The Virtual Midas Touch: Helping Behavior after a Mediated Social Touch

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Abstract
A brief touch on the upper arm increases people's altruistic behavior and willingness to comply to a request. In this paper, we investigate whether this Midas Touch effect would also occur under mediated conditions (i.e., a text messaging system and an arm strap equipped with vibrotactile actuators). Although helping behavior was more frequently endorsed in the touch, compared to the no touch condition, this difference was not found to be statistically significant. Such a failure to find response similarities between vibrotactile stimulation and real (i.e., unmediated) physical contact undermines the design rationale of the field of mediated social touch, which aims to provide an alternative for real physical contact.

Keywords
Mediated social touch, physical contact, computer mediated communication, haptic feedback, assistance (social behavior)

ACM Classification Keywords
H.5.2 [Information Interfaces and Presentation (e.g., HCI)]: User Interfaces — haptic I/O, evaluation/methodology, prototyping; J.4 [Computer Applications]: Social and Behavioral Sciences — Psychology; General Terms: Experimentation.

Introduction

If you happen to be a waiter or waitress, you are advised to have physical contact with your customers, as a brief touch on the shoulder might well increase the size of the tips you receive (e.g., [2]). Similarly, if you want to get on the bus for free, whether you accidentally forgot your wallet or not, then you should consider touching the bus driver briefly on the shoulder or upper arm while making your request. Research by Guéguen and Fisher-Lokou [6] has shown that such a simple act increases your chances on a free ride. These are just two of the many documented examples that illustrate the effectiveness of interpersonal physical contact as a means to affect people's altruistic behavior and willingness to comply to a request, be it implicit or explicit. This phenomenon is known as the Midas Touch, after Greek mythology's King Midas, who changed everything he touched into gold.

The Midas Touch is effective independent of whether a person is aware of being touched [5], and effective, even, when the touch is initiated by an untidy person in dirty clothing [4]. Furthermore, the Midas Touch effect can be transferred to requests made by another person than the one that initiated the touch. Goldman and colleagues [3] showed that people were more willing to comply to a request—in this case, to answer phone calls for charity—when they were touched by a confederate asking for directions minutes before the second confederate made the charity request. The Midas Touch can be explained by means of several mechanisms: By an increased positive affect toward the person who initiated the touch, an increased awareness towards his or her needs, by establishing power differences, or by positively affecting self-perceptions in part of the receiver [3,11,13].

In this paper, we further investigate the efficacy of virtual touch in enriching mediated social encounters, by studying whether the Midas Touch effect would also occur under mediated conditions. If it does occur, this would then constitute evidence that a virtual social touch is processed in similar ways to real unmediated physical contact (i.e., a case of *response similarity* [10]). Establishing such response similarities is important for the field of *mediated social touch*, which aims at designing technologies that allow people to touch each other over a distance by means of haptic or tactile feedback technologies (for a review and a critique, see [8]). If such response similarities cannot be demonstrated, then communication devices that aim to deliver mediated social touch fail to provide an alternative for real physical contact, thereby undermining much of the field's design rationale (also [9]).

Method

Participants

Our sample was drawn from students and employees of our university. Sixty-three persons, all male, participated in the experiment. The mean age was 23.7 (SD = 5.6; range 18 to 48 years). All participants received coffee and cake as a compensation.

Experimental Design

In a between subjects experiment, participants were outfitted with a haptic arm strap, attached to the upper arm, equipped with electro-mechanical vibrators. They were randomly assigned to one of three conditions: (1) A Touch condition, in which participants received vibrations via the arm strap from the confederate. (2) A No Touch—System Failure condition, in which participants did not receive any stimulation, but were

made to believe that, although the confederate did initiate the virtual touches, these were not transmitted due to a system failure. (3) A No Touch—Intentional condition, where, again, the participant received no stimulation, but in which the interpretation was put forward that the confederate had not used touch during the session—and thus by inference, that she had no intention to touch the participant. Following the Midas Touch hypothesis, one would expect participants in the Touch condition to be more forthcoming in helping to pick up coins, as compared to both No Touch conditions. Furthermore, if the presence or absence of touching behavior is processed as an intentional communication act [8], the presence of an alternative explanation (i.e., system failure) in the No Touch—System Failure condition could potentially ameliorate the effect of the absence of touch.

Procedure

The participant was invited to evaluate a haptic instant messaging system together with another person. This latter person was a female confederate of the experimenter. She was casually dressed in a manner appropriate for a young women of her age (25 years). The experimenter instructed the participant and the confederate to take a seat at separate sides of the room (divided by an opaque screen) for a question and answer session, by means of a messenger system that, besides typed text messages, allowed for virtual touches to the shoulder. The prototypical version of this system, as the experimenter explained, only allowed for one person to transmit such touches. The participant was always assigned the role of questioner, and the confederate was always in control of the virtual touches. After they took their seats, the participant was given a written instruction asking him to go through a fixed set of eight questions. This, the instruction read, would allow the experimenter to investigate when mediated social touches would be most frequently used. The confederate's answers and initiations of the virtual touches—three in total—were similar for all participants. After, for example, being asked about her favorite movies, she would respond being especially fond of romantic movies, and would initiate a virtual touch. After the question and answer session, the participant was given a short bogus questionnaire. In both No Touch control conditions, the experimenter would interrupt the participant to provide an explanation for the fact that he did not receive any touches. In the No Touch—System Failure condition, the experimenter explained that his interaction partner had used the touches, but that these were not transmitted due to a system failure. By contrast, in the No Touch—Intentional condition, the experimenter explained that his interaction partner had not used the virtual touches. Note, that we took several measures to insure that the confederate was blind with respect to the experimental condition to which the participant was assigned. The experimenter could control the transfer of the virtual touches, without the confederate knowing the state of the system. Secondly, the confederate wore a headphone, playing music, to block the sound of the vibrotactile actuators, and any conversations between the experimenter and the participant. This insured that the confederate's verbal and nonverbal interactions with the participant would be similar in all conditions.

Measures

After the participant had filled out the questionnaire, the experimenter gave the participant a form and asked him to write his name and e-mail address to keep count

of the number of participants. He then walked to the other side of the room and told the confederate to do the same. The confederate would then go to the participant's side of the room, and just when the participant was about to stand up, the confederate would drop 18 coins out of her wallet, scattering them across the floor, while making an utterance appropriate for such a clumsy act. She would start picking up the coins, one by one, approximately at a speed of one coin per second. As a measure of the participant's helping behavior we observed whether he did or did not assist the confederate in picking up the coins, and observed how many coins he retrieved. Finally, the experimenter debriefed the participant regarding the true purpose of the study.

Apparatus

Tactile stimulation was provided through a neoprene arm strap, attached to the upper arm, equipped with six vibrotactile actuators of type 1E110. The hardware and software used for controlling the vibrotactile actuators were similar to that used by Rovers and van Essen [15,16] and Haans and colleagues [9]. The six actuators were activated in sequence with overlapping intervals (resembling a stroke). Overall, the stimulus had a duration of less than one second. The stimulus was strong enough to be felt through thin clothing without causing discomfort.

Results

First, we examined whether there was a difference in helping behavior between the two No Touch control conditions (see Table 1). We found that the percentage of participants assisting the confederate was highly similar in the two conditions, with 44.4% in the No Touch—Intentional, and 45.5% in the No Touch—System Failure condition. Since, the two No Touch control conditions yielded similar helping behavior, we treated them as a single condition.

Table 1: Number of Participants With and Without Helping Behavior in the Touch, No Touch—System Failure, and No Touch—Intentional Conditions.

Condition	Helping	Not helping
Touch	14	9
No Touch—System Failure	10	12
No Touch—Intentional	8	10

Secondly, we investigated whether helping behavior was higher in the touch condition (see Table 1) compared to the combined No Touch condition. Whereas, the percentage of participants that assisted the confederate with picking up the coins was 45.0% in the combined No Touch condition, as much as 60.9% of the participants helped the confederate in the Touch condition. In other words, the odds of helping were 1.9 times higher in the Touch as compared to the No Touch condition. However, a one-sided Fisher exact test did not show a statistically significant difference between the two conditions, with $p = .17$. Finally, we examined the number of coins that were pickup up by those participants that assisted the confederate. The average number of coins picked up was 5.50 in the Touch condition, 5.63 in the No Touch—Intentional condition, and 7.60 in the No Touch—System Failure condition. Interestingly, although a higher percentage of participant was willing to help the confederate in the Touch condition, these participants, on average, picked up the least coins. This is similar to what Powell and

colleagues [14] found, who suggested that a touch might increase a person's motivation to appear helpful, but not his or her motivation to actually do so.

Discussion

Although the percentage of persons that assisted the confederate with picking up the coins was, as expected, higher for those participant that received the virtual touches (i.e., 60.9%), than for those who did not (i.e., 45.0%), this difference was not found to be statistically significant. In other words, we did not replicate the Midas Touch effect under mediated conditions.

Overall we were surprised by the small number of people that assisted the confederate in picking up the coins. We expected this to be a fairly effortless task that would be endorsed by most of the participants. As a comparison, Guéguen and Fisher-Lokou [7], who used a similar dropping-of-items paradigm—in their case computer diskettes—, found 63.3% and 90.0% of their participants to assist the confederate (i.e., in the no touch and touch condition, respectively). One explanation for the low rate of assistance may be that we did not succeed in adequately covering the true purpose of the experiment. As a reason for not assisting the confederate, several participants mentioned, during debriefing, that they were suspicious about the purpose of the experiment. On the other hand, such suspicions are an excellent justification for not having assisted another person in need. In fact, during debriefing, participants also reported that money is too personal to be touched by another person (a possible limitation of a dropping of coins paradigm), or that they did not notice the coins being dropped (despite the sound of the coins hitting the floor, and the complementary confederate's utterances).

Unfortunately, experiments on mediated social touch require a trade-off between strict experimental control and the naturalness of the interaction between the participants. Although the Midas Touch effect is an interesting paradigm for evaluating the effectiveness of communication devices that aim at providing mediated social touch, future studies need to find the right balance between experimental control and the naturalness of the situation.

Despite these limitations, the present study seems to corroborate our earlier experiment—in which we investigated whether the gender differences generally found in same and opposite sex social touch are also effective in mediated situations [9]—, by showing that people do not respond in a similar manner to vibrotactile stimulation as to a real (i.e., unmediated) social touch. As a result, haptic communication devices that employ such means of stimulation (e.g., [1,15]) might not effectively replace real (i.e., unmediated) physical contact for geographically separated people. This, of course, does not render these devices completely useless, as they might, for example, still compensate for the lack of intimacy or connectedness that such separations may entail. Taken together, however, our experiments remain promising for the field of mediated social touch, since, notwithstanding statistical (non)significance, the experimental effects were in the expected direction for both studies. One possible explanation for the small effect sizes in these two studies is that we deliberately isolated the touch act from the other means of nonverbal behavior with which it is naturally confounded [12]—which suggests that the relative contribution of physical contact to the Midas Touch effect is generally overestimated in the social psychological literature.

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