

### **III Methodology**

This chapter will review the steps that were followed throughout the study. This chapter along with the literature review will shape a clear base for understanding how the results were obtained and the topics of the discussion. The first question that the study aims to answer is if the respective difficulties of the SP and the NSP found in linguistic communication can be found in extra-linguistic communication as well. Secondly, how do the specific features of extra-linguistic communication affect its comprehension compared to that of linguistic communication; and do these features affect a person's ability to understand different pragmatic phenomena (such as simple communicative acts, which follow the standard path; complex communicative acts, which are two or more subsequent simple communicative acts ironies, deceits and failures) in different ways. Finally, the third question the study aims to answer is how a linguistic and a cultural change may have affected the results of the study; and which differences between the results obtained by Bara et al's original study (2001) and the results of this replication can be explained by considering these factors. The aim of this chapter is to provide the limitations of the study in addition to an explanation to how the data collected as well as how the information obtained was analyzed.

#### **3.1 Data Collection**

Although there were several limitations concerning the participants and the development of material, especially in the case of the scenes for the study's task,

these limitations were faced and overcome. In this section the materials as well as the protocol for the selection test and the study's task are explained.

### ***3.1.1 Participants and selection test***

As it was stated before, it is a challenge to perform a study with clinical participants in Mexico because of the long protocols for getting authorization and the difficult conditions within public hospitals. Considering the challenge and the conditions concerning the clinical participants, the participants suffering of a closed-head injury were chosen before the control group participants. This way the control group participants could be sorted out to match (as much as possible) the age, socio-economic status, gender and education level of the closed-head injured participants. For choosing the closed-head injured participants the first step was to interview the possible participant's attending doctor. This interview consisted on obtaining her opinion of which one of the patients could become participants for the study. She was given several limitations which were previously considered such as the age range for having participants with optimal brain functions (21 – 60), the participants must be able to read simple sentences (preferably they should have at least a elementary school degree), the participants must not have neurological impairments previous to the closed-head injury and the participants must not suffer from aphasia nor severe motor impairments due to the closed-head injury. These characteristics were imperative so that the participants were physically able to perform the task and the variables that could affect the results would be minimal.

After the interview the attending physician provided five possible participants of various ages and both genders. The next step for choosing the clinical group for the study was to apply the selection test to the patients proposed by the attending doctor. The selection test applied to the participants suffering of a closed-head injury so that these participants could be considered part of the study's clinical group had the intention of realizing if those participants were able to recognize different mental states by using extra-linguistic communication. The participants for the study needed to understand extra-linguistic representations of mental states because, as mentioned before, mental representations of the world and mental states (such as feelings) are a more primitive and simple aspect of communication and recognizing and sharing mental states are the basis of successful communication. If the participants suffering of a closed-head injury's cognitive functions were so severely damaged that they would not be able to recognize a shared representation of a mental state (which is a simpler task than understanding a communicative action) then they would probably not be able to recognize a more complex message using more complex means. By performing this selection test on the participants suffering of a closed-head injury a maximum of deterioration of the cognitive functions was established for the participants who made part of the clinical group. For performing this task five different images (faces) were chosen from the internet. Each face showed a common mental state (happy, sad, angry, scared and surprised). These images representing mental states are originally used in kindergarten classes for teaching young children to recognize the most typical mental states and to help them become conscious of "how are they feeling today". Consequently, these five mental states are

recognizable since a very early age and a grown-up person should not have any problems recognizing any of the five mental states. The images were shown to the participants, one by one. Each one of these images showed a different mental state. The participants were asked to tell what was the feeling or mental state that each face was showing. The answers given by each participant suffering of a closed-head injury were noted on a control sheet (Appendix C). Only the participants that gave five out of five right answers were considered viable for the study's task. This selection test was very important because the participants for the study's task needed to (at least) be able to recognize that the face was intending to communicate something and they needed to have basic shared mental representations (such as identifying emotions). These were the two requirements for becoming a participant in Bara et al.'s (2001) original study. One of the possible participants for the clinical group was not able to perform the selection test because of a severe nearsightedness and consequently he would not be able to watch the scenes. From the four possible participants left only two of them passed the selection test: Liliana and Vicente. Liliana was a 32 year old woman who worked at a travel agency and finished a psychology bachelor's degree. Vicente was a 59 year old bus driver who finished elementary school.

As mentioned before, the clinical group participants were chosen before the control group participants so that the control group could match as close as possible the clinical group. As a result, the control group participants Claudia and Ernesto were chosen according to the characteristics of the two closed-head injured participants. The participants who were part of the control group were

contacted by the researcher among her acquaintances so that they could match as best as possible the characteristics of the clinical group. Claudia was a 31 year old secretary who finished a bachelor in communications and Ernesto was a 60 year old taxi driver who did not finish high school. Neither one of them has suffered head injuries nor have neurological genetic problems that they know of. The four participants work and have lived all their lives in Mexico City. Mexico City, as well as Torino, Italy, is a big city with large population and international influence. This is relevant to the study because, as it has long been known, the type of area in which people live in may affect their way of life and consequently, their culture.

Finally, there were only two closed-head injured participants (Liliana and Vicente) and two control group participants (Claudia and Ernesto). The characteristics of gender, age and education, among others between the control group and the clinical group were matched. Furthermore, the deterioration of the cognitive functions of the clinical group did not pass the limit established by the selection test. As a consequence, this assured that the clinical group was able to perform the study's task.

### ***3.1.2 Task and protocol of the study***

For collecting the data, both groups of participants performed the same task; this way we had the same bases to contrast the clinical group with the control group, compare the results and discuss the differences and the effects that a closed-head injury could have regarding communicative competence using extra-linguistic communication. This task consisted on watching sixteen scenes; each one

representing a communicative action. Secondly, after watching each scene, the participants needed to choose between four photographs of the last frame of the scene. Each photograph contained a balloon representing one of the actor's thoughts verbally as showed in appendixes E - I.

Each one of the sixteen scenes, which were part of the task lasted fifteen to thirty seconds. The sixteen scenes used for this task were divided into five different groups:

- three successful (the intended meaning of the communicative action was understood by the actor receiving the action) simple scenes, which followed a standard path and described in Appendix E
- three successful (the intended meaning of the communicative action was understood by the actor receiving the action) complex scenes which followed the standard path described in Appendix F
- three successful (the intended meaning of the communicative action was understood by the actor receiving the action) deceit scenes which followed a non-standard path described in Appendix G
- three successful (the intended meaning of the communicative action was understood by the actor receiving the action) irony scenes which followed the non-standard path described in Appendix H
- four non-successful (the intended meaning of the communicative action was not understood by the actor receiving the action) scenes (one for simple

communicative action, one for complex communicative action, one for deceit and one for irony) described in Appendix I

The scenes that were considered simple had only one character performing a communicative action whether the scenes considered complex had two or three characters performing a communicative action. As mentioned in the limitations section, for this research there were only three actors (two female and one male) for all the scenes due to feasibility reasons and none of those actors were children.

In addition, four photographs representing the last frame of each scene were printed and a balloon simulating the actor's possible thoughts (one different option per photograph) was pasted near the actor's head. An example of the set of four photographs corresponding to a scene is found in Appendix A. The photographs corresponding to each scene were not attached to this thesis because otherwise the appendix section would be too extensive, but a description of each scene including the different contents of the balloons in the photographs can be found on Appendixes E to I. A control sheet (Appendix J for the control group and Appendix K for the clinical group) was printed for each participant for checking the participants' results while performing the study's task. Each control sheet had four columns with the possible options for each scene as A, B, C or D option and an extra column with the number of the scenes (1 to 16). Replicating the original study's protocol, the correct answer for each scene was always option A. The possibility of the results of the study being affected once the participants have realized the pattern was considered; but it was discredited once the results were analyzed.

The protocol of the study's task consisted on the following. Individually, each participant watched the videotape in which the sixteen scenes of communicative actions are shown. This task is performed individually so that the participants will be able to focus on the scenes and not be distracted by other participants. Furthermore, the participants were not able to negotiate the meaning of the communicative action among them. The videotape was stopped at the end of each scene for giving the time to the participant to choose between the photographs. No scene showed the actor B's reaction to the actor A's communicative action because this could be used as a clue to what was the intended meaning of the communicative action shown in the scene. After each scene the four photographs showing the last shot of the scene were offered to the participant. For each scene, the participant needed to choose the photograph that contained the balloon which they thought described what the actor was thinking after the communicative action had occurred. Consequently they had to choose the communicative action they believed happened in each scene. After the participant had chosen a photograph, his or her choice was noted in the control sheet and the videotape continued to play the next scene.

### **3.2 Data analysis**

Collecting the data is only the first half of the study; the second half regards how the data was analyzed and consequently how it was interpreted. The study's data



analysis was divided into two parts: analyzing the data from the study task and comparing the study's results with other studies.

### ***3.2.1 Analyzing the data from the study's task***

The analysis of the data collected from the study's task consisted of two parts: analyzing the results of each group as a whole and comparing the results of both groups. For analyzing the results of each group the answers were first divided into five different groups depending on the nature of the communicative action that the scene was showing:

- Simple successful standard path
- Complex successful standard path
- Deceit as a successful non-standard path
- Irony as a successful standard path
- Non-successful communicative actions (standard and non-standard paths).

Secondly, the percentage of each type of communicative action per group was obtained and the difference between the control group's percentage and the clinical group's percentage was described. Finally, the differences and similarities between the percentages of the control group and the percentages of the clinical group were discussed. For this discussion the probable difficulties of understanding each specific communicative action were considered.

### ***3.2.2 Comparing the study's results with other studies***

The results obtained from this study were compared to the results of previous studies of Bara et al. (1997) considering the difficulty of comprehending the standard path and non-standard path for closed-head injured participants using linguistic communication. Additionally, the possible specific features of extralinguistic communication that affect its comprehension compared to that of linguistic communication were discussed. Secondly, the present study's results were compared with the original study's results (Bara et al., 2001). The differences between the original study and the present study were considered regarding the possible explanations due to language variation and culture variation. In the case of language variation, the closeness between Italian and Spanish morphosyntactic and lexical features was considered such as their pro-drop pronouns characteristic and their specific/unique conjugations, which correspond to gender and number. The proximity between these two languages may result in a minimal difference between the means of receiving the instructions of the task, which the researcher provided verbally and the sentences contained within the balloons of the photographs. Concerning cultural variation, Hofstede's (as quoted by McDaniel et al., 2007) cultural dimensions were considered for Italian culture and Mexican culture: power distance index (the extent to which the less powerful members of organizations and institutions, such as family, accept and expect that power is distributed unequally), individualism versus collectivism (the degree to which individuals are integrated into groups and the level of importance individuals give to being part of these groups), masculinity versus femininity (masculinity represents a very assertive and competitive culture; on the other side, its opposite, femininity, represents a modest and caring culture), uncertainty avoidance index (indicates to

what extent a culture programs its members to feel either uncomfortable or comfortable in unstructured situations) and long-term versus short-term orientation (values associated with long-term orientation are prudence and perseverance; values associated with short-term orientation are respect for tradition, fulfilling social obligations, and protecting one's 'face').

### **3.3 Limitations**

For better understanding the present study it is important to mention several limitations that were faced before we were able to apply the study to the participants. The limitations that were faced throughout the study were the cause of several decisions taken concerning the participants and the materials. Consequently these two types of limitations were the cause of various differences between the original study's protocol and the present study.

#### ***3.3.1 Limitations concerning participants***

The first limitation was obtaining the participants suffering of a closed-head injury's consent. Although closed-head injuries are considerably common, gaining access to people that have suffered such an injury was found to be a difficult task. To gain access to people suffering of closed-head injuries an attending doctor of a public traumatology hospital was contacted. The attending doctor is in charge of the ER of this hospital and was of mayor help not only for contacting and gaining access to people suffering of closed-head injuries but to understand which the implications of such a trauma were. In contrast with the authors of the original

study (Bara et al., 2001), the researcher who performed this replication is only involved in the linguistic field and not in the medical field. As a consequence, the attending doctor's guide was imperative for understanding the effects of a closed-head injury and how these effects could affect the research. Although the researcher counted on this asset, according to the Mexican law, every study concerning participants from a hospital has to be presented to the hospital's board who analyzes the case for approximately half a year and who may or may not grant access to the hospital's patients. The first step for the hospital's permission to be granted was to send a letter to the hospital's board (Appendix D) explaining the main objectives of the research. Researchers need to wait for authorization, which as it was mentioned before may take six months maximum and may not be granted. Fortunately, the attending doctor who was helping the researcher with this study contacted the hospital's board personally and an extra-official permission was granted for accessing the hospital's patients after a month the letter was sent to the hospital's board. The second limitation, which was faced concerning the participants was that, even after surgery, closed-head injured patients do not generally spend more than a week in the hospital. In the case of this study, there was a selection test, which needed to be applied to the participants suffering of a closed-head injury so that these participants could be considered part of the study's clinical group. Therefore, the time between applying and analyzing the selection test to the participants suffering of a closed-head injury and applying the study's task was considerably short. This was a problem because the researcher of this thesis lives in a different state and consequently, it was not easy for her to move across states lines constantly.

### **3.3.2 *Limitations concerning the material***

There were several differences between the materials used in Bara et al.'s original study (2001) and the materials used for this replication. Although the development of the materials was intended to follow as close as possible to the original study of the material's description, various limitations in this area were faced as well. The materials which, suffered changes were the 16 scenes representing the communicative actions. These scenes were described in the original study's appendix (Bara et al., 2001, p. 90 – 93). This description was equivalent to the description of this research's scenes shown in Appendixes E to I. The main differences between the original study's scenes and this study's scenes were the actors and the props used in the videos. While the scenes of the original study were performed by 35 different actors from which several were children having from two to three actors per scene, in the case of this study there were technical problems that caused several consequences. In the first stages of this replication the videos were filmed using 35 different actors although none of them were children because the researcher had no access to young children. Unfortunately, due to a technical malfunction the video containing the 16 scenes acted by 35 different actors was lost and the scenes were filmed for a second time. Because of time related reasons the researcher was not able to obtain the help of 35 people to re-tape the scenes, as a result the each scene was filmed using the same two or three actors (depending on each scene). None of these actors were children. Another limitation concerning the materials was the props that were used for the original study's scenes. Bara et al. (2001) used several props in their scenes that

the researcher of this study had no access to and because of economic reasons were not purchased. Some examples are: a glass vase, a comic-book, a drill, a book, among others. For this reason some of the scenes were different from the scenes described in the original protocol but the specific communicative action that was described in each scene was maintained and therefore, the present study was limited to partially replicate the original study, which was not the researcher's intention. For example, one of the original study's deceit scenes was described as following:

“Two children are playing in a room. While they chase each other around a table, one knocks down a vase that is placed on it. Alarmed with the noise, their mother enters the room and looks at the scene. The child who has broken the vase looks back at her and points at the other child.” (Bara et al., 2001, p. 91)

In the case of the present replication the same scene was performed as following:

Two girls and a boy are sitting on a table. One girl and the boy are reading magazines. The other girl is writing on a notebook. The girl who was writing on the notebook stands up and walks away. The other girl accidentally knocks down a glass of water, which was on the table and gets the notebook wet. The girl who was writing on the notebook comes back and frowns. The girl who knocked down the glass points at the boy.

It is believed that the changes due to the material's limitations did not affect the data resulting of this replication.

In every research limitations are faced and problems are solved as best as possible whether they are technological, economical bureaucratic or other. Furthermore, the hospital in which the study was performed was a public hospital. In the case of this particular replication the limitations faced concerning the participants played an important role on the study's timetable, while limitations concerning the materials caused differences between Bara et al.'s original study's scenes (2001) and this replication's scenes. Additionally, a third limitation which was faced through the application of the study's task was that the public hospital in which the clinical participants performed the task was full and several patients need to share the same room. Consequently, the participants within the hospital were surrounded by distractions during the previous test and the study's task.