

# Trust *without* Touch: Jumpstarting long-distance trust with initial social activities

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## ABSTRACT

Computer-mediated communication (CMC) is thought to be inadequate when one needs to establish trust. If, however, people meet before using CMC, they trust each other, trust being established through touch. Here we show that if participants do *not* meet beforehand but rather engage in various getting-acquainted activities over a network, trust is much higher than if they do nothing beforehand, nearly as good as a prior meeting. Using text-chat to get acquainted is nearly as good as meeting, and even just seeing a picture is better than nothing.

## Keywords

Trust, cooperation, text chat, communication media, CMC, CSCW

## INTRODUCTION

With today's modern communication technologies people now can work together while being remote. If remote teams have shared documents and high quality audio or video communication, they can produce work of the same quality as that produced when teams are collocated [6].

There are exceptions to this rule, however. If the work requires team members to trust each other, the fact that they are remote hinders their work. Remote teams have been reported to be less effective and reliable than face-to-face teams, based on the observation simply stated as "trust needs touch" [3]. This lack of trust has been shown to be a hindrance in tasks where participants must negotiate complex agreements [7]. In field studies, there is evidence that trust of remote colleagues is significantly lower than trust of collocated colleagues [9]. In the

laboratory, it has been shown that face-to-face meetings facilitate development of trust better than email does [8].

One demonstrated way to support trust development among remote team members is for them to get acquainted face-to-face before they collaborate via email or some other computer mediated communication (CMC). Rocco [8] showed that if strangers who normally communicate only through email gather for a team-building exercise prior to work, they outperform strangers who have no prior meeting. Furthermore, they do as well as groups who meet face-to-face throughout the work. This finding corroborates the widely held popular business opinion that people who meet before working together form better, more solid team relationships.

Unfortunately, not everyone has the travel budget to meet face-to-face before working. Are there alternatives to meeting face-to-face? Can any of the CMC technologies (video, audio, chat, email) coupled with prescriptions on how to use them substitute for actual face-to-face meeting? Moore et al [5] found that remote participants were less likely to reach an impasse in a negotiation task when prior to the task they did three things: They exchanged personal information (both a photo and a resume) and they engaged in a get-acquainted session via email. Although exchanging such information was better than nothing, we do not know yet, however, whether these prior exchanges produced work as good as it would have been had they met face-to-face beforehand. And, where Moore et al had people chat about social things while seeing a picture and getting a resume of each other, we do not yet know how these factors individually play in the development of trust nor anything about the underlying psychological mechanisms.

This paper addresses this question by separating the three information sources that Moore et al [5] used and we compared these with face-to-face interactions. We expect to replicate the finding that trust is highest in people who meet face-to-face beforehand, significantly higher than

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those who have no exchange. The main research question is: how effective are pre-task activities where participants either:

- talk about social things over chat,
- see a picture of the other person, or
- review a personal information sheet about the person?

We can additionally factor out various kinds of information from these information vehicles. What is the role in trust development of

- seeing the other person
- learning about more personal aspects of the remote person, or
- interacting with them in some way.

Is knowledge of the social information sufficient, is a picture of the partner sufficient, or does it take interactivity to engender trust?

As shown in Table 1, we see 3 different factors playing in the effects described above. Meeting face-to-face gives the participants interactivity, visibility, and social information. When participants are *interactive* they are able to assess the attention that the other pays and the implicit bonding that happens when excited responses emerge, such as “I went to France last summer, too!” When participants are *visible* to each other, there is an implied accountability. Behavior might be more cooperative because the other person will recognize you in a future situation and will behave toward you according to what they learned from you in this situation. Seeing a person also makes the humanity of the partner more salient. The third factor is the actual content of the get acquainted session, where *personal information* is disclosed. This disclosure may lead to trust because it makes one appear vulnerable in some cases, and it allows the opportunity of finding similarities that lead to trust.

**Table 1. Some pertinent features of different communication media**

	Interaction	Visual Identification	Personal Information
FTF	X	X	X
Social Chat	X		X
Photo		X	
Personal Info. Sheet			X
Nothing			

Moore et al [5] presented people with social chat, the photo, *and* a resume, the combination of which was shown to be better than nothing. The question remains whether

these individually contribute to the development of trust and how they compare to meeting face-to-face.

In order to tease these factors apart, we constructed five conditions to test. To replicate the basic finding that having no information or interaction beforehand will engender self-serving behavior, not cooperation and trust, we have people negotiate through text chat without having any prior interactions, a condition called “Nothing.” To replicate the Rocco finding that face-to-face meeting prior to the negotiation that uses only email will encourage people to cooperate and trust, we included a condition in which people get acquainted face-to-face before the task, a condition called “FTF.”

Three other conditions test various other media, which included different factors shown in Table 1, above. The “Social Chat” condition, which has interaction and personal information in it, had people getting acquainted by using a text-chat facility to talk about personal things. Pilot work showed that they talked mainly about whether they are students, what year and major, whether they work part-time, where they live, etc. In the “Photo” condition, instant photographs were taken of each participant and given to the partner. These photos were available throughout the session. In the “Personal Information Sheet” condition, each participant answered a set of questions about the same factors people talk about in a “get acquainted session,” revealed in our pilot work on social chat. This was like a resume, but containing more social information, rather than education and accomplishments. Together these five conditions inform us as to the relative value of interaction, visual identification and personal information in engendering trust.

## METHOD

**Participants.** Two-hundred undergraduate and graduate students participated in this study in exchange for pay. One-hundred and five were female, ninety-five male. Twenty pairs (7 mixed gender, 7 female pairs, 6 male pairs) participated in each of the five conditions. Participants had never met their partner prior to the task.

**Procedure.** Participants arrived at the lab at different times so they did not meet each other. Each participant was escorted to separate rooms upon arrival. Inside the room, participants completed a pre-experiment questionnaire that consisted of 25 items, a mixture of “filler” items asking about their attitudes about group work and investment, and the key items about the person’s baseline trust, adapted from Rotter’s [9] general interpersonal trust scale. For those in the Personal Information Sheet condition, they additionally filled out a questionnaire about various aspects of their personal lives.

Following this questionnaire session, the pairs in four of the conditions had some level of pre-task interaction. FTF groups met for approximately 10 minutes and discussed

topics of their own choosing. Social chat groups became acquainted with each other during a 15-minute session in a private internet-based chat space. Photo groups received an instant photo of their partner. For the Personal Information Sheet (PIS) group, participants reviewed the personal information gathered in the questionnaire session for a few minutes<sup>1</sup>. The control group, the Nothing condition, went directly from the questionnaire to the trust game instructions.

Before playing, participants were told that they were going to be Day Trader investors for a simulated period of five to six weeks, each week being a set of 5 days or trials. After every five trials (i.e., week), the pairs were allowed to communicate via a chat facility. At trial (day) 30, participants were informed that the next day was the last day.

After completing this final trial, participants filled out a post-experiment questionnaire that included items on trust, group work, and investment strategies [1]. The participants were then asked to describe to the experimenter the strategies they used and what they thought their partner had done. Finally, participants were individually debriefed and escorted from the lab.

**The Day-Trader Investment Task.** Pairs of participants played a multi-trial variant of a Prisoner's Dilemma task, a task that has a long history of testing group cooperation and trust [4]. For this task, each participant was to imagine being a day-trader during a multi-day investment period. Each participant received \$40 a day to invest; they could invest all or some of the \$40. The day-trader had two choices for investing the money: invest in a common pool whose payoff was dependent on how much the other partner invested in it, or keep it in an individual account.

Prisoner's Dilemma games for two people are difficult to engineer, because in two-person games there is a lot of information that can be inferred from payoffs about exactly what each partner contributed. It is very hard to design the payoffs so that people act on their temptations to be self-serving. In order to conceal what each partner contributed exactly, we added a random factor (between -10 and +10) representing stock market fluctuations to any group contributions. The random factor differed across days, but was in the same order for each pair and over the 31 days, and they summed to zero. After including the random factor, the money that each person invested with the group was doubled and split evenly between the two participants. The money that was not invested, the person kept.

We added one more element that encouraged self-serving behavior. The participants were told that at the end of the each week (after 5 trials) a \$200 bonus might be given to the person who made the most money that block (a simulated week). In actuality, the bonus was given every block. If there was a tie, the bonus was split evenly.

According to this payoff structure, the best strategy *for an individual* was to invest less than the \$40, but to convince his or her partner to invest a full \$40. This would provide one participant with half the pooled, now doubled investment, in which the partner contributed more. For example suppose Participant A contributed \$39, withholding \$1, and Participant B contributed \$40. This pooled \$79 is then doubled to \$158, and split between the two participants, each getting \$79. Partner A then adds his \$1 making \$80, and Partner B has only \$79. Partner A will then win the bonus, having made \$1 more than Partner B. In contrast, the best strategy *for the group* was for both partners to invest \$40 each day (\$80 per person).

After every five trials, the participants were allowed to communicate over an internet-based chat program. Because this task was played over multiple trials and in the context of a volatile stock market, it provided ample opportunity for a variety of strategies.

## RESULTS

Data were collected for various measures of cooperation and trust: the pair's total payoff for each trial, the total number of trials during which the pairs cooperated (invested fully), the total number of defections (promises made in a discussion that were violated in the next block), and the prior- and post-task trust measures.

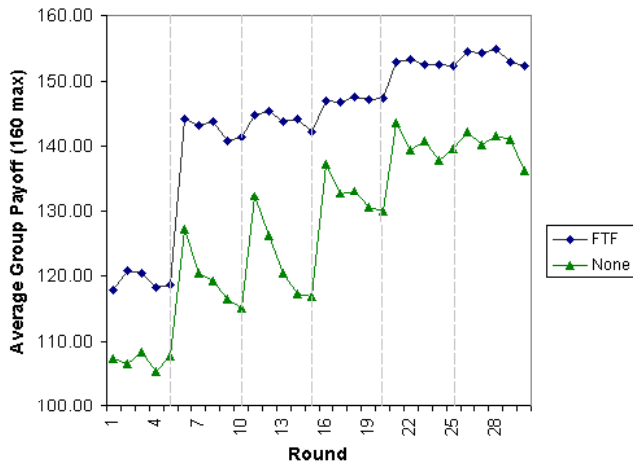
**Manipulation check.** There was no difference across the conditions regarding initial trust levels,  $F(4, 98) = .27$ , n.s.

**Investment Payoff.** The trial by trial investment payoffs are shown in Figures 1 and 2. Figure 1 shows only FTF and Nothing condition, demonstrating the same kind of pattern as Rocco found, where people meeting FTF beforehand are much more cooperative than those with nothing beforehand. The sawtooth pattern for the Nothing group is consistent with results from larger groups [1]. People without trust invest more after each chat period, but their investments fall off as the five trials progress.

In our statistical analysis of the data, because we were interested in investment behavior and the bonus and random factor were the same for all groups, the bonus and random factor were removed from all calculations. An

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<sup>1</sup>The times chosen for this communication session were unequal, but reflective of the extra time it takes people to type their exchange in a text-chat. It is impossible to equate the sessions for the amount of social information delivered, there being no studies of this



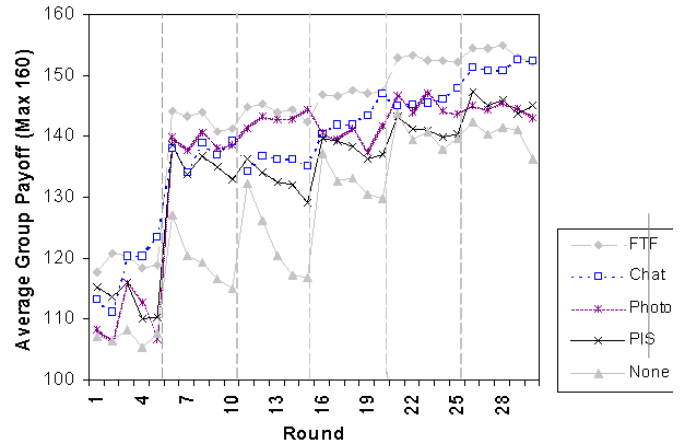
**Figure 1. Trial by trial payoffs, showing only the two extreme conditions, a the replication of the difference between FTF vs. Nothing.**

analysis-of-variance of these two conditions shows an overall difference in the condition,  $F(1,38) = 10.70$ ,  $p < .005$ , and an interaction between condition and trial,  $F(1,38) = 5.50$ ,  $p < .05$ . And, the drop-off in trust of the Nothing condition within each of the five trials is also significant,  $F(1,38) = 10.7$ ,  $p < .005$ . There is a drop-off with those who had not interacted at all beforehand, but no drop-off with those who had met face-to-face.

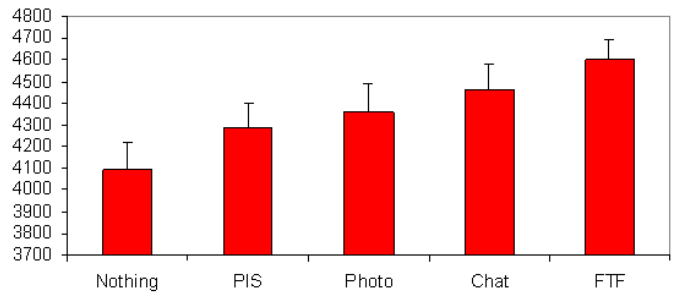
Figure 2 shows the trial by trial payoffs for all five conditions. Figure 3 shows the total payoff for each of the five conditions. The data shown in Figure 2 were analyzed using a 5 (media group) X 6 (block or “week”) repeated measures analysis-of-variance (ANOVA) with media group as the between-subjects variable. There was a main effect of condition on payoff,  $F(4, 95) = 2.547$ ,  $p < .05$ , indicating that the closer the media was to FTF, the greater the payoff (Figure 3).

The main effect of block on investment payoff was significant, indicating that groups received higher payoffs over time  $F(5, 475) = 61.41$ ,  $p < .001$ . However, the main effect for trial within block on investment was significant as well, indicating that people contributed less the further from the intermittent, text-chat interaction they were  $F(4, 380) = 5.86$ ,  $p < .001$ . There was an interaction between trial within block and condition,  $F(16, 380) = 4.51$ ,  $p < .001$ , as well. Planned comparisons indicated that the drop off for the Nothing group was greater than that for the other groups, the same result we found when examining just the FTF and Nothing conditions, above.

The data shown in Figure 3 were analyzed using a one-way ANOVA with condition on total payoff. Again, there is a significant difference among conditions,  $F(4,95) = 2.54$ ,  $p < .05$ .

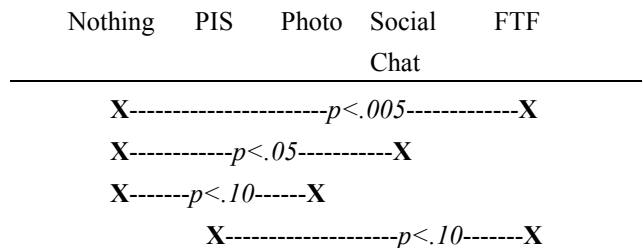


**Figure 2. Trial by trial payoffs for all five conditions, showing the high trust with various social interventions. The two conditions from Figure 1 are grayed.**



**Figure 3. Total payoff for each of the five conditions.**

Pairwise comparisons, analyzed through planned contrasts in the ANOVA, are shown in Figure 4. The pattern of results suggests that Social Chat and the Photo are on a par with being face-to-face beforehand, and that the Personal Information Sheet is nearly equivalent to having nothing beforehand.

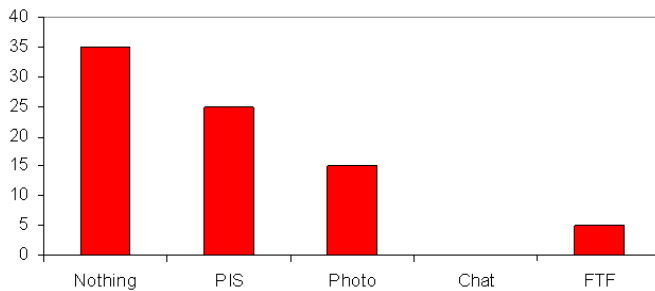


**Figure 4. Planned pair-wise comparisons of the total amount of payoff (trust) in the five conditions.**

**Incidence of defection.** Occasions of defection behaviors were coded and analyzed. Pairs were deemed defecting when they did not invest what they promised to. On average there were 5.4 trials in which at least one of the two partners defected. There were no reliable differences across conditions.

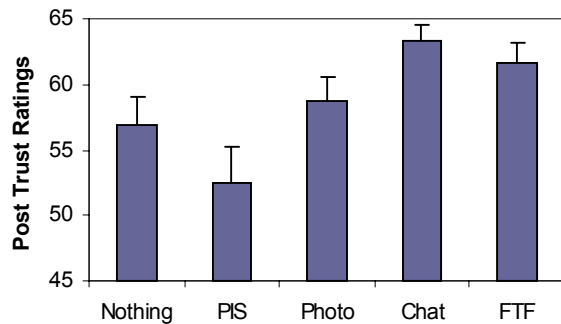
**Pairs who never invested fully.** We also counted the number of pairs who never invested the full \$40, and therefore never maximized group payoff, presumably because of lack of trust. As shown in Figure 5, there was a significant difference in whether or not people from different conditions ever invested the entire \$40,  $\chi^2(4) = 12.02, p < .01$ .

The pattern of data indicated that pairs were less likely to fully cooperate in the Nothing, PIS, and photo groups than in the Chat or FTF groups. In fact, 35% of the pairs in the Nothing condition, 25% in the PIS condition, and 15% of the pairs in the Photo condition never fully cooperated (i.e., both invest the full \$40). No one withheld their investment in the social chat condition, and only 5% of the pairs did in the FTF condition.

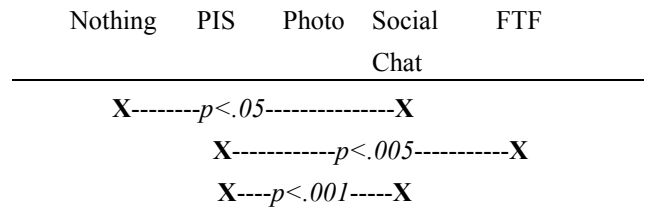


**Figure 5. The percent of pairs in each condition who never invested their full \$40.**

**Trust Measures from the post-session questionnaire.** The post-experimental trust measures indicated that there was a main effect of condition on trust,  $F(4, 95) = 4.58, p < .005$ . Figure 6 shows the means across conditions. Comparisons among the individual conditions are shown in Figure 7.



**Figure 6. Average post-session trust scores across conditions.**



**Figure 7. Planned pairwise comparisons of the post-experiment trust scores in the five conditions.**

**Pertinent features of the communication media.** As mentioned in the introduction, these five conditions share various key features that are likely to have differential effectiveness on trust behavior. Face-to-face has *interactivity*, the partners are *visible* to each other for possible accountability and feelings of humanity, and they reveal *personal information*. Accordingly, instead of comparing 5 conditions per se, we did a regression analysis on these 3 variables. The three variables account for 6% of the variance,  $F(3, 96) = 3.25, p < .05$ , a small but significant amount. The resultant formula with the weights for each variable is:

$$\text{Total Payoff} = 3850 + 178(\text{Personal}) + 91(\text{Interaction}) + 216(\text{Visual}) + \text{error}.$$

Only the coefficient for Visual is significant,  $p = .05$ .

## DISCUSSION

Our results clearly show that people who must work through the relatively impoverished channel of text chat benefit from various kinds of prior activity that focuses on social/personal information. Trust, as measured in amount of cooperation shown in a variation of a Prisoner's Dilemma game and in post-task opinions, is highest when partners meet face-to-face beforehand. However, engaging in a text chat beforehand about social things, a "getting acquainted" session, is nearly as good in establishing trust. Having a photograph is also effective, nearly as strong as the social chat or in-person meeting. Having a static presentation of the kinds of social information that is exchanged normally in a getting acquainted session is no better than having nothing.

When people mistrust, they most often manifest it in withholding group investment rather than in outright defection, --making promises and not keeping them.

It appears from the analysis of the various pertinent features in these media conditions, that seeing the partner (even a still photo) is very effective by itself, independent of whether personal information is explicitly disclosed or there is any attention paid (by being interactive rather than static). These results unbundled the effects shown in Moore et al [5] and place them in the context of the Rocco

[8] results showing the effectiveness of meeting beforehand face-to-face.

These results have very important practical implications. If one wished to establish trust among remote workers who have to use an impoverished medium, the most effective interaction is to meet face-to-face. Exchanging get-acquainted social information through interactive chat prior to beginning work is nearly as effective. More surprising is the result that having a static photograph of the partner is as effective in establishing trust, whereas a text-based, static information sheet of personal information is not. The prominence of the visual dimension also suggests that a large part of the cooperative behavior may be due to accountability (fear of retribution if you run into the other person again) rather than other forms of trust.

These results are preliminary, however. We need to better understand the mechanisms underlying these media effects. We also do not know yet how long the trust lasts in the various conditions; Although the experiment simulated “weeks” with a large number of opportunities to assess your partner’s behavior, it still was a relatively short elapsed time span. And, we do not yet know how this transfers out of the laboratory and into the field. But the results are promising, and warrant further confirmation.

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