, p=.046, \eta_p^2=.03$. The main effect of medium was not significant when analyzing winsorized data. No further main effects or interactions were found, all $F_s(1, 149) \leq 2.2, p \geq .14$.

3.3.4. Liking

No differences between conditions were found in the $2 \times 2 \times 2$ MANOVA for liking of the interlocutor, all $F_s(2, 148) \leq 2.37, p \geq .1$.

3.4. Communication behavior

We further analyzed participants’ communication behavior when answering the inquiry. The total number of words in participants’ inquiries did not differ between conditions, all $F_s(1, 149) \leq 0.83, p \geq .36$. Hence, length of participants’ inquiry was not considered in further analyses.

3.4.1. Self-disclosure

Participants’ *amount* of self-disclosure (i.e., number of first person pronouns) in the inquiry ranged from 0 to 34 with an average of $M=6.41 (SD=7.33)$. The $2 \times 2 \times 2$ ANOVA revealed a marginal significant disordinal interaction between self-disclosure and inquiry, $F(1, 149)=3.26, p=.07, \eta_p^2=.02$. After winsorizing the data, the interaction reached significance $F(1, 149)=4.19, p=.04, \eta_p^2=.03$. Descriptive analyses showed that in the short-inquiry/low-SD condition participants self-disclosed most about themselves ($M=7.85, SD=2.38$) in contrast to participants in the long-inquiry/high-SD condition, who disclosed the least ($M=5.10, SD=1.01$). Though, contrasts between high and low self-disclosure separately for short and long inquiry conditions were not significant, $F(1, 75)=1.62, p=.21$ and $F(1, 74)=1.73, p=.19$ respectively. In addition, we found a marginal significant interaction between medium and inquiry, $F(1, 149)=3.45, p=.07, \eta_p^2=.01$. Participants answering the long inquiry tended to disclose more when communicating via e-mail ($M=7.39, SD=1.09$) compared to in a forum ($M=4.65, SD=0.87$) as indicated by a marginal significant effect for medium, $F(1, 74)=3.66, p=.06$. The separate contrast between e-mail and forum for participants in the short inquiry conditions was not significant, $F(1, 75)=.77, p=.38$.

Content analysis for *breadth* of self-disclosure showed that information (42%) and thoughts (43%) were disclosed most. Emotions were disclosed in only 24% of inquiries. Participants did not differ regarding self-disclosure of information, all $\chi^2(1, N=157) \leq 0.34, p \geq .56$; thought, all $\chi^2(1, N=157) \leq 1.79, p \geq .18$; or emotion, all $\chi^2(1, N=157) \leq 0.11, p \geq .74$. Overall, participants’ breadth ranged from no self-disclosure to self-disclosure in all three categories. On average, participants disclosed only in one dimension ($M=1.09, SD=1.13$).

The *depth* of self-disclosure ranged from no self-disclosure at all to deep self-disclosure in all three areas. While 29% of the participants disclosed deep and intimate information at least in one content area and 27% disclosed personal information on an average intimacy level, 44% of the participants did not disclose personal information at all. Participants did not differ between conditions, all $\chi^2(1, N=157) \leq 3.25, p \geq .20$.

3.4.2. Emotion

Emotions were mentioned between zero and seven times in each inquiry with an average of $M=1.38 (SD=1.35)$. Overall, there was a similar amount of positive ($M=0.62, SD=0.91$) and negative emotions ($M=0.76, SD=0.94$). Participants in the high-SD condition mentioned significantly more positive emotions ($M=0.96, SD=0.12$) than participants in the low-SD condition ($M=0.58, SD=0.08$) as indicated by a significant main effect of self-disclosure on amount of positive emotions, $F(1, 149)=6.58, p=.01, \eta_p^2=.04$. No further differences were found for either positive, all $F_s(1, 149) \leq 0.78, p \geq .38$, or negative emotions, all $F_s(1, 149) \leq 1.6, p \geq .22$.

3.4.3. Advice

Analyzing the content of participants’ response, we identified the five most frequently given types of advice in percentage mentioned in participants’ responses: *Structuring the study phase* (93%), *motivational aspects* (65%), *changing social learning*

environment (29%), advice on the *physical learning environment* (29%), and *cognitive aspects* (24%). On average participants gave 2 different types of advices ($M=2.4$, $SD=0.99$). No differences were found for the overall sum of pieces of advice, all $F_s(1, 149) \leq 3.19$, $p \geq .08$. Results indicated that participants answering the long inquiry gave significantly more advice on the physical environment, $\chi^2(1, N=157)=21.26$, $p \leq .001$. No further differences were found between conditions for advice categories, all $\chi^2(1, N=157) \leq 2.65$, $p \geq .10$.

4. Discussion

Combining quantitative and qualitative research methods our study extends existing knowledge on privacy regulation in several ways. Firstly, privacy research has mostly focused on the sharing of intimate and even stigmatizing information to close family members and friends (e.g., HIV diagnosis). We argued that – although self-disclosure of intimate information can do greater harm – any sharing of personal information is risky, especially when talking to strangers. Thereby, boundaries between privacy and publicity need to be regulated implicitly through the extent of self-disclosure. Secondly, most studies have assessed reciprocal self-disclosure in preexisting dialogues (cf. Barak & Gluck-Ofri, 2007) or experimentally structured reciprocity of self-disclosure (e.g., Sprecher et al., 2013). Only few studies have experimentally investigated people's reactions to varying the extent of self-disclosure. Unlike many other studies in this field, we investigated our research goals in an actual online communication setting. Hence, we did not rely on self-reports (e.g., "Do you disclose your real name online?") or explicitly asked questions on personal information (e.g., "How much money do you make?"). Although experimentally manipulating self-disclosure and thereby possibly triggering reciprocal effects, our task did not direct attention to the regulation of privacy through self-disclosure: Participants were to answer the content question raised and not pointed toward self-disclosure or privacy concerns.

The first research question of this study was to find out whether participants sensitively assess self-disclosure in their interlocutor as well as the privacy of the communication setting. The second question addressed participants' regulation of privacy, that is, whether manipulation of a self-disclosing interlocutor led to reciprocal self-disclosure and whether a private setting would lead to more self-disclosure compared to a public communication setting. In the following, we summarize and discuss the results separately for both questions. We will also outline the limitations of our study and, finally, give an outlook considering opportunities for future research on the role of self-disclosure on the Internet.

4.1. Perception of privacy and self-disclosure

We manipulated self-disclosure through the presence of emotion-related expressions. Results showed that our participants kept track of how far self-related emotions were addressed in an inquiry from an unknown interlocutor. We conclude that the wording of a message delivers a clear and analyzable picture of the interlocutor. Our results further demonstrate that participants interpreted the information in reference to the context. Whether the same information was presented as an e-mail inquiry or an inquiry stemming from a public and open online forum influenced how self-disclosing they perceived the interlocutor. Moreover, the presence of emotion-related expressions influenced the perceived trustworthiness of the interlocutor. Writing an inquiry without emotion-related expressions led to the impression that the interlocutor was more benevolent (e.g., more concerned about others) than someone who emotionally self-disclosed. A possible

explanation is that a strongly self-disclosing interlocutor is perceived as generally more self-focused rather than looking out for others. Further, the interlocutor was perceived to be more competent when writing a rather short inquiry compared to a long inquiry. In the context of a problem-based inquiry this result seems reasonable.

Concerning the context of the communication, participants were aware of the privacy of online contexts, that is, participants perceived e-mail communication as being more private than forum communication. However, when we controlled for outliers, an interaction between self-disclosure and medium indicated that participants felt more private in a one-to-one e-mail communication compared to a public forum only when the interlocutor had self-disclosed to a low extent. We assume that when participants were provided only with little information on the interlocutor they focused more on the information provided by the communication setting resulting in a higher awareness of privacy.

4.2. Verbal reactions to privacy and self-disclosure

Self-disclosure as an offer of trust is supposedly reciprocated in interpersonal communication. However, our results demonstrate that this is not necessarily the case. Though, not reciprocating self-disclosure might not necessarily represent a general rejection of the interlocutor's offer of trust. The situation we created (i.e., a person seeking advice) might have encouraged an empathic reaction rather than a sharing of one's own experience. This assumption is supported by participants' perception of the emotionally self-disclosing interlocutor as being more distressed as well as by their increased references to positive emotions when answering that person.

For regulating privacy in online communication settings, people not only need to be aware of the degree of privacy in a given setting, but they need to realize that sharing information in a public setting involves a risk that uninvolved overhearers can assess and therefore gain control over the content. Consequently, people should be more cautious about sharing personal information in an online forum compared to an e-mail setting. However, our results demonstrated that people do not adapt their communication behavior to the privacy of the context. Our participants disclosed information, thoughts, and emotions about themselves independently of whether they communicated via an online forum or private e-mail. This failure to adapt self-disclosure behavior to the privacy of the context has been found in previous studies, and it has been interpreted as paradoxical action (cf. Barnes, 2006). However, there is reasonable doubt of the paradoxical nature of this effect. Individuals in our experiment were fairly aware of the context, even if they obviously did not transfer this knowledge into an assessment of risk. One possible explanation is that the (explicitly mentioned) anonymity could have led participants to perceive the risk as low despite the publicity. Furthermore, the topic of the conversation was procrastination behavior, that is, a well-known and accepted behavior among students (cf. Steel, 2007). Participants might not have considered the information to be vulnerable and possibly risky.

4.3. Limitations

Evaluating persons on the basis of their messages is a typical situation on the web. Our study examined the wording of these messages by manipulating the amount of emotional self-disclosure and the medium in which information was conveyed. However, we restricted communication to an asynchronous setting and a one-turn interaction. Privacy-related assumptions might influence social interactions more at the beginning of an interaction than during the ongoing communication process. Hence, with regard

to privacy concerns, further research is needed to illuminate the awareness of possible overhearers in multi-turn online interactions.

One methodological limitation is that our participants first answered the inquiry and afterwards completed the survey on person perception. Answering the inquiry could have activated reflections on one's own procrastination behavior, influencing perception of the interlocutor, that is, in relation to one's own behavior. Hence, this speculation strengthens the need to dive into the interplay of person perception and language behavior (see Jucks, Paus, & Bromme, 2012). Nevertheless, this consideration does not explain the differences between experimental conditions.

4.4. Conclusions and implications for future research

Combining quantitative and qualitative research methods our experimental study has focused on self-disclosure in an online environment when talking to a stranger. Thereby, we found variability between participants on the amount, breadth and depth of their self-disclosure. However, self-disclosure was neither adapted to the self-disclosure level provided by the interlocutor nor to the privacy level of the context. To our knowledge, this is the first study to illustrate in an experimental setting that the social norm to reciprocate does not take effect automatically in self-disclosure. Hence, reciprocating self-disclosure is not typical ubiquitous behavior. Instead, self-disclosure seems to be valued in reference to the aim of the conversation, that is, whether self-disclosure is appropriate in a given situation. In future research, reciprocal self-disclosure could be investigated in contexts where it is essential for successful communication. Furthermore, we only manipulated emotional self-disclosure resulting in general low vs. high extent of self-disclosure. This contrast could have been too small to evoke effects in behavior. A systematic variation in future studies of the degree of self-disclosure would be worthwhile. Overall, participants did not regulate their privacy through self-disclosure, even though they were aware of the privacy degree. We conclude that awareness for

privacy in online communication is a necessary, but not sufficient for regulating privacy. Future research needs to further investigate people's inability to transfer privacy awareness into risk perception and privacy regulation in online communication settings.

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Appendix A. Instructions

These are the instructions (translated from German) implementing the experimental manipulation of the privacy context. Sentences marked as bold were manipulated in the instructions for the e-mail condition before the slashes, and in the instructions for forum condition after the slashes.

In the project "Students help students" (ShS) at a large German university, students can ask questions about different aspects of studying. Completely anonymously, they can **post their inquiries to other students in an online forum/write an e-mail to other students**. Whoever has read the message can answer it **so that these answers will be visible in the online forum/in an e-mail that is sent only to the author of the inquiry**. Therefore, other recipients **can/cannot** follow the conversation. In the following, you will read an inquiry from an advice-seeking person on the topic of "procrastination." Please read the inquiry carefully! We want to know what advice you are going to give this person. Please take sufficient time to answer the inquiry properly.

Appendix B. Visual design of inquiries

This gives the visual design (translated from German) of the experimental manipulation of the privacy context when the inquiry was displayed in the mail context (above) and the forum context (below).

From: contact384d@shs.com
Subject: [Students help Students - SHS] Inquiry
Date: December 5th, 2012 11:52:10 MEZ
To: [REDACTED]

-----Begin forwarded message-----

Subject: Procrastination behavior
Date: December 5th, 2012

Hello, I have not posted an inquiry before, but something has been bothering me for some time and it is causing me a great deal of suffering. I keep on putting off important tasks until it is almost too late. It is really getting me down. Actually, I am on schedule with my studies, and I shall be getting my degree next semester. I'm very proud of that. However, I have a number of exams to pass beforehand. At first, I was even looking forward to learning for them, but I just can't get started. Things are gradually becoming critical, because otherwise I won't manage to finish my studies/and I'm really afraid that I'll not finish my studies. I need advice. I'm feeling really bad. Are there any tips and ways of getting this under control?

Best regards!

-----End forwarded message-----

procrastination behavior



forum overview -> studies general -> procrastination behavior

626 views

Show previous topic :: Show next topic	
Author	Message
Guest	<p>D posted on: 5 Dec 2012 11:52:10</p> <p>Hello, I have not posted an inquiry before, but something has been bothering me for some time and it is causing me a great deal of suffering. I keep on putting off important tasks until it is almost too late. It is really getting me down. Actually, I am on schedule with my studies, and I shall be getting my degree next semester. I'm very proud of that. However, I have a number of exams to pass beforehand. At first, I was even looking forward to learning for them, but I just can't get started. Things are gradually becoming critical, because otherwise I won't manage to finish my studies/and I'm really afraid that I'll not finish my studies. I need advice. I'm feeling really bad. Are there any tips and ways of getting this under control?</p> <p>Best regards!</p>

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Appendix C. Inquiries

These are the inquiries (translated from German) implementing the experimental manipulation of self-disclosure and length of inquiry. Sentences marked as bold were implemented only in the high self-disclosure condition. Inquiries were translated from German.

Short inquiry	Long inquiry
<p>Hello, I have not posted an inquiry before, but something has been bothering me for some time and it is causing me a great deal of suffering. I keep on putting off important tasks until it is almost too late. It is really getting me down. Actually, I am on schedule with my studies, and I shall be getting my degree next semester. I'm very proud of that. However, I have a number of exams to pass beforehand. At first, I was even looking forward to learning for them, but I just can't get started. Things are gradually becoming critical, <i>because otherwise I won't manage to finish my studies/and I'm really afraid that I'll not finish my studies</i>. I need advice. I'm feeling really bad. Are there any tips and ways of getting this under control?</p> <p>Best regards!</p>	<p>Hello, for a long time now, I've had one question that is really getting me down. Perhaps you can help: I keep on putting off all the things I have to do for my studies, and I often leave them until the very last minute. This may now even affect my future and my academic success/I am really worried about my future and I am afraid that this will affect my academic success. I have several exams to pass at the end of the term. These are very important for my studies and I need to do a lot of learning. I resolved to start studying at an early stage, and I was looking forward to doing it. But, up to now, I haven't got much done. When I sit down to get started, I am initially full of energy and feeling good, but I just don't get very far. I know something's got to change. I really want to work hard, but I just can't concentrate for long enough. I keep on letting myself be distracted. This is really bringing me down. Please can you advise me!</p> <p>Greetings</p>

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