

Research Study

Communicative interactions between parents and deaf children

With the collaboration of:



SPANISH CONFEDERATION OF
FAMILIES OF DEAF PEOPLE



UAB

Universitat Autònoma de Barcelona

Autonomous University of Barcelona

Funded by:



MINISTERIO
DE EDUCACIÓN
Y FORMACIÓN PROFESIONAL

GOVERNMENT OF SPAIN
MINISTRY OF EDUCATION AND PROFESSIONAL TRAINING



ONCE Foundation



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Aware that the first communicative interactions that occur within the family contribute to the future development of our children, as they influence the process of acquiring and developing oral language, and other cognitive processes that arise from it, as parents we accept our responsibility as the first and foremost promoters of their autonomy and personal development.

However, the presence of hearing impairment in one of our children raises communication barriers inherent to deafness itself, which give rise to one of the main difficulties we must face in their upbringing. Often, the anxiety created by this situation, along with a lack of information, reduces the quality and quantity of our communicative interactions.

Within the framework of our Programme of Care and Support for Families, funded by the Ministry of Labour and Social Affairs (now MEPSyD), and thanks to the funding of the ONCE Foundation, FIAPAS, the entity best representing the families of people with hearing disabilities in Spain, thus decided to carry out this Study in collaboration with the Centre for Studies and Psychoeducational Research into Deafness and other Communication Difficulties - GISTAL Group, of the Autonomous University of Barcelona, in order to understand the interactive processes established between hearing parents and their deaf children. And so enable us to guide and train families.



This likewise lies within the framework of the Collaboration Agreement that the Confederation has maintained since 2005 with the Ministry of Education, Social Policy and Sport (Secretariat for Education and Training), with co-funding from the ONCE Foundation, enabling the publication of the Study today.

One of the results obtained, which marks a novel difference from other studies, shows that the participating families have a normalised level of stress and that the level of emotional development of the children is equally normalised. Since research shows that this is one of the variables that influences communicative patterns, we may infer that this normalisation has made it easier for families to make interactions with their children more natural and tailored to their needs and interests, thus encouraging the development of oral language.

There can be no doubt that, the conclusions reached by the research team of the GISTAL Group in this interesting Research Study, and this novel reality, reinforce the important work carried out by the Association Movement of Families and show that the objectives set by FIAPAS culminate in a range of achievements aimed at improving the quality of life of deaf people, from the diagnosis of deafness and along the entire developmental pathway of each person, together with the accompaniment and support of their families throughout their life.

We would lastly like to thank the families who participated in this Research Study, as well as the professional structure we have at the Parents' Associations of our Association Movement, for without them this Study would not have been possible.

*María Luz Sanz Escudero
President of FIAPAS*

The Research Study into communicative interactions between parents and children with deafness, sponsored by FIAPAS, was conducted in collaboration with the Centre for Studies and Psychoeducational Research into Deafness and other Communication Difficulties (GISTAL Group) of the Autonomous University of Barcelona.

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1. Introduction

EDUCATION OF DEAF CHILDREN TODAY

This study is based on the need for educational innovation brought about by current progress in caring for deaf people and their families.

In fact, the universal neonatal screening protocol has already been established in a large part of the Autonomous Regions of Spain, allowing early diagnosis of deafness and timely and adequate use of prosthetics. For example, most children with profound deafness suitable for a cochlear implant can be implanted within the optimal period for language development.

This has a significant impact both on speech therapy methodology and on the primary role that the family has always played in the education of children with deafness.

■ Impact of early care on speech therapy methodology

As for speech therapy methodology, the following needs are highlighted:

– Emphasising hearing stimulation for oral language acquisition

The possibilities of exploiting auditory remnants suggest, firstly, the updating of methods that are based on the stimulation of hearing, such as the auditory-verbal method created by David Ling (Ling, D., 1984) for deaf people with residual hearing.

These methods have been updated to apply to profoundly deaf people with a suitable prosthesis adapted in time. In most cases this will be cochlear implants. And, in cases affected by less severe deafness, digital hearing aids (Estabrooks, W., 1994; Furmanski, H.M., 2003).

– Enhance the “normalisation” of language acquisition in the language acquisition process

The auditory perception of prosody allows for a certain degree of overall perception of discourse, but obviously does not imply an understanding of it.

So what does this normalisation of learning in inverted commas mean?

The inverted commas mean that hearing a little better allows you to place linguistic acquisitions in the context of discourse, but that these acquisitions must certainly be induced by formal learning.

To put it another way, “normalisation” in linguistic acquisitions involves getting closer to the way a hearing person does this, being exposed to the totality of speech, but intentionally emphasising in linguistic learnings that even with optimisation of the residual hearing, the deaf child cannot do so spontaneously. For example, in one of the first studies of the Centre for Studies and Psychoeducational Research into Deafness and other Communication Difficulties-GISTAL, Anna Ramspott found that deaf adolescents had difficulty understanding narrative texts due to problems in interpreting verbal marks, such as pronouns, connectors, etc. (Ramspott, A., 1991). Today, then, together with Cristina Ulloa, Ramspott programmes the learnings of some of these verbal marks, through storytelling situations, in speech therapy sessions for children from 2 and 3 years of age.

The renewal in the programming of the acquisition of oral language by children with deafness, motivated by technological advances to improve their hearing, means abandoning the linguistic learnings presented in a pigeon-holed manner, isolated from the context of the discourse, and advancing a certain normalisation of linguistic acquisitions, according to the individual characteristics and the evolutionary moment of each of them.

– Facilitate language acquisitions in “natural” interactive processes

A third principle derived from the previous two is to consider linguistic acquisitions in “natural” contexts.

Here, too, the inverted commas require interpretation.

If a child with profound deafness cannot audibly perceive the sound stimuli and therefore cannot integrate the auditory and visual stimuli that occur simultaneously but do not occur in the same visual field, the phenomenon of “attention divided over time” occurs. This phenomenon makes it necessary to adapt interactions with the child so that they can perceive both auditory and visual information at the same time, for example, by placing the face of the person explaining a story in the same visual field as the book.

By contrast, utilisation of hearing through modern auditory prostheses allows the deaf child in many cases to simultaneously perceive both types of information without having their attention divided over time. This does not mean that this is always the case, since the greater or lesser utilisation depends on the time when the prostheses were adapted, and the individual characteristics, even in cases with cochlear implants.

■ Impact of early care on the role of the family

Diagnosis and the start of early care also clearly have their effects on the role played by the family environment in the education of a child with deafness, for the following reasons:

- a) The early onset of specialised educational intervention and adaptation of the prosthesis coincides with the stage when most children spend longer at home.

- b) The premises regarding the normalising processes of acquisition of oral language bring to the fore-front the interactions that occur in natural media, in this case, in the family environment.
- c) Lastly, painful life processes regarding the fact of having a child with deafness on the part of the families, as well as the stress that this causes, can be greatly reduced by early diagnosis, early care and effectiveness in the utilisation of hearing. However, although this may be the general trend, it is still a process that, even today, is difficult for many families to overcome.

In short, both the speech therapy methodology and family guidance and advice must progressively undergo a change that, among others, means that especially in the first years of life, the professional/family relationship is reversed. In other words, it is not so much a question of the family collaborating in the task performed by the speech therapist, but rather that the speech therapist collaborates so that the family environment adapts to the needs that the child with deafness raises for their development. This is the current perspective of “family-centred” programmes (Kurtzer-White, E., 1999).

In conclusion, it should be noted that although there is a moment of clear progress in the conditions of care for children with deafness, and that this has an impact on their families, it is also true that first of all, this improvement does not occur uniformly in all children and their families. Secondly, the implementation of good educational practices must be based on knowledge of how communication occurs in families and the differences observed among them. These findings form the basis of this study’s approach.

1.1. CONTENT OF THE PUBLICATION

This study takes as its starting point the socio-educational needs posed by the current changes due to the progress of the application of new technologies and universal neonatal screening for children with deafness, and consequently, the advancement of knowledge of its impact on the development of children with deafness and on family communication.

The **Justification** summarises the main changes that can be deduced “a priori” in this regard, and the educational needs they raise. The current state of knowledge regarding the implications of deafness on the child with deafness and their family is also reviewed. In addition, the knowledge needs to be provided by theoretical support for educational guidance in order to respond to the new needs identified are raised.

Chapter 3 outlines the objectives of this study. **Chapter 4** sets out the methodology, type of design, procedure, techniques and population covered by this study.

Both parents were present and participated in data collection interviews through the questionnaires used, as well as interaction sessions. It should be noted, however, that it was mothers who participated in communication interactions with their children, recorded for further analysis. Therefore, the analysis of the results expressly refers to the personal variables of mothers and the quality of their interactive processes with their children with deafness.

Descriptive results regarding the characteristics of the population studied, as well as the behaviours observed in communicative processes from the point of view of: conversation management, stimulation of oral language and the development of Theory of Mind, are the object of **Chapter 5**.

Chapter 6 explores the variables that can be related to the characteristics of communication processes and explores the relationship between the three dimensions explored. In this chapter it was considered more appropriate to present a comprehensive summary for each section.

Finally, the **Conclusions** of this study are presented.

The publication is accompanied by **bibliographic references** and **annexes** including the materials prepared for data collection.

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Our thanks first go to FIAPAS and its Technical Team, who were there at the origin of the project, believed in it, channelled and supported it at all times, and without their intervention the study would not have been possible. This study is also the result of the collaboration of the Associations of Parents and Regional Federations of FIAPAS and their professionals. Thank you all.

Lastly, for the true protagonists of the study, for the children and their families who participated in it, our thanks are of a different kind. We believe that the families that opened up their homes to us and devoted their efforts to participating in the study, in a completely altruistic manner, deserve thanks that, in the not too long term, should contain some ideas, experiences, and guidance to support improved communication within each family.

Our thanks to everyone in the hope that the results may be useful for the project we have in common: optimising communication and the well-being of deaf children and their families.

N. Silvestre



2. Justification

INTERACTIVE PROCESSES AND PSYCHIC AND LINGUISTIC DEVELOPMENT OF CHILDREN WITH DEAFNESS

This study is based on a general theoretical framework of social interactionism or, more specifically, of socio-discursive interactionism, as defined by Jean Paul Bronckart, in which the role of social intervention in the psychic construction of the human being and, in particular, in the acquisition of oral language is highlighted (Bronckart, J.P., 2004).

Although the effects of deafness have mainly been studied in the psychic and linguistic development of children with deafness, since the 70s studies have been initiated on the impact of deafness of the child on the hearing mother and on the way she interacts with her infant (Spencer, P.E. et al., 2000).

Although it is true that studies showing a clear relationship between the two knowledge blocks are almost non-existent, it is also true that both the theoretical interactionist perspective and the data on the delay in the development of skills, such as, for example, in the symbolic play of children with deafness, an activity in which it has been shown that many hearing mothers are less motivating than mothers with hearing children, serve to point towards a connection between the quality of the interaction between the mother and her child with deafness and the child's communicative and linguistic development.

It is on this basis that this study was initially proposed in order to deepen the understanding of how interactive processes between parents and children with deafness occur in the context of current developments and their educational implications, as set out above. However, in the inevitable delimitation that this work requires, this leads us to choose to delve specifically into the interactions between mothers and their children with deafness, not considering other aspects of vital importance such as the relationships of the child with the rest of the family, as well as those with the father.

This study contemplates these interactive processes in terms of the stimulus they represent for the development of the child with deafness in three aspects: the construction of the activity itself, the use of oral language and the formation of the Theory of Mind. This is defined within the evolutionary stage in which they can have the most impact on development, between 1 and 7 years.

The choice of these three perspectives is due to different reasons supported by the current state of knowledge:

- The tendency of some hearing mothers to control the activity of the child with deafness. However, neither the results of the studies nor their evaluation have one single interpretation.
- The differential aspects regarding a hearing child in the interactive processes between hearing mothers and children with deafness from the perspective of promoting the use of oral language.
- The importance of the development of the Theory of Mind (ToM) in relation to socialisation, the development of conversational abilities and the preferred activities in this evolutionary stage (stories and symbolic play), and the delay found in these skills in most children with deafness.

This study pays special attention to the socio-demographic and personal characteristics of children with deafness and their hearing mothers as potential influential variables in these processes.

A brief review of the state of play in these three knowledge blocks is presented below:

1. The possible effects of deafness on the developmental dimensions and evolutionary stages of a child with deafness that are directly related to this study,
2. the impact of deafness on hearing mothers,
3. and lastly, the impact of deafness on interactive processes between hearing mothers and children with deafness.

Current progress in the development of children with deafness also requires some caution in reviewing the current state of knowledge. In fact, particular attention must be paid to the technological and educational conditions of the upbringing of the participants in the research cited, in accordance with the year and the socio-cultural context in which the studies were carried out, since the development of deaf people has been greatly optimised, especially in terms of acquiring oral language.

However, it must also be borne in mind that the current changes take place gradually. For example, in Spain these changes are most noticeable in students with deafness under 10 years of age. The population covered by this study would be included in this group, which has been able to benefit from new technological advances and the adaptation of prostheses, implants or new generations of digital hearing aids.

2.1. EFFECTS OF DEAFNESS ON PSYCHIC AND LINGUISTIC DEVELOPMENT OF CHILDREN WITH DEAFNESS

The brief review below is limited to the dimensions considered in this study.

■ Influential variables

As is known, the evolution of children with deafness depends not only on the degree of deafness, but also on the influence of multiple sociodemographic and educational variables that combine within each individual, resulting in a great diversity within the group.

This review includes some studies into two of the most influential variables in current progress to optimise the development of children with deafness: the effects of prosthetic adaptation and early care.

In this regard, three lines of research should be highlighted:

The first, on the effects of early prosthetic adaptation and educational care during the first year of life in oral language acquisition and psychic development. The most significant works in this line are performed by the Marion Center, together with the University of Colorado, and show the significant differences in the acquisition of oral language between deaf babies receiving care during the first 6 months of life and those receiving care thereafter (Yoshinaga-Itano, C., 2003; Mayne, A.M., Yoshinaga-Itano, C., Sedey, A.L. and Carey, A., 2000).

The second, on the acquisition of oral language and psychic and linguistic development in implanted children (Manrique, M. and Huarte A., 2002; Virole B, B.A. and Sánchez, J., 2004; Quittner, A.L. et al., 2004; Valero, J. and Villalba, A., 2004; Spencer, P.E., 2004).

The third line comprises the assessment of the effects of the application of hearing aids and implants, not so much in the acquisition of oral language, as in the studies just been mentioned, but focusing on the quality of vocal utterance, and therefore on the intelligibility of speech (Silvestre, N. & Valero, J., 2005; Valero, J. & Gou, J., 2003).

This study basically takes into account the variables listed in the first two lines above.

■ Acquisition of oral language

Numerous studies on the acquisition of oral language in children with deafness show the existing delay, both in the phonological and initial dimensions of language and speech intelligibility (Vinter, S., 1994), and in the acquisition of vocabulary (Prezbindowski, A.K. & Lederberg, A. R., 2003; Nott, P.L., Cowan, R., Brown, M.P. & Wigglesworth, G., 2003) and morphosyntax (Quigley, S.P. & Paul, P., 1984). There are also more comprehensive studies (Spencer, P.E. & Marschark, M., 2005), including that by Silvestre and Ramspott (2003, 2004), showing the difficulties of students with deafness in understanding and producing narrative discourses

■ Socio-affective development

Socio-affective development has been little explored in the early ages. In the research block on the virtues of early care, there is a study showing its positive effect on the emotional development of deaf babies who received care during the first 6 months of life (Yoshinaga-Itano, C., 2003). The aforementioned longitudinal study of Virole and others on the positive effects of cochlear implants on the socio-affective development of children with deafness is also available (Virole, B. et al., 2004).

2.2. THE IMPACT OF CHILD DEAFNESS ON HEARING MOTHERS

The process followed by families, especially hearing parents, who mostly do not have any suspicion of having a child with deafness, has been described, from the first signs, detection and notification of the diagnosis, until they truly take on board the child's deafness and its implications (Lutterman, D., 1999). In many cases, parents find themselves in this process seemingly bereft of the capacity to bring their child up, because of their deafness.

One of the most studied issues has been the stress suffered by the family of a deaf child, and especially the hearing mother. The results are not always consistent, as they depend on many factors (age of the child, socio-cultural level of the family, etc.). For example, there are differences between two studies using the "Parenting Stress Index" as a stress assessment tool (Abidin, R., 1983). On the one hand, Quittner, A.L. et al. (1990) finds that hearing mothers of children with deafness are more stressed than those with only hearing children, and instead Meadow-Orlans (1994) finds no significant differences between these two groups of mothers when the baby is 9 months old.

Some studies show that the **age of the child** influences maternal stress. For example, there is more severe stress when the deaf child is 2 years old, compared to 3 to 4 years old, although different assessment tools were used for each age level (Lederberg, A.R. and Golbach, 2002). Konstantareas, M. and Lampropoulou, V. (1995), on the other hand, agree that maternal stress increases with the age of the child.

The **degree of deafness** has also been a variable considered in various studies, finding that mothers with children with milder deafness are more stressed than those with children with profound deafness (Hintermair, M., 2000).

Early detection of deafness has been a factor examined in various investigations, with no complete agreement either. For example, Bess and Paradise (1994) do not find a positive influence of this variable, but Yoshinaga-Itano, C., Sedey, A.L., Coulter, D.K., and Mehl, A.L. (1998) and Lederberg, A.R. and Golbach in the above study.

Pipp-Siegel, S. et al. (2002) do not find a higher level of stress than described in the Abidin normative sample in mothers who have received guidance and counselling on time.

Early support for families seems to be an important element in reducing maternal stress. It is therefore necessary to consider the forms of support received by the mothers of the populations studied in the different research studies when assessing their results.

A more recent study in our country looked at a population of mothers who received care through multi-disciplinary education teams. Overall, mothers were not found to have a higher level of stress than Abidin's normative sample. Although the detail of the two scales includes as stressful factors those referring to the mastery of parental function, reflecting the insecurity regarding this function caused by the deafness of the child. The significant influential variables in the level of stress were found to be: the age of the mother, the older she is, the more stressed, and disadvantaged socio-cultural status related to a high level of stress (Sánchez, L., 2006).

2.3. THE QUALITY OF INTERACTION BETWEEN HEARING MOTHERS AND CHILDREN WITH DEAFNESS

The impact of child's deafness, the level of stress and experiences of insecurity about your role as a mother when a baby is deaf undoubtedly affect how you relate to the child. However, not all studies agree as to how, overall, all this affects the interactive processes between hearing mothers and their deaf children, nor, of course, does it affect them equally, with many factors having an influence, with regard to both mothers and children.

Next, the state of knowledge in this regard is reviewed in two blocks: one referring to the overall study of interactions, and one considering in particular the stimulus for the use of oral language.

■ Quality of interactions between hearing mothers and children with deafness

As noted by Lederberg & Everhart (2000), overall a more negative picture has been drawn of the interactions between hearing mother and deaf child than is actually the case. Overall, then, they have been defined as being more controlled by the adult, but this is not evident in all studies or in all dimensions studied.

Overall, there is agreement that hearing mothers of children with deafness exert greater overall control over interactions (Gallaway, C. & Woll, B., 1994). This can, however, be interpreted as an adaptation to the linguistic level of the child, and therefore cannot always be assessed negatively.

Results on more specific dimensions of interactions are more divergent. Thus, some studies show that hearing mothers of children with deafness exert greater control over interactions (Spencer, P.E. & Gutfreund, M.K., 1990). However, other studies found no differences (Lederberg, A.R. & Everhart op.cit.). Similar results were found in the study of dominance in intervention turns in interactions (Lederberg, A.R. & Prezbindowski, A.K., 2000).

The present study assesses maternal sensitivity regarding the control of the child's behaviour, from the point of view of following their spontaneous activity or channelling it, and with regard to the overall assessment of each day.

■ Encouraging the use of oral language

The characterisation of interactions and maternal sensitivity relates to the stimulation of mothers to use oral language in their relationship with their child. In this regard, three dimensions are reviewed: feedback on the child's production, the functionality of maternal production in terms of the linguistic production they elicit and the linguistic model offered to the child.

- a) As for feedback, studies point to both the tendency of mothers not to provide sufficient feedback to the production of deaf children, and the tendency towards styles of feedback that are overly controlling and disruptive of discourse. One example of the first tendency is the difficulties in imitating and promoting imitations of a child with deafness, particularly during the first two years of life, because the mother does not give communicative meaning to the first pre-verbal exercises of a child with deafness, especially when they are different from those of a hearing child of the same age (Vinter, S., 1994). The opposite tendency, so to speak, is to correct the child's utterances, interrupting their discourse.
- b) The assessment of maternal language in terms of its **functionality** regarding the use of oral language in the child has been extensively studied. The term “didactic style” has been coined to define the tendency of some hearing mothers to “teach” oral language without relying on their child's motivations and activity.

From a Brunerian perspective, David Wood and collaborators established the different levels of control exercised over the interlocutor from the point of view of the verbal response elicited. They thus established 5 levels, from the type of statement that does not require a linguistic construction, but simply repeating a phrase or responding non-verbally, to the factual expressions whose sole purpose is to encourage the speaker to continue speaking (Wood et al., 1986). Successive studies have found that a hearing adult has a tendency to exercise greater linguistic control when addressing students with deafness than when speaking to a hearing child, which thus diminishes their chances of exercising oral language, with clear consequences in the processes of acquiring such language. It should be added that the predominance of this “controlling” style is found when teachers make use of oral language but also when it is expressed with other forms of communication such as sign language (Power, D., Wood, D., & Wood, H., 1990).

From this perspective, the present study considers the functionality of maternal language directed at the deaf child in terms of stimulating their oral production.

- c) Lastly, as we know, **modelling processes** have a basic function in acquiring **language**. Adults, especially close relatives, adapt the complexity of their discourse to the language level of the child (Rondal, 1983). Although there are few studies that consider maternal speech as a variable in the acquisition of the oral language of children with deafness, it is certainly of particular interest for family guidance and counselling purposes. For this reason, it is a variable that is taken into account in the present study.

■ The stimulus to the development of the Theory of Mind (ToM)

The state of play regarding the development of the Theory of Mind in children with deafness shows that children born into hearing families in particular lag behind their hearing peers (Peterson, C., 2004; Deleau, M., 1996; Peterson, C. and Siegal, M., 1995). Some studies show that this delay affects internal emotional and sentimental states less than cognitive ones.

Although the most widespread hypothesis regarding this delay is based on the importance of the linguistic deficit as an influential factor, studies with hearing subjects also indicate the importance of the mental content of interactions with the mother (Symons, D.K. et al., 2005). Possibly, the linguistic restriction noted by some research, which is common in interactions between hearing mothers and children with deafness, may serve to reduce the mental language of the deaf.

There are still few studies examining the mental language that mothers direct to children with deafness. These include the interesting study by Moeller & Shick (2006), which shows that mothers of children with deafness have fewer conversations involving ToM, and these have less thematic diversity than mothers of hearing children. In addition, the level of ToM development of children with deafness is positively related to the frequency of mental issues addressed to them by their hearing mothers.

This study studies the mental input that mothers can offer to their children with deafness, at the ages studied, in two common situations that are very indicative in the use of mental terms and arguments.

First, the situation of telling a story has been chosen. As is known, in narrative discourses, the intentions, experiences and moods of the protagonists play an important role in textual coherence.

The other situation selected is punishments. In this type of situation, it is common to use the motivations of the child who is to be punished and the effects that their actions have caused on others. These are also situations that encourage the use of mental reasoning. The study makes only a brief foray into mothers' experiences and opinions on the subject.

3. Objective

3.1 GENERAL OBJECTIVES

In accordance with the study's approach, defined in its purpose, as previously justified, and within the framework of a brief review of the current state of knowledge regarding the subject matter proposed, the general objectives formulated are as follows:

Understand the forms of communicative interaction used by mothers from the point of view of the stimulus they present for the following activities of the child: free activity in itself in fictional play, progress in the acquisition of oral language, and the development of the Theory of Mind.

Some of these forms may coincide with the type of interactions characteristic of hearing mothers, as described in previous studies, and other new forms may, meanwhile, emerge new in the face of developments that influence the characteristics of children, especially in the optimisation of the possibilities of oral language acquisition. In both cases, they should be useful to provide the basis for guidance and counselling for all families.

Understand the variables regarding mothers and children with deafness that may be **most influential in the use of different communication strategies**.

Establish the possible relationships between the forms of interaction that occur in communicative processes, from the three points of view studied: the stimulation of activity in children, the development of oral language, and the Theory of Mind.

3.2. SPECIFIC OBJECTIVES

The general objectives are broken down into two groups of specific objectives.

The first is to understand the **characteristics of the participants and the interactions** that occur between hearing mothers and children with deafness from a descriptive point of view.

The second group aims to explore the possible **relationships between the participants' variables, their influence on the aforementioned communicative processes**, as well as **the interrelationships among the different communicative aspects** (maternal sensitivity, stimulation to oral language and stimulation of the development of ToM).

3.2.1. Describe mothers' personal characteristics and interactive processes with deaf children

■ Personal characteristics

- *Parents:*
 - Socio-demographic characteristics: age, level of education and employment status.
 - Personal characteristics: level of stress and experiences regarding the child with deafness.
- *Children:*
 - Socio-demographic characteristics: age, gender, degree of deafness, utilisation of hearing with prostheses, moment of adaptation of prosthesis, type of prosthesis, educational situation.
 - Personal characteristics: level of understanding and production of oral language and socio-affective development.

■ Interactive processes

- *Interactions and management of the conversation:*
 - Describe the interactions that occur between hearing mothers and children with deafness in inter-individual situations of shared activity, and
 - assess interactions from the point of view of the mother's sensitivity and the characteristics of the dyad.
- *Maternal behaviours and stimulation of oral language:*
 - Describe the most common strategies used by mothers to encourage oral language, both in terms of direct feedback, regarding the child's utterances, and
 - describe the different functions of language in terms of linguistic demand involved in maternal utterances to the child with deafness and in the linguistic model they offer.

- *Maternal behaviours and stimulation for the development of the Theory of the Mind:*
 - Describe mothers' use of mental terms in the situation of telling a story to their children, and
 - describe the use of mental arguments in the face of punishments in a fictional play situation, and through information obtained in the interview situation.

3.2.2. Explore relationships between the participants' characteristics and interactive processes of mothers with deaf children

■ Relationship between socio-demographic and personal variables of participants

- Explore the relationships between socio-demographic and personal variables of mothers and of the child population studied.

■ Relationship between socio-demographic and personal variables and interactive processes

- *Management of the conversation:* Explore the influence on maternal sensitivity and dyad dynamics.
- *Stimulation of oral language:* Explore the influence on the mother's stimulation of oral language in the dimensions of verbal feedback, elicited language functions, and linguistic model.
- *Stimulation of ToM:* Explore the influence on the stimulation of ToM, which the mother provides to her children with deafness (use of mental terms and conceptions about punishments).

■ Relationship between the three communication dimensions studied

- Explore relationships between conversational style and stimulation of oral language use.
- Explore relationships between conversational style and ToM stimulation.
- Explore relationships between stimulation of oral language and ToM stimulation.

4. Method

4.1. PROCEDURE

The study was structured into two distinct phases.

The first (2005/Sept. 2006) focused on the task of research design and planning. The variables to be studied, the universe and design of the sample and the procedure to follow for data collection were thus established, preparing the documentation required for this.

It should in this regard be noted that in order to formalise the participation of families in this study, FIAPAS drew up a Data Confidentiality Document that the Confederation and the GISTAL Group independently signed with each of the participating families, undertaking to process the data collected for the study in accordance with Organic Law 15/1999 *on the Protection of Personal Data* and Organic Law 1/1996 *on the Legal Protection of Minors*, in order to ensure their absolute privacy.

In the second phase (Oct. 2006/2007) data collection, processing and analysis were performed and the Final Report was drawn up, setting out the results and conclusions reached.

To conduct the study, FIAPAS signed a Collaboration Agreement with the Autonomous University of Barcelona (24 October 2006), establishing the terms of collaboration and participation of the GISTAL Group in this study.

Finally, during 2008 work was carried out on the Final Report in order to prepare this publication.

■ Sample configuration and selection

For the configuration of the sample, the procedure followed in the Sociological Study performed by FIAPAS between 2004/2005 in collaboration with the demographic research company IPSOS-ECO Consulting was taken as a reference.

A sample selection by province was thus performed, based on the distribution by Autonomous Region of the theoretical sample of 1,000 families of deaf people, configured by IPSOS-ECO Consulting according to the universe of families with children and young people in Spain and the incidence data for deafness in this country.

In configuring the sample, flexibility criteria were maintained between provinces of the same Autonomous Region, as well as between adjacent habitat strata, since on occasion there were no Parent Associations in some provinces and, in others, the Association did not have the sample defined to participate in the study.

Based on this information, the decision was taken to work with a theoretical sample of 60 families. This was distributed according to the demographic criteria needed to ensure representativeness and territorial balance.

The criterion used to select the sample was that families should meet all of the following **requirements**:

- Parents:
 - hearing
 - communicate in oral language
- Children:
 - with moderate, severe or profound deafness
 - aged between 1 and 7 years (inclusive)

The study participants are the sample mothers and their children. Communicative behaviours in family situations and their personal characteristics and family context are studied. In most cases, the parents were present at the data collection.

To achieve the objectives described, a cross-sectional design was followed, using indirect and direct observation in controlled situations for data collection.

Meanwhile, for the analysis of the results, bivariable comparisons and qualitative analyses were performed, as shown more extensively in the results chapters.

4.2. DATA COLLECTION TECHNIQUES

The techniques used to obtain data are presented below. Except for the questionnaires, which require written results, the other tests were fully filmed and transcribed, using the Atlas Ti software.

■ Sociodemographic data: Questionnaire prepared by FIAPAS

For the collection of sociodemographic and personal history data, both for parents and children with deafness, FIAPAS prepared a Data Collection Questionnaire, taking as reference the induction protocol used at the SAAF Services of the Family Care and Support Network (see annex).

■ Family experiences with the child: Interview prepared by GISTAL

In order to characterise the experiences of the families associated with the deafness of their child, as well as to obtain data regarding the personal characteristics of the child population regarding behaviour and character, as well as communication and oral language, the GISTAL Group structured a questionnaire to conduct personal interviews (see annex).

In order to evaluate the use of mental terms by mothers, this interview asks two questions to obtain information about one of the most common situations in the daily life of children prompting arguments that resort to ToM: punishment situations.

As presented in the results, the maternal responses entailing reciprocity in punishments and stimulus of ToM were analysed.

■ Maternal stress: Parenting Stress Index PSI (Abidin, R., 1995)

It consists of a list of 120 items that can be self-applied or used as an interview. Mothers must register their agreement with each statement. Each item is given a score on a scale of 1 to 5 (1 means completely disagreeing with the suggestion and 5 means strongly agreeing).

Stress is assessed through two domains: that of the child, maternal perception about the child, and perception about the actual role of the mother. In turn, each domain is assessed by subscales, namely:

- Child domain:
 - Distraction-Hyperactivity
 - Adaptation
 - Parental reinforcement
 - Demand-imposition
 - Mood swings
 - Acceptance
- Maternal domain:
 - Feeling of competency
 - Social isolation
 - Affective bond
 - Health
 - Role restriction
 - Depression
 - Partner support

■ Maternal linguistic production: The story of “The Turtle”

The material in this test consists of a picture book with no text that we entitle “The Turtle”.

The book tells the story of a boy and a girl who play together. The boy has a turtle in a fish tank and the girl decides one day to take it and release it into a pond. The child gets very angry and thinks about horrible revenge. The story ends with a scene in which an adult woman mediates between them.

The application procedure is for the adult to look at the images in the story and then explain it to their child in the presence of those images.

Next, the child is asked 5 basic storytelling questions that they must answer without being allowed to look at the images again, so as to formulate their answers based primarily on the adult's storytelling.

This achieves the following objectives:

- Evaluate the linguistic model that hearing mothers offer to their children with deafness.

As discussed in the analysis of the results, the mother’s ability to explain a story is assessed based on the particular linguistic characteristics of the narrative discourse.

Elements relating to the organisation of the discourse (type of narration, presentation of the characters or the initial scene as an anticipatory element of the story, purpose, cause and consequence of the actions themselves and type of outcome) and the organisation of the referential discourse (maintenance of the reference through the elision of the subject and marks of oral discourse) are assessed.

- Analyse the mother's use of mental terms.
- Assess the level of verbal understanding of the narrative by the participating children.

■ **The socio-affective development of children: Profil Socio-Affectif PSA (Dumas, J.E. et al., 1997)**

The PSA is composed of 8 baseline and 4 global scales. Each baseline scale consists of ten statements, of which five describe social skills and five difficulties with adaptation. This structure allows each scale to be defined with a positive and a negative pole.

■ **“PICNIC” oral production test, of the Centro de Estudios y de Investigación Psicoeducativa sobre Sorderas y otras Dificultades en la Comunicación (Silvestre, N., Ramspott, A. y Pareto, I., 2006)**

The material in this test consists of an image booklet, without text, that tells the story of a family going on a picnic. The application procedure is for the child to look at the story and, following review, without the images in front of them, to explain it.

The oral production of the child is valued from the following aspects:

- General organisation of narrative discourse
- Sentence level
- Mistakes made

For children, whose linguistic development does not allow the application of the tests of understanding and production of the "Turtle" and "PICNIC" stories, respectively, spontaneous language was assessed through the situations of interaction and the information provided by the mothers and the speech therapists in this regard.

■ **Mother-child interactions: Nappy changing and play situations**

Two situations of daily life were selected to assess the interactions between the mother and her child with deafness: changing nappies and role play.

- **Nappy changing**

For the three children in the study population who still wear nappies, the nappy changing situation was selected to assess the interactive processes with the mother and the stimulation she exerts for oral language.

- **Symbolic play**

In most cases, a symbolic game observation scenario was used. This symbolic play situation was used to explore whether the mothers would resort to inciting the Theory of Mind in the child and/or how they would solve a conflict situation. For the youngest participants, three stuffed puppets (a pirate, a dolphin and a penguin) were used, instructing the dyad that they would play freely. For the rest of the children, the context of a birthday was recreated by inviting the adult and the child to play and create the story they wanted around the toys provided:

1. Two dolls: a boy and a girl.
2. A doll
3. Table (1), chairs (2), saucers (3), spoons (3), knife (3), cakes (2), neutral piece (1), pizza (1), popcorn bowl (1)

After three minutes of play, the researcher intervened and introduced a situation of fictional conflict, in which one of the dolls ate the whole cake without leaving it for the others, then allowed the dyad to play freely again.

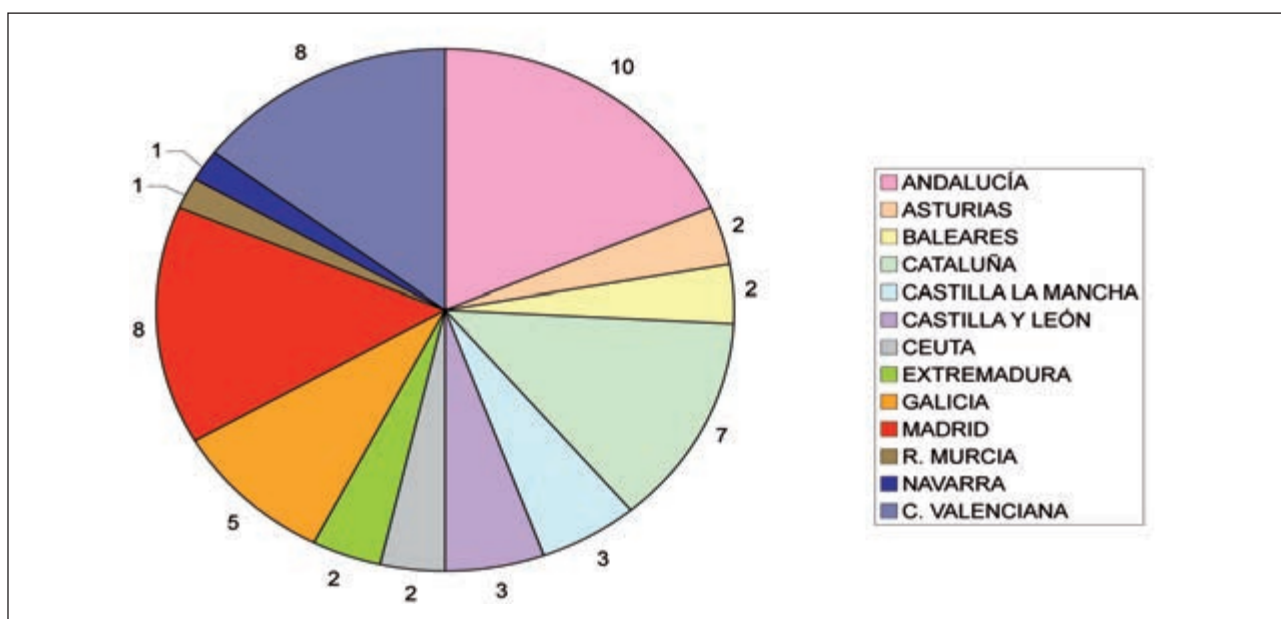
4.3. POPULATION

We took as our universe the families belonging to the Association Movement of FIAPAS Families throughout Spain, with children aged between 1 and 7 years, with medium, severe and/or profound deafness and without associated disorders, from hearing families. All were invited to participate in the study.

However, the desired sample size was reduced due to the difficulties involved in gathering data in natural settings, as is the case of our study in which behaviours are filmed at home.

After receiving the response of the families of the FIAPAS Family Association Movement, the total sample was 54 families, from a total of 26 provinces and 12 autonomous regions: Andalusia, Aragon, Asturias, Balearic Islands, Castile-La Mancha, Castile-Leon, Catalonia, Extremadura, Galicia, Madrid, Navarre, Valencia and the Autonomous City of Ceuta.

Graph 1. DISTRIBUTION OF THE SAMPLE BY AUTONOMOUS REGION



4.3.1. Sociodemographic variables of children with deafness

The following sociodemographic variables were considered:

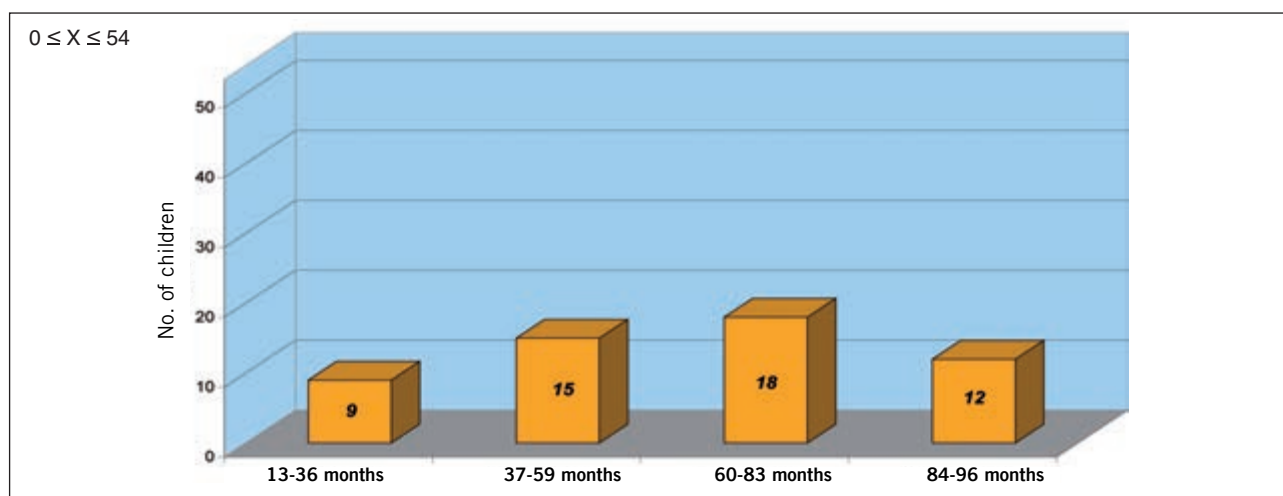
- Age
- Gender
- Hearing loss
- Type of prosthesis
- Initial installation of prosthesis and specialised educational intervention

■ Age

As may be seen, unfortunately, participants aged under one year could not be included in the sample, probably due not only to the fact that few children are detected at this stage, but also to the fact that families are still in a first phase of disorientation and distress in the process of assimilating the child's deafness and refuse to participate.

For the relational analyses presented in chapter 6, the population was grouped into four age bands (Graph 2).

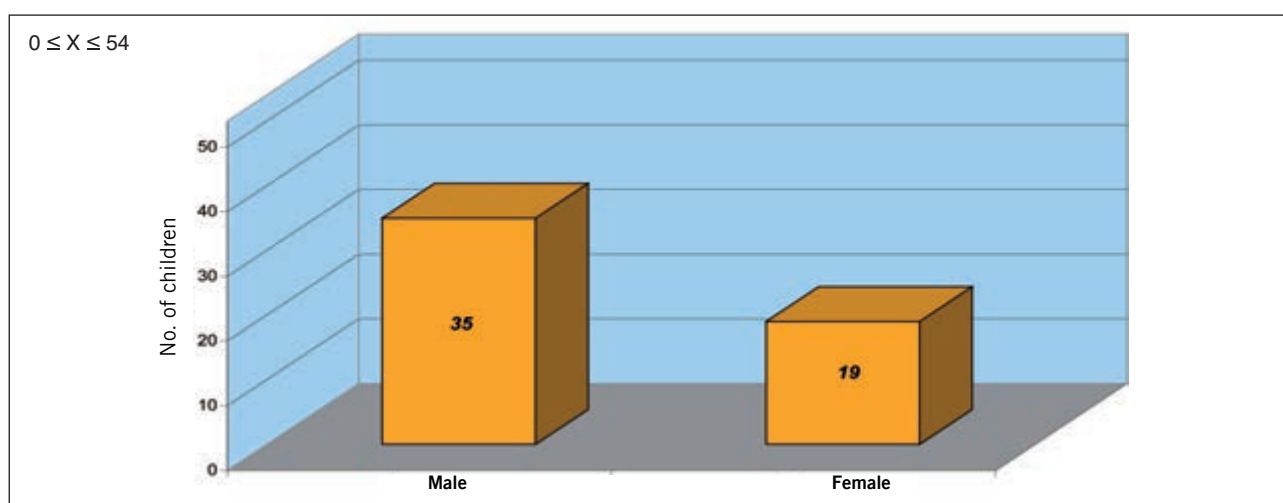
Graph 2. SOCIODEMOGRAPHIC VARIABLES OF THE CHILD POPULATION
Age group distribution



■ Gender

The gender distribution of the population studied is not balanced, as there are more boys than girls (Graph 3).

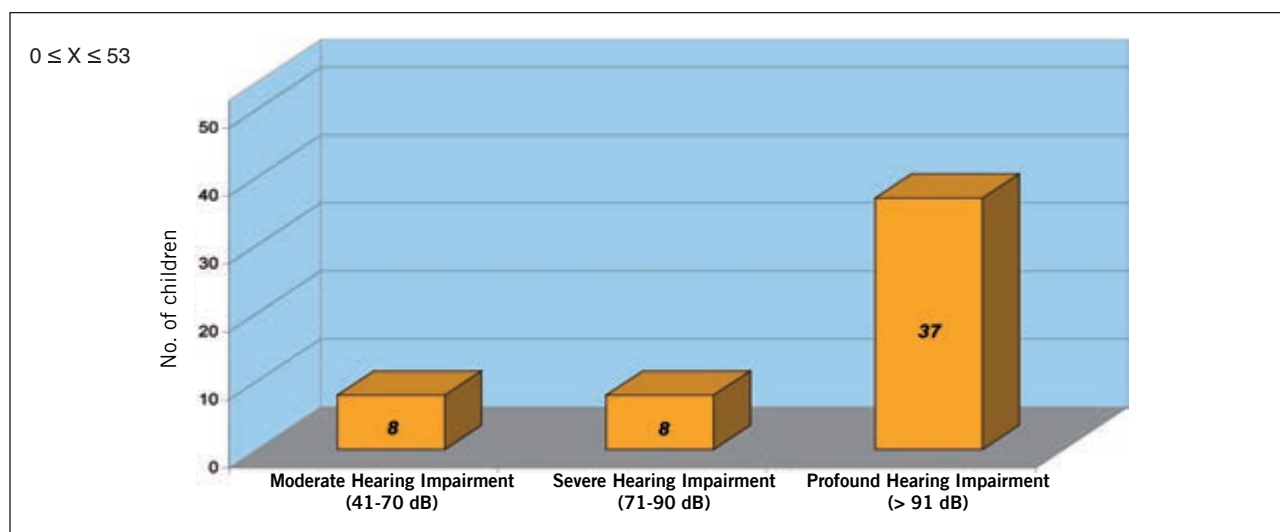
Graph 3. SOCIODEMOGRAPHIC VARIABLES OF THE CHILD POPULATION
Gender distribution



■ Degree of Hearing Loss

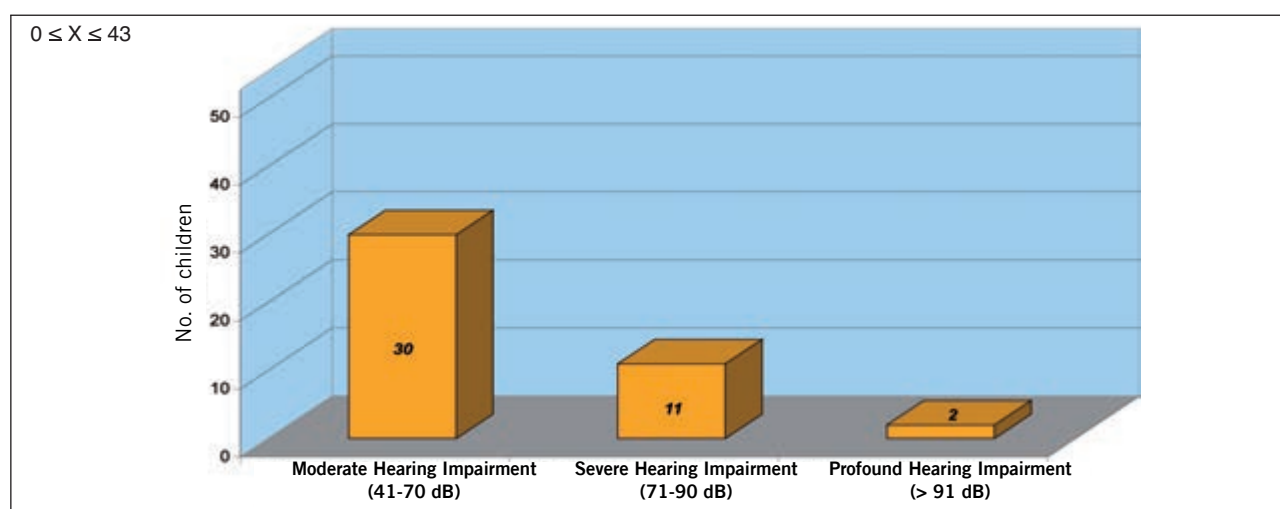
Hearing loss assessment for diagnosis without prosthesis is available for all participants except one case. It may be seen that the vast majority of participants (69%) have profound deafness (Graph 4).

Graph 4. SOCIODEMOGRAPHIC VARIABLES OF THE CHILD POPULATION
Distribution by degree of hearing loss



Unfortunately, it was not possible to obtain such important data as the auditory gain or auditory performance provided by the prosthesis and auditory education of all participants (Graph 5). However, prosthetic adaptation allows more than 50% of participants to function audibly as if with a slight loss. There is no case operating at the level of profound loss that they actually have. It should be recalled that without prostheses, 69% have profound deafness, and only two cases continue to have hearing characteristic of severe deafness.

Graph 5. SOCIODEMOGRAPHIC VARIABLES OF THE CHILD POPULATION
Distribution according to utilisation of hearing in the better ear with prosthesis

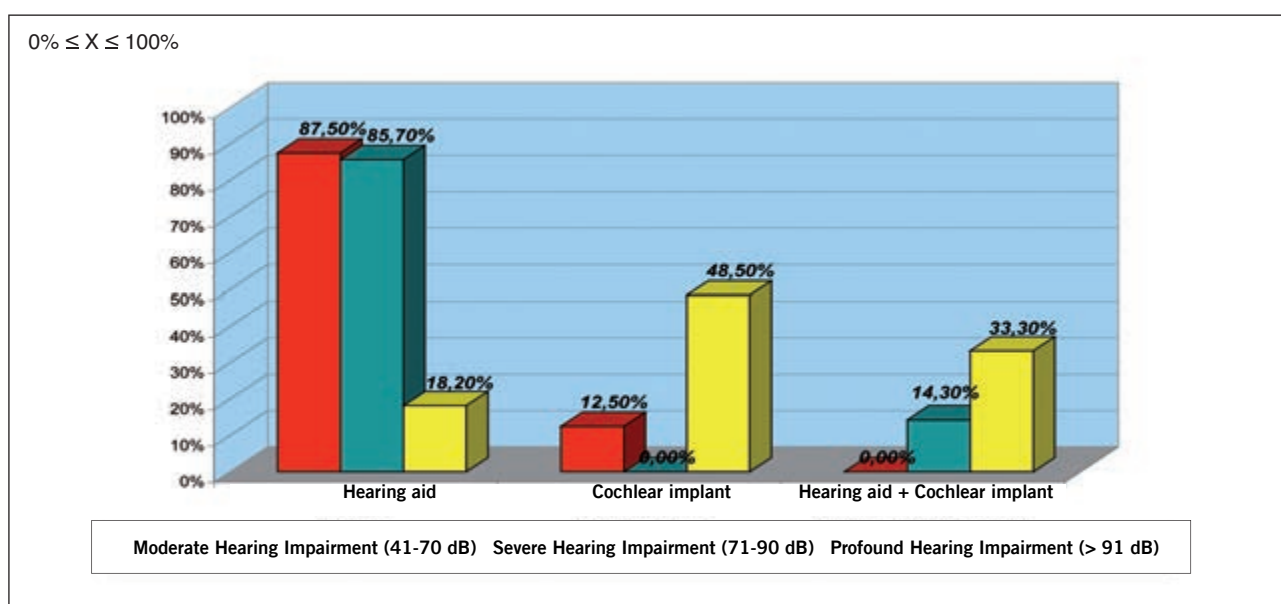


■ Type of auditory prosthesis

Progress in hearing utilisation with the prosthesis is explained by the quality of prosthetic adaptation and auditory education.

Although it cannot be stated that all study participants have an appropriate and well adapted prosthesis, more than 80% of cases with profound deafness have cochlear implants (Graph 6).

Graph 6. SOCIODEMOGRAPHIC VARIABLES OF THE CHILD POPULATION
Distribution by type of prosthesis and degree of hearing loss

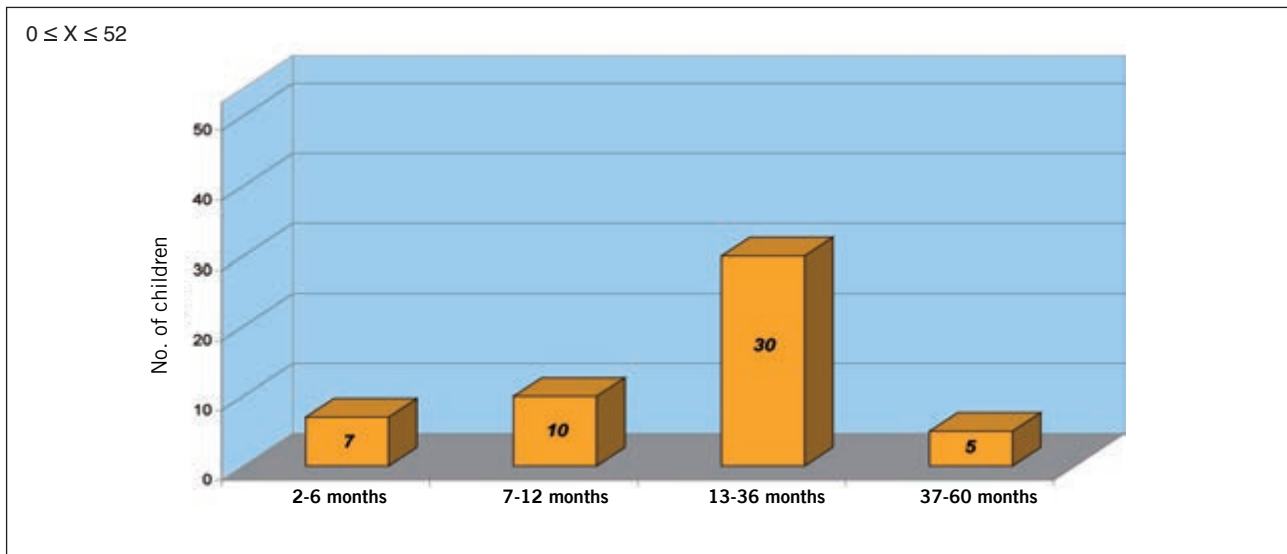


■ Moment of prosthesis installation and specialised educational intervention

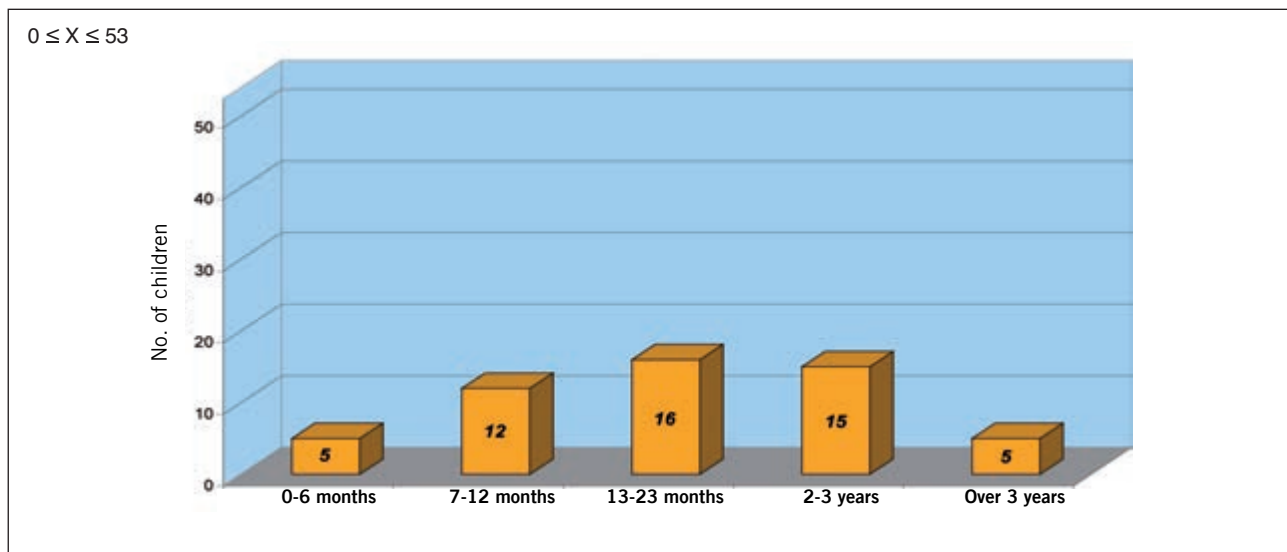
Despite progress in neonatal screening, the study data do not give an overly optimistic view in this regard since only 17 participants, out of the 52 who responded, benefited from application of the prosthesis during the first year of life, 7 of them between 2 and 6 months and 10 of them between 7 and 12 months. Of these 10, only 5 started early education before 6 months (Graphs 7 and 8).

While these data represent significant progress compared to the situation in our country a few years ago, it does not, however, allow us to compare results with the studies previously reviewed and conducted at the Marion Down Center. These show that 6 months of life is a key period for the start of early education and that there is a big difference in language acquisition processes between children treated before and after this age.

Graph 7. SOCIODEMOGRAPHIC VARIABLES OF THE CHILD POPULATION
Distribution according to moment of prosthetic adaptation



Graph 8. SOCIODEMOGRAPHIC VARIABLES OF THE CHILD POPULATION
Distribution according to the age of the child at the start of rehabilitation



4.3.2. Sociodemographic variables of families

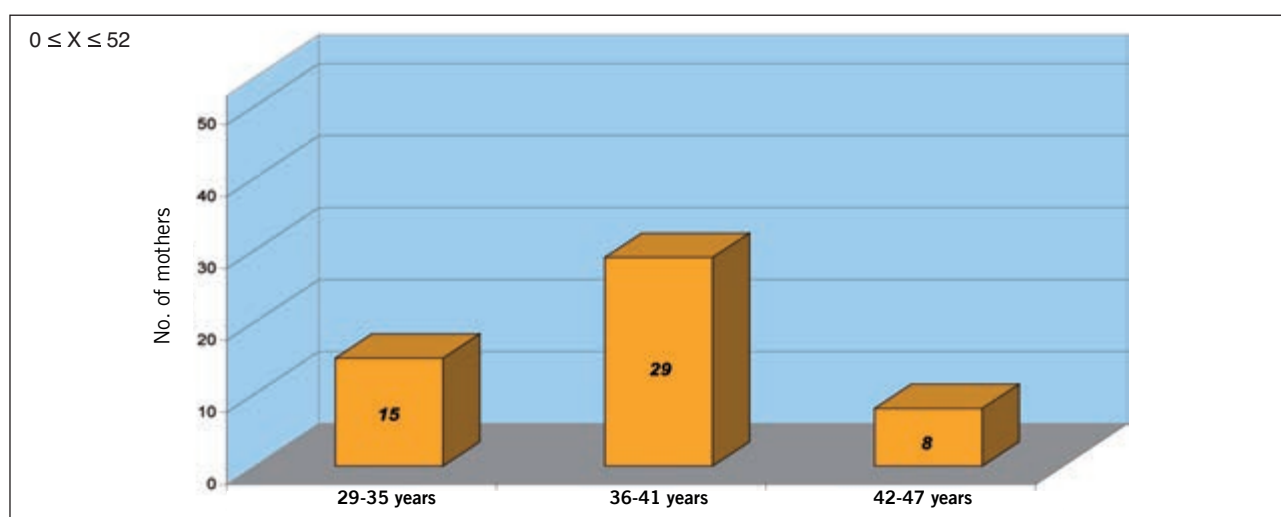
The following characteristics were taken into account to describe the families in the population studied:

- Age
- Level of education
- Employment circumstances
- Number of children
- Family constellation

■ Age

With regard to the age of the mothers who participated in this study, it may be noted that the ages are concentrated between 29 and 47 years, with 53.7% corresponding to mothers in the age range between 36 and 41 years, this being the majority, followed by the age range between 29 and 35 years, with 27.8% of the total. Lastly, the age range with the lowest representation corresponds to ages between 42 years and 47 years, with 14.8% of the population (Graph 9).

Graph 9. SOCIODEMOGRAPHIC VARIABLES OF THE FAMILIES
Age distribution of mothers

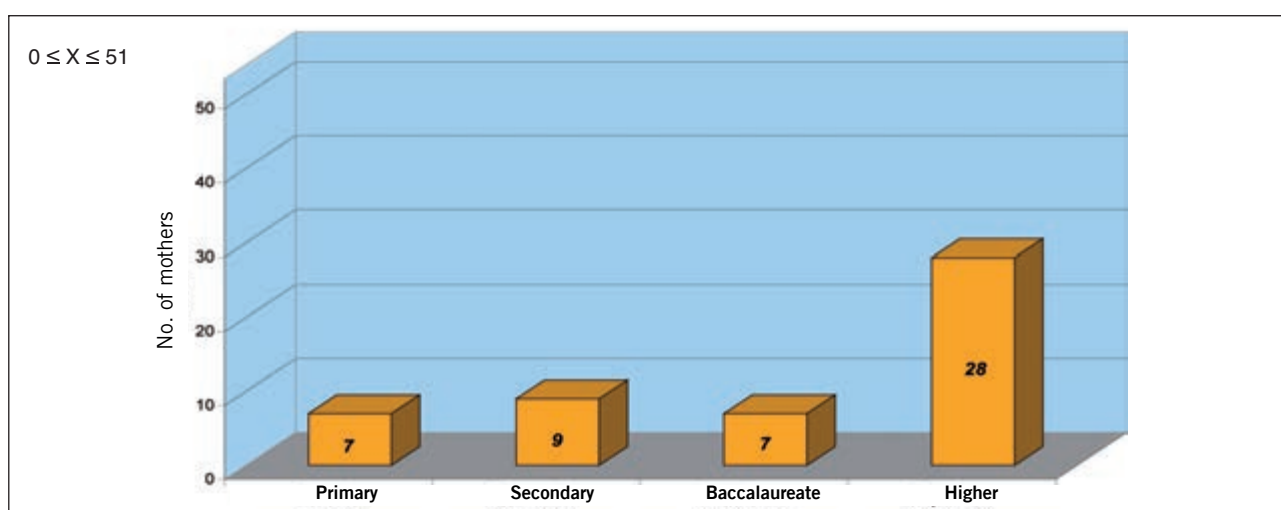


■ Level of education

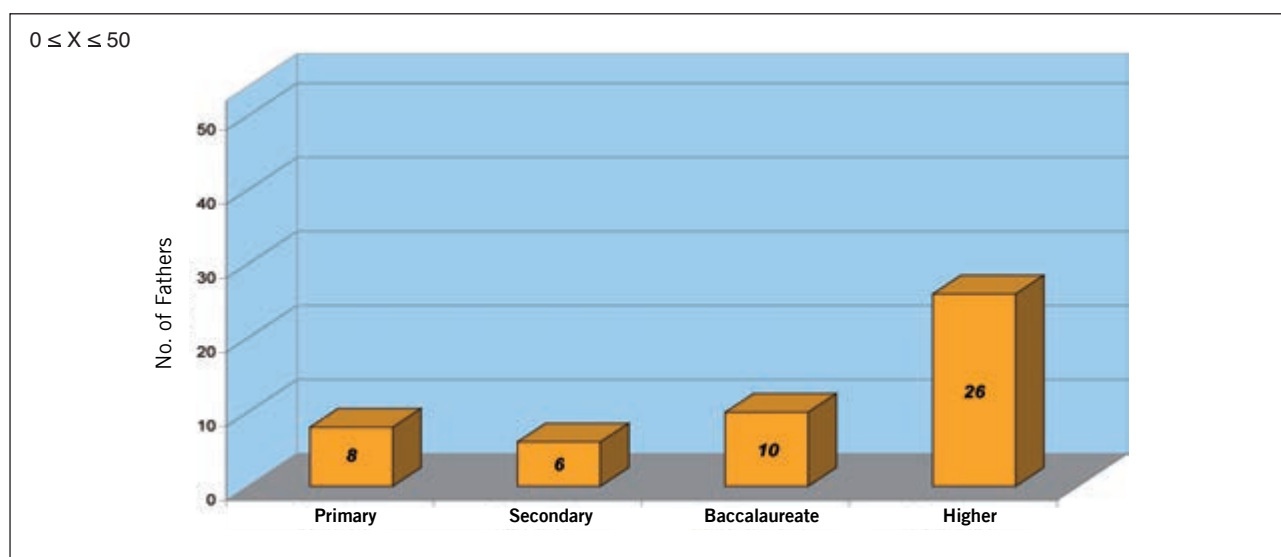
We find that more than 50% of mothers have higher education (Graph 10).

The father groups are very similar. Both predominantly have higher education (Graph 11).

Graph 10. SOCIODEMOGRAPHIC VARIABLES OF THE FAMILIES
Distribution of mothers by educational level



Graph 11. SOCIODEMOGRAPHIC VARIABLES OF THE FAMILIES
Distribution of fathers by educational level



■ Employment circumstances

Overall, mothers with a professional occupation predominate, which coincides with the high percentage of mothers with higher education (Graph 12).

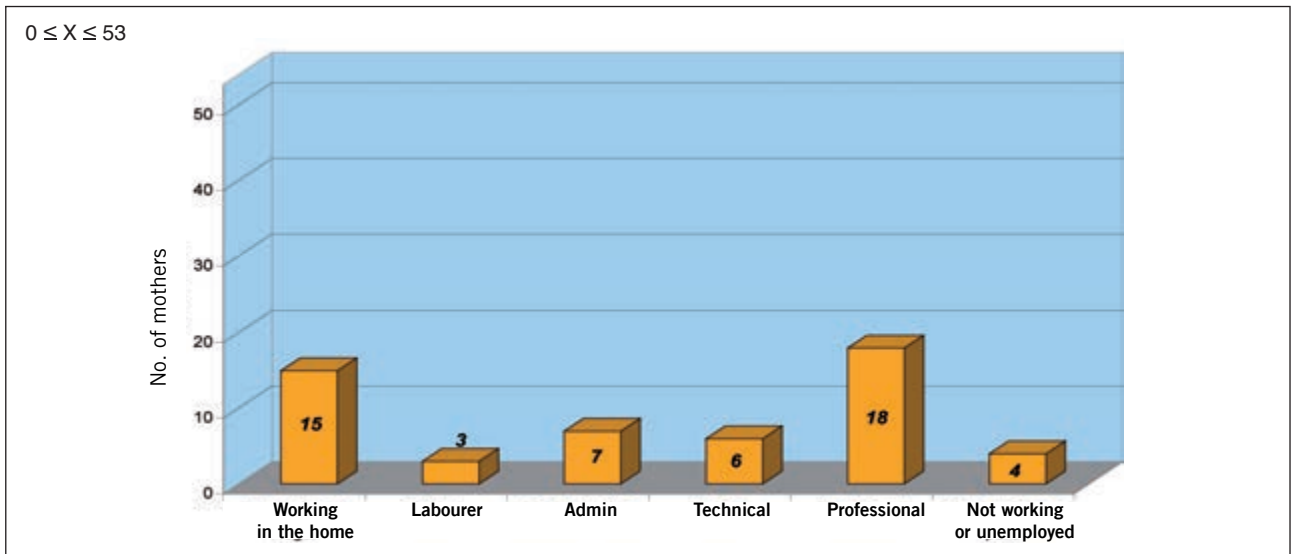
There is also a significant number of mothers who are homemakers. This latter information is not precise, since it does not inform us of the reason for this role, nor about their previous employment status if any.

The employment status of fathers is somewhat different from that of mothers (Graph 13). In the father group, there are no participants working at home or out of work, while in the parent group, of the 53 who answered this item, 15 are in the former situation and 4 in the latter.

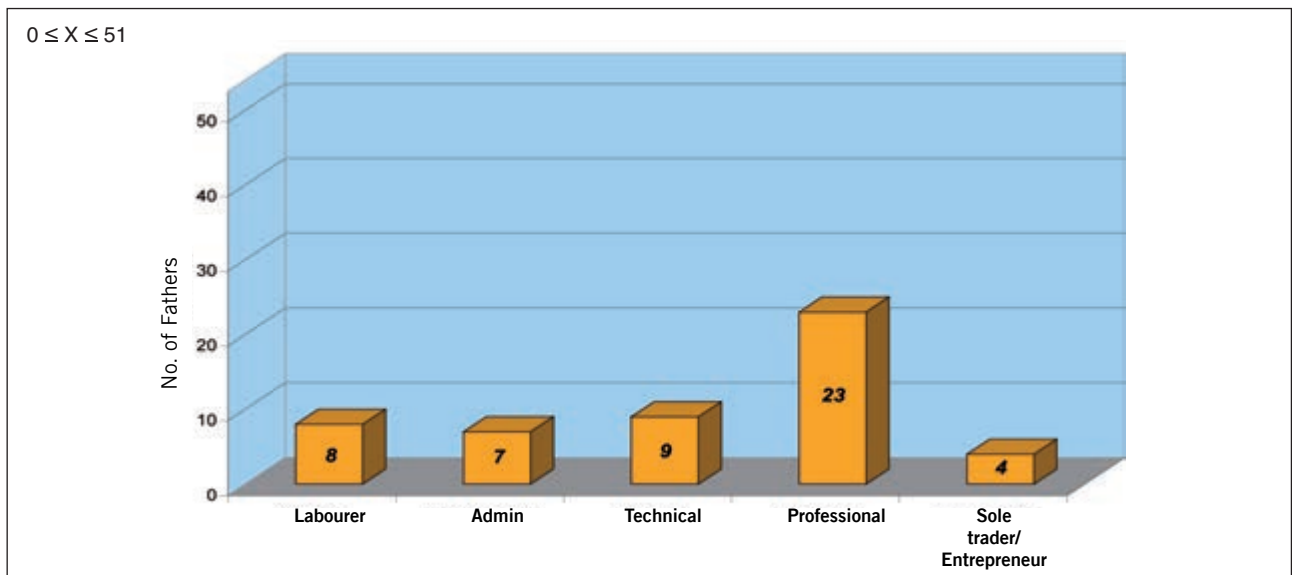
Nor are there participants in the group of mothers who are sole traders or entrepreneurs, while in the group of fathers, of the 51 who answered this item, there are 4 in this category.

Except for these clearly differentiating data, the other data are very similar between the two groups.

Graph 12. SOCIODEMOGRAPHIC VARIABLES OF THE FAMILIES
Distribution according to mothers' employment status



Graph 13. SOCIODEMOGRAPHIC VARIABLES OF THE FAMILIES
Distribution according to fathers' employment status

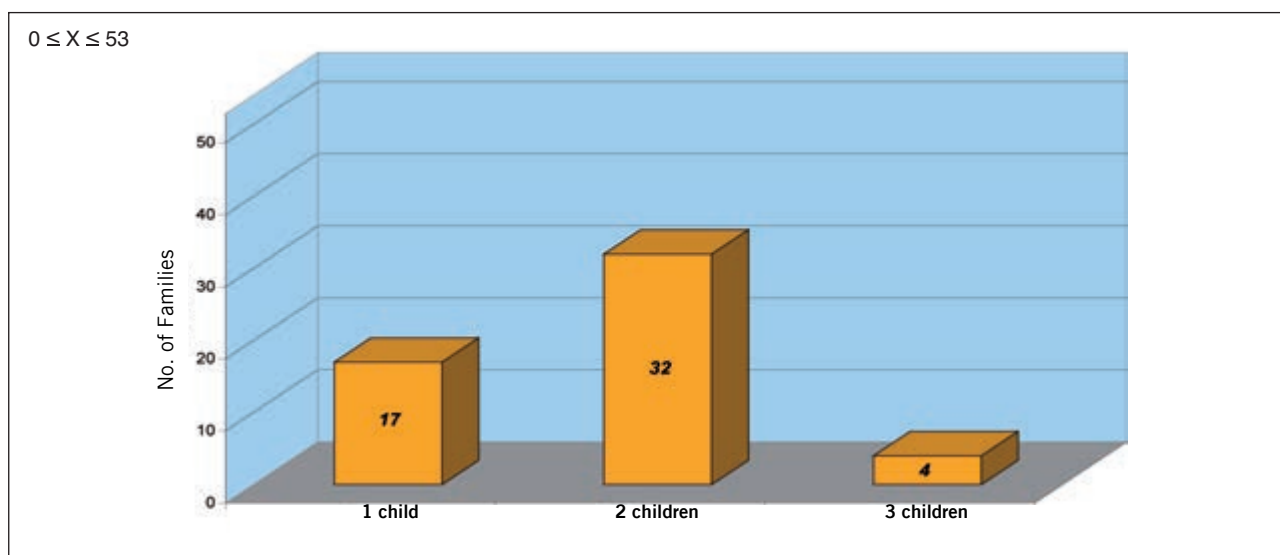


■ Number of children

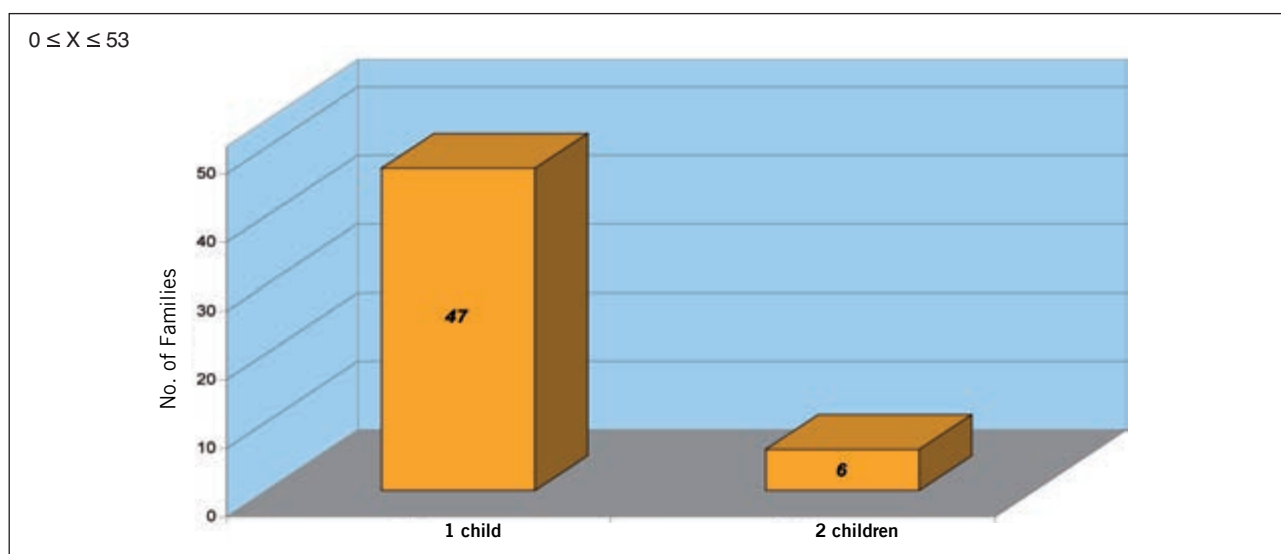
As may be seen, the average is slightly less than 2 children per family (Graph 14).

Only 6 families out of 53 families who have responded to this item have two children with deafness (Graph 15).

Graph 14. SOCIODEMOGRAPHIC VARIABLES OF THE FAMILIES
Distribution by total number of children



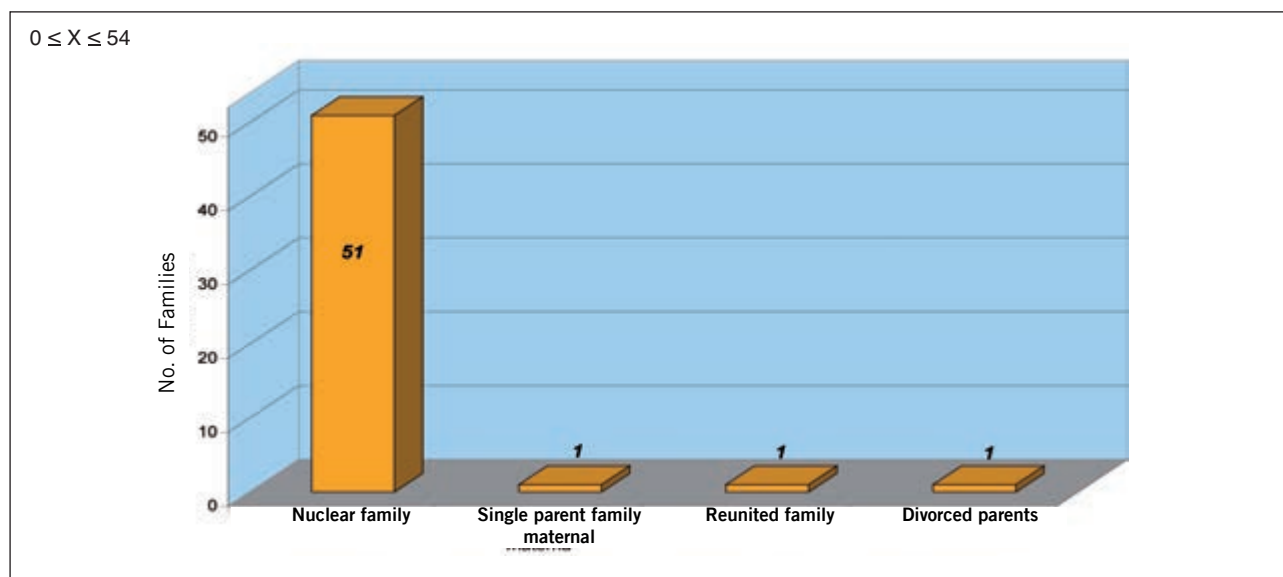
Graph 15. SOCIODEMOGRAPHIC VARIABLES OF THE FAMILIES
Distribution by number of children with deafness



■ Family constellation

The participating families largely follow the traditional pattern of nuclear structure. This is therefore not an independent variable to be considered in the statistical analysis since there is no variability (Graph 16).

Graph 16. SOCIODEMOGRAPHIC VARIABLES OF THE FAMILIES
Distribution according to family constellation



5. Results

This chapter presents the descriptive results regarding the personal variables of the population, the stress level of mothers and the linguistic and socio-affective level of the child population, as well as the characteristics of their communicative processes in terms of conversation management, stimulation of oral language and the development of the Theory of Mind (ToM).

5.1. PERSONAL CHARACTERISTICS OF MOTHERS AND CHILDREN WITH DEAFNESS STUDIED

5.1.1. Personal characteristics of mothers: stress level

The stress level of mothers was assessed for two domains: child and parental role.

■ Stress level: Child domain

More than 50% of mothers are found to be normal in terms of the level of stress derived from the child domain. Only 18.5% have a high level of stress.

Within the normality reflected in these results, a greater number of mothers with a high level of stress (N=10) than with a low level of stress (N=4) were observed in cases not within normal bounds.

■ Stress level: Parental role domain

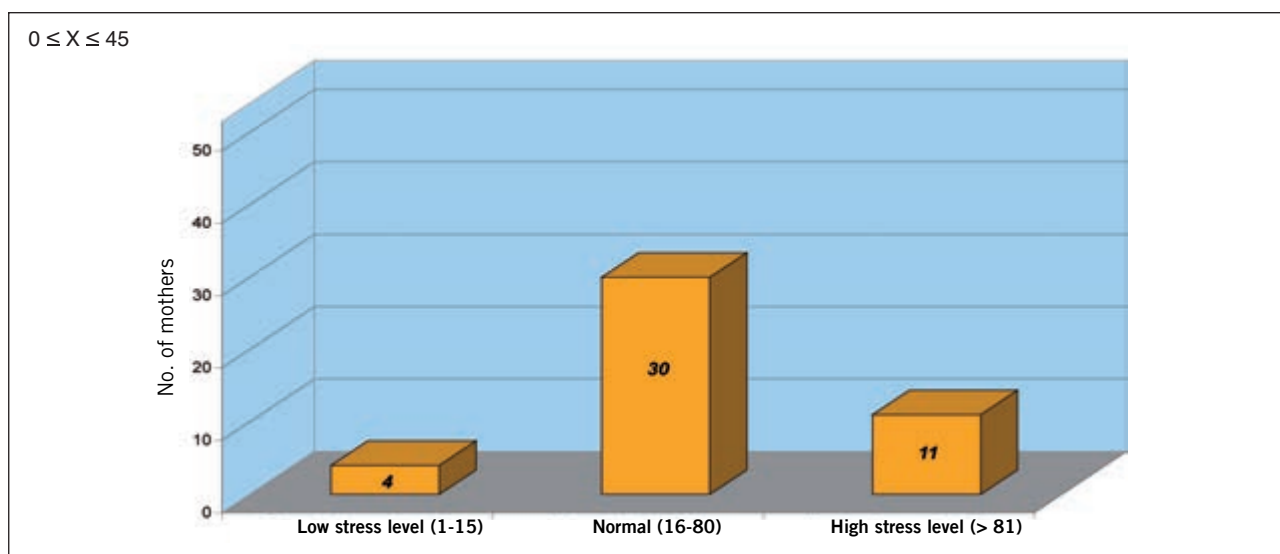
The results regarding the parental role domain are very similar to those of the child domain. No differences are observed between the two domains. These results coincide with those previously found in this country (Sánchez, L., 2006).

■ Stress level: Total stress

As a result of the results of the subscales, the results show that more than 50% of the mothers in the population studied (N=45, since 9 mothers did not respond) have a level of stress within the normal range, although at the extremes we find mothers with a very high level of stress (N=11) and mothers with a low level of stress (N=4). (Graph 17).

Overall, these results coincide with those found in this country by Laura Sánchez (2006), although they deviate from those of Quitner et al. (1990), discussed above.

Graph 17. PERSONAL CHARACTERISTICS OF MOTHERS
Total stress level



An analysis of the cases shows that the **profile of stressed mothers** is as follows:

- 7 of the 11 stressed mothers are in the first age bracket studied (29-35 years), with the youngest having a higher level of stress,
- 7 of the 11 mothers have a basic educational level (corresponding to primary or secondary education).

Regarding the **characteristics of the children of these stressed mothers**, 8 of them are male. In most cases (8 out of 11) they are children who already use simple phrases, simple and even fluent conversations in their everyday language. In the language tests performed in this study, 5 of these subjects were unable to perform the oral production tests and 4 obtained a low level of structuring of simple and complex sentences. And in turn, 5 obtained a low level of discourse analysis. It is also noted that 5 of the subjects failed oral comprehension tests and 3 obtained a low level of comprehension.

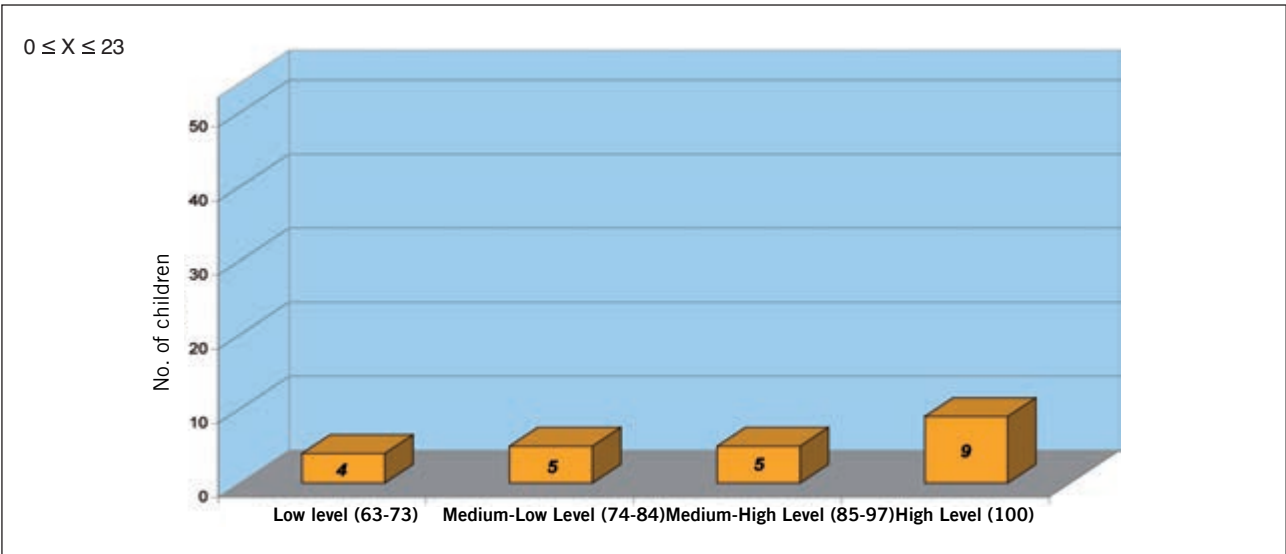
5.1.2. Personal characteristics of the child population studied: level of oral language and socio-affective level

■ Oral language: Comprehension

Overall, the child population that could be assessed for understanding the story (N=23) shows an acceptable level of understanding, as 14 children are at a high or medium level.

Graph 18 shows in brackets the percentage of the information shown by the children who understood the story.

Graph 18. PERSONAL CHARACTERISTICS OF THE CHILD POPULATION
Oral language comprehension



■ Oral language: Production

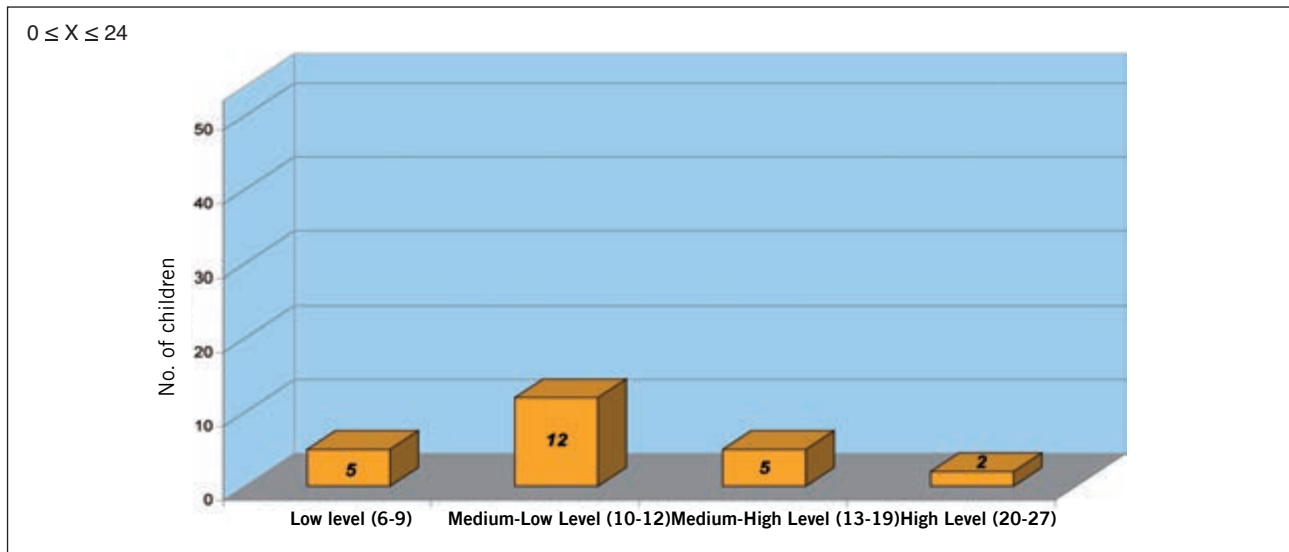
a) Discourse analysis

It is observed that of the entire child population that had an acceptable level of language to perform the test (N=24), i.e. they have a simple or fluent level of conversation, the highest frequency (N=12) presents a Medium-Low Level of Discourse Analysis (Graph 19).

This shows that assessments of language proficiency may vary in the same subject depending on communicative contexts and type of speech, with narrative being more complex than conversational.



Graph 19. PERSONAL CHARACTERISTICS OF THE CHILD POPULATION
Oral language production: Discourse analysis

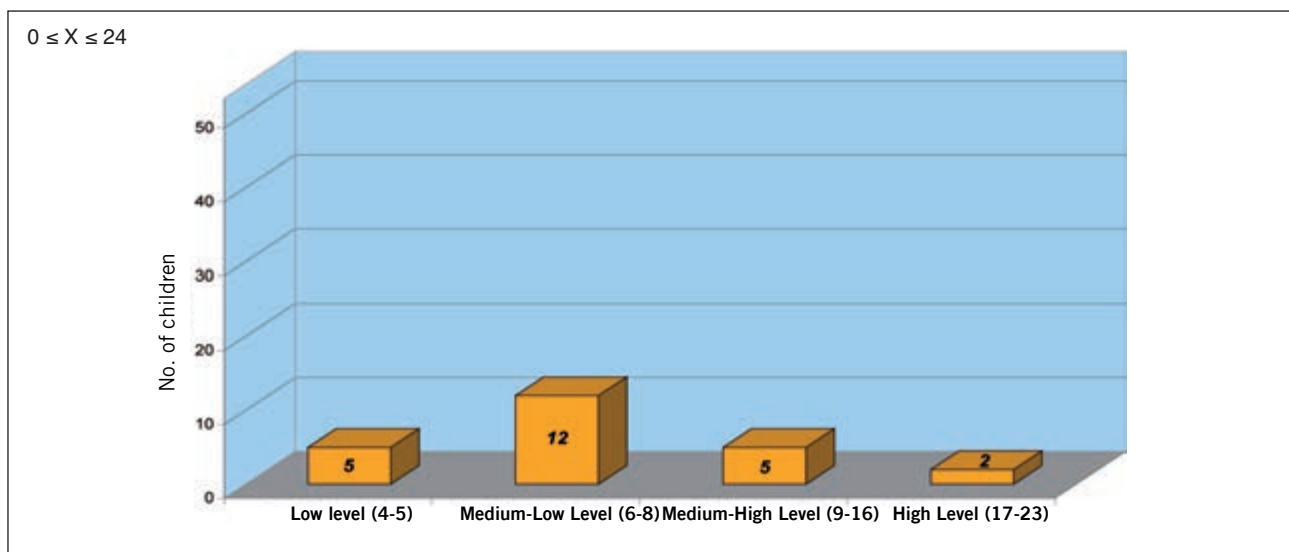


b) Simple and complex sentences

It is observed that, of the entire child population that performed the test (N= 24), the highest frequency of subjects (N=12) presents a Low-Moderate Sentence Structure Level (Graph 20).

Regarding the type of sentences used by children, it may be pointed out that 22 children with deafness use both simple and complex sentences, and the other 2 children use only simple sentences.

Graph 20. PERSONAL CHARACTERISTICS OF THE CHILD POPULATION
Oral language production: Sentence level

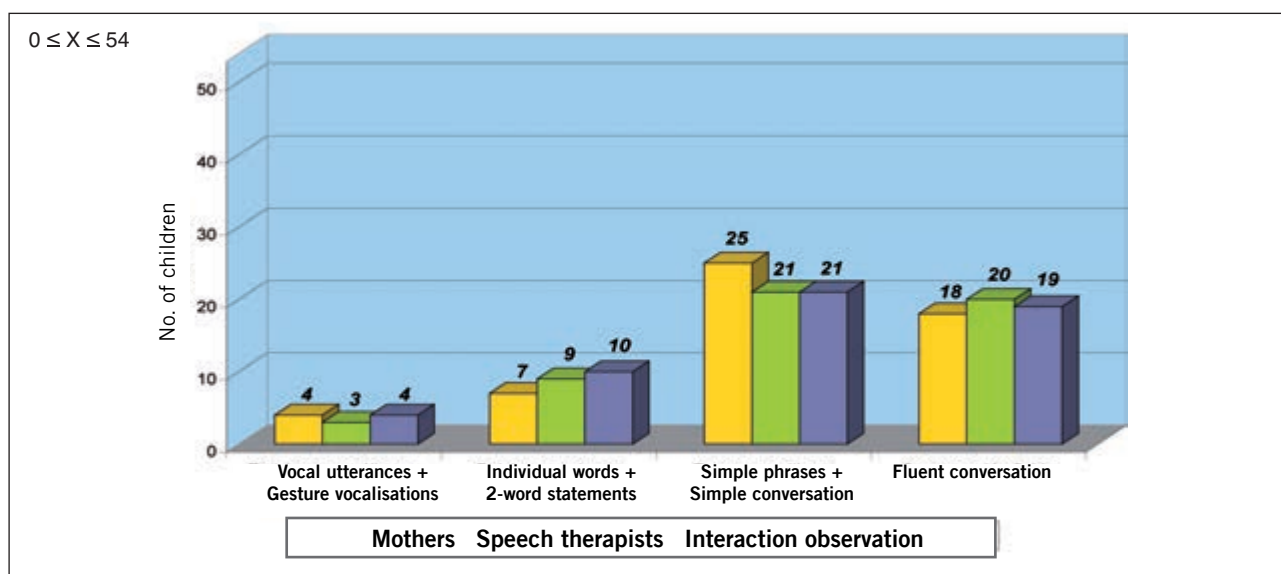


■ Spontaneous oral language

As can be seen in Graph 21, the mothers' perception of their children's language level coincides with the professional opinion of the speech therapists, and with the observational analysis conducted by the researchers in interaction situations.

Approximately 40 children with deafness have a level of language that fluctuates between simple and fluent conversation, with only 4 of the subjects having vocal utterances and gestures.

Graph 21. PERSONAL CHARACTERISTICS OF THE CHILD POPULATION
Spontaneous spoken language



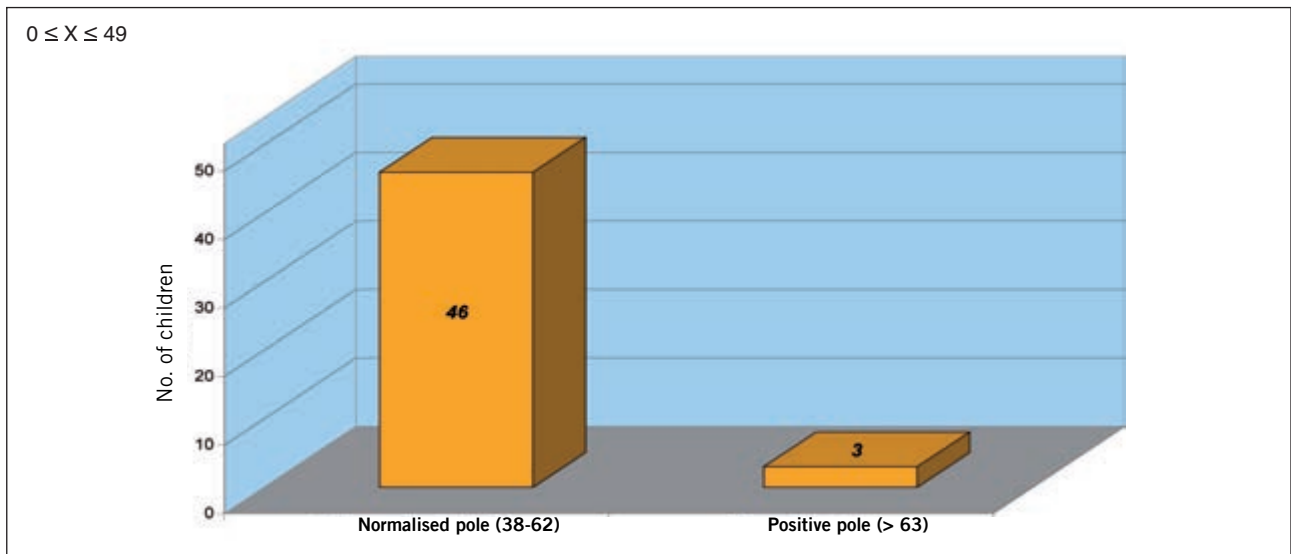
■ Socio-affective level

In summary, it is important to note that the results obtained offer a fully normalised view of the socio-affective development of children with deafness (Graphs 22, 23, 24 and 25; cases lost=6).

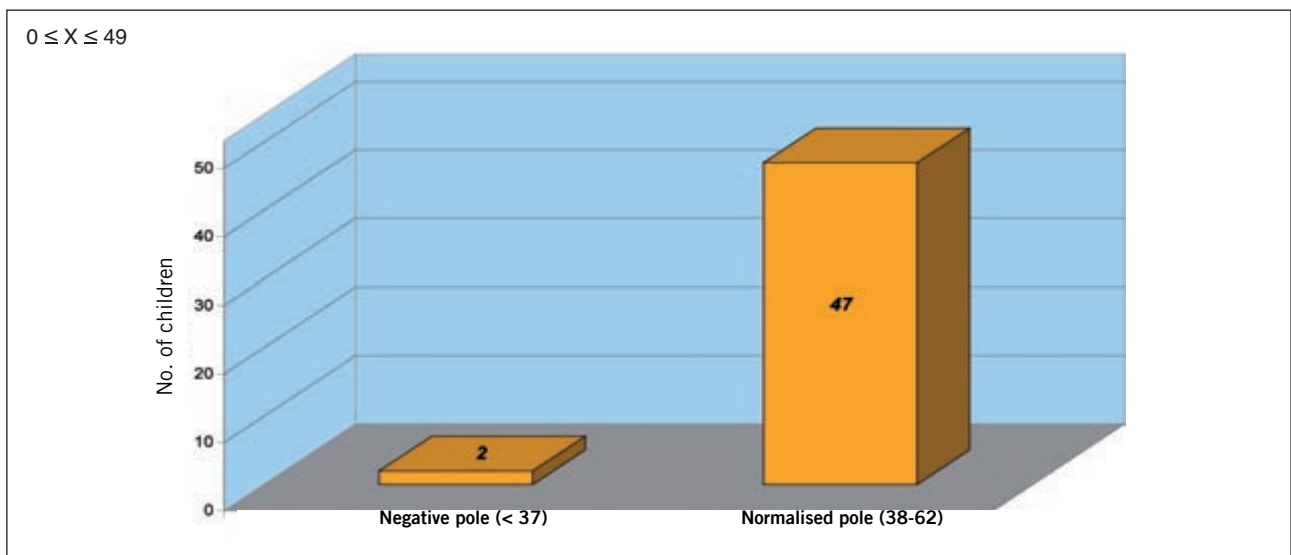
In this sense, these results allow us to refute ideas about possible socio-affective development difficulties in the ages studied and converge with those found in the aforementioned study of Virole et al. (2004) that used the same instrument, the PSA. Although the results are not as strong as those presented here, this study shows a process of complete normalisation.

Consequently, the socio-affective development of the child was rejected as an independent variable in the statistical analysis, since there is no variability in this regard and the normality of the development of the participants in this dimension constitutes a uniform characteristic of the study sample.

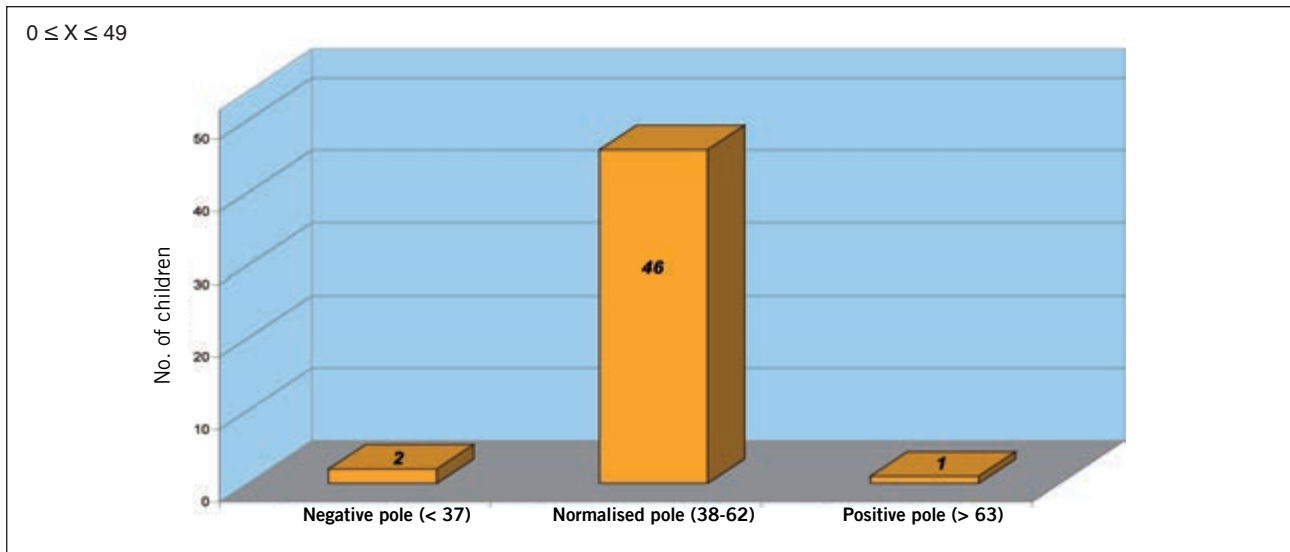
Graph 22. PERSONAL CHARACTERISTICS OF THE CHILD POPULATION
Socio-affective development: Social skills



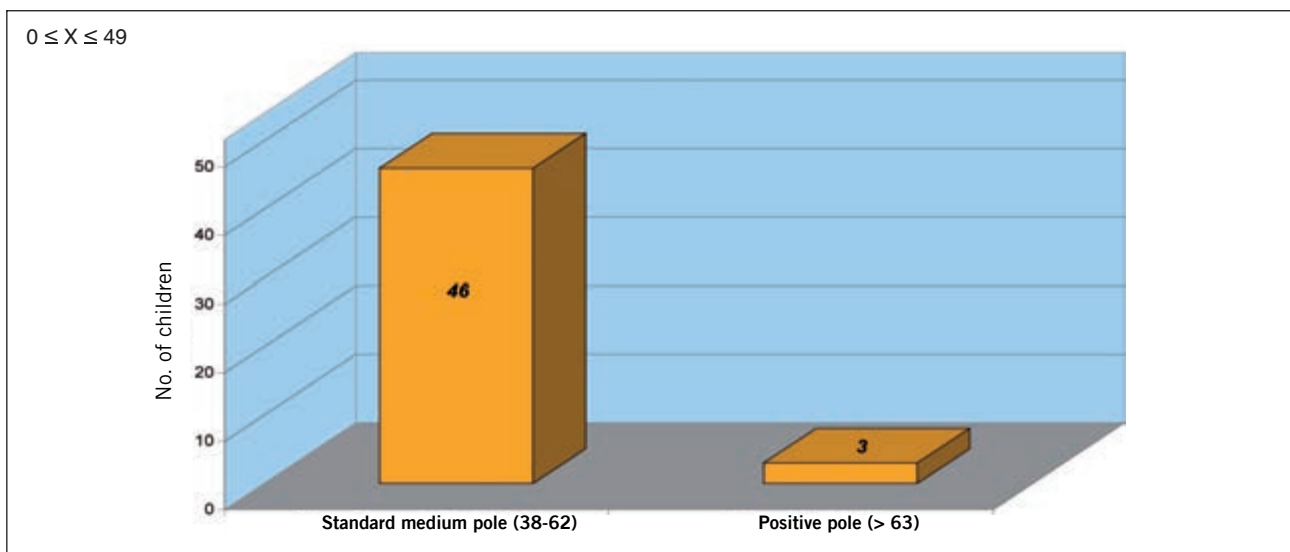
Graph 23. PERSONAL CHARACTERISTICS OF THE CHILD POPULATION
Socio-affective development: Externalized problems



Graph 24. PERSONAL CHARACTERISTICS OF THE CHILD POPULATION
Socio-affective development: Internalised problems



Graph 25. PERSONAL CHARACTERISTICS OF THE CHILD POPULATION
Socio-affective development: General adaptation



5.2. INTERACTIVE PROCESSES BETWEEN MOTHER AND CHILD WITH DEAFNESS

5.2.1. Interactions and conversation management between hearing mother and deaf child

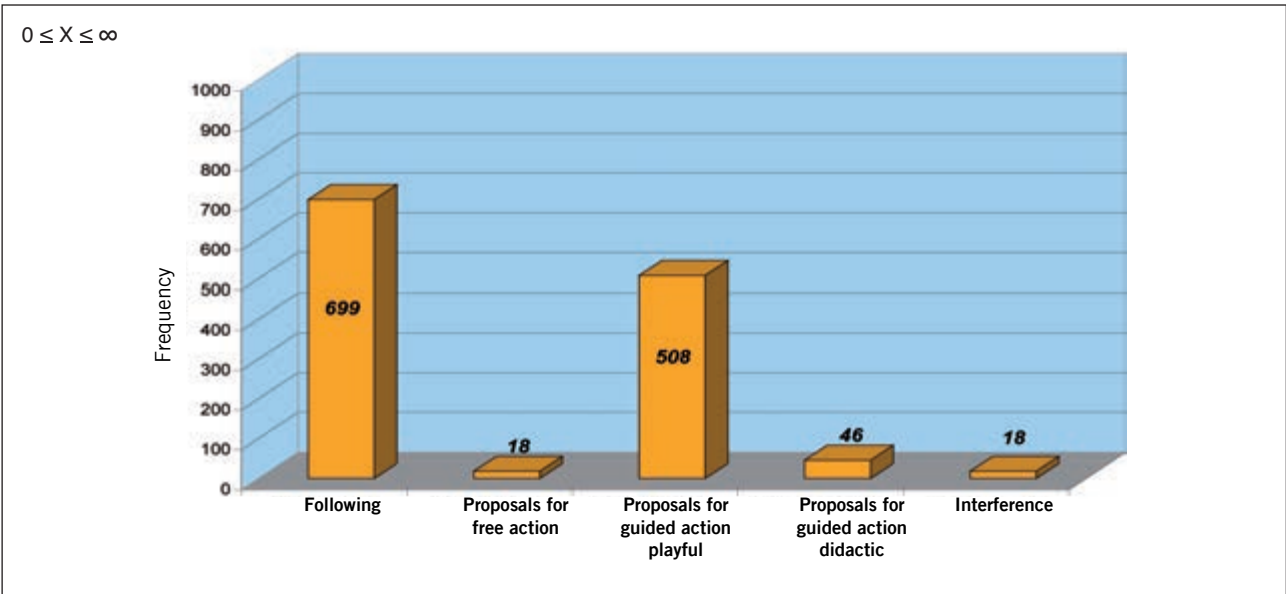
The conversational context in which exchanges between mother and child take place was analysed from the perspective of conversation management, in which the margin of control of the communicative interaction exerted by the mother is assessed, whereby maternal sensitivity is deduced in following the interests shown by the child and the overall assessment of the dyad in terms of intervention turns.

■ Maternal sensitivity

Given the frequency of “following” behaviours and “proposals for guided play action”, the participating mothers are mostly sensitive to the activity and interests of the child and integrate well in the game (Graph 26).

The low frequency of didactic tutoring behaviours contradicts the findings of previous studies highlighting the tendency of some mothers to act as speech therapists. However, there is a notable lack of proposals for free action.

Graph 26. INTERACTIVE-CONVERSATION MANAGEMENT PROCESSES
Maternal sensitivity



■ Assessment of the dyad

Although, as shown above, mothers are sensitive to their child's motivations, the results show a great asymmetry in the participants' initiative. In fact, most exchanges are initiated by the mother (1,046 out of 1,481 exchanges analysed) (Graph 27).

In this regard, the results are consistent with previous studies indicating the predominance of maternal initiative, even in free-play situations.

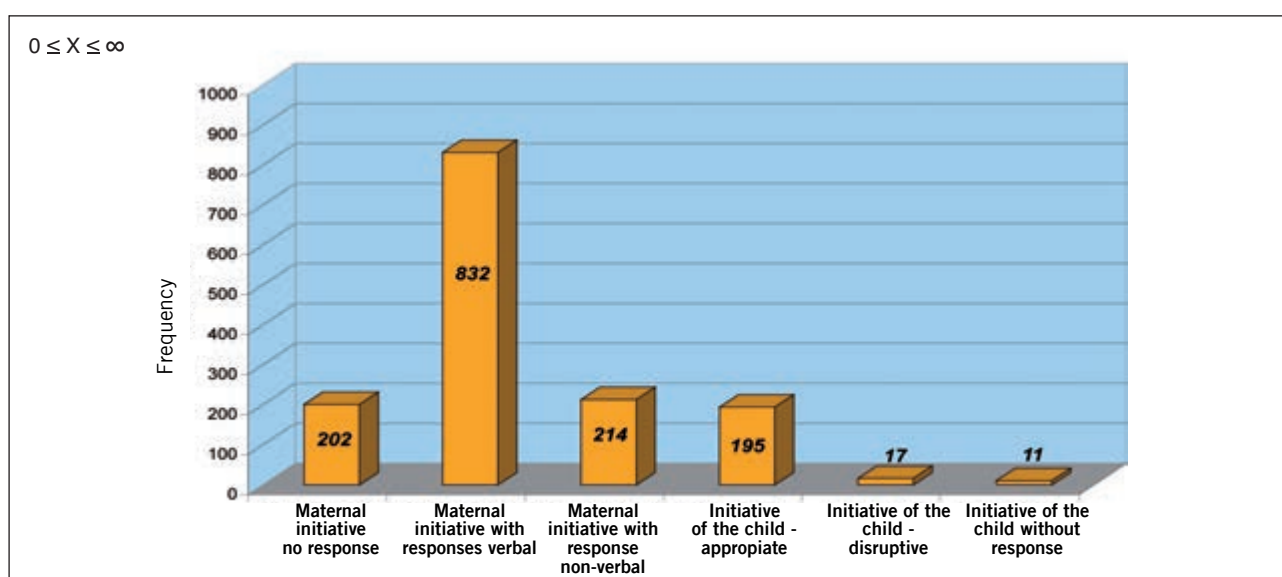
This seems to be a characteristic of exchanges with the deaf child, since in comparative studies between interactions with hearing and with deaf children this dominance is greater than in the case of dyads formed by hearing mothers and hearing children.

On the other hand, however, it is interesting to note that in most of the interactions initiated by the mother there is an adequate response from the child with deafness and that, very importantly, in an overwhelming majority (832 out of 1,481 exchanges) the child gives a verbal response.

With respect to shifts initiated by the child population, the highest frequency corresponds to appropriate initiatives (N=195), followed in order by disruptive initiatives (N=17) and finally by the child's initiatives that are not responded to by the mother (N=11).

Overall, the dynamics between the dyads are agile, in that in total, few initiatives are counted as receiving no response. This obviously occurs more often in the interventions of the mother than in those of the children.

Graph 27. INTERACTIVE-CONVERSATION MANAGEMENT PROCESSES
Overall rating of the dyads



5.2.2. Maternal behaviours and stimulation of oral language

Maternal behaviours that directly affect their child's language are discussed below, as well as maternal language as a model for the child.

Three parameters are used to assess the mother's stimulation for her child to use oral language: direct feedback given by the mother in response to the child's utterances, the functionality of maternal language productions in terms of the type of oral language production elicited from the child, and analysis of the mother's explanation in terms of the language model.

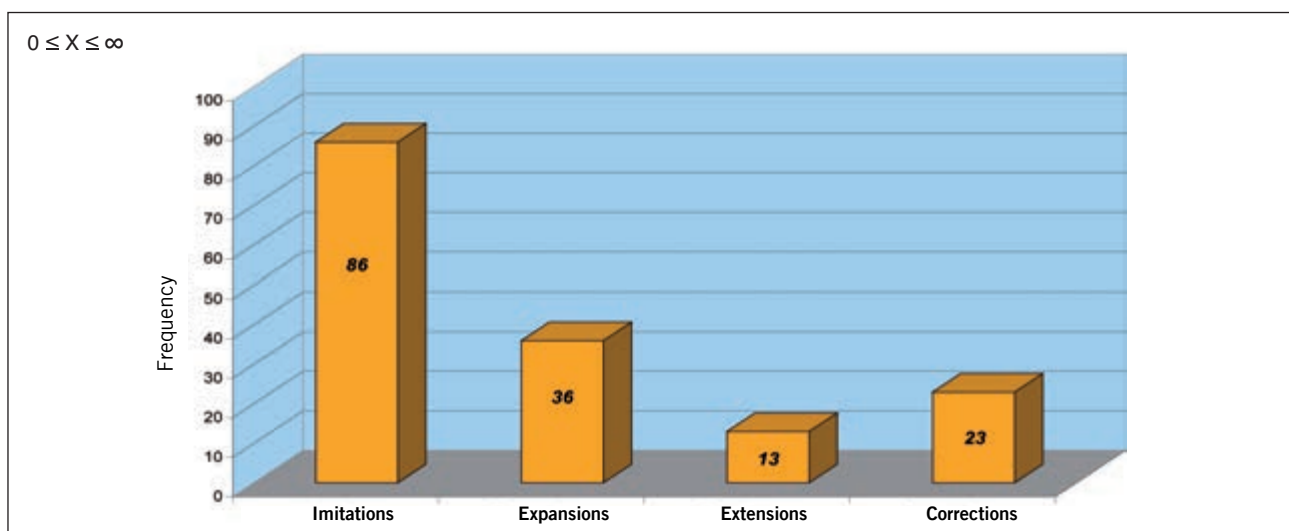
■ Maternal verbal feedback

As may be seen, the most common verbal feedbacks are imitations, as opposed to very few expansions and extensions. These results may seem contradictory to those of some studies cited, that have highlighted the difficulties of hearing mothers in imitating the utterances of a child with deafness because the baby's utterances are not similar to those of the chain of speech (Vinter, 1994; Kurtzer-White, 1999). However, it must be taken into account that imitations have a different function according to the age and language level of the child (Graph no. 28).

In the case of a deaf baby, imitations are necessary to reinforce their verbal utterances. However, when the child already has a certain level of language, imitations may have another function. Thus, for example, in the situation of the role play studied, the action is alternated with comments, and the imitation by the mother not only has the function of reinforcing what the child has said, but mainly of reinforcing what they are representing by the action.

In any event, with the average sample age, more expansive and extensive feedbacks would have been expected.

Graph 28. INTERACTIVE PROCESSES-STIMULATION OF ORAL LANGUAGE
Overall maternal feedback



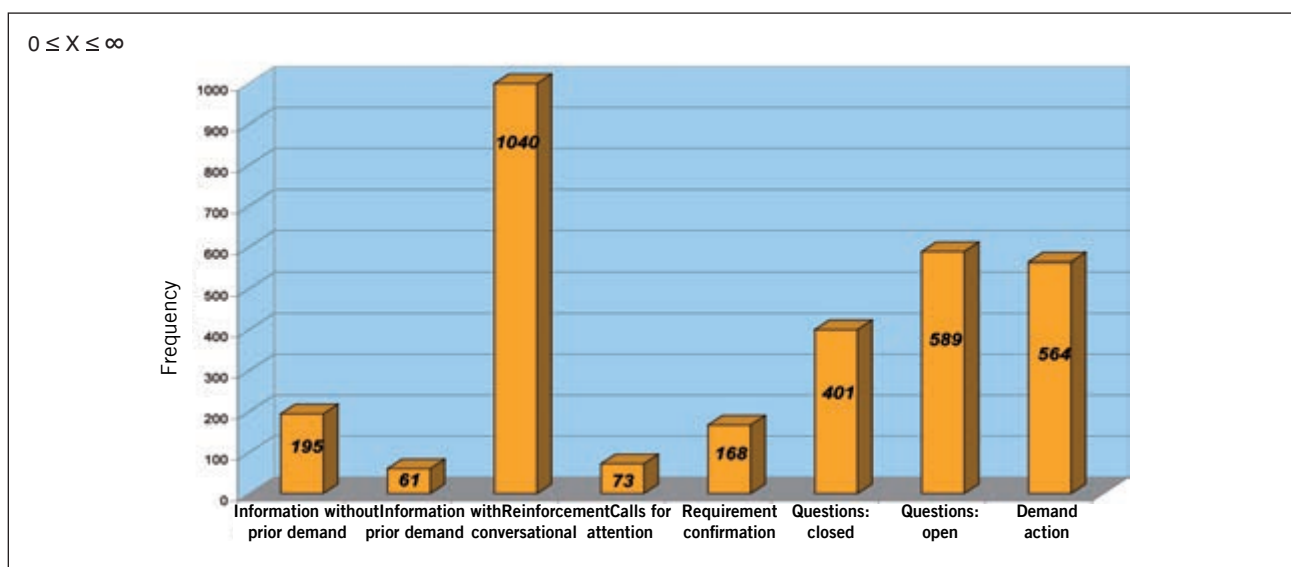
■ Functionality of maternal production and type of linguistic production elicited

The linguistic function most commonly used by mothers during interactions with their children is conversational reinforcement, which serves to advance the conversation between the dyad (Graph 29).

Open-ended questions are also used with high frequency, even slightly higher than closed questions (N=589 and N=401, respectively) which together offer a predominance of an expansive maternal communicative style.

These results do not, however, coincide with the different studies reviewed in similar play situations, which highlight a tendency for mothers to use language functions that exert greater control over the production of children. Undoubtedly, in the present study, the predominant linguistic level in the studied population, simple and fluent conversation, allows mothers to use this linguistic function that encourages the production of oral language of the child population.

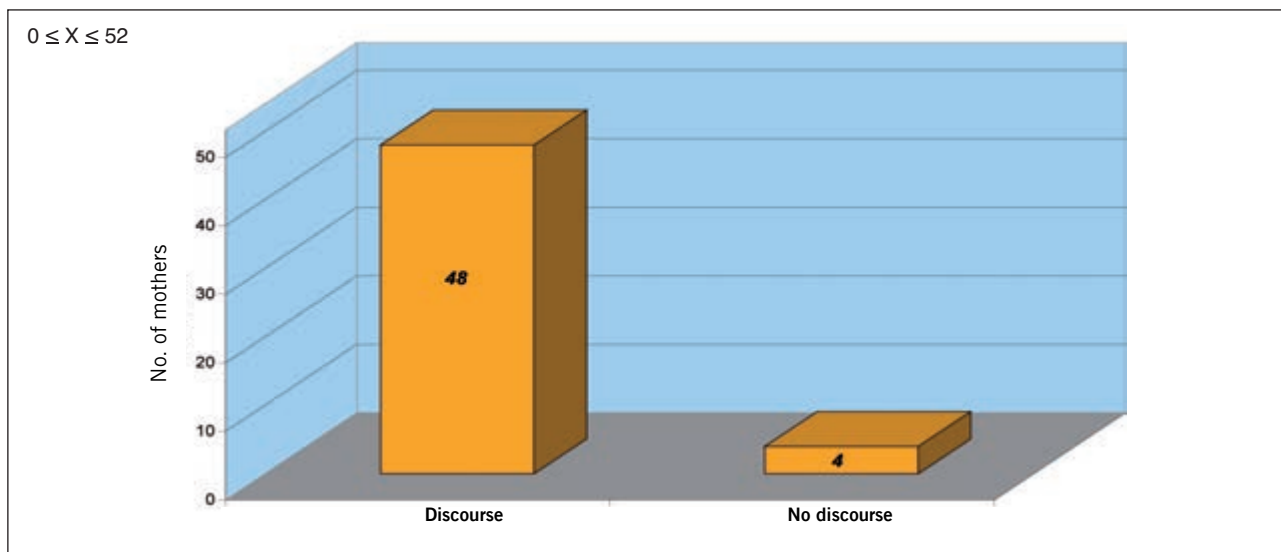
Graph 29. INTERACTIVE PROCESSES-STIMULATION OF ORAL LANGUAGE
Functionality of maternal production and type of linguistic production elicited overall



■ Maternal linguistic model

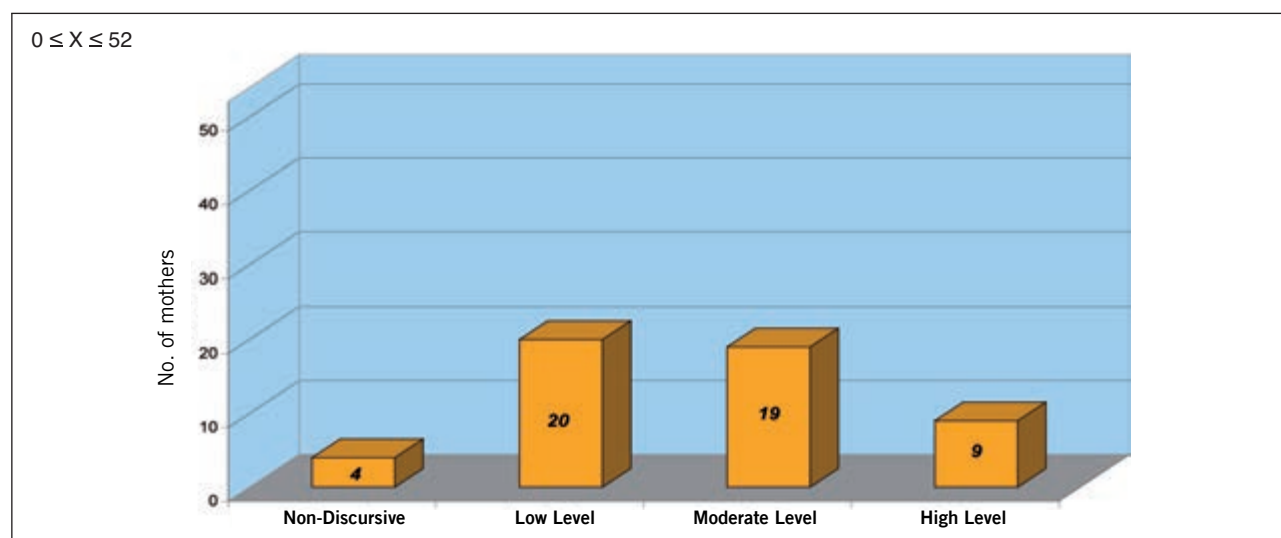
The first point to note is that the vast majority of mothers studied generate discursive productions. Only 4 of them perform simple listings of objects or actions, coinciding with mothers of children of a pre-linguistic level (Graph 30).

Graph 30. INTERACTIVE PROCESSES-STIMULATION OF ORAL LANGUAGE
Maternal linguistic model: Type of narration



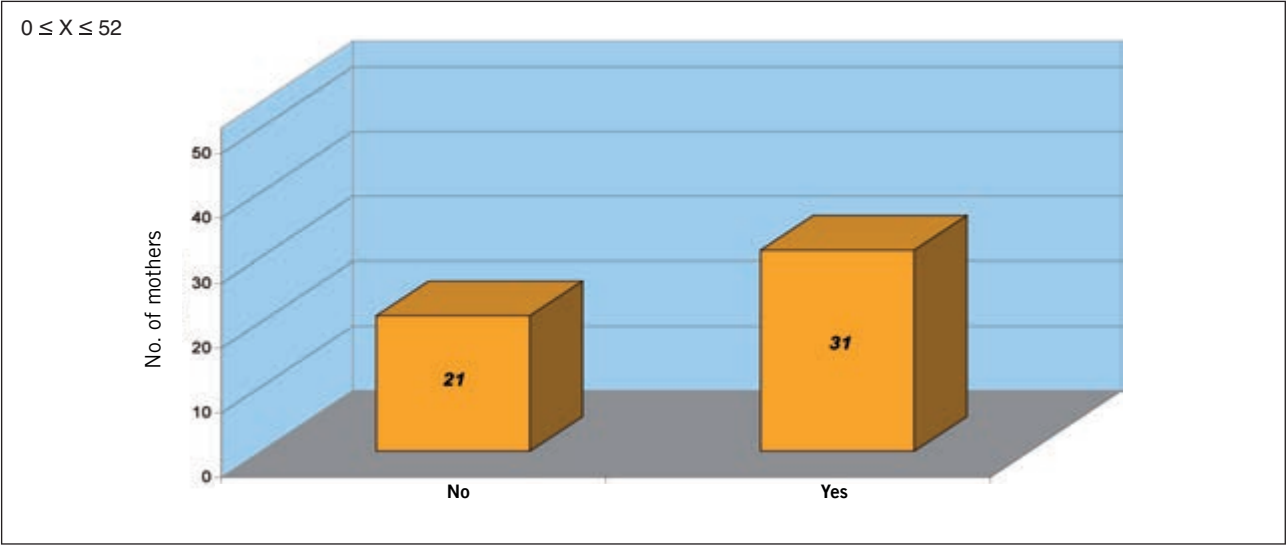
In terms of the level of organisation of the discourse, approximately 50% of the mothers present a good structuring of the discourse (N=19, medium level and N=9, high level of structuring) according to the most basic elements defined by the grammars of stories (Graph 31).

Graph 31. INTERACTIVE PROCESSES-STIMULATION OF ORAL LANGUAGE
Maternal linguistic model: Level of discourse organisation

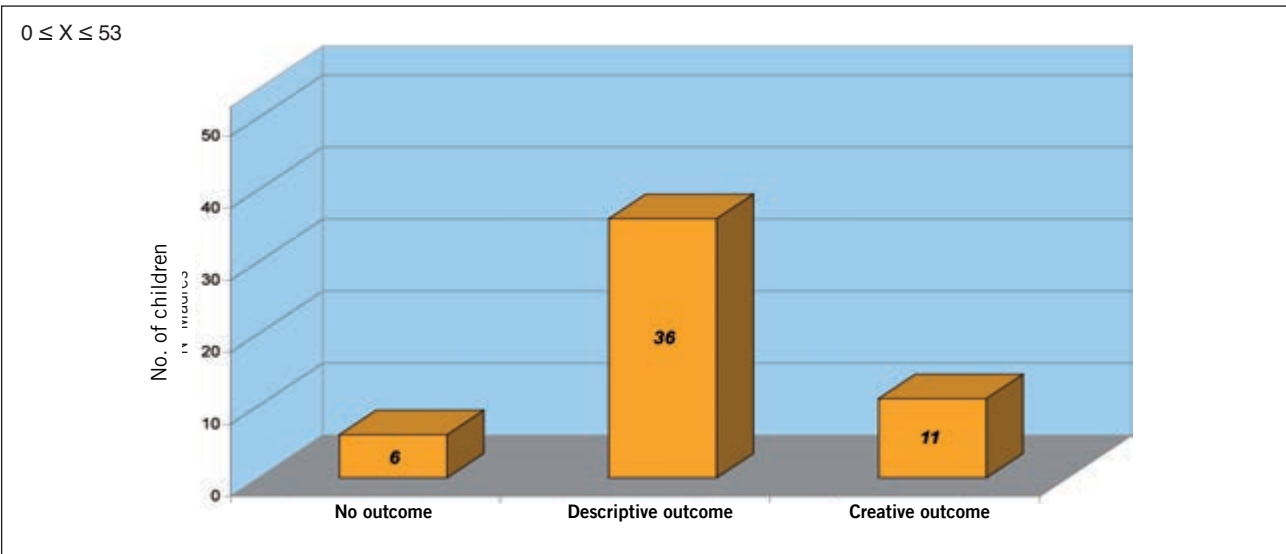


The parts of the story that were “taken more into account” by the mothers (N=31) are the initial presentation (Graph 32) and the outcome that, although it is not explicit in Graph, 46 mothers explained, mostly describe it from the image, with 11 inventing it in a consistent manner (Graph 33).

Graph 32. INTERACTIVE PROCESSES-STIMULATION OF ORAL LANGUAGE
Maternal linguistic model: Presentation of characters or initial scene



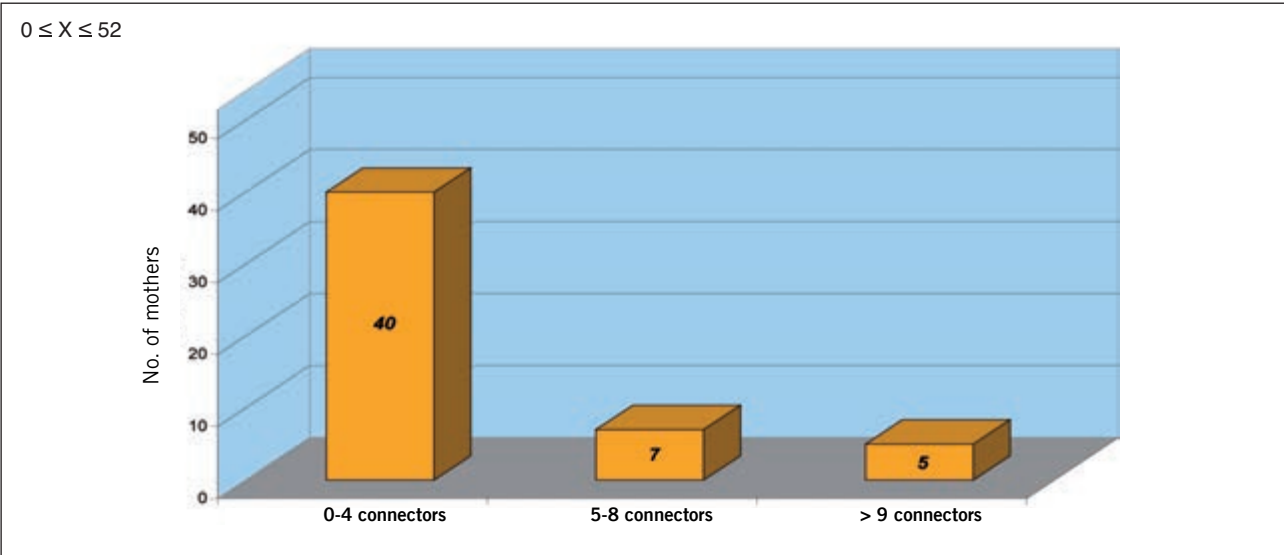
Graph 33. INTERACTIVE PROCESSES-STIMULATION OF ORAL LANGUAGE
Maternal linguistic model: Type of outcome



As for the use of connectors and resources to maintain the reference through subject elision, only 9 do so frequently in their discourse. The vast majority use none or less than 4 (Graph 34).

The connectors used by the participants with the greatest frequency are what we could call linear: “then”, “first”, “next...” Only 3 mothers use connectors to anticipate an important event, “until one day”, “suddenly”. The end is anticipated by some saying “in the end”, but the most common form is of the “And they all lived happily ever after...” type.

Graph 34. INTERACTIVE PROCESSES-STIMULATION OF ORAL LANGUAGE
Maternal linguistic model: Oral discourse marks (connectors)

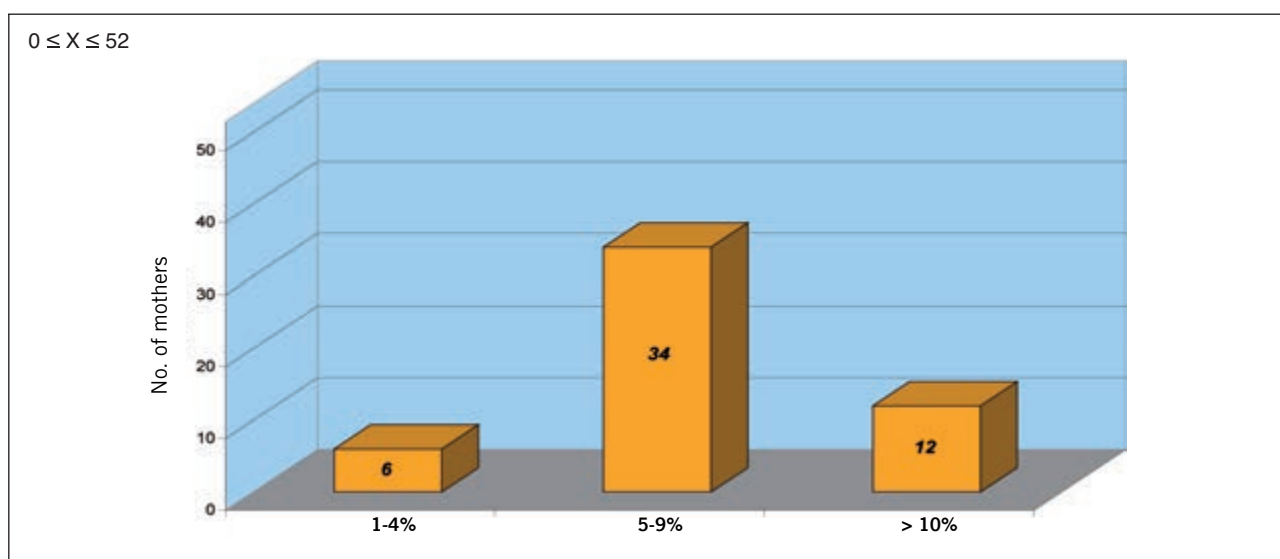


5.2.3. Maternal behaviours and stimulation for the development of the Theory of the Mind

■ Mental terms in the story “The Turtle”

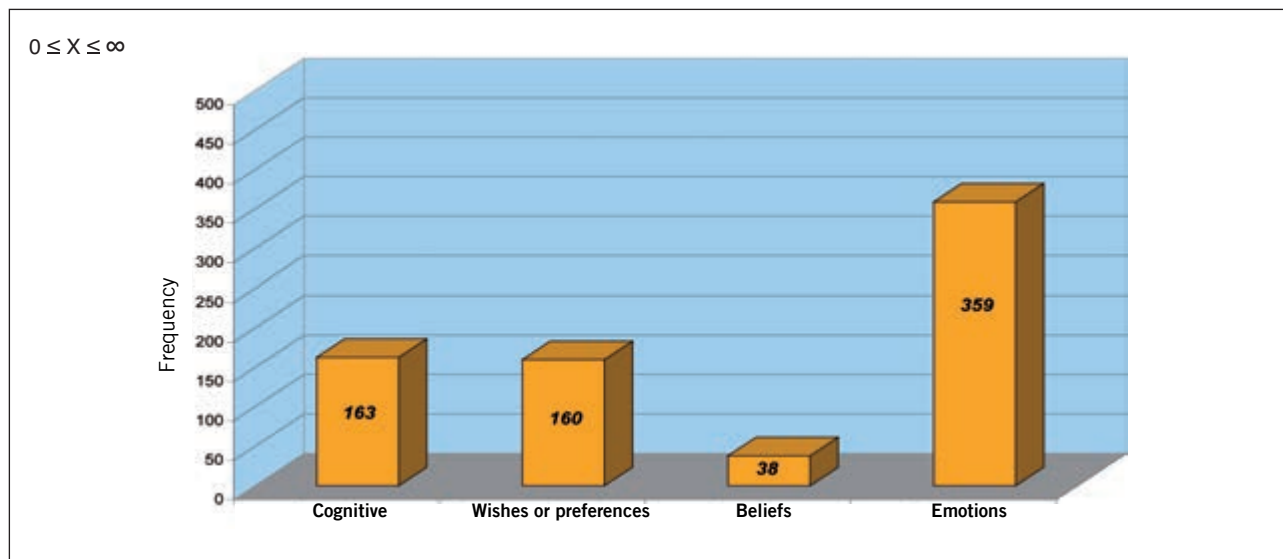
Looking at the discursive corpus of the mothers, we find that little reference is made to the various mental states. The percentage of mental words used by mothers out of the total number of words in the story corpus is low. Although in some cases it reaches up to 16%, this is only in one specific case and most mothers use between 5% and 9% of mental words (Graph 35).

Graph 35. INTERACTIVE PROCESSES-STIMULATION OF DEVELOPMENT OF THEORY OF MIND
Percentage of mental words used by mothers



Almost 50% of mental terms refer to emotions. Undoubtedly the content of the story, with a conflict between two people at its core, mainly entails the verbalisation of feelings and emotions. However, it should be noted, at the other extreme, the infrequency of use of terms referring to beliefs which, although they may also be elicited by the content of the story, due to some ambiguous episode, instead represent greater complexity (Graph 36).

Graph 36. INTERACTIVE PROCESSES-STIMULATION OF DEVELOPMENT OF THEORY OF MIND
Global frequency of types of mental terms used by mothers

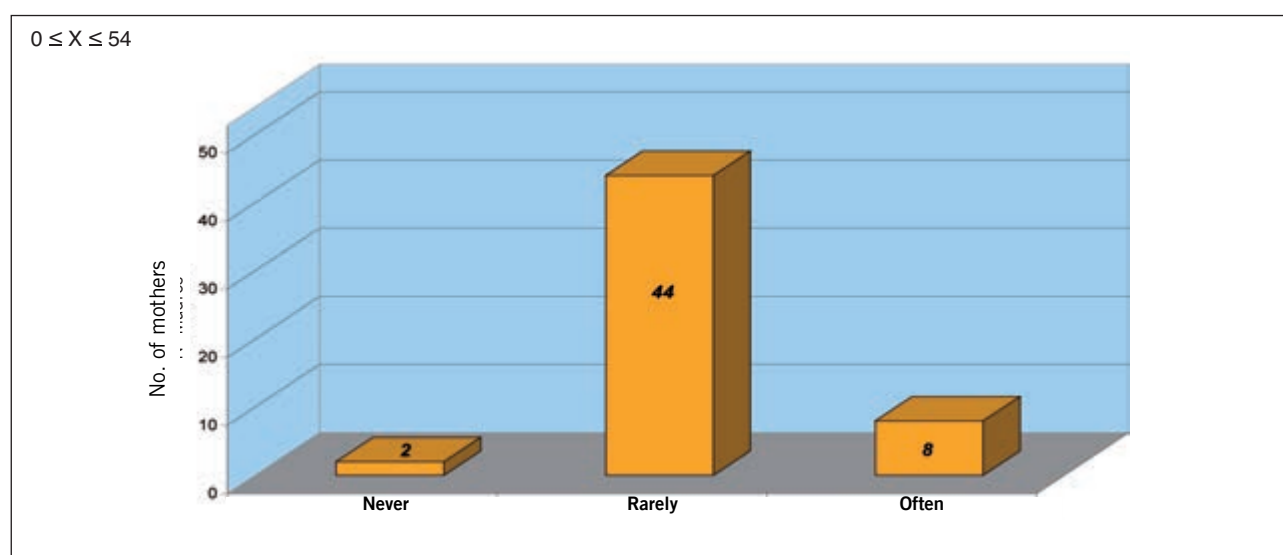


■ Mental arguments in punishments

According to the mothers, punishment is rare in most cases ($N=44$, representing more than 80% of participants). Only 8 mothers say they often need to punish their child (Graph 37).

This could be interpreted in line with what some authors suggest, that children with deafness are more overprotected or simply well-adapted children who are not troublesome, as may be seen from the results obtained in the PSA.

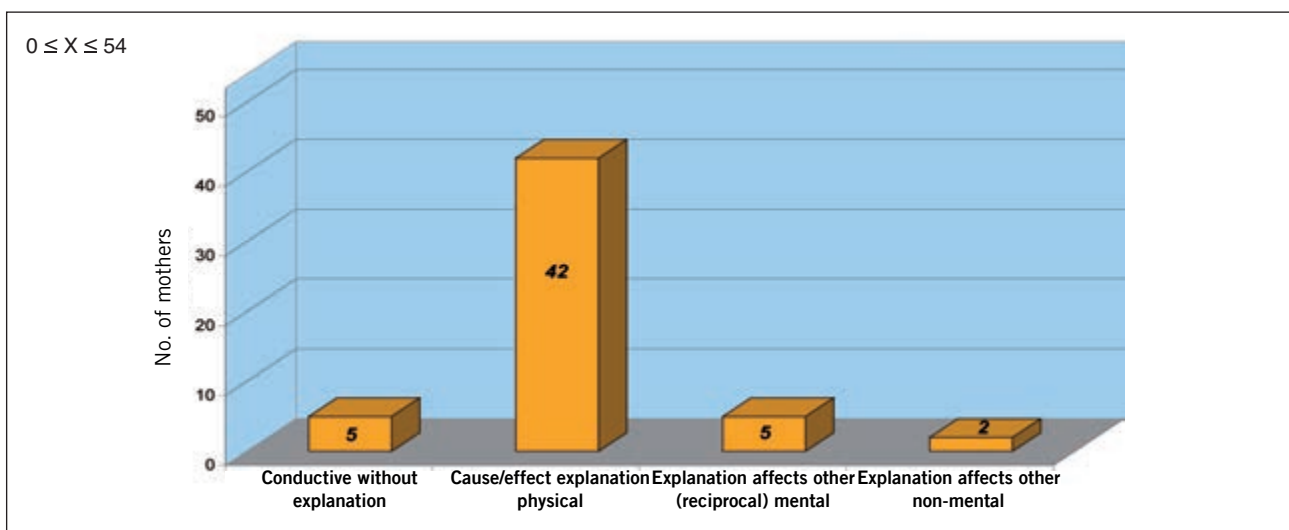
Graph 37. INTERACTIVE PROCESSES-STIMULATION OF DEVELOPMENT OF THEORY OF MIND
Frequency of punishments



The most important data point refers to explanations of punishment.

The mothers studied report that when they punish their children they give them explanations (N=49). This is at odds with another study in which one of the reasons mothers claimed not to punish was that it was difficult to give understandable arguments to a deaf child. The mothers in this study say they give explanations, but only 5 of them explicitly state mental arguments (Graph 38).

Graph 38. INTERACTIVE PROCESSES-STIMULATION OF DEVELOPMENT OF THEORY OF MIND
Types of explanation in punishments



■ Mental arguments in conflict situation in the role play

In the role play a fictional situation was introduced that induced a conflict between two characters (“the brother eats his sister’s piece of cake”), leaving room here for free action by the dyad.

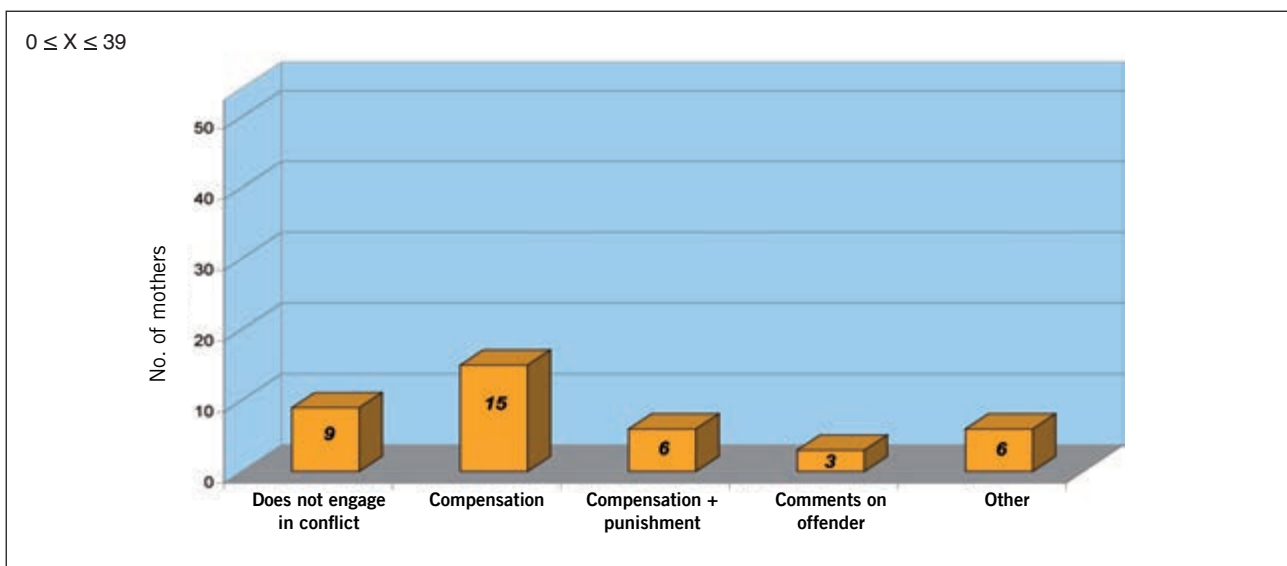
Only 39 of the dyads participated in this situation. The other 15 participated in the puppet game, proposed for younger participants (Graph 39).

There are different types of response to the conflict. Most dyads (N=15) take up the conflict and use the compensation strategy in the absence of the cake. Other mothers compensate the “victim” and punish the offending character.

Graph 39. INTERACTIVE PROCESSES-STIMULATION OF DEVELOPMENT OF THEORY OF MIND
Type of responses to conflict in fictional situation

Of the 26 mothers who entered into the conflict in the fictional situation, most of the arguments used to explain the conflict were non-mental. Less often, there are mothers who use mental terms when narrating the conflict and who mostly allude to the emotions experienced by the fictional characters (Graph 40).

Graph 40. INTERACTIVE PROCESSES-STIMULATION OF DEVELOPMENT OF THEORY OF MIND
Types of terms in the face of conflict in fictional situation.



6. Analysis of the results

After the description of the results obtained, this chapter analyses the results regarding the interrelationships of the variables of mothers and children, how these may be associated with the different forms of communication between mothers and their children with deafness, and also the exploration of the possible relationships among the three dimensions studied for these communicative forms: the management of the conversation, the stimulation of oral language, and the stimulation of development of the Theory of Mind.

For this analysis, the characteristics of both children and mothers were selected to be considered as **independent variables**.

For the children:

- Firstly, the data on socio-affective development are not taken into account, since the majority of the population studied is in the normal range and can therefore be considered characteristic of the population studied.
- Secondly, with regard to the assessment of hearing loss, once the selection criterion of the sample of profound and severe hearing loss has been considered for the analysis of the results, the auditory performance of the participants with prostheses was taken into account.
- Thirdly, the different data obtained in this study as to the level of acquisition of oral language takes into account the overall assessment resulting from the weighted assessment of the information from the families, the speech therapists and the observation in the situation of interaction in play, since these data are obtained in the same way for the whole population studied. The data resulting from the understanding of the story and the narrative production of the participants aged 4 to 7 years are therefore not taken into account for this analysis, since data are not available for the entire population studied.

As regards the variables relating to the population of mothers, those with the greatest impact are retained:

- age,
- level of education,
- stress level
- and number of children, for some occasions.

Regarding the **dependent variables**: conversation management, stimulation of oral language and stimulation of ToM, a selection was also made for the analysis of the results according to the following criteria:

- In **conversation management**, of the two dimensions studied, maternal sensitivity and the quality of the dyads, only the first was taken into account since, in the second, the majority of dyads are characterised by behaviours classified as maternal initiative with verbal response and there is therefore not enough diversity in this regard.
- The same applies to the analysis of behaviours to **stimulate the use of oral language**, arranged in three groups: verbal feedback, linguistic functions and the maternal linguistic model. In the first case, as noted in Chapter 5, maternal verbal feedback behaviours dominate imitations at all ages, and were therefore not considered as a variable.
- For a similar reason, the relationship between the **type of punishments** used by mothers and the other dependent variables (maternal sensitivity, stimulation of oral language, etc.) could not be carried out, since 77.70% say they use the same type of punishment.

Finally, due to the sample size and also, on several occasions, the number of categories in which the observed behaviours were ordered, the analysis presented below has not been based so much on the statistical relationship between the variables considered, but mainly consisted of comparing the number of participants presenting each type of behaviour, calculating the percentages out of the group.

However, in some cases, in order to reduce categories and facilitate the application of Chi-squared, some of them where the results presented in Chapter 5 were ordered have been regrouped.

The results are therefore presented in three blocks:

- Relationship between independent variables of children and mothers.
- Influence of the variables of children and mothers on each dimension of the communication process studied.
- And finally, the relationship between the different communication dimensions.

6.1. RELATIONSHIP BETWEEN SOCIODEMOGRAPHIC AND PERSONAL VARIABLES OF MOTHERS AND CHILDREN

This first block analyses the results from the point of view of how the sociodemographic variables, considered as independent, relate to the dependent variables we call 'personal', namely the stress level of mothers and the level of oral language for the child population.

6.1.1. Maternal stress

A. Relative to maternal variables

As presented above, more than **50% of the mothers** studied have a **normal stress level** and therefore there is little variability in the study population in this regard.

Consequently, the analysis presented below, both for the relationship of the stress level with maternal variables and with the variables of the child with deafness, has little support, only in some cases, in contingency tests, and attempts are made instead to sketch out some of the patterns of how the variables influence, by analysing percentages.

Two were maternal sociodemographic variables related to the stress level of the mothers studied: age and level of education.

■ Age

It is found that **the age of mothers influences stress**, as 50% of mothers in the first age range (29-35 years) have a high level of stress. Meanwhile, more than 70% of mothers in the next two age groups (36-41 years and 42-47 years) have a normalised stress level. Lastly, no mother in the first age group has low stress.

By grouping the two age bands (36-41 years and 42-47 years), to apply the Chi-squared test, the difference in the stress level of mothers, according to age, is significant ($P=0.024$).

This result does not coincide with that found in the aforementioned study by Laura Sánchez (2006) in which a higher level of stress is related to the older ages of the mother, which the author interprets as that life experience is related to a higher level of demands that can lead to a higher level of stress.

The results of this study, conversely, can be interpreted in line with the fact that less life experience may entail less personal resources to resolve issues in the daily upbringing of children or knowledge.

■ Level of education

There is an inverse relationship between stress level and maternal education level. Thus, the **maternal stress level decreases at a higher levels of education**. Likewise, it is found that in the group of mothers with a higher level of education, this is the only one in which participants are found with a low level of stress and in which the percentage of normality with regard to stress is higher. Although it must be considered that there is insufficient efficacy in all groups, the relationship between educational level and maternal stress is significant ($P=0.036$).

These results are consistent with other studies linking socio-cultural status with low levels of stress. The interpretation seems obvious because the more information and the more ability to search for information, the more knowledge about the implications of deafness and the resources to adapt to the child's deafness.

B. Relative to the variables of the child population

The variables of the child population, both sociodemographic and language development, that may influence maternal stress are presented below.

■ Age

Unlike some of the above studies that show linear progression with age, the older the child/the more stress for the mother (Konstantareas, M. & Lampropoulou, V., 1995), the present study does not show such a clear distribution.

The stress level of mothers is mainly concentrated in the age range between 3 and 6 years, decreasing at 7 years, coinciding in part with the aforementioned study by Lederberg & Golbach (2002) that places this stage as the most stressful time for the mother.

It may be assumed that during the first year of life stress is high, although this study has no data on this, and that **stress increases**, not so much during the second year of life, but **from the fact that the comparison they make on the evolution of the hearing child population becomes more evident**, when they start producing two-word statements or simple phrases. **Stress decreases at age 7, when the child population studied becomes fluent in conversation.**

■ Gender

A **higher level of stress is observed in mothers with male children**. Although the relationship is not significant, it is observed that 28.6% of mothers of deaf boys (8 subjects) have a high level of stress compared to 17.6% of mothers with deaf girls (3 subjects). One may wonder whether, in general, boys cause more stress than girls.

■ Language level

No relationship can be asserted between the child's oral language level and the mother's stress level. It should simply be noted that all mothers with a low level of stress (N=4) have children with a certain level of language acquisition.

■ Hearing utilisation with prostheses

Half of mothers with children with a moderate hearing level with prostheses have a high level of stress. By contrast, 70% of mothers whose children have a slight hearing level with prostheses are within normal range.

It is also detected that all mothers who have a low level of stress have children that can utilise hearing at the level of slight hearing impairment with prostheses.

Likewise, mothers of the studied child population with **greater hearing utilisation** have **a more normalised level of stress** than children with less hearing.

■ Current type of prosthesis

Although a **significant relationship** is not established between the type of prosthesis of the child and the stress level of the mother, **mothers of children with cochlear implants have a higher percentage at low and normal stress levels than those with children with hearing aids**, and a lower percentage at the high stress level.

■ Timing of auditory prosthetic adaptation

It is observed that all mothers with a low level of stress are those who have children who have had the prosthesis fitted before 36 months of age. It was also found that 40% of mothers with children who had their prosthesis fitted from 37 months to 60 months had a high level of stress.

Consequently, although no **statistically significant relationship** is noted between the moment of adaptation of the prosthesis and maternal stress, **a positive linear progression is observed for low and normal stress levels based on how early the prosthesis was fitted**.

6.1.2. Acquisition of oral language relative to child population variables

As noted in Chapter 5, the population studied has already acquired oral language: 40 out of the 54 children studied show a level of language between simple and fluent conversation. Of the remaining 14, only 4 have not yet begun to use meaningful words.

After analysing the relationships between the progress of oral language and the variables of the child population that are assumed to be the most influential, it has been found that the **level of language is closely related to chronological age**. The relationship is significant ($P=0.00$) although it should be considered that there are 3 groups that do not have the minimum frequency expected.

It may be seen that as they increase in age, the percentage of participants with the best level of language also increases, presenting, from 60 months to 96 months of age, a structuring of language characterised by the use of simple phrases and simple and fluent conversation. Conversely, in the lower age bands the percentage of children with lower levels of language increases.

SUMMARY

Although, as discussed above, in most cases no statistically significant relationships could be established, the above analysis identifies the variables most commonly associated with maternal stress and the level of oral language acquisition in the child population as follows.

With regard to maternal stress, and on the basis of the high level of normality of the population studied, it seems that the groups of mothers with the highest level of stress are on the one hand the youngest and on the other the ones with the lowest level of education.

With reference to the variables of the children associated with maternal stress, it does not seem that either gender or, more surprisingly, the level of language of the child, are relevant variables in this regard.

However, coinciding with the stages of language acquisition, the extreme age ranges of the population studied are those associated with low and normal stress levels. The first stage, perhaps because differences in development compared with hearing children are less obvious, and the last because children are already fluent in conversation. Without it being possible to establish significant relationships, higher levels of hearing utilisation and cochlear implantation are associated with a low or normal level of stress.

In terms of the level of development of the participants' oral language, age is associated with progress in the acquisition of oral language in a significant way. This leads to a normalised development in this regard. Nonetheless, a more careful analysis should perhaps be made of the relationship with other variables that do not appear with a significant relationship, such as the type of prosthesis or the level of hearing. An initial interpretation might be that the prosthetic adaptations are actually adequate and in most cases allow for optimisation of hearing.

6.2. RELATIONSHIP BETWEEN MATERNAL AND CHILD POPULATION VARIABLES IN CONVERSATION MANAGEMENT

Of the two dimensions studied in conversation management, as indicated above, only what has been defined as maternal sensitivity is taken into account for the analysis, since the characteristics of the dyad do not offer sufficient diversity. In fact, most of them are characterised by being dominated by the mother's initiative, demanding verbal responses and adequate response from her child.

6.2.1. Maternal sensitivity

A. Relative to the mother's variables

Consideration is given to the two sociodemographic variables of the mother that proved most relevant, age and the personal variable stress level.

■ Age

There is a trend towards a higher priority to the children's own or free activity in older mothers (40.5%). By contrast, **younger mothers tend to channel the behaviours** of their children more (40.0%).

■ Stress level

However, if we compare the number of mothers, in percentage terms, who primarily use one or another more or less controlling form of communication, we find that 75% of **mothers with a low level of stress have a tendency to prioritise the interests of their children**, while a high percentage of mothers with a high level of stress channel the behaviour of the children, although they do not perform interference.

Mothers who are within normal range have different strategies for managing the conversation between themselves and their children.

B. Relative to the variables of the child population

The following variables of the child population are considered: age, gender, language level, hearing utilisation with prosthesis and type of prosthesis.

■ Age

The youngest and oldest child populations studied (13-36 months and 84-96 months, respectively) **have more passive mothers**, i.e. they do not tend to choose a particular strategy, or they do not prioritise the interests of the child population.

This may be due to the lower degree of control required by both young and old.

■ Gender

Regarding the relationship between maternal sensitivity and gender in the child population, **no differences are observed**, although mothers use more interference with boys than girls, without the difference being significant (11.4% for boys and 5.3% for girls).

■ Language level

It is observed that with a better level of language, mothers have a tendency to use more channelling strategies and there is a decline in behaviours that follow the interests of children. It is also noted that mothers use more interference when their children are already beginning to establish simple conversations.

■ Hearing utilisation with prostheses

Most mothers with children **with a level of prosthetic hearing performance comparable to that of mild hearing impairment have a tendency to prioritise the interests of the children (40%) or channel their behaviour (36.7%)**. In contrast, the group of mothers with children with moderate hearing impairment with prostheses had a highly distributed sensitivity level.

■ Current type of prosthesis

No significant differences are seen between maternal sensitivity according to the type of prosthesis in children. Nonetheless, there is a **greater tendency to prioritise the interests of the child when they wear a hearing aid (45%), while when they have a cochlear implant, mothers channel their behaviour more (36.4%)**.

SUMMARY

The study of the relationship between the independent variables of the participants and maternal sensitivity allows us to identify some interesting associations despite the lack of statistical significance in most cases.

With regard to maternal characteristics, age is identified as a factor related to more channelling behaviour, this being the case of mothers of the young age group and, conversely, to follow the interests of children in the groups of older mothers.

It should be remembered that the group of younger mothers also has the lowest percentage in normalising levels of stress, low and moderate, and, consequently, there is an association between channelling behaviours and the high level of stress.

In contrast, the educational level of mothers that is related to the level of stress is not directly associated with the predominance of use of certain strategies.

In terms of the variables of the child population, age is also related to passive and following behaviour regarding the interests of the child population by mothers in the extreme age ranges of the population studied. It also coincides with the stages when the percentage of mothers with high stress is lower.

More clearly, the adaptation of mothers' behaviours to the language level of the child population studied appears in the following sense: mothers who have children with a higher level of language show a preference for channelling behaviours, as opposed to following the interests of the child population in mothers with lower language levels.

The gender variable does not seem to be very important, but is more associated with interference behaviour by mothers when it comes to children, though this is really rare. This result also coincides with the higher level of maternal stress with children.

6.3. RELATIONSHIP BETWEEN MATERNAL AND CHILD POPULATION VARIABLES IN THE STIMULATION OF ORAL LANGUAGE

The analysis of the variables related to verbal language stimulation behaviours was applied only to two of the three dimensions studied: the functionality of maternal productions and the maternal linguistic model. The linguistic feedback dimension was excluded due to the homogeneity of the population studied in this regard, since the most widespread form of feedback is imitation, distributed uniformly at all ages.

The analysis was also limited in terms of the independent variables considered not to be related to maternal oral language stimulation, namely the age and stress of the mother and, with regard to the child population, gender, hearing utilisation and type of prosthesis.

6.3.1. The functionality of maternal production

A. Relative to the mother's variables

Only associations of educational level and number of children are taken into account for the purpose of maternal linguistic production.

■ Level of education

A significant relationship ($P=0.067$) is observed between the level of education and the predilection for the type of communication, although it should be taken into account that not all groups have sufficient numbers. Indeed, **mothers with a lower level of education have a clear tendency to make non-linguistic demands** (57%), while the preference of **mothers with higher education** is completely the opposite, and **they mostly produce expansive statements** (50%).

■ Number of children

Mothers with only one child are more likely to use expansive statements than mothers with more than one child. The difference is significant ($P= 0.011$) although it must be taken into account that one group does not have sufficient effective subjects.

B. Relative to the variables of the child population

The following variables are considered: age and language level

■ Age

The age of the child is associated with the use of channelling behaviours, since in the first age range, expansion clearly dominates (77.8%), and in the upper age range, the frequency of channelling increases progressively.

■ Language level

The relationship between the linguistic functionality of the mothers' utterances and the level of oral language of the child coincides with that indicated with regard to the relationship between type of linguistic functionality and age.

Indeed, it is observed that groups of mothers with children who are in the first two levels of language prioritise expansive production, and in contrast, those with children with higher levels tend to use channelling. This type of production increases in groups of children who have more complex oral language.

6.3.2. The maternal linguistic model

Only a few variables are associated with the type of discursive organisation used by mothers, namely the educational level of mothers and age levels, language acquisition and auditory performance of children.

A. Relative to the mother's variables

Only one of the maternal variables, the level of education, is associated with the type of discourse.

■ Level of education

Only some of the mothers with primary education perform non-discursive production of the story that this group prioritises over some other type of organisation (42.9%). By contrast, the most frequent discourse of mothers with secondary, baccalaureate or higher education are low- and medium-level discursive narratives. High-level structure narratives are rare, and occur only in mothers in the secondary and higher education groups.

B. Relative to the variables of the child population

Characteristics of children associated with the type of discourse organisation used by mothers include age, language level and auditory performance.

■ Age

It is observed that 30% **of mothers with children aged 60 to 96 months produce speech with a high level of structuring**, while mothers with children between 13 and 59 months do not produce high level discourse.

However, mothers with children in both age groups use mostly low and medium structure discourses, which may be due to the adaptation of mothers not only to the age level but also to the level of infant language.

■ Language level

Although most mothers produce discourse of low and medium level structure (between 65% and 80%), it can be seen that, **at a higher linguistic level of the children, the mothers' type of discursive production has a high level of structuring**. It may likewise be seen that, **at a lower level of language, mothers perform non-discursive productions**, a type of discourse not performed by mothers who have children at the upper linguistic level.

■ Hearing utilisation with prostheses

Small differences are highlighted in favour of a **higher frequency of more structured discourse aimed at children who have a functional hearing of light loss**.

SUMMARY

There is only one maternal variable that relates to maternal stimulation to oral language, namely the level of education. Indeed, in terms of language functions, mothers with higher education have a tendency to make expansive-type productions, and those with only primary education have a preference for statements that do not require verbal responses.

Also in terms of the model of discourse, although there are few high-level discourses of structuring, i.e. using cohesive marks, these are produced by mothers with higher education, while mothers with only primary education produce mostly unstructured discourse and in no case produce a discourse of what has been defined as a high level of structuring.

As for the variables of the children's population, overall, the results the fact reflect that mothers adapt the purpose of their linguistic productions, in the play situation, and the organisation of their discourse, in the situation of explaining the story, to the characteristics of the children, basically their age and their level of language. On the one hand, as regards the purpose of productions, they are progressively more channelling as age and language level increase. On the other hand, the organisation of speech is also more structured at higher levels of age and language acquisition.

6.4. RELATIONSHIP BETWEEN MATERNAL AND CHILD POPULATION VARIABLES IN MATERNAL STIMULATION OF ToM

The two maternal variables shown to be associated with ToM stimulation were taken into account, and the level of maternal stress not shown to be related was eliminated. Also in the case of the variables of the child population, the variables of time of application and type of prosthesis were omitted.

6.4.1. ToM stimulation

A. Relative to the mother's variables

The maternal variables taken into account are age and educational level.

■ Age

Younger mothers produce fewer mental terms than older mothers.

■ Level of education

Mothers with only primary education make less use of mental terms than others. **As the level of education increases, the percentage of mental terms used increases.** The relationship between the use of mental terms and the level of maternal studies is significant ($P=0.024$) although, as in almost all cases, in this study it must be taken into account that some of the groups compared do not have sufficient numbers of effective subjects.

B. Relative to the variables of the child population

The variables of the child population taken into account are age, gender, language level and hearing with prostheses.

■ Age

Mothers increase the use of mental terms as children get older. In other words, maternal adaptations are not only expressed in terms of the linguistic form used, but also in terms of the content of the message.

■ Gender

Although no significance can be claimed, there is a tendency to use more mental terms in mothers addressing boys than girls. If one counts those using more than 10% of mental terms, it was found that for boys it was 30.3% of mothers and for girls it was only 10.5%.

■ Language level

In combination, it may be seen that **mothers addressing children with a higher level of language use a greater number of mental terms**. With low frequency limitations, it may be noted in some groups that the difference is significant ($P= 0.015$).

■ Hearing utilisation with prostheses

Mothers addressing children with auditory utilisation whose hearing loss can be described as slight, use more mental terms than those addressing children with lower functional hearing with prostheses.

SUMMARY

The interest in the study of variables associated with stimulating the development of mental content lies in studying the interactions not so much as to how they occur, but their content. The results allow us to identify that the same groups of mothers who are more fragile in terms of conversation management and stimulation of oral language are also fragile in terms of stimulation of ToM.

Indeed, younger mothers and those who have only completed primary education are those who would be less inclined to rely on mental terms and arguments.

If one looks at the variables of the child population that relate to the tendency of mothers to use mental terminology, one finds that they are age, level of language and utilisation of hearing with the prosthesis. Mothers, as they do with their conversation management and oral language stimulation strategies, adapt to their children's age, language and hearing levels to use a greater number of mental terms the higher the developmental levels in these areas.

6.5. RELATIONSHIP BETWEEN MATERNAL SENSITIVITY, STIMULATION OF ORAL LANGUAGE ORAL AND ToM STIMULATION

The relationships between maternal sensitivity and stimulation of oral language are examined in two aspects studied: the functionality of maternal utterances and the organisation of their speech.

6.5.1. Relationship between Maternal sensitivity - Stimulation of oral language

■ Maternal sensitivity and functionality of maternal production in terms of elicited linguistic production

It is observed that there is a relationship between exchanges that do not demand a verbal response and maternal production of channelling behaviour. At the same time, there is an association between maternal behaviours that follow the interests of the child population with expansive linguistic functions, which allow the child to express themselves freely, and also with channelling.

■ Maternal sensitivity and linguistic model

There is **little relationship between maternal sensitivity and the linguistic model provided by the mother**. It can only be said that there is an association between the production of a highly organized, well-cohesive discourse and behaviour of maternal sensitivity to give priority to the interests of children (55.6% of mothers).

6.5.2. Relationship between maternal sensitivity - ToM stimulation

For the assessment of ToM stimulation, only the data regarding the use of mental terms in the explanation of the story were taken into account, disregarding the information derived from the type of punishments.

50% of mothers who use more than 10% of mental terms also have behaviours that give priority to the interests of the child. By contrast, 50% of mothers who use the lowest percentage of mental words correspond to channelling behaviour.

6.5.3. Relationship between Stimulation of oral language and of ToM

The organisation of discourse by the mothers was selected for the assessment of the stimulation of oral language.

■ Organisation of maternal discourse and Stimulation of ToM

Contrary to what might be expected, there is no significant relationship between the stimulation of language in terms of discourse organisation and the stimulation of ToM. However, it may be seen that mothers who make non-discursive production use less than 10% of mental words, while 33% of mothers who use a high level of speech organisation use more than 10% of mental words. In fact, **the percentage of mothers who use more than 10% of mental terms increases with the complexity of speech they produce.**

SUMMARY

The relationships among the three dimensions examined point to two styles of conversation management, stimulation of oral language and stimulation of ToM.

Thus, in the aspect of conversation management, which has been called in this study 'maternal sensitivity', two very clear associations are outlined: the group of mothers that in conversation management has a tendency to follow the interests of the child, which is related to expansive and well-organised discourse behaviours to stimulate oral language, and the group of mothers that tends to channel their child's behaviour and, from the point of view of stimulating oral language, prioritises exchanges that do not elicit a verbal response.

The two opposing trends in maternal sensitivity also relate to ToM stimulation. The tendency to follow spontaneous activity of the child is related to the tendency to stimulate ToM. And mothers' tendency to channel their children's behaviours is related to lower ToM stimulation.

Finally, there is a relationship between cohesive discourse organisation and the tendency to stimulate ToM.

7. Conclusions

The conclusions are presented in two sections: the main contributions of the study and the prospects for continuity.

■ CONTRIBUTIONS OF THE STUDY

The contributions from this study that incorporate new data of interest to the current state of knowledge regarding the communication of hearing mothers with their deaf children are selected as four points.

1. Significant progress in the psychological and linguistic development of the children studied compared with previous generations at the same ages.

The implications of hearing loss on the development of children with deafness have changed substantially in recent years in this country thanks to the early care and timely adaptation of technologically advanced hearing aids.

Indeed, the child population participating in this study shows overall advances in oral language acquisition: 40 participants are at least at a level of syntactical structuring of simple language phrases, and of them, about 20 participants are able to maintain a fluent conversation.

In addition, although 69% of participants have an initial diagnosis of profound deafness, when hearing is assessed with prostheses in the better ear, no participant with a well-adapted prosthesis would function as profoundly deaf, and only two would perform as corresponding to severe hearing deficit. The rest of the population would functionally have hearing equivalent to slight or medium losses.

Meanwhile, in relation to emotional development, although there are few reference studies to make comparisons, the data obtained show highly normalised development in the population studied.

2. Normalisation regarding maternal stress

Overall, the new educational conditions and their results in the development of children with deafness seem to have also influenced maternal experiences and behaviours which at the same time have, in an interrelated manner, undoubtedly affected the development of the children.

Indeed, most mothers have a normalised level of stress. These results coincide with a recent study in Spain, but contradict those obtained in previous years by other studies (Sánchez, L., 2006; Quitner et al., 1990, respectively).

3. Improved communication between hearing mothers and children with deafness

The results show that communication patterns are somewhat different and much more positive than those drawn from previous research. The apparent progress in both the development of the deaf child population participating in this study and the experiences of their mothers may have influenced the communication styles observed.

- Overall, the *dyads have a dynamic* that is agile in which few interventions receive no response, although most *are characterised by the predominance of maternal initiative*.

In this last aspect, though, the results coincide with those reported by previous research: overall the mothers in this study show a high level of communicative sensitivity, and in their behaviours the following of their children's interests and motivations predominate over other types of behaviours defined in other studies as the "didactic style", which aimed to channel the child's behaviour towards learning (Gallaway & Woll, 1994).

- It has also been observed that *the most frequent communicative style is to ask open questions and issues of conversational reinforcement* to encourage the child to continue speaking. These results also do not coincide with those of previous studies that pointed to a more frequent style of conversational control, characterised by the type of highly channelled questions that demand highly specific answers (Spencer & Gutfreund, 1990).

Meanwhile, coinciding with the results of previous studies, there is a lack of verbal feedback behaviours developed and adapted to the linguistic level of children, such as expansions and extensions. More frequent forms in this regard are imitations, which are very useful for children in the pre-linguistic period, but which have another function when the child already has a minimally developed language, as is the case of the majority of the child population participating in the study.

It also confirms that mothers rarely use mental terms. However, although in the communication interactions observed the mothers do not provide their children with mental arguments, they do refer to personal experiences.

Overall, this is one of the first studies to show significant progress in the quality of mother/deaf child interactions, although some aspects remain that may be the subject of family guidance and counselling for improvement.

4. The interrelationships between the studied dimensions of mother-deaf child communication

Within the limitations of the study, it was possible to establish relationships not only between conversational style and stimulation of oral language, but also between these forms of interaction and stimulation of the development of certain mental content.

This is the first foray into this approach, where this is a pioneering study. In fact, as explained in the review of the current state of knowledge, there are quite a few studies on forms of mother-deaf child interaction, in terms of managing the conversation and even controlling them. There are also some other, more limited studies available on the stimulation of ToM by mothers, but there is no research that focuses on the interrelationship between these communicative dimensions: conversation management, stimulation of oral language and language content.

This study found that the most expansive style, from the point of view of the purpose of productions in encouraging the deaf child to use oral language, is related to a conversational style of following their interests and initiatives, with mothers using well-organized narrative discourse and ToM-stimulating behaviours.

Conversely, although there does not seem to be any relationship between the level of organisation of the mother's speech and the other dimensions studied, there are relationships between the tendency to manage the conversation by channelling the child's behaviour, and the demand for non-verbal responses with little stimulation of ToM.

Undoubtedly, it is possible in conceptual terms to establish relationships between the dimensions of conversation management and stimulation of oral language, on the one hand, and the discursive organisation and stimulation of ToM on the other. What is truly interesting and novel is the relationship that appears among the four dimensions.

It is worth asking whether those mothers who, so to speak, are more mindful also act with greater sensitivity in the management of the conversation, guessing the interests of their child, and are more expansive in stimulating their spontaneous discourse. This is one of the issues in this study that it should be possible to confirm with a wider sample.

■ PROSPECTS FOR CONTINUITY

This study leaves open two lines of action, one for the continuation of research and the other for the applicability of its results to family guidance and counselling.

1. Continuation of the study

The results of this study suggest various actions and lines of research for the future. We highlight some of them below.

- **Study of the interactions of children with deafness with other family members and family dynamics as a whole.**

Limiting the study to interactions with the mother raises several questions. First, it is useful to obtain data on the family dynamics and support that the family provides to the mother and the creature. Secondly, the study of inter-individual interactions with other family members should be considered, especially with the most significant people such as parents.

- **Study of oral language acquisition processes in children with deafness in relation to the variables studied.**

The results obtained suggest that the progress observed in the acquisition of oral language in the child population studied is not homogeneous in all linguistic dimensions. An in-depth study should therefore be considered, examining the effects of the variables studied on each of the linguistic dimensions.

- **Study of the mental development processes of children with deafness in relation to the stimuli received.**

In continuity with the study of the stimulus provided by mothers to the development of ToM, the proposal is to monitor the level of development of ToM in children and to explore its relationship with the stimulus received.

2. Family guidance and advice

The simple return of the results of this study and of the criteria for analysis to the participating families certainly represents, for many of them, a first step for reflection on how to act and how to improve.

The goals for optimising the deaf child's family communication will depend on each case and each maternal style. As for the stimulation of oral language, for example, it should be noted that there are no communicative styles or strategies that correspond absolutely to “good practice” and others to “bad practice”, but it is often the balance that each mother must progressively find between her communicative tendency and the characteristics of her child in each developmental stage and in each context, according to a very clear purpose that is to offer the maximum opportunity to exercise oral language in all its dimensions.

Nevertheless, the objectives regarding the strategies to promote each of the studied dimensions that are positively related to each other are deduced from the study. Some of them are used by most mothers in this study, although they do not correspond to the patterns described in previous studies. Other forms of communication are more difficult to incorporate since their infrequency has been noted in the results of previous studies. Finally, there were some difficulties that had not been studied before, regarding the organisation of speech and the stimulation of the mind.

In conclusion, it is pointed out that although this study has shown a certain process of "normalisation" of communicative relations between mothers and their children with deafness, as set out in the presentation "normalisation" does not mean identical treatment to that of hearing children. On the one hand, it has been found that there are no necessary strategies that are not mostly used by the mothers of the study and that are part of the educational implications explained.

On the other, as pointed out in the research prospects, the need is to study more carefully the characteristics of the processes of oral language acquisition in deaf children with the application of new technologies and the impacts that all this has on family communication.

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9. Annexes



COMMUNICATION BETWEEN HEARING MOTHERS AND CHILDREN WITH DEAFNESS AGED 1 TO 7 YEARS

Questionnaire prepared by FIAPAS*
(Socio-demographic data)

CHILD DATA

1. AGE OF DIAGNOSIS

2. MOMENT WHEN DEAFNESS APPEARED

3. CAUSE OF DEAFNESS

4. DEAFNESS TYPE

5. DEGREE OF LOSS

Mild hearing impairment (20-40 dB)	dB
Moderate hearing impairment (40-70 Db)	dB
Severe hearing impairment (70-90 dB)	dB
Profound hearing impairment (greater than 90 dB)	dB

* Excerpt from FIAPAS (JÁUDENES, C. et al.) (2003): Guía de Buenas Prácticas para el funcionamiento de los Servicios de Atención y Apoyo a Familias - FIAPAS. pp. 73-86, Madrid, FIAPAS.

**COMMUNICATION BETWEEN HEARING MOTHERS AND
 CHILDREN WITH DEAFNESS AGED 1 TO 7 YEARS**

Questionnaire prepared by FIAPAS*
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TOTAL AUDIOMETRY WITHOUT PROSTHESIS:

	500 Hz	1000 Hz	2000 Hz	4000 Hz	MODERATE
RIGHT EAR					
LEFT EAR					

PURE-TONE AUDIOMETRY WITH PROSTHESIS:

	500 Hz	1000 Hz	2000 Hz	4000 Hz	MODERATE
RIGHT EAR					
LEFT EAR					

6. DEAFNESS-RELATED PROBLEMS

a) VISUAL

b) MOTOR

c) PSYCHOLOGICAL

d) BEHAVIOURAL

e) OTHER

RESEARCH STUDY
 COMMUNICATIVE INTERACTIONS BETWEEN DEAF PARENTS AND CHILDREN

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7. AUDITORY PROSTHESES:

	RIGHT EAR	LEFT EAR
Digital hearing aids		
Analogue hearing aids		
Cochlear implants		

8. HEARING AIDS

a) TIME BETWEEN DIAGNOSIS AND PROSTHETIC ADAPTATION

b) ACCEPTANCE OF THE PROSTHESIS

c) AUDIO-PROSTHETIC FOLLOW-UP (REVIEW PERIODS: EVERY 3 MONTHS, 6 MONTHS, 12 MONTHS...)

d) USAGE TIMES (ALWAYS, ONLY AT HOME, ONLY AT SCHOOL, RARELY...)

COMMUNICATION BETWEEN HEARING MOTHERS AND CHILDREN WITH DEAFNESS AGED 1 TO 7 YEARS

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9. COCHLEAR IMPLANT

a) TIME BETWEEN DIAGNOSIS AND PROGRAMMING OF COCHLEAR IMPLANT

b) ACCEPTANCE OF IMPLANT

c) CI FOLLOW-UP (REVIEW PERIODS:
EVERY 3 MONTHS, 6 MONTHS, 12 MONTHS...)

d) USAGE TIMES (ALWAYS, ONLY AT HOME,
ONLY AT SCHOOL, RARELY...)

10. OTHER AID

- BONE VIBRATOR

- ACCEPTANCE_____
- BONE VIBRATOR USAGE TIME

- FM SYSTEM

- ACCEPTANCE_____
- USE

☐ AT HOME

☐ TELEVISION

☐ SCHOOL

☐ IN CLASS

☐ IN THE SUPPORT CLASSROOM

☐ OTHER SITUATIONS (specify)

**COMMUNICATION BETWEEN HEARING MOTHERS AND
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11. RECEIVING REHABILITATION? YES ☐ NO ☐

12. START DATE OF REHABILITATION AND AGE OF THE CHILD

13. FREQUENCY

14. REHABILITATION CENTRES OR PROFESSIONALS

15. COMMUNICATION SYSTEM USED BY THE FAMILY

ORAL	CUED SPEECH	BIMODAL	NATURAL SIGNS	SIGN LANGUAGE

16. METHODOLOGICAL SYSTEM USED IN REHABILITATION

ORAL	CUED SPEECH	BIMODAL	NATURAL SIGNS	SIGN LANGUAGE	AUDITORY STIMULATION

COMMUNICATION BETWEEN HEARING MOTHERS AND CHILDREN WITH DEAFNESS AGED 1 TO 7 YEARS

Questionnaire prepared by FIAPAS*
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17. COMMUNICATION SYSTEM USED BY THE CHILD

- **Oral Language:**

- Vocal utterances (speech quality)

- Individual words

- Simple phrases

- Conversational level

☐ Incorrect ☐ Generally correct ☐ Very fluent/conversational

- **BIMODAL**

- **SIGN LANGUAGE**

COMMUNICATION BETWEEN HEARING MOTHERS AND CHILDREN WITH DEAFNESS AGED 1 TO 7 YEARS

Questionnaire prepared by FIAPAS*
(Socio-demographic data)

FAMILY DATA

1. FATHER'S DETAILS

a) NAME OF FATHER

b) HEARING: ☐ DEAF ☐ HEARING

c) LEVEL OF EDUCATION

d) PROFESSION

d) AGE

2. MOTHER'S DETAILS

a) NAME OF FATHER

b) HEARING: ☐ DEAF ☐ HEARING

c) LEVEL OF EDUCATION

d) PROFESSION

d) AGE

COMMUNICATION BETWEEN HEARING MOTHERS AND CHILDREN WITH DEAFNESS AGED 1 TO 7 YEARS

Questionnaire prepared by FIAPAS*
(Socio-demographic data)

3. SIBLINGS' DETAILS

☐ DOES have siblings ☐ DOES NOT have siblings

a) AGE OF SIBLINGS

b) OTHER DEAF CHILDREN: ☐ YES ☐ NO

- How many?

4. NUMBER OF PEOPLE LIVING AT HOME (specify relationship)

Signature of Parent or Legal Representative

Date



RESEARCH STUDY
COMMUNICATIVE INTERACTIONS BETWEEN DEAF PARENTS AND CHILDREN

**COMMUNICATION BETWEEN HEARING MOTHERS AND
CHILDREN WITH DEAFNESS AGED 1 TO 7 YEARS**

Questionnaire prepared by GISTAL
(Family experiences with the child)

A. ASSESSMENT OF PRE-LINGUAL BEHAVIOURS (DROMI):

1. Is it easy for you to understand what your child needs or wants?
2. What level of language do they have? Do they talk a lot or a little? Do they use vocal utterances, individual words, simple phrases, or are they able to maintain fluent communication?

(Select only 2 examples when they already speak):

- When they are hungry, how do they say so? (Pre-lingual)
 - When they you want to leave the house, how do they say so? (Pre-lingual)
 - When they want a toy, what do they do? (Pre-lingual)
 - When they want to call someone who is not there, how do they express that?
3. When you look at or read a storybook together, what does the child do?
 4. When you play peekaboo together, what does the child do? (Pre-lingual)
 5. Of all the ways the child has to make themselves understood, which do you think is closest to the language? (Do not ask this question if the child already speaks)

B. USE OF TELEVISION SUBTITLES

6. Does your child (use child's own name) often watch TV?
7. Approximately how many hours per week?
8. What kind of programmes? Cartoons? Other programmes, which ones?
9. Do you talk to them about the programmes they watch?
10. Do they watch them subtitled? Are the subtitles always on or only when your child watches TV (use child's own name)?



COMMUNICATION BETWEEN HEARING MOTHERS AND CHILDREN WITH DEAFNESS AGED 1 TO 7 YEARS

Questionnaire prepared by GISTAL
(Family experiences with the child)

11. Do they use any special amplification to better hear your TV?
12. Do you think they understand the programmes they watch well? Why?
13. What kind of things do they find harder to understand?
14. Do you think residual hearing helps them to understand them?
15. Do you ever watch cartoons with your child?
16. When you watch cartoons, do they ask to better understand them?
17. Do you have to help them understand?
18. How do you do that? (Commenting on the images, using possible previous information, own experiences, knowledge of the characters...)
19. Do you draw attention to the subtitles so they can understand? Does reading them help?

C. ASSESSMENT OF PARENT-CHILD RELATIONSHIP AND OTHER MEMBERS

20. How is your relationship with your child in general? How do you get along with your child?
21. Are they rebellious?
22. When they misbehave, what do you do to resolve it? How do you explain do's and don'ts? Do you often have to punish your child?
23. Are you able to spend a lot of time with them? (Considering work and the child's school)
24. During the time you are working, who cares for the child? (*Goes to nursery school, has a child-minder, someone to look after them...*)
25. Do you have other family members here? Do they see the child? Are they able to spend time with them? (Grandparents, brothers, aunts/uncles, etc.)
26. How much time do they spend with them?
27. Do they get on well?
28. And is your partner able to spend time with your child? (*Support, shared responsibility, not involved...*)



COMMUNICATION BETWEEN HEARING MOTHERS AND CHILDREN WITH DEAFNESS AGED 1 TO 7 YEARS

Questionnaire prepared by GISTAL
(Family experiences with the child)

29. How do they get along?

30. How did you realise your child was deaf? How did you feel?

31. Did you have prior information about hearing impairment? (A family member with the same impairment, someone outside the family, friends, neighbours, etc.)

D. ASSESSMENT OF THE CHILD'S DEVELOPMENT

32. After learning about the diagnosis, what impact did you think it might have on your child?

33. Currently, how do you think deafness may affect them in the future?

34. If you discuss a problem... How can it be avoided? What can you do to avoid it?

35. What has most contributed to your expectations changing?

36. What can you do to support your child's development?

E. UPBRINGING STYLES

37. Do you think deafness has caused you to bring your child up differently?

38. Do you feel you overprotect your child?

F. ASSESSMENT OF THE INTERVENTION PROGRAMME

39. Of all the information you received, what was the most useful? (Language development, hearing aids, etc.)

40. What has helped you more in the guidance you have received: how to bring up your child or how to teach them language?

41. Have you felt understood and supported throughout the process? What about the professional staff?

42. What qualities do you expect from professionals who care for your children? (Feeling understood, professional competence...)

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FOMENTANDO INCLUSIÓN. APOYANDO PERSONAS. AVANZANDO SOLIDARIAMENTE.

SPANISH CONFEDERATION OF FAMILIES OF DEAF PEOPLE
PROMOTING INCLUSION BY SUPPORTING PEOPLE. ADVANCING IN SOLIDARITY



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