**SOCIAL INFLUENCE IN A COLLABORATIVE WORK**

**SUPPORTED BY MOO**

*Maria Beatrice Ligorio*

# THEORETICAL BACKGROUND

Does communication supported by computers keep the same rules as face to face communication? How does social influence work in this new environment (Spear & Lea, 1992)? How is identity perceived when variables like gender, age, and physical features are not visible (Mantovani, 1995)?
These are interesting questions posed by the literature about communication supported by computer that need to be studied with a psycho-social framework. This project is aimed to use this perspective manipulating both real life variables like social status, and computer related variables as technical skill in the frame of a collaborative work task.

# TECHNOLOGICAL SETTING

The computer environment used for this study is called MOO (Multi-users Oriented Objects). This is a technological device supporting at the same time communication in real time and navigation through text-based virtual space (Curtis, 1992). Three types of actions are possible: a) navigation through virtual rooms, space, etc...; b) communication with people both in the same room and far in other rooms; c)construction and manipulation of objects.

# INDEPENDENTS VARIABLES

Subjects are matched with a conferederate described by a manipulation of two independent variables:
- attributed Moo skill, which can be equal (the confederate declares a Moo skill equal to the subject), or lower (the confederate declares a lower Moo skill)
- attributed Social status, which can be higher (university professors), or lower (high school students).
- a conflict between the subject and the confederete will be introduced as controlled variables (see below).

**TABLE 1 - Experimental Settings**

<table>
<tr><td colspan="2"></td><td colspan="2">Moo Com petence</td></tr>
<tr><td colspan="2"></td><td>Equal</td><td>Lower</td></tr>
<tr><td rowspan="2">Social<br><br>Status</td><td>Higher<br>(University Professor)</td><td>1<br>University Professor with the same MOO skill as the confederate</td><td>3<br>University Professor with one previous experience in the MOO</td></tr>
<tr><td>Lower<br>(High School Student)</td><td>2<br>High school student with the same MOO skill as the confederate</td><td>4<br>High school student with one previous experience in the MOO</td></tr>
<tr><td colspan="4">5<br>Control Group<br>No variables manipulated</td></tr>
</table>

Subjects were all recruited through mailing-lists on the MOO and a ´ Call for subjects ª posted in MOOs, for this reason they had at least a basic MOO knowledge. They are all university students since it was made as condition to participate in the experiment.

## DEPENDENTS VARIABLES

### * *Leadership.*

Leadership of the interaction is mesured by two indicators:
- the use of the navigation Moo commands: ´ follow ª, ´ dont_follow ª, ´ lead ª, ´ dont_lead ª (these commands are specially made for this game), ´go ª, ´ join ª and ´ walk to ª.
- by content analysis of the communication. Whenever a suggestion appears about where to go and what to do, it is considered as taking initiative. Also it is observed whether the confederate's suggestions are taken into consideration or not.

### * *Collaborative Work*

Collaborative Work is studied by looking at the use of the notes taken during the interaction: whether the subject is willing to share the information, ideas, and comments with the confederate or not.
This variable is mesured by the contents of communication commands (´ say ª, ´ page ª), and the use of action commands as: ´ give ª, ´ show ª, ´ read ª, ´ show to ª, ´ read to ª, and ´ take ª.

## EXPERIMENTAL HYPHOTESIS

It is hyphothesised that Social status will affect the collaboration between the confederate and the subject: the subject will be more available to collaborate with a confederate with an higher social status.
Moo skill will affect leadership: the subject will take the leadership when works with a confederate that declares a lower Moo skill.

## EXPERIMENTAL DESIGN

### *The Task*

The task has been designed during a previous research run by Pierre Dillenbourg. It is presented as a game, but it is actually a problem-solving. This type of task is defined, in the framework of the theory of conflict elaboration, as an aptitude task (Mugny & PÈrez, 1994).
Mona Lisa has been killed in a hotel and the two partners have to interact to find the killer, the motive and the access to the weapon. The environments is composed by 13 rooms and 11 suspects (little robots).

### *Interaction Agenda*

The subject and the confederate are supposed to work together to solve a mystery. The interaction is guided by a script composed by 1 Instruction Phase, 3 Interaction Phases with 2 repeated steps, 1 Conflict Phase introduced between the second and the third Interaction Phase.
* Instruction Phase. Instructions and Commands are posted on Netscape. Subjects, contacted by e.mail, are request to print them out and to use them during the experiment. At the fixed date and time the subject connects to tecfamoo.unige.ch 7777 with a special login and password. In this way he/she logs in directly into the setting of the experiment (the hotel). Subjects are requested to declare their MOO skilland the Social Status (always student). The partner /confederate describes his social status and MOO skillas well. The researcher makes sure the subject pays attention on the MOO advanced commands, available only for this game (Follow, lead, dont_follow, dont_lead, and ask), and starts interaction.
* Interaction Phases. During the three phases the role of the confederate is to activate certain type of behaviour, relative to the dependent variables, in others words to take or not the initiative and to collaborate or not. At the first step the confederate asks what to do and then if to do it together or not; at the second step he/she asks how to use the notebooks.

### **Conflict Phase.*

During this phase the researcher generates a conflict between the subject and the confederete by asking the first one who he/she thinks killed Mona Lisa, and telling him that his partner thinks differently.

### *DATA*

This study will use both quantitative (5 subjects for each case) and qualitative data.
Quantitative data: the reactions to the confederate's questions will be observed; the number of orders; taking initiatives; affirmations; reponses to the questionnaire (see appendix B).
Qualitative data: the flow of the interaction will be described, along with specific and peculiar features of each interaction, and the style of interaction.

## BASIC REFERENCES


Curtis, P., (1992) ´ Mudding : Social phenomena in text-based Virtual Realities, in Proceedings of the 1992 Conference on Directions and Implications of Advanced Computing, Berkeley, May 1992. Also available as Xerox Parc Technical Report CSL-92-4.

Fulk, J., Schmitz, J.A., Schwarz, D. (1992) The dynamics of context-behaviour interactions in computer-mediated communication. In Lea M. (Ed.) Contexts of Computer-Mediated Communication, Hemel Hempstead, Harvester Wheatsheaf, pp. 7-29.

Mantovani, G. (1995) Comunicazione e Identit‡. Il Mulino, Bologna.

Mugny, G., PÈrez, J.A. (1994) Strategies d'influence soicla et de persuasion: la theorie de l'elaboration du conflict. In G. Guingouain & F. La PouÈtier (eds.) A quoi sert aujourd'hui la psychologie sociale? Rennes: Presses Universitaires de Rennes.

Spears, R., Lea, M. (1992) Social influence and the influence of the ´ social ª in computer-mediated communication. In Lea M. (Ed.) Contexts of Computer-Mediated Communication, Hemel Hempstead, Harvester Wheatsheaf, pp. 30-65


## APPENDIX A : SCRIPT OF THE THREE INTERACTIONS PHASES AND THE CONFLICT PHASE

### *Interaction Phase 1*

* Initiative Taken.
The confederate asks the subject how are they going to proced. The **Confederate** asks:

*´ So, what's the plan? ª*
- 2 responses are possible:

a) - The subject takes the initiative giving a suggestion.
In this case the **Confederate** asks:

*´ Do we want to go/do it together or do we want to split? ª*
- 3 responses are possible:

a1) to go together. Then the **Confederate** asks:
*´Who goes /does it first? ª*

a2) to split. Then **Confederate** can:
- look at the body/gun/ask the kolonel about the gun
in such way it will find out finding the time the gun has been stolen

OR if the subject does the action descrideb above:
-look at the resto (sign)/ask Hans about MonaLisa in such way it will find out the exact time of the murder

a3) I don't know. In this case the confederate forces the subject to make a decision ba asking again (using different words) the question.
----Here will be measured **when** the subject contacts again the confederate----

b) - The subject doesn't take any initiative and let the confederare make decision! The **Confederate** will suggest to look at the body and the gun and ask the kolonel (which is the
owner of the gun) about the gun. In this way it will find out when the gun has been stoled.

Then the question a1) will be asked.

**---------- after 10 minutes (more o less) --------------**

* Collaborative Work.
The **Confederate** asks the subject to make clear what to do with the notebooks, if any previouse action or declaration has already been made by the subject in regard to this. The **Confederate** asks:

*´ What do we want to do with the notes ? ª*

3 possible answers are possible:
b1) The subject looks up the confederate's notes.
In this case the **Confederate** will ask:

*´ Can I look at your notes*? ª

b2) The subject looks up his own notes.
In this case the **Confederate** doesn't do anything

b3) The subject doesn't want to use the notes.
In this case the **Confederate** doesn't do anything

---

***Interaction Phase 2 ------------ after 20 minutes (more o less) -----------------------***

* Initiative Taken.
The confederate asks the subject again how to proced. The **Confederate** asks:
*´ What we want to do next? ª*
- again 2 responses are possible:
a) - The subject takes the initiative giving a suggestion.
In this case the **Confederate** asks:

*´ Do we want split or should we go further together?? ª*
- 3 responses are possible:

a1) to go together. Then the **Confederate** asks:
*´Do you want to go ahead? ª*

a2) to split. The **Confederate** can:
- question people in order to find out the exact time of the murder IF this is not already done in the previouse phase and IF the subject is doing something else.
OR if the subject does the action described above:
- check for alibis (talk to Rolf Loretan and/or to Lisa Jones)

a3) I don't know. In this case the confederate forces the subject to make a decision ba asking again (using different words) the question
------Again will be measured when the subject contacts the confederate-------

b) - The subject doesn't take any initiative and let the confederare make the decision! The **Confederate** will suggest to question people in order to find out the exact time of the murder (IF this is not already done in the previouse phase and IF the subject is going something else) otherwaise to check for alibis (talk to Rolf Loretan and/or to Lisa Jones)

Then the question a1) will be asked.

**-----------after 25 minutes (more o less) --------------**

* Collaborative Work.
The **Confederate** asks the subject again about the notes if any decision about procedures is already taken by the subject. The **Confederate** asks:
*´ What do we want to do with the notes now? ª*

3 possible answers are possible:

b1) The subject looks up the confederated notes.
In this case the **Confederate** will ask:
*´ Can I look at your notes*? ª

b2) The subject looks up his own notes.
In this case the **Confederate** doesn't do anything

b3) The subject doesn't want to use the notes.
In this case the **Confederate** doesn't do anything

---

***Conlict Phase***

The **researcher** asks the subject to give a first personal guess about who killed Mona Lisa.
The researcher says:
*´ Sorry, to interrupt you, but I need your first personal guess. Who do you think killed Mona Lisa? ª*

When the subject answers, the **researcher** says:
*´ Thank you for your guess. Your partner thinks is ........ Now please, go ahead because time is going to finish! ª*

---

***Interaction Phase 3 ----------------- after 30 minutes (more o less) ------------------------------***

* Initiative Taken.
The confederate asks the subject again how to proced. The **Confederate** asks:
*´ Well, what do we want to do now? ª*

- again 2 responses are possible:

a) - The subject takes the initiative giving a suggestion.
In this case **Confederate** asks:

*´ We'll do it/go there together or separated?ª*

- 3 responses are possible:

a1) to go together. Then the **Confederate** asks:
*´Who goes /does it first? ª*

a2) to split. Then **Confederate** can:
- check for alibis (talk to Rolf Loretan and/or to Lisa Jones) IF this has not already done in the previouse phase and IF the subject is going
something else and IF it is not done during the previous phase.
OR if the subject does the action descrideb above:
- check the painting and the insurance

a3) I don't know. In this case the confederate forces the subject to make a decision by asking again (using different words) the question

-- Will be misured when the subject contact again the confederated ---

b) - The subject doesn't take any initiative and let the confederare make decision! In this case the **Confederate** will check for alibis (talk to Rolf Loretan and/or to Lisa Jones) IF this has not already done in the previouse phase and IF the subject is going something else OR check the painting and the insurance.

Then the question a1) will be asked.

**------------------------------------after 35 minutes (more o less) -----------------------------------**

* Collaborative Work.

**Confederate** asks the subject again about the notes if any declaration has been made already by the subject. The **Confederate** asks:

*´How about the notes? ª*

3 possible answers are possible:

b1) The subject looks up the confederated notes.
In this case the **Confederate** will ask:
*´Can I look at your notes*? ª

b2) The subject looks up his own notes.
In this case the **Confederate** doesn't do anything

b3) The subject doesn't want to use the notes.
In this case the **Confederate** doesn't do anything

**---------------------------------------- after 40 minutes ----------------------------------------------**

**Researcher** says:
*´40 minutes are over! Please tell me who do you think is guilty and why? ª*

## APPENDIX B: QUESTIONNAIRE

At the end of the experiment, before to leave the MOO session, the subject will be requested to answer to the following questionnaire:

1) Where did you read the ´ Call for Subjects ª?
________________________________________________

2) In which MOOS did you already play?
a)______________ b)______________ c)______________ d)______________

3) For statistical reasons we would like to know some of your personal data.
Age _______ Gender F___ M___

4) Could you please give an estimation of the level of difficulty of the game?
From 1 (very eays) to 7 (very difficult)

5) Please, give an estimation of how much your partner has been collaborating with you?

From 1 (not at all) to 7 (very much)

6) Please, give an estimation of how much your PARTNER has been competitive?

From 1 (not at all) to 7 (very much)

7) Could you say, approsimatively, how much was YOUR contribute to the solution of the task?

From 1 (not at all) to 7 (very much)

8) Could you say, approsimatively, how much was the contribute of your PARTNER to the solution of the task?

From 1 (not at all) to 7 (very much)

9) How much do you think was YOUR competence in this task?

From 1 (not at all) to 7 (very much)

10) How much do you think your PARTNER was competente in this task?

From 1 (not at all) to 7 (very much)

## APPENDIX C: CALL FOR SUBJECTS

The Psychology and Science of Education Faculty at the University of Geneva is looking for 18-30 years old graduate and undergraduate students in any discipline to participate in a ~40-minute experiment on a MOO.

The experiment is aimed at studying interaction in the MOO. You will be asked to play a fun game where you could show your talent in collaboratively solving a murder mystery -- discovering crucial details and a solving difficult problem with a partner detective.

Whoever is interested in playing the game with us, please send an email messagge to Ligorio@fapse.unige.ch with a subject line "Call for Subjects", and we will set up a time and partner and give you instructions. Alternatively, you can connect to TECFAMOO (tecfamoo.unige.ch 7777) as guest, and contact or send moo mail to kalimero (#2460).