

I Introduction

In my experience as a student, for learning a language, two main subjects are involved: the language's grammar and the language's lexicon. From this point of view, language in general is considered as a set of rules (grammar) applied to a set of words (lexicon). But if we consider language as the means of communication and not merely as a subject of study, then language may have a more complex definition. According to Hymes (1972), *linguistic competence* (the rules of language or grammar) is just a part of language. He considers there is another part of language, another competence, which is closely related to the rules of social interaction and appropriate social behavior. This *communicative competence* is what enables human beings to communicate in an appropriate and socio-cultural significant manner. According to Gleason and Ratner (1998), speakers not only need to show to other speakers of their community that they know how to create sentences in a structured way, but that they know how to use language in an appropriate manner according to the current situation they are in as well. The situation or *context* in which language is being used is tackled by *pragmatics*. But language is not the only means for accomplishing human communication. *Extra-linguistic communication* can be defined as "actions such as gestures or pointing when they are intentionally performed by an agent with the goal of overtly conveying a communicative meaning" (Bara et al., 2001, p. 79). In consequence, humans have two tools for communicating. One of these tools is language and the other, which serves the same communicative function as language, is extra-linguistic communicative actions. But, can there be

communicative competence within extra-linguistic communication? In other words, can communicative competence be present when words are not? If we consider language according to Hymes (1972) the answer would be yes. It can be claimed that it is possible to consider communicative competence as a feature of language, which is independent from linguistic competence and has the role of an umbrella covering linguistic communication and extra-linguistic/non-linguistic communication as well. Therefore, a person could have a communicative performance without using words and consequently, a person can have a pragmatic competence and performance by using extra-linguistic communication.

1.1 General area of research

According to Givón (2009), language is the main characteristic that defines human beings. No other species in the world has been able to develop a code(s) for fulfilling communicative needs. We, *Homo sapiens sapiens*, are the only ones that are able to use language creatively to communicate an infinite amount of ideas in so many different ways. In other words, language is a human-specific characteristic. But why have we developed such a tool? The answer is simple; because it is useful. Every single tool that humans have invented and every single genetic change that we have acquired throughout the years serves a specific purpose. It has a function that covers a need. Spears were invented to help hunters who needed to provide food to their communities. Money was invented to facilitate the transaction of goods. Clothing, although now also covers a fashion

need, was invented to keep human beings protected from the weather. Our opposable thumbs enable us with two unique movements that facilitate the construction and use of tools. The erect bodies we have today freed our hands to manipulate objects. Language as well, was born out of a need; the need to improve communication among groups of people. It is, by all accounts, our most precious tool because by improving communication we have been able to improve many (if not all) the other aspects our lives. If language had never existed, human society as we know it would have never been possible. Therefore, this research approaches language considering it a tool with a specific function. This function is to communicate information in a successful, easy and fast manner. In consequence, this research considers linguistics from a functionalist point of view. It focuses on its purpose of communicating in a broad variety of contexts such as music, social interaction, recording history, education, exerting feelings, planning future events, making people laugh and in playing.

This research considers several areas of linguistics, which are pragmatics as “the rules of how to use language appropriately in social settings” (Gleason & Ratner, 1998, p. 3), pragmatics and cognition as “the theoretical and empirical study of the mental events involved in human communication” (Bara & Tirassa, 2000, p. 10), neurolinguistics, which “investigates the anatomical and physiological correlates of language behaviors” (Gleason & Ratner, 1998, p. 4) and neuropragmatics, which according to Schönle & Stemmer (2000) is how the brain comprehends and produces pragmatic behavior. In other words, this research will

consider the relationship between the mind and language from its communicative function approach.

According to Rice and Warren (2005) there is an increasing need to produce studies and articles based on interdisciplinary areas such as linguistic acquisition, cognitive development, genetics, neurocortical processes, cognitive neurolinguistics, behavioral phenotypes, and language intervention to be able to understand the causes and nature of language disorders. “Theories in pragmatics are typically analytical and developed on autonomous grounds; the neurosciences, and in particular the neuropsychology of mind/brain impairments, provide them with a natural empirical test bed” (Bara & Tirassa, 2000, p. 10). In other words, the lack of interdisciplinary empirical research for explaining the relationship between the brain and language, especially from a communicative perspective is a general problem of doing linguistic research with clinical participants. The aim of this research is to fill a gap in the existing research.

This thesis is based on partially replicating Bara et al.’s study (2001) entitled *Neuropragmatics: Extralinguistic Communication after Closed Head Injury* in a different context. While the original study was applied in Torino, Italy, this study will be applied in Mexico City, Mexico.

1.2 Specific area of research

The topic of communicative competence of closed-head injured participants and extra-linguistic communication has been previously approached by Bara et al.’s

study (2001). The specific aim of their study was to understand the effect of a closed-head trauma in context understanding. They used sixteen scenes of communicative extra-linguistic actions. The first task was to watch a scene of the above mentioned and secondly the participants were shown four photographs of the last picture of the scene they just watched. These photographs included a balloon near the head of the character that performed the communicative action representing the character's thoughts verbally (a different thought for each photograph). An example of the four different photographs shown for one scene can found in Appendix A. The participants' task was to choose, out of the four photographs, the one representing the intention that they believed the character had. After the participants have chosen one out of the four different photographs proposed to them, they performed the same task with another scene and the four corresponding photographs of the scene they watched. The same task was performed for each one of the sixteen scenes of the study. There was only one correct choice for each four photographs corresponding to a scene. The possible correct choices represented the correct understanding of a simple communicative act, a complex communicative act, a deceit, an irony or a failure to understand a communicative act depending on the scene. The results of the participants suffering of a close-head injury were compared to the results of the control group, which followed the same protocol. This comparison showed a significant shift of context comprehension concerning the participants with closed-head injury specially related to understanding non-standard paths in a communicative action. A standard path is a sequence of inferential phases that is generally followed to understand an utterance or a communicative action. This sequence according to

Bara et al. (2001) consists of five phases or steps. From each phase an inference is obtained. This sequence of inferential phases has a specific order and each phase is dependent of the inference resulting of its previous phase. These phases are the inferential steps that need to happen (in general) from the moment the utterance or a communicative action is received to the moment a response is given:

- 1) Understand the expressive meaning of an act (Ex: Is this a request?)
- 2) Understand the actor's meaning (Ex: what is the request about?)
- 3) Create a communicative effect (Ex: how does this specific request affect me?)
- 4) Create a reaction (Ex: What is my intention towards this request?)
- 5) Generate a response (Ex: I comply with the request.)

A non-standard path is taken when a person chooses to ignore or block an inferential phase of the standard path. The theory behind standard paths (SP) and non-standard paths (NSP) is further explained in chapter two. Furthermore, the authors of the study that was replicated for this thesis (Bara et al., 2001) considered that the shift between the control group and the participants suffering of a closed-head injury is due to a cognitive damage, which affects comprehension of communicative meaning (communicative competence), but not necessarily comprehension nor production of linguistic features (linguistic competence and performance). In other words, there is a neuropragmatic malfunction even if a

neurolinguistic malfunction (semantics, morphology, syntax and phonology) is not present.

1.3 Research strategy

For this research in which Bara et al.'s (2001) study is replicated, two different hypotheses have been considered:

- If the results of this replication would be significantly alike to the results of the original study, this would support Bara et al.'s (2001) original results and show that the variables of language and culture had no impact in this case.
- If the results of this replication would be significantly different from the results of Bara et al.'s (2001) original study, depending on how the results would be different, a possible explanation could be provided in the forth chapter.

This research considers two different types of research questions. Firstly, it includes the two research questions from the original study (Bara et al., 2001, p. 81):

- “Is the difference between the respective difficulties of the standard and the nonstandard paths we found in linguistic communication also found in extra-linguistic communication?”

- “How do the specific features of extra-linguistic communication affect its comprehension compared to that of linguistic communication? And do these features affect different pragmatic phenomena in different ways?”

Secondly, it considers the cultural variation and language variation between Bara et al.’s original study (2001) and this thesis’ replication of their study. These two types of variation are considered as part of the research questions because they are the main differences between the participants of the original study and the replication:

- Are there any differences between the data collected in the original study and the data collected in the present study?
- Which differences (if any) between this study’s results and the original study’s results (Bara et al., 2001) can be explained by considering language variation (differences and similarities between Spanish’s and Italian’s lexicon morphology, and syntax)?
- Which differences (if any) between this study’s results and the original study’s results (Bara et al., 2001) can be explained by considering culture variation (differences and similarities according to Hofstede’s cultural dimensions)?

Two theoretical assumptions were considered by the authors of the original research (Bara et al., 2001). Consequently, these assumptions are considered in this research as well:

- The participant possesses only one communicative competence. This competence manages linguistic and extra-linguistic/non-linguistic forms of communication. Moreover, communicative competence's nature is neither linguistic nor non-linguistic, but mental/cognitive. Consequently, the physiological and pathological functioning of this competence does not depend on linguistic competence and therefore, if this competence is damaged (as it is hypothesized in the case of participants with closed-head injuries) a shift in the participant's communicative performance would be present whether linguistic or extra-linguistic elements are being used for communicating with others.
- Every superficial means of expression that corresponds to a type of communicative action has unique features, which make it easy to generate the expression and to understand the communicative meaning it is expressing. In consequence, differences in communicative performance that correspond to a specific intended meaning should be found when extra-linguistic/non-linguistic communication is considered.

1.4 Motivation/Justification for research

It is certain that more empirical studies are needed for fully understanding the relationship between language and the human brain. Furthermore, empirical studies in the areas of neurolinguistics, cognitive linguistics and neuropragmatics are needed to better understand linguistic disorders, their causes, their effects and

even (maybe) to find their cures. This knowledge could improve medical care especially in the area of neurology and provide better treatments to patients suffering of neuropathologies.

This research, as well as the original research, “is concerned with the decay of communicative abilities after head trauma” (Bara et al., 2001, p. 72). The aim of the original study done in 2001 was to investigate the comprehension of some communicative actions with subjects suffering of closed-head trauma by using extra-linguistic communication. The aim of this replicated study is not only to partially support or to complement Bara et al.’s (2001) results, but to compare the results of the original study with the results of the present study by changing two specific variables: language (Italian – Spanish) and culture (Italian culture – Mexican culture). Additionally, in the words of Bara et al. (2001, p. 72) and according to the original study, “the impairment of communication that is observed in this disease [closed-head injury] is particularly interesting in that it is often neither linguistic in nature nor related to a linguistic deficit”.

In the area of neurolinguistics, a trend is evident. A highly significant part of this area’s empirical studies are concerned with linguistic (structure) characteristics of language. Various types of aphasia have been discovered and investigated. Even so, very little research has been performed concerning the communicative (pragmatic) competence and performance of patients suffering of head traumas; which, as Bara et al. (2001) show in the original study was replicated for this thesis, is a main feature of language that can also be affected by these kinds of trauma. Therefore, without research concerning communicative (pragmatic)

competence, which would provide evidence for developing a theory, researchers will not be able to provide definite answers to questions concerning pragmatics localization, its relationship on the brain with purely linguistic features, among others.

Finally, although research in the general area of neurolinguistics has started to include specific research concerning the communicative aspect of language, it is clear that much additional work will be required before a complete understanding of how and why does this phenomenon occur. This replicated study hopes to contribute to a relatively new area of neuropragmatics. Moreover, it is hoped that this study will stimulate further investigation especially in Mexico concerning this field.

This thesis is divided into five chapters consisting in: an introduction that provides the general and specific areas of research as well as the motivation justification and the research strategy of the study; a literature review that includes the mayor work in general and specific areas of this research; a methodology that explains the design, participants, materials and procedure of the study, a results and discussion section which, considers the results obtained and the analysis of the results; and a conclusion which, considers the implications, limitations and justifications of this research as well as the possible answers to the research questions previously mentioned.