Self-Disclosure via Mobile Messaging: Influence Strategies and Social Responses to Communication Technologies

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Abstract. Social responses to communication technologies theory (SRCT) says that people tend to treat computers as social actors by applying social rules. Little work has evaluated SRCT in ubiquitous computing. This work tests SRCT for the first time in the context of self-disclosure via messaging on mobile phones. A field experiment (n=71) compared three influence strategies (direct request, flattery, and social norms) with a (ostensibly) human or computer sender. An interaction between strategy and sender was found that challenges the predictions and scope of SRCT. This work suggests research questions and methods for future work in mobile persuasive technology.

Keywords: mobile phones, persuasive technology, captology, social responses to communication technologies, self-disclosure, flattery, text messaging

1 Introduction

Interactive technologies can persuade: functioning as tools, media, or social actors, they can change people's attitudes and behaviors by design [3]. When functioning as social actors, this is the subject of social responses to communication technologies theory (SRCT): SRCT claims that people apply social rules used when interacting with computers [8].[1]

Social responses from computers – such as politeness, praise, or humor – can shape attitudes and behaviors [3, 7, 8]. Most relevant to the present work, social responses can increase self-disclosure: Moon [7] showed that people disclose more information to a computer when questions are coupled with "self-disclosures" by the computer. In this case, the computer influenced people to disclose more information. Other research shows how disinhibition effects can result in over-disclosure [6].

Mobile and ubiquitous computing can amplify the challenges of appropriate self-disclosure when people make disclosure decisions in-the-moment via mobile devices. There is potential for influencing these decisions in ways that benefit for users and service providers [1]. More research in this area is needed, building on success in previous research. For example, Consolvo et al. [2] investigate mobile location

[1] SRCT is also known as computers as/are social actors (CASA) and the media equation [8].

disclosure, but their research participants do not make real disclosures; instead, they respond to hypothetical scenarios in-situ.

Our current research investigates factors that cause people to disclose intimate information when using mobile technology. Previous direct tests of SRCT have been limited to desktop computing and have shown a mix of similar and different effect sizes for social responses to humans and computers and have been limited to the desktop [7, 8, 9]. Our experiment also breaks new ground in persuasive technology by comparing effects of various persuasion strategies. Finally, our study is a first test of the following hypotheses, which have been suggested by previous work:

H1. Participants will self-disclose more via mobile messaging in response to intimate questions coupled with the flattery (H1f) and social norms (H1s) strategies than direct requests [4, 3].
H2. Participants will self-disclose more via mobile messaging in response to intimate questions ostensibly from a human than from a computer [9].
H3. Participants' self-disclosure via mobile messaging in response to intimate questions will be differentially affected by a human or computer sender that flatter them compared to one that does not flatter them [4, 8].

2 Method

This experiment was a two (sender: "human", "computer") by three (strategy: "direct request", "flattery", "social norms") mixed design. Sender was a between-participants factor. For the strategy factor, all participants received “direct requests” to disclose information. In addition, each participant received either messages of flattery or social norms. Half of the participants were in the flattery or social norms level first, and half were in the direct request level first.

Participants. 71 university students received course credit or a $20 Amazon gift certificate and were told that the study was testing a new questionnaire system. All participants used their own mobile phones and service plans.

Procedure. Participants received text messages at convenient times. To achieve this, we had each participant select two 48-hour periods spaced one week apart. Participants then chose an hour each day when they would receive six to seven questions via text message. They could go about their daily business as long as they could respond, even with a blank message if they did not want to answer the question, to incoming text messages during the hours they selected.

Each day the first message said "Welcome to the mobile phone questionnaire study. This is the research [assistant *or* computer] that will be sending you questions today. Please reply when you're ready." A few minutes after the participant replied, the computer sent the first question. This process repeated for six questions each day.

Following Moon [7], the first two questions each period were low intimacy, and the remaining ten each period were high intimacy. These questions were adapted from [7]. For example, one high intimacy question was: "What has been the biggest disappointment in your life?" Questions and order were the same for all participants.

Manipulation. The sender conditions were identical except that the sender was referred to as a "research assistant" or "research computer" in the two reminder emails and four welcome messages. All messages were in fact sent by a computer via SMS.

The strategy conditions were identical except for the non-question content of the messages. In flattery, each message contained a compliment (e.g. "Nice reply!", "You are better at texting than most."). In social norms, messages contained a sentence stating the percentage (87-100%) of participants which had fully answered the question (e.g. "95% of participants fully answered this question"). In direct request, messages included only questions that prompted people to disclose information.

Measure. We measured breadth of disclosure by counting words participants texted back in replying to questions [7]. We counted refusals to disclose (e.g., "no comment") as zero.

3 Results

A mixed effects model was fit to the measures for responses to all intimate questions.[2]

Table 1. Mean disclosure (word count) for intimate questions by condition.

	Direct request	**Flattery**	**Social norms**
Human	6.36	9.52	5.48
Computer	5.76	5.86	5.25

H1f and H1s. The data show a significant main effect for strategy ($F(2, 300) = 5.69$, $p < .005$). Participants disclosed more information in response to flattery than direct request alone ($t(329) = 2.54$, $p < .05$). A similar contrast was not significant for flattery within the computer condition, or for social norms.

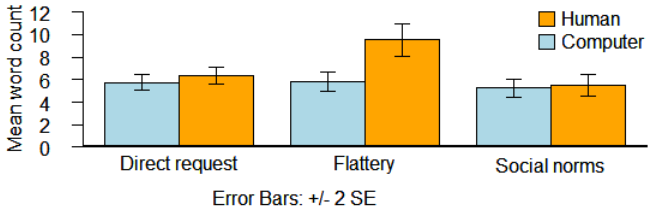

Fig. 1. Mean disclosure (word count) for intimate questions by strategy and sender factors.

H2 and H3. The main effect for sender was significant ($F(1, 273) = 6.47$, $p < .05$). This result is an artifact of the interaction between sender and strategy. The model's estimate of the fixed effects for sender was not significant. The data show a significant interaction between sender and strategy ($F(2, 300) = 3.41$, $p < .05$): self-disclosure was differentially affected by flattery along the sender dimension.

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2 Sender and strategy factors were specified as fixed effects; question was a random effect within a random effect for participant. Nine participants with technical problems and/or who were missing five responses to intimate questions were excluded from analysis.

4 Implications and Future Work

Our experiment shows that flattery increases the impact of a direct request for personal information via mobile devices. This effect, however, was shown only when the flatterer was ostensibly human. Flattery from a computer had no effect, in contrast to previous research [4]. These results suggest that interacting through mobile phones is psychologically different than interacting with desktop computers, as hinted at by Goldstein et al.'s [5] failure at replicating an indirect test of SRCT with mobile devices. Furthermore, in contrast to the predictions of SRCT, effect size for flattery is shown to be different for humans and computers [8, 9].

Future work could manipulate both the stated identity of the sender and participants' belief in the accuracy of this identity. Also, future work could compare different strategies for increasing disclosure by presenting requesters in different ways or by introducing different rewards for disclosure. Other dependent variables, including location disclosure, could also be studied. Participants could also receive messages throughout their day, rather than constrained by times they choose.

This experiment can be used as a template for future work: participants receive text messages on their own mobile phones, and a measure of their response behavior is the main dependent variable. Our method moves experimental inquiry into a field context where people use devices they already posses. Following our easy-to-replicate method, future research on mobile interactions becomes easier to perform, and nagging questions of external validity in experimental design are partially addressed.

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