II Literature Review

This chapter includes mayor work in the general areas of research as well as mayor work in the specific areas of research, which will provide the context the problem within the research literature.

2.1 Mayor work in general areas of research

There are several areas of study which concern the present study. The general areas of research that are involved in this thesis are neurolinguistics, pragmatics, neuropragmatics and finally, mental representations and the functionalistic approach.

2.1.1 Neurolinguistics

According to Gleason and Ratner (1998), there is a long history of studies of the relationship between language functioning and the brain. The authors point out that the first mentions of language impairment due to head trauma date to 3000 B.C. They consider that a trauma is “an injury to the brain produced by external force” (Gleason & Ratner, 1998, p. 53) and that the first studies on the relationship between language and the brain focused the loss of speech skills following a head trauma. These could be considered the first cases of aphasia, which is the “loss of language abilities due to brain damage” (Gleason & Ratner, 1998, p. 53). It is evident that, although neurolinguistics may seem a recent field of study, its roots are as old as language itself. The first step in the field of neurolinguistics was to

describe the various different impairments related to language and being able to differentiate them. Since the sixteenth Century, speech disorders were no longer regarded as anatomical related problems (such as a physical tongue failure) but as brain related problems, considering the human brain as the organ in charge of cognitive and mental processes. It was until the nineteenth Century that researchers began the first attempts to understand the relationship between language and brain. It was during this century that localization studies started. As a result Brocca's and Wernickle's aphasias along with other theories were proposed. According to Gleason and Ratner (1998), Brocca's ahasia or cortical motor aphasia can result of a damage of the left frontal convolution, which is better known as Broca's area. The possible outcomes of this specific damage are comprehension and/or production problems as well as hesitant and little speech and a lack of recognizable sentence structure. In the case of Wernicke's aphasia or cortical sensory aphasia, the damage is found on Wernicke's area. Patients suffering of this kind of aphasia are fluent and their speech has discernible grammar structure; but their speech does not appear to make much sense. These patients may not be aware of their disability. Since the nineteenth century, several neuropathologies that affect language have been studied giving birth to neurolinguistics as we know it today. Unfortunately, according to Bara et al. (2000), in the area of neurolinguistics most of the works and research performed have left aside the communicative characteristic of language. There have been a series of cases in which linguistic features have been observed and analyzed by comparing a control group with a group of people suffering a neurological impairment. This is a reasonable approach to discern the differences between

both groups and learn more about the effects of the pathology. But in the majority of this research, a structuralist approach has been applied rather than a functionalist approach. The preference towards this approach is natural if we consider that neurolinguistic studies have been closely related to medical and especially neurological advances; placing the peak of neurolinguistic studies in the twenty-first century and therefore under the influence of structuralism regardless of its functional and communicative characteristics. Today, more and more researchers are turning their heads to the functionalist approach concerning language and the brain. Some examples of research, which consider a functionalist approach are Bara et al's (2000) study entitled *Neuropragmatics: Brain and communication* in which communicative competence is considered as a key element for better understanding communication and the brain; and Bara et al's (2001) study which is replicated for this thesis study. In both studies the authors claim that the intention to communicate (and therefore, the communicative function of language) has a crucial role in the understanding of utterances and actions; and is a key element concerning brain injuries and their effects.

2.1.2 Pragmatics and cognitive pragmatics

According to Yule (1996, p. 3), "pragmatics is concerned with the study of meaning as communicated by the speaker (or writer) and interpreted by a listener (or reader)". Evidently it has more to do with what people mean when they use language than what they are linguistically saying with words. Pragmatics is an area of study that is highly concerned with context. Meaning can change depending on the context in which the same words are spoken. In other words,

pragmatics is the field of linguistics in charge of reading between the lines and exploring human capability of doing this task. Pragmatics, according to Yule (1996) is the study of the relationship between linguistic forms such as (syntax, morphology and semantics) and the people that are using those forms as tools for communicating a message. There are many concepts within the area of pragmatics, such as deixis, presuppositions, implicature and turn taking; but for the purposes of this research we will focus on the relevance theory. Relevance theory is a theory developed in the area of pragmatics, which is concerned with the intentions of the speaker. This theory considers two of Grice's central claims. Firstly, "an essential feature of most human communication is the expression and recognition of intentions" (Grice, 1989; as quoted in Horn & Ward, 2006, p. 607). This claim is of great importance to this research because the study is based on describing if the participants suffering of closed-head trauma are able to recognize the intended meaning of the scenes that are shown to them. In other words, the intention of this study is to explore the capability of the participants' competence concerning this claim. For recognizing the intended meaning of a communicative action, the participants of this study need to follow a standard path in the cases of simple communicative action and complex communicative action; and a non-standard path in the cases of deceit and irony. In the cases of irony and deceit, the capability of recognizing the intention of these communicative actions is the only way for the participant to choose a non-standard path. For example, in the case of irony, the participant needs to recognize the intention of the person performing the communicative action. The person performing the irony intends for the person receiving the communicative action to realize that what he or she is

expressing by performing this action is opposite to what he actually believes or thinks. In other words, that he is being ironic. Secondly, relevance theory considers another one of Grice's claims: "utterances automatically create expectations which guide the hearer toward the speaker's meaning" (Grice, 1989; as quoted in Horn & Ward, 2006, p. 607). In this case, as the study deals with extra-linguistic communication or communicative actions, the participants' task is not to create expectations by listening to utterances, which would guide them toward the meaning. What we could expect in this case is that the participants would be able to create expectations by watching the communicative actions that will be presented to them and, which would guide them toward the meaning represented by each communicative action. In the case of this study the four photographs of each scene contain expectations of what the actor receiving the communicative action in the scene believes will happen next. The participants need to match the expectation they have created in their minds as a result of watching the scene to one of the expectations verbally proposed in the photographs; and consequently, choose such a photograph as the right answer according to their criteria. The communicative actions shown in the scenes of this study were chosen by partially recreating the original study of Bara et al. (2001). The actions used in this study are not the same as described at the original study's protocol but the communicative actions (complex, simple, irony, deceit and failure) were respected. This provided the participants of a specific context, which is created by the actors interacting in the scene and from which, expectations can be created by the participants. Accordingly, communicative actions could be considered precise and predictable enough to guide the participant towards the

intended meaning of each communicative action. Furthermore, relevance theory considers that not only utterances should be viewed as relevant for accomplishing a successful communication, but that there are other observable phenomena as well as thoughts, memories and conclusions of inferences that affect the level of success of communication (Horn & Ward, 2006). Consequently to the former statement, a relationship between the mind and pragmatics can be considered. According to Horn and Ward (2006, p.608), in the area of interpretation of meaning "the most important type of cognitive effect is a contextual implication, a conclusion deducible from input and context together, but from neither input nor context alone". In the case of Bara et al.'s study (2001), one of the hypotheses is concerned with the difference between using linguistic communication and using extra-linguistic communication. In the specific case in which the input consists of extra-linguistic actions, the information provided by the context can be expected to be considerably higher than when using linguistic communication. According to the former, pragmatics and how we process information (cognition) are strongly related. The field that studies mental processes and its relationship with the communicative use of language is cognitive pragmatics. From the cognitive pragmatics point of view, "communication is a form of social activity; more precisely, it is an agent's intentional and overt attempt to affect a partner's mental states" (Airenti, Bara, & Colombetti, 1993a, 1993b; Tirassa, 1997 as quoted by Bara & Tirassa, 2000, p. 10). This statement follows a functionalist approach because, from this perception, social interaction and the intention underneath the action affect the meaning of the communicative action, even on a cognitive level. Therefore, communicative competence (the capability of being able to

communicate with others within a social context in an appropriate manner) is considered a distinct and innate cognitive faculty, which governs the domain of agent/world interaction without being neither linguistic nor non-linguistic in nature (Tirassa, 1999b as quoted by Bara & Tirassa, 2000).

2.1.3 Neuropragmatics

As already mentioned above, pragmatics deals with “the communicative use of language” (Schönle & Stemmer, 2000, p. 233) and it is also strongly related to cognitive and mental processes. This means that pragmatics focuses on how, by interacting, two or more people exchange, create or change mental representations using language or other means. On the other hand the neurosciences are in charge of the study of the brain and the nervous system. The interdisciplinary theories and studies of these two fields of study give birth to neuropragmatics. This relatively new field is in charge of exploring “how the brain and mind use language; that is how it comprehends and produces verbal pragmatic behavior in healthy as well as neurological impaired individuals” (Schönle & Stemmer, 2000, p. 233), usually approached from a cognitive perspective. This area of study tackles the use of brain mechanisms that enable a person to perform mental as well as motor actions with the aim of communicating. It also studies the environment that surrounds and triggers those mechanisms. As previously stated, a lack of interdisciplinary research is evident and consequently, as neuropragmatics is a highly interdisciplinary area, barely a handful of studies were available for this thesis. Even so, further research in this area would provide important contributions to the field of linguistics as well as other fields. For

example, Bara and Tirassa (2000) explain that neurosciences and pragmatics have opened the field to the study of neuropathologies that affect a person's communicative abilities and which not necessarily affect his or her linguistic abilities. This area has focused on performing studies with participants suffering of different neuropathologies which enable the researcher to obtain a "reliable description of the particular neuropsychological syndrome they want to investigate, in order to be able to predict its consequences on the subjects' performance" (Bara & Tirassa, 2000, p. 11). Although developing a new field of study from two well established and older fields has significant advantages for the researchers of neuropragmatics, until today researchers have not being able to develop a theoretical model of pragmatic processing. This is due to the fact that "most research in neuropragmatics has been limited to providing detailed descriptions of aspects of pragmatic abilities in brain damaged populations" (Schönle & Stemmer, 2000, p. 234). There is a strong coherent reasoning for starting to explore this field (or any other field) by describing. As it happened with the area of neurolinguistics, description is the first step to a better understanding the functions of human brain and it becomes the foundations of new theories. Consequently, the more neuropragmatic studies concerning the description of specific brain damages and their effects on communicative competence and/or performance (which are described and provided by the field of neurology) are performed, the better we will be able to understand which are the mental mechanisms involved in the communicative use of language. Several studies have been performed with a wide range of participants suffering of brain damages; some of those as the result of head traumas and some others due to genetic problems. For example, the

study that will be replicated for this research concerns participants with closed-head injuries (Bara et al., 2001). Alzheimer's patients have also been participants in neuropragmatics studies by Bara, Bucciarelli and Geminiani (1999 as quoted by Bara & Tirassa, 2000) as well as normal and neuropsychologically abnormal children in Bara, Bosco and Bucciarelli's studies (1999a, 1999b as quoted by Bara & Tirassa, 2000). In case after case, researchers have found that neuropathologies can not only impair linguistic competence and performance, but that these neuropathologies may impair communicative competence and performance as well. Additionally, in a series of cases, the cognitive approach has played an important role in neuropragmatics researches. This approach considers the degree to which cognitive systems such as attention, perception and memory or other cognitive processes affect language use and communicative skills (Schönle & Stemmer, 2000).

2.1.4 Mental representations and the functionalist approach

As mentioned in the introduction, the existence of language is based on the fact that it serves as a tool that human kind has acquired or developed with the purpose of covering a need. Language has been a way for humans to adapt and evolve for becoming stronger within their environment. But, after tackling the why of language existence, we must understand the development of language; we need to understand how language was born to understand how it works within human mind (brain). This perception of language from an adaptive approach has been covered by Givón (2009) in his book entitled *The Genesis of Syntactic Complexity: Diachrony, ontogeny, neuro-cognition, evolution*. According to Givón (2009)

language was born because people had the need of sharing information they possessed with others. Since we are born, humans (and many other species) start creating mental representations. A mental representation is “an affair of the individual mind striving to code, make sense of, interpret and construct ‘reality’, be it external, mental or social” (Givón, 2009, p.19). In other words, we start to create representations of the world that surrounds us and the world that is within us (such as feelings) which help us make sense out of the world and understand how it works. We create an internal world full of information about facts, processes, social life, etc. Dogs, for example, do the same thing. Since they are puppies they start to develop mental representations of the world. They start to understand what is a ball, what is it for, how to smell other dogs for saying hi, how to defend their territory by using body language, how to show affection or even how to accomplish a task as herding sheep. They possess a whole reality of the world and how it works within them. Not only humans and dogs are able to create mental representations but many other species perform this task as well. Language was born from the need of sharing and passing on these mental representations to others, in other words, it was born from the need of communicating our inner world with others. “Communication is primarily an interactive affair of two (or more) minds exchanging mentally-represented information; or, as is often the case, negotiating and constructing it jointly” (Givón, 2009, p. 19). In the case of humans, communication evolved by creating a code, which is language. The complexity augmented significantly during its development, starting with a pidgin and finishing by having a language including semantic, syntactic, morphological, phonological, graphological and pragmatic

features. Surprisingly, the more complex the code became the more effective it was for communicating with someone that shared the same code. For example, the simple sentence *I am happy* provides information about the mental state of the person saying the sentence. However the complex sentence *I am happy because I will have ice-cream* provides not only the same information than the simple sentence, but the cause of such mental state and information about a possible future. Givón (2009) explains that mental representation and communication are the two core functions of language, being mental representation the eldest and communication evolving constantly and acquiring complexity. Therefore, the intention of communicating is the birth-right of language. This is why communication deserves to be taken into consideration in every theory and study in the area of linguistics. In addition, the functionalist approach was a response to Chomsky's generative grammar. This approach considers grammar analysis from the function of what is being communicated. In other words, this approach considers the communication of mental representations and the intention of such representations.

2.2 Mayor work in specific areas of research

As it was stated before, there are several general areas of study which concern the present study, such as neurolinguistics, pragmatics and cognitive pragmatics neuropragmatics and mental representations and the functionalistic approach, which were covered through the first part of this chapter. Through the second part

of this chapter the specific areas of research that concern the present study are approached. These areas are closed-head injury and communication, a cognitive theory of communication, base-level and meta-level inferences, three non-standard paths (N-SP) and extra-linguistic communication.

2.2.1 Closed-head injury and communication

As it was stated before, research concerning neuropragmatics has been performed with participants suffering of neurological disabilities (due to head traumas or otherwise). By doing so, researchers have been able to compare and contrast the subjects performance with a control group and therefore describe the linguistic and pragmatic repercussions due to each disability. The study that was replicated focused on participants suffering of closed-head trauma or injury. According to the authors of the original study, “the violent acceleration which the cranium undergoes in head trauma results in two types of cerebral lesions: ecchymoses, caused by the brute force of the impact, and axonal damages and tissular sufferance, caused by the overstretching of the neurons, the blood vessels, and their supporting structures” (Bara et al., 2001, p. 73). These two different types of damages do not only affect the area of impact; the damage could affect the any part of the brain depending on the anatomy of the various structures that are involved in the trauma. As a consequence, the cognitive subsystems that are within those structures can be affected as well. In the case of closed-head traumas, the patient usually falls into a coma which could last from minutes to months. After the patient regains consciousness, a general deterioration of his or her cognitive functions, especially those related to the frontal lobes (attention, learning, memory, judgment, and

planning), can be perceived. The damage perceived in this specific cognitive function result on a high difficulty for the patient to succeed in world/agent interactions due to inappropriate associations in thought (Bara et al., 2001). Furthermore, this causes communication related problems and difficulties for the patient. "The discourse of closed-head-injured patients often is poor and confusedly organized and the flow of their conversation is hampered with irrelevant details and digressions" (McDonald, 1992; McDonald & van Sommers, 1993; Sherratt & Penn, 1990 as quoted in Bara et al., 2001, p. 74). Patients suffering of a closed-head trauma are able to produce well structured and coherent utterances; even so, the speech of patients suffering a closed-head injury can be considered redundant. They tend to over explain their ideas and repeat themselves constantly. Even after the patient has recovered his or her other cognitive functions the communicative impairment remains permanent. This specific permanent damage in the area of communication makes people suffering from a closed-head injury an interesting case for neuropragmatic and cognitive studies. For this study the clinical participants (participants suffering of a closed-head trauma) had to pass a selection test previous to performing the study's task so that they could be considered part of the study's clinical group. This selection test was performed by the authors of the original study (Bara et al., 2001) as well for selecting the clinical group. As a result, the clinical group which performed the study's task only consisted of the clinical participants who passed this selection test. The researcher of this thesis administrated the selection test to five participants suffering of a closed-head injury at the hospital where they were being treated. Only two participants passed the test and became part of the clinical

group for this study. The objective of this selection test previous to the study's task was to assure that the deterioration of the clinical participants' cognitive functions would not affect their ability to physically and mentally perform (well or badly) throughout the study. This selection test for choosing the clinical group for the study's task consisted on recognizing five different mental states. For performing this task five different images (faces) were shown to the participants, one by one (Appendix B). Each one of these images showed a different mental state (happy, sad, angry, scared and surprised). The participants needed to tell what was the feeling or mental state that each face was showing. The answers given by each participant 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. The materials and the protocol of the selection test for choosing the participants who were part of the clinical group, which performed the study's task is further explained in chapter three. Furthermore, the patients' attending physician was asked for her opinion about her patients' capability for understanding the instructions of the study and their capability of performing in the study (considering the cognitive damage as well as their motor skills). In other words, it was necessary to assure that although there was a deterioration of the cognitive functions, this deterioration would affect the participants' performance but it would not impair it.

2.2.2 A cognitive Theory of Communication

Several other articles have been published concerning cognitive theories of communication. Experts in pragmatics such as Grice (1989) and Austin (1962)

have developed different theories on how people are able to communicate with each other by using and changing their mental states (beliefs, desires and intentions). One of these theories is the theory of cognitive pragmatics developed by Airenti, Bara, and Colombetti (1993a as quoted by Bara et al., 2001). This was the theory that the authors adopted as the foundations of the original study which was replicated; therefore, it is the cognitive theory of communication that guided the replication as well. According to this theory, communication is a person's intentional attempt to affect another person's mental state in a desired way by displaying his own (Bara et al., 2001). The authors stress that the cognitive relevant phenomena can be analyzed in two levels. The first level is called the "*behavior game*". In this level, communication is viewed as a social interaction plan that is being executed by the participants. Secondly, it can be analyzed from another level, in which "communication is described as a specific sequence of defeasible [they can be blocked or ignored] inferences" (Bara et al., 2001, p. 74), which create the "*conversation game*". These inferences allow the participant to generate a relevant response to the message received. In other words, if the "*behavior game"* would be the stage on which communication happens, the actors would be the participants in the conversation and the dialogues of the play and what is inferred from the dialogues are delimited by the stage but the stage can be modified by the actors throughout the play. For example, it would make no sense to perform a play about trains having the actors on roller-skates on a stage that looks like the front part of a pirate ship; but the actors may change the ship into an island as they have arrived ashore. The *conversation game* can be divided in five steps or inferential phases that need to happen from the moment the utterance is

received to the moment a response is given. The first step is to understand the expressive meaning of the act; for example “this is a request”. The second step is to understand the actor’s meaning; for example what is the request about or what is the other participant asking me to do. The third step is the communicative effect, which means that understanding that there has been a request and what the request is about has an effect on the person receiving the request. He or she is modified and now has to decide what to do next; comply to the request and play the conversation game that the other participant has proposed or not; and if so to consider the possible outcomes. The fourth step is the reaction; an intention to play the game or not to play the game emerges as well as an intention on how the game will be played; for example the intention to comply with the request by doing what is requested. Finally, the fifth step is the generation of a response as a result of the intention the participant already has; in other words, it is making a move on the conversation game. Following these five steps or inferential phases without blocking or ignoring any phase is considered to follow the *standard path* (SP). But, as these inferences are “defeasable”, a person can decide to block or ignore an inference and not to pass to the next inferential phase; when this happens the person will follow a *non-standard path*. Three non-standard paths (deceit, irony and failure) are exposed at the end of this chapter. After the five steps are accomplished the roles reverse and the participant’s response becomes the other participant’s utterance. It is important to mention that according to Bara et al. (2001, p. 75), “to go through the conversation game requires an agent to be able to entertain, in addition to private beliefs and intentions, two mental state types that are specifically dedicated to communicative purposes, namely shared belief and

communicative intention". The two participants need to have shared beliefs; both need to believe "mental representation X" and both need to believe the other believes the same "mental representation X". This means that both participants need to share (at some degree) the same mental representations. According to Givón (2009), sharing beliefs or mental representations is a primitive function. If we consider the example about the mental representation of a dog from the first part of this chapter we can see that a person may have a mental representation of a dog in which dogs can be found on roofs and another person may have a mental representation of a dog in which dogs cannot be found on roofs. Both people need to have experienced dogs living on roofs for being able to share the same mental representation of dogs. Although human communication has primitive roots, it is fair to say that it has acquired a high level of complexity. Misunderstandings and failures to communicate occur when the participants take different pieces of knowledge as shared when in reality they are not. According to Bara et al.'s (2001, p. 75) perception of this theory, "a communicative action may now be defined as the overt execution of one move of the shared behavior game that the agents are jointly playing, where ''overt'' means that both the move and the intention to play must be shared between the interlocutors". Accordingly, a communicative intention is not only the desire to communicate something with someone, but the desire of communicating that desire to communicate. More importantly, communication will only be accomplished if the message, which was intended to communicate was understood and the intention of communicating that message was understood as well.

2.2.3 Base-level and meta-level inferences

The five steps or inferential phases which have been discussed above are what the authors of the original study which was replicated call a standard path (SP). This is how things go usually but not necessarily always. As it was stated before, inferences are defeasible. This means they can be ignored or blocked if they are not appropriate to the context in which the conversation game occurs. The authors explain that a SP occurs when none of the inferences are blocked and the inferential phases keep their order. In contrast, if one of the inferential phases or steps of the conversation game is blocked, the conversation game is blocked as well and the SP is no longer followed. This can happen if, for example, a man asks for the time to a woman in a party but the woman does not speak the man's language. She may be able to understand he is asking her something because of the intonation of the utterance and that he obviously wants to play the conversation game; but she cannot understand the meaning of what he is asking. She accomplishes the first phase: she understands the expressive meaning of the act: a question; but the second phase gets blocked: she does not understand the actor's meaning. When this happens, the conversation game follows a *non-standard path* (NSP) from the inferential phase that has been blocked. Different NSPs have different specific phases. For example, a NSP that could occur because the actor's meaning was not understood is very different than a NSP that would occur if the reaction phase is blocked, meaning that there is no intention to create a response. According to Bara et al. (2001, p. 76), "This web of possible paths makes it necessary that some control be exercised in the conversation

game. The cognitive apparatus behind communication thus works on two levels. The base level is composed of the inferences that the understander [the person understanding] draws from the actress's actions and conveyed mental states". There is another level controlling the base-level. The meta-level's task is to check the correct functioning of every inferential phase, to control the shift from one phase to the other and to decide what should be done if any of the phases get blocked. It is the meta-level and not the base-level of the cognitive apparatus which decides to take a NSP if necessary.

2.2.4 Three non-standard paths

For this study we will consider the first two inferential phases or steps of the SP, in which the expressive nature of the communicative act is understood through the first phase and the meaning underlying that act is understood through the second phase. The SP and three NSPs due to a blockage in the first two phases will be explored through this study. That is, "three types of situations where the relationship between what is expressed and what is intended is not straightforward. These are ironies, deceits, and failures" (Bara et al., 2001, p. 77). When the task of communicating an irony is successful, there is a situation in which the person receiving the communicative action believes that the actor's mental state does not overtly correspond to what the actor actually believes, that is, the actor's intention is for the participant to realize he or she does not believe the mental state that he or she is expressing. "A communicative act may become ironic when its pragmatic meaning is overtly different from its expressed one" (Bara et al., 2001, p. 77). In this case, irony is considered a NSP because the inference obtained as

the result of the second inferential phase of the conversation game is refused as true or coherent to reality. As a result, the second phase of the conversation game is blocked and the game cannot continue to the third phase of the SP. Consequently, another path needs to be taken. Deceit, which is similar to irony, happens when the person receiving the communicative action believes that the actor's mental state does not correspond to what the actor actually believes. As happens with irony, the inference obtained as a result of the second phase of the conversation game does not correspond to what the person receiving the irony believes to be true. In this case, the second phase is blocked as well and a NSP must be taken. But contrary to irony, deceit occurs when the actor's intention is not for the participant to realize that the actor believes that what he or she is stating does not correspond to his or her mental state and true beliefs. As it was stated before, the intention of the person who is trying to communicate the message plays an important role on successful communication. That which differentiates irony from deceit is the actor's intention to for the other person to understand that what the actor is stating does not correspond to his or her mental state or beliefs. Finally, failure occurs when a communicative act is not successful in achieving the goals planned for it. This can result in misunderstandings, meaning it has achieved a goal it was not planned or in the incapability of finding any meaning in the communicative act. Failure can occur through any phase of the conversation game. For this research failure concerning the first and second phases will be considered. In the case of failure on the first phase, the person receiving the communicative action does not understand its nature; for example, this person can believe he is receiving a comment when the intended meaning of the

communicative action was a request. In the case of failure on the second phase of the conversation game, the person receiving the communicative action does not understand the intended meaning of the communicative action. For example, this person may believe he was requested to move away when the intention of the communicative action was to stand up.

2.2.5 Extra-linguistic communication

As it was stated before through the first chapter of this thesis, much research has been done concerning linguistic competence and the human brain. We have been able to localize specific zones, which are in charge of different specific linguistic faculties by doing research with participants suffering of neuropathologies. Even so, there is still a lot of work to be done concerning communication and the brain, leaving aside purely linguistic competence and performance. Communicative competence is a mayor aspect of language that needs to be study because it affects the participant's capability to communicate with others regardless of his or her linguistic capabilities. In this case, linguistic competence is not the focal point of the study. 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). Therefore, if we consider the previous definition of communication as the intentional and overt attempt to modify a partner's mental states, then other aspects of interaction such as gesticulations accompanying speech, paralinguistic phenomena and facial and postural manifestations of emotions cannot always be considered as communicative because although this aspects may change the

other participant's mental state, they are not necessarily changing it intentionally. Consequently, as extra-linguistic communication is approached as intentional according to the former definition, then it should be considered as communicatively important and complex as linguistic communication.

In this chapter several fields which are involved in this research such as mental representations and the functionalist approach, neurolinguistics, pragmatics and cognitive pragmatics and neuropragmatics have been approached with the aim of explaining that this type of research belongs into a very interdisciplinary field. It belongs to the field of human communication and our understanding of how human communication has evolved and how it works in real life and within human mind. Secondly, several specific topics have been presented concerning the key elements, terminology, definitions, theories and perceptions that will serve as evidence to support the study, such as closed-head injury and communication, a cognitive theory of communication, base-level and meta-level inferences, three non-standard paths and extra-linguistic communication. In the next chapter, the methodology, which the study followed will be explained. The steps for obtaining and analyzing data are strongly related to the concepts and theories previously presented.