

UNIVERSIDAD AUTONOMA DE NUEVO LEON
FACULTAD DE PSICOLOGIA
SUBDIRECCION DE POSGRADO E INVESTIGACION
MAESTRIA EN CIENCIAS CON ORIENTACION
EN PSICOLOGIA DE LA SALUD



PERCEIVED STRESS, COPING STRATEGIES AND OPTIMISM
IN HEARING MOTHERS OF DEAF CHILDREN

TESIS
COMO REQUISITO PARCIAL PARA OBTENER
EL GRADO DE
MAESTRIA EN CIENCIAS

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La presente tesis titulada “Perceived stress, coping strategies and optimism in hearing mothers of deaf children” presentada por Lic. Lorena Elizabeth Ibarra González ha sido aprobada por el comité de tesis.

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DEDICATION

The average human heart beats 70 times per minute. That's 4,200 beats in an hour; 100,800 in a day; and over 36 million beats in a year... I'm guessing that's pretty much the number of beats one feels when defending a thesis...

I would like to dedicate this work to everyone and everything that has made my life to be a continuous journey of learning, and to those who have helped me and encourage me, sometimes without even realizing it. I hope I don't ever stop being a student (not just for the vacations), but because we always have something new to learn.

I want to dedicate this to my *big sister*; you've shown me so much about what it means to go after what you really want in life and never giving up. To my *little sister*; you're nice to me now, but I remember you were kind of evil with me when we were little... I'm still afraid of you, to be honest. To my *cousin*; thanks for teaching me how to have fun and just relax. To my *wives* (not legally yet); you've made me see this life in a whole different manner and you opened up my world in so many ways that I don't think I'll ever be able to thank you enough. To *you*; thanks for breaking down the barriers and pulling apart my stubborn and autistic mind. To my *pup*; who is probably jealous that I dedicated more time to write this thesis than to pet him (woof grrr woof). To my *mom* and *dad*. And of course, to my *friends*.

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ABSTRACT

The main objective of this work was to describe the relationships between perceived stress, coping strategies and optimism level in mothers of deaf children, as well as to analyze differences concerning sociodemographic variables. It was a non-experimental type of study, with a transversal, descriptive and correlational design. The sample consisted of 30 participants between 25 and 50 years of age. The instruments used were the Perceived Stress Scale, the Coping Strategies Questionnaire and the Life Orientation Test Revised. The results showed a high level of stress in participants, a medium use of the seven coping strategies and medium level of optimism. We found correlations of stress with negative auto-focused and positive reappraisal; as well as association of optimism with negative auto-focused, avoidance and social support seeking. Furthermore, we found differences among participants in their level of stress and use of coping strategies in relation to sociodemographic variables, specifically for sex of the deaf child, age of diagnosis, age of mothers, marital status and sign language knowledge in partners of the participants.

Key words: Coping, deafness, family, optimism, stress.

RESUMEN

El objetivo principal del presente trabajo fue describir la relación entre estrés percibido, estrategias de afrontamiento y nivel de optimismo en madres de hijos sordos, asimismo analizar diferencias en relación a variables socio-demográficas. Fue un estudio de tipo no experimental, con un diseño transversal, descriptivo y correlacional. La muestra consistió en 30 participantes de entre 25 y 50 años de edad. Los instrumentos utilizados fueron la Escala de Estrés Percibido, el Cuestionario de Afrontamiento del Estrés y el Test de Optimismo Revisado. Los resultados mostraron un alto nivel de estrés en las participantes, un empleo medio de las siete estrategias de afrontamiento y un nivel medio de optimismo. Se encontraron correlaciones de estrés con auto-focalización negativa y reevaluación positiva; así como asociación de optimismo con auto-focalización negativa, evitación y búsqueda de apoyo social. Además, se encontraron diferencias entre las participantes en el nivel de estrés y el uso de estrategias de afrontamiento en relación a variables socio-demográficas, específicamente para sexo del niño(a), edad al momento del diagnóstico, edad de las madres, estado civil y conocimiento de lengua de señas en las parejas de las participantes.

Palabras clave: Afrontamiento, estrés, familia, optimismo, sordera.

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CHAPTER I

INTRODUCTION

The diagnosis of deafness in a child can have a profound impact in the whole family system. For this reason, parents are prone to experience a variety of negative emotions such as shock, anger, confusion, frustration, depression and blame (Yoshinaga-Itano & de Uzategui, 2001), from the moment they suspect something is odd with their child to the posterior confirmation of the diagnosis. They can also experience feelings of powerlessness and incompetence (Bodner-Johnson & Sass-Leher, 1996; MacTurk, Meadow-Orlans, Koester & Spencer, 1993), an emotional crisis (Leigh & Anthony, 1999 cited in Kurtzer-White & Luterman, 2003), an impaired quality of life (Burger et al., 2005) and high levels of stress.

The deafness diagnosis in a child can impact parents' in a way that can be considered a crisis; that is, a period of psychological imbalance. This crisis implies a grieving process starting from the diagnosis of deafness, and is produced due to the loss of an ideal that parents had of their child. In other words, the illusion of having a healthy and "normal" child is lost (Ortega, Torres, Garrido & Reyes, 2006).

Depending on how this crisis is resolved, it will lead to a stage of family growth or, on the contrary, to a disorder. However, every family is different and unique, hence it cannot be assured that necessarily all families who receive a diagnosis of deafness in a child will react in the same way, or that they will present disorders. A lot of families manage to rearrange before the crisis, while others get stuck on the road to acceptance. As Ortega et al. (2006) point out, conflicts or family crisis do not emerge as a direct consequence of a disability, but because of the strategies and resources that family members have, or do not have, to cope with this new and stressful situation.

Two important and associated variables that have been studied in relation to parents of children with disability are stress and coping. According to Lazarus and Folkman (1984), stress is a particular relation between a person and its environment, which is evaluated by the person as something that exceeds their resources and puts in danger their well-being. In other words, stress is a reaction that involves physiological, cognitive and emotional responses to situations that imply a change in life (Sandín, 2003), such as the birth of a child with disability.

The stress level a person feels depends on two processes: cognitive evaluation or appraisal, and coping. The concept of appraisal makes reference to a primary evaluation process made by the person when facing an event. When a person considers a situation is a threat for their well-being, she or he makes a second appraisal evaluation to take into account the coping options available to deal with it. The evaluation of the coping options available (secondary appraisal) and the assessment of what is at stake (primary appraisal) interact with each other and determine the degree of stress and the emotional response of the individual (Lazarus & Folkman, 1984).

Coping, on the other hand, refers to the cognitive and behavioral strategies a person uses to control or manage situations that are appraised or evaluated as stressful (Sandín, 1999). Summarizing, it can be said that stress is an inevitable aspect of the human experience, however it is coping that makes a big difference in the adaptation process.

The importance of stress and its study relies in the way it correlates with other variables. In general, a higher level of stress has been found to correlate with depression, anxiety and illness (Folkman & Moskowitz, 2000), as well as with psychological discomfort, reduced wellbeing and low quality of life (Sandín, 1999). In addition, ineffective coping has been associated with a higher level of stress

(González & Landero, 2007a) and somatic symptoms (Ruchkin, Eisemann & Hägglöf, 2000).

Specifically in parents of deaf children, there are factors shown to contribute to a higher level of stress, these are divided in: characteristics of the deaf child, factors related to the deafness, characteristic of parents and external factors.

In relation to characteristics of the deaf child, there have been researches that show correlations between parental stress and age and sex of the child (Henggeler, Watson, Whelan & Malone, 1990; Konstantareas & Lampropoulou, 1995), the presence of other disabilities besides deafness (Pipp-Siegel, Sedey & Yoshinaga-Itano, 2002), and socioemotional problems in children (Hintermair, 2006). The factors related to the deafness that influence the level of stress in parents are the degree of deafness in the child (Pipp-Siegel et al., 2002), the age of identification (Konstantareas & Lampropoulou, 1995) and the method of communication (Greenberg, 1983; Hintermair, 2000).

Characteristics of parents that correlate with stress are educational level (Deater-Deckard & Scarr, 1996; Singer, Song, Hill & Jaffe, 1990), hearing status (Hintermair, 2006), marital satisfaction (Friedrich, Greenberg & Crnic, 1983) and effective coping. And finally, among the external factors that influence stress levels in parents we can mention social support (Lederberg & Golbach, 2002; Meadow-Orlans, 1994; Pipp-Siegel et al., 2002).

The above-mentioned factors can increase or decrease stress levels, depending on the direction of the variable. Therefore, they can either help or hinder the coping process.

To a certain degree, it can be said that stress and coping are reciprocal processes; when coping is ineffective, the stress level is high; and vice versa, when coping is effective, the stress level is prone to be low (Lazarus, 1999). This relation

between stress and coping is the reason why the use of effective coping strategies is so important.

There have been studies showing that parents who think they have the strategies to raise their deaf child have lower stress scores (Hintermair, 2006), also, that mothers who successfully use strategies to cope with their child's deafness have children with better emotional development. In addition, the deaf child shows less impulsive behavior and better social competence (Calderón & Greenberg, 1993; Calderón, Greenberg & Kusche, 1991). These studies prove the importance of an effective coping in parents of deaf children.

A personality trait that studies have shown has a positive influence over the coping strategies and level of stress is optimism (Carver, Scheier & Segerstrom, 2010). Optimism can be defined as the tendency a person has to expect positive and favorable results in their lives (Scheier & Carver, 1985). In short, optimistic people expect good things to happen to them.

Optimism is a highly important variable for this study, since previous research have found it correlates with lower depression symptoms (Given et al., 1993), more life satisfaction (Fitzgerald, Tennen, Affleck & Pransky, 1993), a higher quality of life (Allison, Guichard & Gilain, 2000), better physical health and even low mortality and longer life, both in men and women (Giltay, Geleijnse, Zitman, Hoekstra & Schouten, 2004; Tindle et al., 2009).

Optimism has also been found to correlate with stress in a negative way; that is, a higher level of optimism associates with lower levels of stress (Brissette, Scheier & Carver, 2002; Carver et al., 1993; Fitzgerald et al., 1993). The explanation for this is that optimism can influence what kind of strategies someone uses in a given situation, and vice versa (Chico, 2002).

Statement of the problem

The revised literature shows that stress has a great tendency to arise in mothers and fathers when a disability is diagnosed in a child; however, not all parents show high levels of stress or emotional disorders, therefore, there are variables that influence this relation. It is in this aspect that coping strategies and optimism are introduced, as well as demographic variables.

Taking into account that the cognitive, emotional, social and behavioral development of children depends greatly on the interaction within the family, specially between parents and children (Ortega et al., 2006; Sarto, 2001), the identification of correlations between these variables is of high importance to analyze the level of stress present in parents with deaf children, and in what way professionals can help parents to effectively cope and be optimistic about this situation.

Despite that stress and coping strategies are two variables widely studied in social sciences, optimism has not found a place yet in researches with deafness related population. Furthermore, the quantity of researches done in Mexico exploring stress and optimism in parents of deaf children is practically nonexistent. For this reason, it is necessary a study about how the level of optimism and the use of certain coping strategies relate to the parental stress caused by raising a child with deafness, as well as the difference in sociodemographic variables to take into account for potential psychological treatments.

Based upon the aforementioned information, questions arise such as, what level of stress and of optimism have mothers of deaf children? What kind of coping strategies do they use more often? Does the level of stress have an association with being optimistic or pessimistic? What kind of coping strategies do optimistic mothers use? The levels of stress and optimism, as well as the coping strategies,

are different when taking into account sociodemographic variables in mothers and children?

Therefore, the research question of the study is: What are the relationships between perceived stress, coping strategies and optimism in mothers of deaf children, and are there any differences between them concerning sociodemographic variables?

Research justification

According to the 2010 Mexican population census, there are over 649,000 deaf people in the country (Instituto Nacional de Estadística y Geografía [INEGI], 2010); most of them are part of hearing families.

When talking about deafness, it is commonly referred to as an “invisible” disability, because is not as easily discernible as others, such as blindness or Down syndrome. This reason can explain the gap of information and disparity between deafness in comparison to other disabilities. However, it is not enough to explain why there is a lack of research with this population, more likely it is a motive to help this field grow and develop specific therapeutic strategies for their psychological well-being.

The reason why there is a need for specific strategies is because there have been several studies showing a high frequency of socioemotional problems in deaf children and youngsters, with prevalence rates going from 8% to more than 22% (Furstenberg & Doyal, 1994; Hindley, Hill, McGuigan & Kitson, 1994; Mitchell & Quittner, 1996; Van Eldik, 2005; Vostanis, Hayes, Di Feu & Warren, 1997). Basing on these researches, it appears to be that deaf children have a higher risk of psychological problems compared to their hearing peers. However, there have been other studies declaring that problems in deaf children, both psychological and behavioral, are correlated with the stress level in parents (Hintermair, 2006; Pipp-

Siegel et al., 2002). That is, parents who experience less stress levels have deaf children with better socioemotional development.

Perhaps the reason why the aforementioned studies have reported a high prevalence of socioemotional problems in deaf children is because parents are prone to present high levels of stress. Indeed it has been found that these parents report a higher level of stress than parents of regular children. For example, Quittner, Steck and Rouiller (1991) compared levels of stress of mothers of deaf children with cochlear implants and mothers of children with normal hearing. Mothers of implanted children reported *higher* levels of stress than their counterparts. Studies by Quittner (1991) and Quittner, Glueckauf and Jackson (1990) coincide with these findings. Another study found similar results. Burger et al. (2005) measured parental stress levels at two different times during the initial phase of fitting hearing aids in children. They found *high* psychological stress in both measures, both in parents whose children had hearing aids and parents of children with cochlear implants.

The relation previously mentioned between parental stress and socioemotional problems in children is of high importance because it gives us a way to help both parents and children. Despite that nowadays the attention given to the field of disability has increased, the demands are still unfulfilled, since the majority of assistance services are mostly individually-centered (Jackson, Wegner & Turnbull, 2010), aimed only to children with disability, while parents are usually left aside. Parents of deaf children need to be psychologically healthy to be able to give their child the type and quantity of support they need to fully develop and be independent in the future. In other words, the support that special services provide to children would multiply if there were also support services for parents. We believe that if there were programs aimed at teaching effective coping strategies against stress for parents of deaf children, it would impact significantly to the socioemotional development of the child.

The relation between stress and coping strategies has been revised in a wide range of previous studies; however, in this research it is about the relation of these variables in a minority within a minority; that is, the population that has disability is a minority, and even more so the people with deafness.

The reason for including optimism to the study too is because of its positive effects on coping strategies and its correlation with lower levels of stress (Lazarus, 2000), as well as its association with other positive variables in parents of children with disabilities, such as life satisfaction (Dellve, Samuelsson, Tallborn, Fauth & Hallberg, 2006) and psychological and physical well-being (Greenberg, Seltzer, Kraus, Chou & Hong, 2004). In addition, it appears that optimism is a variable that has not found a place in researches with deafness related population. Furthermore, the quantity of researches done in Mexico exploring stress and optimism in parents of deaf children is practically nonexistent. For this reason, it is necessary a study about how the level of optimism and the use of effective coping strategies relate to the parental stress caused by having a child with deafness.

It is important to note that we only included mothers of deaf children in the sample, and not both parents. The reason for this is that researches show that mothers are still the main participants in the intervention processes of children with disabilities (Limiñana & Patró, 2004; Meadow-Orlans, Mertens & Sass-Lehrer, 2003), and also for reasons of time and access to the sample.

Main objective

The identification of correlations between the aforementioned variables is of high importance to describe the level of stress present in mothers with deaf children, and to analyze its association with coping strategies, optimism and sociodemographic variables. For this reason, we now mention the objectives of this study.

Main objective:

To describe the relationship between perceived stress, coping strategies and optimism level in mothers of deaf children, as well as to analyze differences concerning sociodemographic variables.

He

Specific objectives:

1. To determine the level of perceived stress in a sample of mothers with deaf children.
2. To identify the predominant coping strategies in a sample of mothers with deaf children.
3. To determine the level of optimism in a sample of mothers with deaf children.
4. To study the relation of stress and coping strategies in a sample of mothers with deaf children.
5. To study the relation of optimism and coping strategies in a sample of mothers with deaf children.
6. To study the relation of optimism and stress in a sample of mothers with deaf children.
7. To analyze the differences of perceived stress level, optimism level, and use of coping strategies in mothers, in relation to sociodemographic variables of their children.
8. To analyze the differences of perceived stress level, optimism level, and use of coping strategies in relation to sociodemographic variables of mothers.

CHAPTER II

THEORETICAL FRAMEWORK

Deafness

Concept and classifications

Deafness is a wide term generally used along others as synonyms, such as hearing loss, hearing impairment and hypoacusis, to describe any kind of hearing disability. However, it is important to note that there isn't just one type of deafness; there are actually different kinds of classifications, making the deaf group very heterogeneous.

Specifically, deafness is defined as the complete loss of hearing ability in *one* (unilateral) or *both* (bilateral) ears. Hearing impairment or hearing disability refers to both *partial* and *complete* loss of the ability to hear. And, hypoacusis alludes to a decrease in the *normal* level of hearing (World Health Organization [WHO], 2012). To avoid confusion, throughout this study the term *deafness* will be used to describe people with any kind of hearing disability.

Deafness and its implications on a person's life vary depending on several factors. The difficulties a profoundly deaf individual has on her or his life are not the same than an individual with mild hearing loss. Likewise, language development won't be the same on a child who lost hearing after learning how to speak and another who lost it before being able to speak. The classifications of deafness must be taken into account when describing a deaf individual, as well as when deciding the main method of communication and education for a deaf child.

The diverse classifications of deafness depend on the site of lesion, the onset, the causes, the age of hearing loss and the degree of hearing loss (Kral & O'Donoghue, 2010). Each of these classifications is briefly described below.

Depending on the site of lesion, deafness can be divided in three categories:

- *Conductive*. The damage is located in the external or middle ear.
- *Sensorineural*. The damage is in the cochlea or the auditory nerve.
 - *Sensory*. Disease or deformity in the cochlea.
 - *Neural*. Disease or deformity in the cochlear nerve.
 - *Central*. Disease or deformity of the rostral central nervous system to the cochlear nerve.
- *Mixed*. Combined damage of the outer, middle and/or inner ear.

Deafness can also be classified according to the onset; which can be *congenital*, when it is present at birth, or *acquired*, if it develops at any time after birth. Congenital deafness can be detected through neonatal screening.

Regarding to what caused the deafness; this can be divided into several categories:

- *Genetic*. Genetic causes account for at least 50% of cases of permanent deafness in childhood. Inheritance is usually autosomal recessive (80% of the cases) but may also be dominant (15%). Deafness may be present at birth or may also develop in later life.
- *Infectious*.
 - *Prenatal*. Due to cytomegalovirus infection, rubella, syphilis, toxoplasmosis or other viral infection.
 - *Postnatal*. Due to measles, mumps or meningitis.
- *Environmental*. Due to noise.
- *Ototoxic agents*. Due to certain antibiotics or chemotherapeutic agents.
- *Miscellaneous*. Sepsis, prematurity, low birth weight, and anoxia.

Depending on the age the hearing loss was acquired, deafness can be divided into:

- *Prelingual deafness*. If the hearing loss occurs before age 3, or before development of spoken language.
- *Postlingual deafness*. If the hearing loss occurs after acquisition of spoken language.

And finally, deafness can also be divided according to the degree of hearing loss. The decibel (dB) is the unit used to measure this degree. According to the WHO (1991), grades 2, 3 and 4 are classified as disabling hearing impairment.

0. *No impairment*. 25 dB or better. No or very slight hearing problems, able to hear whispers.
1. *Slight impairment*. 26 to 40 dB. Able to hear and repeat words spoken in normal voice at 1 meter.
2. *Moderate impairment*. 41 to 60 dB. Able to hear and repeat words spoken in raised voice at 1 meter.
3. *Severe impairment*. 61 to 80 dB. Able to hear some words when shouted into better ear.
4. *Profound impairment*. 81 dB or greater. Unable to hear and understand even a shouted voice.

Incidence and prevalence

The WHO (2000, cited in Centro Nacional de Excelencia Tecnológica en Salud [CENETEC], 2008) estimates an incidence rate of 5 deafness cases per 1,000 persons. On their part, Lombardero and Denia (2009) report 7 cases of permanent deafness per 1,000 live births, while Davis, Davis and Mencher (2009) declares that most estimates are found ranging 1.10 to 1.70 per 1,000.

As can be seen, the incidence rate of deafness can vary due to several factors, mainly because of how cases of deafness are defined, how cases of

deafness are found and the population from which the cases are obtained (Davis et al., 2009).

Specifically in Mexico, even though it is recommended that every Mexican hospital performs universal hearing screening in newborns (CENETEC, 2008), these are not always carried out. The incidence rate found in Monterrey, Mexico, was .65 cases of bilateral deafness per 1,000 newborns (Yee-Arellano, Leal-Garza & Pauli-Müller, 2006); that is, lower than the previously reported.

Globally speaking, by the year 2004, more than 275 million people in the world had moderate to profound hearing loss; most of them living in low and middle-income countries. It is highly important to point out that 1 of every 2 cases of deafness can be prevented if taken the right measures, such as vaccination (WHO, 2012).

According to the 2010 Population Census in Mexico, nationwide there are 5,739,270 people with some physical or mental difficulty to carry out everyday life activities (INEGI, 2010), this means that 5.1% of the Mexican population has at least one disability. According to the data, deafness is the third most frequent impairment, accounting for 12.10% of the total population with disability. This means that in Mexico there are approximately 694,451 people with some kind of deafness.

The numbers of the 2010 Census are far higher than those of the 2000 Census (INEGI, 2004). For example, the data on the latter reported 1,795,000 people with some kind of disability, representing 1.8% of the population nationwide. Of these, 15.70% reported some kind of deafness; that is, 281,815 people.

Since there is no specific data yet about prevalence of deafness in the 2010 census, we will use the data reported by the 2000 census.

The prevalence in Mexico for any kind of hearing impairment was 2.90 per 1000 persons; specifically in Nuevo León, the prevalence was 2.40 per 1000. According to the data, most deaf people had no education (39.40%) or incomplete primary studies (28.70%), with only 3.20% having undergraduate and graduate studies. The average schooling was 3.40 years (INEGI, 2004).

Diagnosis of deafness and its impact on parents

The age of deafness diagnosis in children is still nowadays dependent on the suspicion of the parents. As was previously mentioned, even though the universal hearing screening is recommended in every newborn, this is not always performed in hospitals. As a result, there is a significant delay between the parents' suspicion, the audiological diagnosis, and the intervention (Lombardero & Denia, 2009).

If we take into account that the spoken language develops in a child on the first two years of life, it makes sense that it is around this age that parents start to suspect something is odd with their child. However, this stage is only the beginning of a process parents go through when they have a deaf child.

Although the suspicion of deafness happens around or before two years of age, the age of diagnosis is far from that. The average age of deafness diagnosis in 1984 was 7.8 years old, when the brainstem auditory evoked potential was starting to be used. Ten years later, the average age for diagnosis was 4.9 years old (García-Pedroza, Peñaloza & Poblano, 2003). Although there have been advances in the age of diagnosis, there is still a substantial delay between the stages prior to intervention.

The commission for the early detection of hypoacusis in Spain (CODEPEH, cited in Lombardero & Denia, 2009) proposes a detection and intervention protocol consisting of three phases:

Phase 1. Universal screening to all newborns.

Phase 2. Diagnosis of deafness for babies between 3 and 6 months old.

Phase 3. Intervention for deaf babies at 6 months old or sooner.

However, the reality is that there is an average delay of 5 to 7 months between suspicion and diagnosis, and then another delay of 3 to 6 months between diagnosis and intervention (Harrison & Roush, 1996). This means that the intervention for a deaf child occurs approximately a year after the parents' suspicion. In other words, when a hearing child starts to pronounce their first words, parents of deaf children are involved in visits to professionals to find out the reason for the lack of language of their child. This differential process between a family with a hearing child and a family with a deaf child leads to differences in the development of language, a difference in which the deaf children's development will be jeopardized because they will receive attention at a later time and, in most cases, the family's and professionals' efforts will be channeled to *make them speak*, instead of focusing in their whole development.

It has been found that a late diagnosis of deafness is related to delays in cognitive and linguistic development (Swanepoel, Delpont & Swart, 2004). However, an early diagnosis is of little help if the professionals do not give parents information about how to offer an opportunity of full development to their deaf child (Storbeck & Calvert-Evers, 2008; Young & Tattersall, 2007).

Minuchin (cited on Ortega et al, 2006) mentions that the birth of a child brings a change in the family organization; changes that require a physical as well as an emotional space. These changes brought by the birth of a child can aggravate in the case of a deafness diagnosis, having as a result a great impact on the family, especially on mothers (Limiñana & Patr3, 2004).

The disability diagnosis in a child can impact parents' in a way that can be considered a crisis; that is, a period of psychological imbalance. This crisis implies a grieving process starting from the diagnosis of deafness, and is produced due to

the loss of an ideal that parents had of their child. In other words, the illusion of having a healthy and “normal” child is lost (Ortega et al., 2006). This grieving process is a normal reaction of what a person goes through after losing something or someone who they considered valuable or important.

Despite existing different classifications of the stages of the grieving process or the crisis that happens after finding out a disability diagnosis in a child, the parents’ reactions generally go through the next three phases, frequently having setbacks (Ortega et al., 2006):

1. *Shock phase*. Parents are psychologically disoriented, irrational and confused. They experience feelings of anxiety, threat, guilt and low confidence in themselves. This phase can last minutes or days, in which they are in need for help and understanding.
2. *Reaction phase*. Parents show reactions of anger, rejection, resentment, and disbelief, as well as feelings of loss, anxiety, guilt and overprotection. Parents question the diagnosis and look for second opinions. They direct their anger to the health professionals, as well as to themselves. This phase opens the way to reinterpretation and understanding of what has happened.
3. *Adjustment phase*. It happens when parents begin to wonder about what can be done. Parents start to understand the situation and to value the options available. In this phase, parents have reinterpreted the situation, they know what to do and they start to act. It is important to offer information and psychological help additionally to medical and pedagogical.

In brief, the parents’ reaction to a child with disability depends on a variety of factors, such as stability in family relations before the arriving of the child with disability, previous grieving situations and how they were resolved, degree of disability, place of the disabled child within the family, family beliefs and expectations, and the external social support given to parents (Núñez, 2003; Ortega, 2002; Weiss, 2002).

As was previously mentioned, the birth of a child brings changes in the family organization. There are several aspects that differ from having a deaf child, compared to a hearing one, which causes modifications in the family dynamics (Luckner & Velaski, 2004; Luterman, Kurtzer-White & Seewalk, 1999; Muñoz, 2006; Muñoz & Jiménez, 2004):

- *Deaf culture.* Parents have little knowledge about deafness, about what it implies for a child to grow up being deaf and about the best method of communication.
- *Crisis.* When parents find out about their child's deafness, they go through a crisis process and several emotional reactions occur before fully accepting the disability.
- *Communication.* Since most deaf children have hearing parents who use mainly oral language, there are going to be difficulties to communicate. No matter what communication method parents choose to keep in touch with their child, they will need to make significant changes to the way they relate inside the family group.
- *Involvement from professionals.* From the moment of the suspicion, a variety of professionals (medics, audiologists, and teachers) will start to get involved inside the family group, offering the parents information and advice, and changing the family's dynamic.
- *Parental role.* The parental role, especially on first-borns, brings along stress and confusion about what *being a good parent* means, this situation aggravates when a child is diagnosed with a disability. Therefore, parents of a disabled child can feel less qualified to exercise their role as mother or father.
- *Psychosocial disorders.* There are certain characteristics that could lead to psychosocial problems in deaf children, for example: lack of parents-child bond (since 90% of deaf children have hearing parents), and parental overprotection or permissiveness.

Fernández-Mostaza (2003) explains that the adaptation process of hearing parents to the needs of the deaf child will depend on the initial information parents receive, of their cultural capital and of how the people involved in the process take action, for example, the professionals.

Depending on how the crisis of having a deaf child is resolved, it will lead to a stage of family growth or, on the contrary, to a disorder. However, every family is different and unique, hence it cannot be assured that necessarily all families who receive a diagnosis of disability in a child will react in the same way, or that they will present disorders. A lot of families manage to rearrange before the crisis, while others get stuck on the road to acceptance. As Ortega et al. (2006) point out, conflicts or family crisis do not emerge as a direct consequence of a disability, but because of the strategies, resources and capacities that family members have, or do not have, to adapt to the new situation.

Luckner and Velaski (2004) comment that despite gender, race, social class or age, children and youngsters who feel cared for, accepted and supported by their families report to be healthier, happier and more competent, in comparison to their peers who do not feel that way. In the case of families with a deaf child, what these authors mention can have a great impact in regard of which aspects of family life can be developed, so that deafness has the least of negative impact, and also to help the deaf child and their family to reach their ideal development.

In the aforementioned study of Luckner and Velaski, hearing parents of deaf children were interviewed with the aim of identifying factors that families thought they contribute to their health, as well as to mention suggestions to other families with deaf children and to professionals who work with this population.

The factors that contributed to being a healthy family with a deaf child were: commitment towards the family, learning sign language, support from other external members and members of the community, support from professionals who worked

with their children, and high expectations towards their deaf child. Likewise, parents mentioned some difficulties they had when dealing with professionals, among them: suspicion of their child's deafness but difficulty to convince their medic to perform a study, and professionals generally recommending just one communication method and not handing out information about others (sign language, oralization or total communication) (Luckner & Velaski, 2004).

The factor about having high expectations towards the deaf child has also been mentioned in other researches. Thumann-Prezioso (2005) carried out interviews with Deaf parents of deaf children, and some parents expressed concerns about teachers having low expectations of their deaf students, thinking they could not do certain things only because they were deaf. This is a really concerning matter because lowering expectations for a child, be it deaf or hearing, has as a result less effort from teachers and from the student as well. There is a big difference between *lowering* expectations and *adapting* the school content to the deaf child. Lowering expectations implies, in one way or another, that the teacher or professional does not think the deaf child is capable of doing the same things a hearing child would. Whereas adapting the school content means teaching and expecting exactly the same from a deaf child and a hearing child, but making changes so the first can have the same opportunities.

On their part, Eriks-Brophy et al. (2007) reported a series of facilitators mentioned by parents, deaf teenagers and teachers to achieve the integration of deaf children into family, social and community environments. These facilitators were:

- Parents making sacrifices for their children, such as looking for appropriate intervention services, even when it meant moving to another city.
- Support from friends and/or extended family to help parents deal with stress.
- Participation of parents in support groups.
- Maintaining a balance in the family and setting apart some time for each parent to spend on their interests.

- Dedicate attention and time to the development of other family members, such as siblings of the deaf child.
- Parents having an open communication with the deaf teenager, as well as encourage them to be independent and responsible.
- Parents encouraging their deaf children to be involved in sports and social activities.
- Deaf children and teenagers having contact with other deaf members of the community, so they can develop a sense of identity and build self-esteem.

The researches by Luckner and Velaski (2004) and Eriks-Brophy et al. (2007) report an important recommendation for parents, and that is to participate in support groups and to receive help from professionals. It is essential for parents to be oriented by professionals at times, since parents sometimes can have unreal expectations towards their deaf children, be it too low or too high (Muñoz & Jiménez, 2004).

Despite the grieving process and acceptance of the disability in a child is a long process, sometimes with backward steps, if families have enough abilities, resources and assistance, these can adapt and move on (Ammerman, 1997).

In relation to what makes a family overcome the difficulties of having a deaf child and to achieve the best development for the child, as well as the family as a whole, there is one aspect that has a great influence: the intervention. Most of the interventions for children with some type of disability have been individually-centered (Jackson et al., 2010); that is, the intervention program focuses on the development of the child alone, leaving parents and siblings on the side. However, nowadays there has been a shifting towards a more family-centered approach, on which parents are encouraged to have a larger amount of participation on their child's rehabilitation and learning process.

The family-centered intervention programs, as described by Dunst (2002), are practices on which families are treated with dignity and respect, where professionals share information and intervention options with families so they can make better decisions, where professionals plan individualized and flexible programs for children, where they encourage collaboration between professionals and parents, where professionals provide parents with resources and supports they need to take care for their child, and where professionals provide emotional support for families. It is also important that parents have an active participation during the planning on their child's program and in the actual intervention.

The parents' participation in the intervention is even more important when their child is younger, since there are certain decisions to be made that will impact their future development; for example, the method of communication or the hearing device they will use, and at what age. These are decisions that parents need to make with the collaboration of professionals. It is vital that the professional gives wide information, even about methods they do not fully support, since there cannot be bias when explaining parents the available options for their deaf child.

On a study conducted by Tharpe (2000), it was found that 57% of the interviewed parents were not satisfied with the way audiological evaluations were carried out and how the information was given to them. Also, 50% of the parents complained that their comments and suggestions about the intervention had not been taken into account by the professionals. On another research, Young et al. (2006) described that parents of deaf children were dissatisfied with the information provided by the professionals, since they did not inform of all the available options for supporting their child. Besides, parents reported that some professionals did give them information about communication options for their deaf child, but it was biased.

Unfortunately, as it can be seen by the aforementioned researches, there are still barriers concerning the collaborative work between parents and

professionals. One difficulty in the family-oriented approach is the professional who wants to keep an attitude of *expert* and treat the parents as *patients*. These are professionals who make all the important decisions on their own and take into account the parents' opinions only when they go according to the program goals (Bruder, 2000; Guralnick, 1997). Nevertheless, it must be taken into account that the parents' participation on intervention programs is for the best of the child and their developmental needs. It is vital that professionals have the knowledge and skills to *empower* parents to make decisions and to get involved in their child's intervention program.

The importance of providing enough information to parents as well as helping them built coping resources and making them part of their child's intervention lays in that the home is still the place where the child spends most of their time. Even if deaf children go to school and also to pedagogical or psychological therapy, they still spend their majority of time in their homes and with their families. It is important that parents become involved in their child's intervention and that they collaborate with professionals so the results of the deaf child in school and therapy generalize to other areas, and so they can achieve their full potential. Nonetheless, despite the importance of the child's education and intervention, parents must always keep in mind that the deaf child is, first and foremost, a *child*, and the deafness is secondary; so family interactions and activities should never be fully exchanged for the intervention (Eriks-Brophy et al., 2007).

Another aspect related to family-centered programs is the involvement of both parents, not just mothers. Researches show that mothers still assume the primary responsibility of their children and are the ones that most participate on intervention programs and activities (Calderón, Bargones & Sidman, 1998; Meadow-Orlans et al., 2003; Meadow-Orlans & Sass-Lehrer, 1995), this can have serious repercussions, since they have a greater risk of potential burnout than fathers (Eriks-Brophy et al., 2007).

However, it is not that all fathers are uninterested in their deaf children's development, but rather they are less available to participate due to conflicting agendas. In spite of probably having more difficulty in arranging their agendas, it is essential that fathers take part on their children's development and daily life, since it has been found that children whose fathers were present showed higher academic, socioemotional and languages results, compared to those children whose fathers were absent (Calderón & Low, 1998).

Deaf culture

When referring to deaf people, it is important to make a differentiation of concepts between deaf-mute, deaf (lower case letter) and Deaf (capital letter). The word *deaf-mute* was previously used to explain that the lack of oral language of an individual was due to deafness (Bartual, 1988). However, this term appears to have a negative meaning nowadays, since deaf people are not mute because of defects to the articulatory phonetic organ or vocal cords, but because they cannot hear, and therefore, they cannot repeat the sounds of an oral language.

About the other two concepts, Marchesi (1999b) explains that *Deaf* (with capital letter) refers to a person with hearing impairment, who uses sign language as the principal mean of communication and who identifies themselves with the Deaf culture. The word *deaf* (with lower case letter) names a person with hearing impairment that does not feel a member of the Deaf community nor uses sign language to communicate.

In relation to the aforementioned concept, Glickman (1996) proposed a developmental theory of Deaf identity, based on the suggestion that deaf individuals, as members of a minority group, share experiences of oppression similarly to members of other minority groups. On this theory, the author categorizes deaf people into four stages:

- *Culturally hearing.* The goal of this stage is to be “as hearing as possible” by being compliant to the norms of the people who hear and speak. The most common people in this stage are individuals who lost hearing at a later age, probably adolescence or adulthood. Deafness is seen as a disability; therefore they look for medical cures to overcome it. Learning sign language is often not an option since it represents the hassle of learning a new language and getting involved in a community in which they cannot connect with; so their preference is to maintain contact with the hearing world. This stage also refers to individuals who grew up being deaf but prefer the oral language; they socialize mainly with hearing peers and may advocate for spoken language in deaf children’s education.
- *Cultural marginality.* In this stage, the deaf person is either ambivalent or does not identify with neither the hearing nor the deaf group; sometimes they shift between groups depending on the level of acceptance or rejection they feel. Marginality may be the first stage to deaf children born of hearing parents, since they often do not fully assimilate the hearing environment and have identity confusions.
- *Immersion in the Deaf world.* In this stage there is an immersion into the Deaf identity and Deaf culture, as well as disapproval or condemnation to hearing values or spoken language. These Deaf individuals want to be surrounded by only Deaf peers, and have feelings of anger towards hearing people for creating barriers of communication.
- *Bicultural stage.* Here, Deaf people recognize strengths as well as weaknesses of the hearing and the Deaf culture, and integrate the values of both to enter this bicultural stage. They have an identity of what it means to be Deaf, but also respect and collaborate with hearing individuals. They are also comfortable in both hearing and deaf environments.

The Deaf identity development does not happen in progressive or linear order; it is actually more common to switch from stages backward and forward depending on the circumstances and on the deaf individual (Glickman, 1996).

However, it has been noted that the bicultural stage represents the most optimal psychosocial adjustment compared to the first three stages (Hintermair, 2008). In addition, other researchers have found that cultural marginality correlates with lower scores in self-concept and self-esteem measures (Cornell & Lyness, 2005; Hintermair, 2004; Maxwell-McCaw, 2001), and eating disorder symptomatology in women (Moradi & Rottenstein, 2007).

Sign Language

According to the Ley General de las Personas con Discapacidad (General Law for People with Disability; 2005), sign language can be defined as a language of the Deaf community, consisting in a series of gestural signs made with the hands, as well as facial expressions, deliberate eye contact and corporal movement; all of these provided with linguistic function. The general law also establishes Mexican Sign Language (LSM, for its acronym in Spanish) as a linguistic heritage of said community, and as rich and complex as any oral language. It is important to point out that there isn't just one sign language used by the deaf communities; these are different among countries just as oral languages are different throughout the world.

The formal development of sign language, fingerspelling and deaf education began approximately in the sixteenth century in Europe. During that time, sign language was the preferred method in schools for deaf people; although articulation and speech was also taught, it was just a subject, like any other. However, in the twentieth century, the oral method started to stand out, along with a debate of which was the best method for deaf people (Symington & Carberry, 2006).

It is said that language in general is an instrument that allow us to refer to ourselves and others, and to make references to the past, present and future (Tuson, 2003). Sapir (cited in Tuson, 2003) defines language as a purely human method to communicate ideas, emotions and desires through a system of symbols

that are produced voluntarily. However, he later adds that these symbols are mainly auditory and elaborated by the speech organs.

It is actually a common misconception to view *language* as synonym of *oral language*; although these terms are related, it is of utmost importance to differentiate between them and not treat them as the same, because this misconception has serious effects in the deaf children's education, the preferred method of communication and their intervention.

It must be noted that not all deaf people use sign language to communicate, especially children, since parents are usually the ones that choose the main method of communication. At present, there are four main approaches regarding the method of communication for deaf children (Comes, 2003):

- *Pure oral communication.* Its aim is to integrate the deaf child to the hearing society. They avoid teaching sign language because they believe that it creates a negative interference with the oral communication.
- *Complemented oral communication.*
 - Lip-reading. The deaf person observes the face of the speaker and "reads" their lips to know what they are saying; unfortunately, there are phonemes whose articulation is not visible and others that can be easily confused.
 - Cued speech. It is a system of manual cues that, along with lip-reading, allows visualizing the complete phonological code of the oral language. It is a support system for lip-reading.
- *Gestural communication.*
 - *Dactylology.* It refers to fingerspelling, the representation of the letters and numbers of a writing system using only the hands.
 - *Dactylology along with speech.*
 - *Sign language.* It is considered the natural language of the deaf. It is a language that is expressed gesturally, is perceived visually and it is developed with a spatial organization and its own grammar. It is used

by most Deaf adults and deaf children of deaf parents. Many sign languages use fingerspelling or dactylogy for the names of people and places, as well as some new words that do not have a particular sign yet.

- *Sign language along with oral language.* Also known as bilingualism.
- *Total communication.* It includes hearing stimulation, oralization, lip reading, sign language and dactylogy.

From the medical approach, deafness is seen as a disability, it is a pathology that needs a cure, whether through correction or compensation (Muñoz-Baell & Ruiz, 2000); therefore, medical and clinical rehabilitation in deaf people, mainly in deaf children, is directed to the development of an oral language. Nevertheless, it is important to take into account that not all deaf children will be able to follow an oral methodology and develop spoken language; the level of acquisition of the oral language in deaf children will depend on the degree of hearing loss they present.

When hearing parents focus all their efforts so their deaf child can develop an oral language, it has some disadvantages. The first is that they generally use a restrictive and controlling coaching style towards their children, becoming more their teachers than their parents. Also, the excessive importance they put on developing the oral language leaves in the background the social and emotional development of the deaf child (Muñoz & Jiménez, 2004).

There is nothing wrong with parents wanting their deaf child to have access to an oral language; however, language therapy must have its limits so it does not invade all of the child's life. It has been reported that a deaf child educated only through oral methodology does not receive the proper stimulation for their cognitive and social development, since parents' and professionals' main goal is to stimulate spoken language alone (Power, Wood, Wood & MacDougall, 1990).

Nowadays there are still many prejudices towards sign language, mostly referring to the assumption that it causes interference or delays in deaf children who are learning an oral language and that it secludes them from the hearing world. Nevertheless, it is important to look at the facts, and it has been reported by several researches that sign language is a method of communication that has positive effects in deaf children and adults (Fernández-Viader & Pertusa, 1995; Marchesi, 1999a).

Using sign language as a method of communication with deaf children makes a noticeable difference in their development, compared to using only oral methodology. This can be seen in deaf children born of deaf parents, since these children learn sign language in the same way hearing children learn an oral language (Muñoz & Jiménez, 2004). In a signing environment, the deaf child progresses at the same level than a hearing child (Castro, 2003).

Fernández-Viader (1993) reported a series of differences when comparing the interactions between deaf parents-deaf children and hearing parents-deaf children. He describes that deaf parents established a better exchange of information with their deaf child, they took turns, they were more visual and gestural, they only communicated with the child when she or he was looking toward them and there were not misunderstandings or miscommunication. On the other hand, the hearing parents used basically oral language to communicate with their deaf child, even when she or he was not looking at them; and both parents and child showed difficulties for mutual understanding. The author declares that the difference between these exchanges was mostly due to the method of communication. In the deaf parents' case, they had a common code of communication that made the exchange of information easier for both.

Previous researches have pointed out that deaf children and teenagers have a higher risk of presenting behavioral and emotional problems compared to their hearing peers (Denmark, 1994; Hindley, 1997; Van Eldik, Treffers, Veerman &

Verhulst, 2004). However, although it is well known that deaf children born of hearing parents are prone to present delays and difficulties in their emotional and social development, this risk is not a direct consequence of deafness itself, but about being deaf in an environment that does not adapt to the emotional and linguistic needs of the child (Simón, 2008; Terwogt & Rieffe, 2004; Zekveld, Deijen, Goverts & Kramer, 2007), since these difficulties do not appear in deaf children born of deaf parents (de Villiers, de Villiers, Schick & Hoffmeister, 2000). Therefore, the cause of the delays would not be deafness, but rather the lack of a way to communicate.

Indeed there are authors (Pressman, 1999; Silvestre, 1998; Valmaseda, 1998) who state that psychosocial difficulties concerning deaf children reside in the lack of communication resources needed to establish an appropriate parents-child interaction. Rodda and Grove (1987), based on their researches about mental health problems in deaf children, have affirmed that an efficient communication between hearing parents and deaf children is crucial to the development of children. Therefore, it is vital that parents learn a new method of communication when the oral language does not turn out to be effective (Muñoz & Jiménez, 2004).

Stress and coping

Stress concept

Stress can be defined as an individual's reaction that involves physiological, cognitive and emotional responses to situations that imply a change in life; the stress effects depend on the appraisal or evaluation a person makes of the stressor, as well as their ability to control and face the situation (Sandín, 2003).

It is important to point out that what is stressful for someone, it is not necessarily stressful to another; therefore, stress cannot be defined just taking into account the conditions of the environment, it is also necessary to put emphasis on

the person's characteristics. Taking this into account, psychological stress can be defined as a particular relation between the person and the environment, which is evaluated by the person as something that exceeds their resources and puts in danger their well-being (Lazarus & Folkman, 1984).

Transactional theory of stress

The transactional theory of stress, developed by Lazarus and Folkman (1984), explains stress as a relation between the person and the environment. The *transaction* concept entails that stress is not found only in the person nor in the environment, but in a combination of both, where the person's motivations and beliefs are confronted with an environment that supposes threat or damage (Lazarus, 1999).

Stress is also considered a *process*, because it does not stay static, but changes according to the continuous interactions between person and environment; and also because it involves other components such as cognitive appraisal, physiological and emotional responses, coping and personal and social modulators (Sandín, 1999).

According to this theory, for an event to be considered stressful or not depends on two processes that mediate the relation person-environment, which are: cognitive evaluation or appraisal and coping. Coping will be explained in the next subtheme; therefore we will only describe here the process of appraisal.

However, before explaining this process, we will briefly describe the three types of environmental events that Lazarus and Cohen (1977) had categorized as stressful stimulus or stressors. This categorization is important to understand the concept of appraisal and its development. Thus, the types of environmental events described as stressors are: (a) mayor changes that affect a large number of people; (b) mayor changes that affect one or few people; and (c) daily difficulties.

About the first type of events, there are certain phenomena that can be considered universally stressful and out of people's control, for example: natural disasters or catastrophes, wars or imprisonment. Said events can have a limited or a long duration; however, the physical and psychological repercussions can extend for a long period of time, even if the stressful stimulus was brief.

The events mentioned in the second type refers to events involving one or few people; it can also be out of people's control (death of a loved one, an illness or a disability), or can be influenced by the person to whom the event is happening (a divorce).

However, not only catastrophes or big changes are causes of stress. The third type of stressful events refers to daily life experiences; these are little things that can cause irritation or inconvenience, for example, having a discussion with one's partner or a bad behavior from a child. Despite these situations seem less dramatic than the first two types of events; sometimes they can be more important in a person's health and adaptation (DeLongis, Coyne, Dakof, Folkman, & Lazarus, 1982; Kanner, Coyne, Schaefer & Lazarus, 1981).

As can be seen, these three different kinds of stressors have the capacity to produce stress among people; however, although certain types of events cause stress in a high number of people, there are always groups and individual differences. That is, individuals differ in their interpretation and reactions to events. For example, people can react with anger, depression or indifference, even before the same event. This is where the concept of cognitive appraisal comes in.

Cognitive appraisal is an evaluation process, it means categorizing an event with respect to its significance to our wellbeing. This concept helps us explain the difference and variations among individuals under comparable external conditions.

Lazarus and Folkman (1984) made a basic distinction between primary and secondary appraisal.

Primary appraisal is further divided into three kinds: irrelevant, benign-positive and stressful. When an event has no implications or shows no threat for someone's wellbeing, that incident is considered *irrelevant*. That means that nothing is lost or gained in the transaction. The *benign-positive* appraisal makes reference to an event that preserves or improves someone's wellbeing or promises to do so. These events are related to positive emotions such as love or happiness.

The *stressful* appraisal, on the other hand, brings about three further types of appraisal: damage/loss, threat and challenge. The first type deals with damage or loss that has already happened. *Threat* is related to damage or loss that has not taken place, but its occurrence is possible or probable in the near future. And finally, *challenge* consists in feeling that, even though there are difficulties to achieve a goal, these can be overcome.

Threat and challenge share in common that they both imply the mobilization of coping resources for a future event. However, they also differ in an aspect; whereas challenge focuses on the potential gain brought by an event and is characterized by positive emotions, threat concentrates on the potential harms an event can have and is characterized by negative emotions. Nevertheless, threat and challenge are not mutually exclusive and can occur simultaneously (Lazarus & Folkman, 1984). For example, a new job position can be seen both as a challenge and as a threat for the new risks it involves.

The secondary appraisal appears when an event is considered a threat or a challenge, and something must be done to deal with the situation. This is an evaluative process that takes into account the coping options available, what every coping option will accomplish and the likelihood of using the coping strategy in an effective way.

The evaluation of the coping options available (secondary appraisal) and the assessment of what is at stake (primary appraisal) interact with each other and determine the degree of stress and the emotional response of the individual (Lazarus & Folkman, 1984).

Summarizing, it can be said that stress is an inevitable aspect of the human experience, however it is coping that makes a big difference in the adaptation process. This can be justified because a stressful stimulus alone does not directly explain the occurrence of a psychological disorder, but it is more likely that a coping response was inadequate.

Stress and health

The importance of stress and its study relies in the way it correlates with other variables. There are findings that have shown that a high level of stress associates with depression, anxiety, physical symptoms and illness (Folkman & Moskowitz, 2000).

Stress also has effects on physical and mental health, since it can lead to a disorder, influence the course of a disease, produce physical and psychological discomfort and reduce wellbeing and quality of life (Sandín, 1999). Therefore, it is a risk factor for physical and mental disorders (González, Landero & Ruiz, 2008).

Stress has also been found to correlate with other psychosocial variables, such as social support (González & Landero, 2005; Sarason, 1999) and self-esteem (Lara, Verduzco, Acevedo & Cortés, 1993); as well as social conditions such as socioeconomic level, marital status, working status and sex (Cockerham, 2001).

Coping concept

Now that we have explained the concepts of stress and appraisal, we can move onto the coping concept.

Coping refers to the “constantly and changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person” (Lazarus & Folkman, 1984, p. 141). As was previously mentioned, stress occurs when a person has difficulty to manage or solve a problematic situation; therefore, coping consist in cognitive and/or behavioral efforts that a person uses to overcome these stressful demands (Sandín, 1999).

To a certain degree, it can be said that stress and coping are reciprocal processes; when coping is ineffective, the stress level is high; and vice versa, when coping is effective, the stress level is prone to be low (Lazarus, 1999).

It is important to point out that coping is not the same as *controlling* the environment. There are stressful situations that cannot be controlled or changed by the person; in these cases, an effective coping will refer to a person tolerating, minimizing, accepting or ignoring what cannot be controlled. Likewise, there isn't a universally better or worse cognitive or behavioral coping strategy, since the decision to use a strategy is made by a person considering its context. For example, denial can be adaptive somehow in certain situations, but not necessarily in others. Lazarus (1999) suggests evaluating the type of person, the type of threat and the stressful encounter to understand when a form of coping is beneficial or harmful.

Coping styles and strategies

As can be deduced by this point, coping strategies differ between one person and another, even when facing the same stressful situation. In relation to this, there are two main ways to explain how individual differences influence coping (Carver, Scheier & Weintraub, 1989).

The first is that there are coping styles, that is, that people have coping dispositions that remain relatively stable across time and circumstances. According to this view, people do not approach each stressful situation from zero, but rather they already have a preferred set of coping strategies. However, Folkman and Lazarus (1980) take coping as a dynamic process that changes from situation to situation; for them, having a preferred coping style would be counterproductive, since it would fix the person into one mode of coping, instead of giving them the freedom to adjust according to the circumstances or stressors. The second way to explain differences in the use of coping strategies is that preferred ways of coping depend on personality dimensions; that is, that there are certain personal characteristics that predispose people to use particular coping strategies when facing stress, such as intelligence, educational and socioeconomic level, social skills, social support, health and optimism (Lazarus, 1999).

Another important difference found in choosing certain coping strategies over others, is sex. It has been found that women tend to focus on and vent emotions, and to seek social support; while a strong tendency in men is the use of alcohol and drugs as a way of coping (Carver et al., 1989).

Therefore, even though the use of coping strategies depend in part on the context in which they are used, Folkman and Lazarus (1980) proposed two general styles of coping: problem-focused and emotion-focused. The first refers to solving the problem or doing something to alter the source of stress; while the latter is intended to reduce or manage the emotional stress associated with a situation.

Although most stressful events elude both types of coping, problem-solving is predominant when the person feels the situation is controllable, whereas emotion-focused is predominant when the person feels they do not have control over the stressful event.

Carver, et al. (1989) found similar results on their research. They reported that subjects who viewed a stressful situation as prone to change engaged in more active coping, planning and suppression of competing activities, whereas subjects who considered that the stressful situation was something they had to get used to, reported higher levels of acceptance and denial.

In short, the coping strategies that are usually grouped in problem-focused or rational coping are social support seeking, problem-solving and positive reappraisal; whereas in emotion-focused coping the strategies are overt emotional expression, avoidance and negative auto-focused. The strategy religion has been found to group with emotion-focused coping (Sandín & Chorot, 2003) as well as problem-focused coping (González & Landero, 2007a) depending on the sample of the study.

To assess these two types of coping, Folkman and Lazarus developed the Ways of Coping Checklist (WCC, 1980), later modified and renamed the Ways of Coping Questionnaire (WCQ, 1988). This scale had eight factors, each corresponding to a coping strategy: confrontive coping, distancing, self-controlling, seeking social support, accepting responsibility, escape-avoidance, planful problem solving and positive reappraisal.

However, due to differences in number of factors and coping strategies it measured (Folkman & Lazarus, 1985; Rodríguez-Marín, Terol, López-Roig & Pastor, 1992), new questionnaires were developed based on the WCQ, such as the Coping Strategies Questionnaire (Sandín & Chorot, 2003).

It is important to mention that problem-focused and emotion-focused coping are not always exclusive; this means they can facilitate as well as hinder each other, since they frequently happen simultaneously or successively (Lazarus & Folkman, 1984).

Coping and health

As with stress, coping strategies have been found to relate to other variables, such as psychological wellbeing. In this regard, problem-focused coping appears to correlate with a higher wellbeing both in women and men (Donaldson, Prinstein, Danovsky & Spirito, 2000; Seiffge-Krenke, 1990; Williams & McGillicuddy-De Lisi, 1999). In addition, a study by Sandin and Chorot (1993) reported that individuals with anxiety disorders scored higher in emotion-focused dimensions; whereas regular individuals scored higher on problem-focused dimensions.

There are other researches that have found a correlation between somatic symptoms and certain coping strategies, such as cognitive and behavioral avoidance (Ruchkin et al., 2000), negative auto-focused, overt emotional expression, avoidance and religion (González & Landero, 2007a).

And finally, as was expected, several coping strategies correlate with stress. In a research by González and Landero (2007a) problem-solving and positive reappraisal correlated with lower levels of stress, whereas negative auto-focused, overt emotional expression and avoidance correlated with higher levels of stress.

Stress and coping in hearing parents of deaf children

The birth of a child with deafness, as was mentioned previously, can have a great impact on parents and the entire family system, it can generate feelings of powerlessness and incompetence (Bodner-Johnson & Sass-Leher, 1996; MacTurk

et al., 1993), cause an emotional crisis (Leigh & Anthony, 1999 cited in Kurtzer-White & Luterman, 2003), give rise to feelings of shock, anger, confusion, frustration, depression and blame (Yoshinaga-Itano & de Uzcategui, 2001), relate to an impaired quality of life (Burger et al., 2005) and produce high levels of stress.

Specifically in relation to stress, there have been researches focusing on factors that contribute to stress in parents of deaf children. For an easy reading, we classified the findings in accordance with the categorization of factors made by Pipp-Siegel et al. (2002), adding a fourth group suggested by Scorgie, Wilgosh and McDonald (1998). The categories are:

- *Characteristics of the deaf child.* It refers to age, sex and/or other disabilities in the child, as well as possible socioemotional problems.
- *Factors related to the child's deafness.* It makes reference to the degree of deafness, age of identification and method of communication.
- *Characteristics of parents.* It refers to educational level, socioeconomic status, hearing status, social support (from partner), marital status, marital satisfaction and coping.
- *External factors.* It makes reference to social attitudes, social support (from relatives, friends or acquaintances) and collaboration with professionals.

Characteristics of the deaf child

In regard to this category, there have been researches that show a positive correlation between age and maternal stress (Konstantareas & Lampropoulou, 1995); that is, stress tended to increase as child age increased from 2 to 14 years. However, contrary to this finding, Pipp-Siegel et al. (2002) found that mothers of younger children were the ones who reported more stress.

In relation to the sex of deaf children, Pipp-Siegel et al. (2002) reported few differences in parental stress related to this variable. Nevertheless, in another

study, it was found that mothers of deaf girls reported less stress than mothers of deaf boys (Henggeler et al., 1990).

Concerning the presence of other disabilities besides deafness, Meadow-Orlans, Smith-Gray and Dyssegaard (1995) found no differences in maternal stress levels of mothers whose children were deaf with additional disabilities and those without. On their part, Pipp-Siegel et al. (2002) reported that mothers were more stressed when their children had another disability besides deafness.

Finally, with respect to socioemotional problems in deaf children and stress in parents, Hintermair (2006) found a positive correlation. That is, stressed parents had children with a high number of emotional problems, behavioral problems, hyperactive behavior and peer problems.

Factors related to the child's deafness

With regard to the degree of deafness in the child, a study found no differences in stress levels when comparing mothers of children with moderate to profound deafness (Konstantareas & Lampropoulou, 1995). Nevertheless, Pipp-Siegel et al. (2002) reported an interesting finding; that mothers of children with less deafness reported more stress. The authors explain this result by saying that it would be easier for parents of children with less hearing impairment to underestimate the impact deafness has on their child, this together with an ambiguous diagnosis and intervention could explain the higher levels of stress in mothers of children with less hearing impairment.

On the subject of age of identification, Konstantareas and Lampropoulou (1995) reported that the identification of deafness before the age of 18 months was correlated with increased maternal stress. However, this high stress level could be explained by taking into account that the phase of diagnosis and early intervention are perceived as the most stressful for parents (Burger et al., 2005). On another

study, age of identification showed no correlation with maternal stress (Pipp-Siegel et al., 2002).

Regarding the method of communication, Greenberg (1983) reported differences in stress levels when comparing mothers that supported total communication and mothers who supported spoken language only. Mothers who supported total communication were less stressed than their counterparts. However, Pipp-Siegel et al. (2002) found no relation between these variables.

Continuing on this subject, Mapp and Hudson (1997) reported that stress was lower in parents of deaf children who signed fluently, compared to parents of deaf children who did not know sign language or knew very little; and Hintermair (2000) indicated that parents who use signing as a method of communication showed higher acceptance of their deaf child.

Characteristics of parents

In relation to educational level, lower levels have been found to correlate with increased stress (Deater-Deckard & Scarr, 1996; Singer et al., 1990). Additionally, Silvestre (2009) described a significant relation between stress level, age and educational level on mothers; older mothers (36 to 47 years old) had lower levels of stress; as well as mothers who had a higher educational level.

The hearing status of parents could be a variable related to stress, since it has been found that deaf mothers reported less stress than hearing mothers when interacting with their deaf child (Hintermair, 2006).

Concerning marital status, Mapp and Hudson (1997) hypothesized that married parents or parents who live with a partner had lower levels of stress than their counterparts; however, the results found no correlation between stress and presence or absence of a partner. Nevertheless, in married couples, Friedrich et al.

(1983) found that greater marital satisfaction correlated with lower level of stress. Half of the sample of parents in a study by Kashyap (1983) even reported that the crisis resulting from the deafness diagnosis had brought the family closer together.

Effective coping is also a characteristic that can help parents reduce stress levels. Since this is an important variable in the present study, a subtheme will be added after describing the fourth and final category of stress.

External factors

Social support is a variable that has been found to negatively correlate with level of stress in parents of deaf children (Lederberg & Golbach, 2002; Meadow-Orlans, 1994; Pipp-Siegel et al., 2002). That is, increased social support is associated with lower levels of stress.

Social support also makes reference to the contact parents have with deaf adults, being these friends, acquaintances or part of a support group. In a research by Hintermair (2000) one question addressed this matter; parents of deaf children were asked if they had contact with Deaf adults. Surprisingly, only 3.8% of parents ($n = 12$) responded affirmatively; of these percentage, most parents were deaf. This study demonstrates that Deaf adults play little, if any, role in the socialization process of deaf children. This is definitely a deficit, since Deaf adults could be positive role models for deaf children. The study also showed that parents with deaf children who have contact with other parents with deaf children had stronger emotional bonds and a higher acceptance of their child.

Coping strategies

The decision to use a certain coping strategy over another depends on the person and their context. The individual must first evaluate the event, the options available, the results that every option will accomplish and the likelihood of using a

strategy in an effective way, to then understand when a form of coping is beneficial or harmful (Lazarus, 1999).

There have been studies showing that parents who think they have the strategies to raise their deaf child have lower stress scores (Hintermair, 2006), also, that mothers who successfully use strategies to cope with their child's deafness have children with better emotional development, reading skills and problem-solving behavior. In addition, the deaf child shows less impulsive behavior and better social competence (Calderón & Greenberg, 1993; Calderón et al., 1991). These studies prove the importance of an effective coping in parents of deaf children.

In relation to problem-focused coping, specifically in positive reappraisal, a strategy that parents mentioned it worked was to maintain a sense of humor when dealing with the difficulties of raising a deaf child, as well as being able to share a laugh with parents in the same situation (Eriks-Brophy et al., 2007). In addition, Hintermair (2000) reported that parents with deaf children coped better with everyday challenges when they met with other parents in the same situation and with deaf adults; this makes reference to social support seeking.

Now, with regard to emotion-focused coping, it has been reported that to maintain a façade of control is valued as an unsuccessful strategy, since parents do not deal directly with stress, but it just keeps piling up, eventually leading to exhaustion and burnout, which in turn become barriers to a proper family functioning (Eriks-Brophy et al., 2007). Additionally, a limited use of sign language in children correlates with distance coping in parents, whereas lower educational level and income in parents correlates with an increased use of distancing and escape-avoidance coping (Mapp & Hudson, 1997).

Summarizing, we can say that social support, from partners, relatives, friends and professionals, both deaf and hearing, as well as personal resources

such as self-efficacy, self-esteem and optimism, influence the coping process in a positive way (Hintermair, 2004).

Stress level in parents with deaf children

Now that we have mentioned the factors that have influence on stress level in parents of deaf children, we come to an important question – do parents of deaf children have higher levels of stress than normative parents?

On this subject, there have been mixed findings; for example, Quittner et al. (1991) compared levels of stress of mothers of deaf children with cochlear implants and mothers of children with normal hearing. Mothers of implanted children reported *higher* levels of stress than their counterparts. Studies by Quittner (1991) and Quittner et al. (1990) coincide with these findings, although the samples on their researches were deaf children in general, not implanted children only.

Another study found similar results. Burger et al. (2005) measured parental stress levels at two different times during the initial phase of fitting hearing aids in children. They found *high* psychological stress in both measures, both in parents whose children had hearing aids and parents of children with cochlear implants.

However, there are other studies that have not found significant differences in stress levels. For instance, Meadow-Orlans, Spencer and Koester (2004) compared levels of stress between parents of deaf children and parents with hearing children and found no significant differences. It is important to point out, however, that parents of deaf children were highly educated, resided in urban settings and their children had received early intervention, apparently these are variables that can hinder stress.

On another study, Weisel, Most and Michael (2007) compared groups of parents depending if their child had not received a cochlear implant, had been

implanted for a period of 3 years and had been implanted for 3 to 9 years. All three groups of parents reported *normal* levels of stress, with no significant differences between them. On her part, Silvestre (2009) reported that half of the sample on her study had a *normal* level of stress.

A longitudinal study by Lederberg and Golbach (2002) described that mothers of deaf infants aged 22 months had higher levels of stress than mothers with hearing children; however, when the children were 3 and 4 years old, no significant difference on stress level was found between groups. On their part, Pipp-Siegel et al. (2002) reported that parents of deaf children who were early diagnosed and received good support had stress levels *similar* to parents of hearing children.

These results may seem contradictory, since some report higher levels of stress in parents of deaf children while others describe there are no significant differences when compared to parents of hearing children, a study even finds a high stress level at the beginning but it diminishes with time. In relation to this, and as it was previously mentioned, the impact of deafness in family life depends on a variety of aspects, so not all parents of deaf children are going to report high levels of stress. The discrepancy in results could arise from differences in sample sizes, in measure instruments, in the age of the child and the degree of deafness (Pipp-Siegel et al., 2002).

It also must be taken into account that the phases of diagnosis and early intervention are perceived as the most stressful for parents (Burger et al., 2005); therefore, the contradictory results of some researches can be partially explained by how much time has passed since parents received the diagnosis. A normative level of stress in parents could mean that they are adjusting to the deafness of their child, since most parents eventually find the resources to cope better with the disability (Moores, Jatho & Dunn, 2001).

The importance of these mixed results lays in the existence of certain factors that seem to protect parents of deaf children from having high stress levels and better coping resources that help them overcome the impact of the disability in their lives. With the identification of these protective factors, there can be better psychological intervention programs that focus their attention on parents as well as deaf children.

Optimism

Concept

Optimism and pessimism are generalized expectations, both favorable and unfavorable, about the things that happen to a person throughout their lives. Therefore, optimism can be defined as the tendency a person has to expect positive and favorable results in their lives (Scheier & Carver, 1985). The authors refer to this concept as a one-dimensional construct, with optimism on one side and pessimism on the other.

Optimism is taken to be a personality trait; since previous studies have found that the level of optimism remains stable over time and shows high test-retest correlations ranging from 0.58 to 0.79 in periods of few weeks to three years (Atienza, Stephens & Townsend, 2004; Lucas, Diener & Suh, 1996; Scheier & Carver, 1985; Scheier, Carver & Bridges, 1994), and even correlations of 0.71 across a ten year period (Matthews, Räikkönen, Sutton-Tyrrell & Kuller, 2004).

The definition of optimism includes expectations of having control over the results of our own actions, expectations about the possibility of achieving positive results in the future, as well as a component of personal efficiency (Gillham, Shatté, Reivich & Seligman, 2001).

Theory of optimism

In relation to optimism, there are two main approaches of seeing this concept. The first approach is by Peterson and Seligman (1984) who consider that the degree of optimism depends on interpretations made in the past about the causes of events.

According to this approach, each of us has an explanatory style that helps us explain why good or bad things happen to us. This explanatory style develops in childhood and has three dimensions: permanence, pervasiveness and personalization (Seligman, Reivich, Jaycox & Gillham, 1996). Considering this, optimistic people believe that bad events are temporary (permanence dimension), have specific causes (pervasiveness dimension) and the blame is external to them (personalization dimension). On the contrary, pessimistic people think that bad events are permanent, affect all they do and they are to blame for the bad things that happen.

The other approach to view optimism is the one developed by Scheier and Carver. Since the instrument used in the present study was the Life Orientation Test developed by these authors (LOT; 1985), we will take their approach of optimism as the theoretical framework for this study.

Scheier and Carver (1992) put more weight not on attributions but on expectancies, debating that outcome expectancies predict behavior better than the causes of events.

Their approach of optimism is based on expectancy-value theories; which assume that behavior organizes around the pursuit of goals. There are two main elements in this theory: goals and expectancy. *Goals* refer to conditions or events that people consider desirable or undesirable (anti-goals). The more important a goal is, the more motivation the person has to achieve it. *Expectancy* refers to a

sense of confidence or doubt the person has about achieving a certain goal (Carver & Scheier, 2002). Summarizing, if people have an important goal to achieve and their expectancy is of confidence, they will move towards action, even in the face of adversity. On the contrary, if people's expectancy is of doubt, there will be no action, regardless of the importance of the goal.

These confidence and doubt expectancies can apply to specific and concrete contexts and also to more generalized contexts. Therefore, optimism and pessimism are only generalized versions of confidence and doubt, but instead of being directed to concrete situations or goals, they relate to life (Carver & Scheier, 2002).

It is important to mention that, even though the approach by Scheier and Carver and the one by Peterson and Seligman have differences in how they measure the concept, they both have in common that optimism deals with the expectation of good outcomes and that optimists and pessimists differ in the way they cope with adversity.

Optimism and health

Optimism and pessimism have been found to associate with several variables connected to psychological and physical health.

In relation to the psychological area, it has been found that optimistic people experience more positive emotions than pessimists, which have a tendency to experience negative feelings such as anxiety, guilt, anger, sadness and despair (Carver & Scheier, 1998; Scheier & Carver, 1992).

Among other studies showing correlations between optimism and mental health we can mention the following. In a study with a sample of women who had given birth, optimism correlated with lower depression symptoms and predicted

lower levels of depression postpartum (Carver & Gaines, 1987). Optimism has also been associated with a higher quality of life (Scheier et al., 1989) and more life satisfaction (Fitzgerald et al., 1993) in people after coronary surgery.

In caregivers of cancer patients, optimism correlated with lower symptoms of depression and less impact on physical health (Given et al., 1993). Also, optimistic people have reported a higher quality of life before and after treatment in a sample of cancer patients (Allison et al., 2000). And in ischemic patients, less optimism related to more symptoms of depression after surgery and at a 1-year follow-up (Shnek, Irvine, Stewart & Abbey, 2001).

These positive outcomes of optimism are said to be mostly mediated in a cognitive level; since an optimistic person tends to choose more positive habits that enhance their health, to cope better and to be more socially active than someone who is a pessimist (Taylor, Kemeny, Reed, Bower & Gruenewald, 2000).

Now, concerning physical health, there are also studies highlighting the importance of optimism for the physical well-being of people. Optimism has been found to correlate with less likelihood of hospitalization after coronary surgery (Scheier et al., 1999), better immune response to influenza in older adults (Kohut, Cooper, Nickolaus, Russell & Cunnick, 2002), men healing faster after receiving a biopsy (Ebrecht et al., 2004), and even low mortality and longer life, both in women and men (Giltay et al., 2004; Tindle et al., 2009).

Optimism, stress and coping

The difference between optimists and pessimists in how they see life and the events that happen to them, also bring differences in the way they deal with adversity and in their resources available. This means that optimistic people and pessimistic people differ in the way they cope with stressful situations (Carver et al., 2010).

In relation to stress, there have studies where a higher level of optimism has correlated with less distress in several samples, such as participants of unsuccessful in vitro fertilization (Litt, Tennen, Affleck & Klock, 1992), patients of coronary surgery (Fitzgerald et al., 1993), breast cancer patients (Carver et al., 1993), and students starting college (Aspinwall & Taylor, 1992; Brissette et al., 2002).

The reason behind the correlation between optimism and less distress could be the way optimistic people cope with problems. So, we can ask ourselves, what is the difference of coping styles and strategies between optimists and pessimists?

As was mentioned before, one of the most common ways to categorize coping is between problem-focused and emotion-focused styles (Folkman & Lazarus, 1980). Another manner is to divide them between engagement/approach coping and disengagement/avoidance coping (Roth & Cohen, 1986; Skinner, Edge, Altman & Sherwood, 2003). Engagement or approach coping makes reference to dealing with the stressor or the emotions produced by it; whereas disengagement or avoidance coping refers to escaping the stressor or the emotions caused by it.

Since optimism refers to favorable expectations for the future, optimism should be associated with active coping efforts; and since pessimists have unfavorable expectations for their future, pessimism should be associated with focusing on emotional distress and disengagement. Previous researches have confirmed that assumption. Studies have come to the conclusion that optimists tend to use more problem-focused strategies than pessimists. Even in cases when the stressor cannot be controlled or the situation cannot be changed, optimists use emotion-focused coping in a more adaptive way than do pessimists, using acceptance, sense of humor and positive reappraisal of the situation. On the contrary, pessimists tend to deny or physically and cognitively disengage from the

stressful situation, regardless of whether something can be done to change the situation or not (Carver et al., 1989; Chico, 2002; Scheier et al., 1994).

Specifically, optimistic people effectively use the next strategies to cope with stressful or problematic situations: making plans for the future and setting goals for recovery (Scheier et al., 1989), accepting the reality of the situation, focusing on positive aspects and trying to relieve the situation with humor (Carver et al., 1993), as well as directly approaching the situation instead of avoiding it (Scheier, Carver & Bridges, 2001).

On the contrary, pessimists tend to use coping strategies such as escape (Litt et al., 1992), denial and giving up (Carver et al., 1993), substance abuse (Ohannessian, Hesselbrock, Tennen & Affleck, 1993), avoiding the situation (Scheier et al., 2001) and withdrawal from social activities (Carver, Lehman & Antoni, 2003).

With respect to the social resources available for optimist and pessimist people, there have also been found correlations. Optimists tend to have more positive social interactions (Helweg-Larsen, Sadeghian & Webb, 2002) and to have broader social networks (MacLeod & Conway, 2005). In couples, it was found that optimistic partners were more likely to be more satisfied with their relationships (Srivastava, McGonigal, Richards, Butler & Gross, 2006), to have better relationship quality, less negative interactions and higher level of cooperative problem-solving (Assad, Donnellan & Conger, 2007), as well as to work harder and being consistent in their relationships (Geers, Wellman & Lassiter, 2009).

According to the previously mentioned researches, optimism can influence what kind of strategies someone uses in a given situation; however, it can also happen that certain coping strategies influence or determine the level of optimism; that is to say that coping and optimism can establish an interaction and influence each other (Chico, 2002).

Optimism in hearing parents of deaf children

The theory of optimism is relatively new compared to that of stress and coping, and it is an even more recent concept in relation to parents of children with deafness; therefore, the amount of findings and researches about this topic is quite reduced.

In fact, we were not able to find researches where optimism was studied in mothers of deaf children. Even though we found several studies with similar concepts, such as parental self-efficacy (DesJardin, 2003), sense of coherence (Hintermair, 2004), resiliency (Brasfield, 2008), parental well-being (Gascon-Ramos, Campbell, Bamford & Young, 2010) and quality of life (Jackson et al., 2010), it seems that optimism has not found a place yet in researches with this population.

However, there are some studies about optimism in parents of children with other disabilities; which we will mention them briefly below.

In parents of children with autism spectrum disorders, for starters, it was found that they had lower levels of optimism than normative samples. Furthermore, optimism was positively correlated with social support, life satisfaction and psychological well-being (Ekas, Lickenbrock & Whitman, 2010); as well as negatively correlated with parental stress (Kayfitz, Gragg & Orr, 2010). In this last study, the authors found that mothers reported more positive experiences than fathers; and that a more optimistic view of the disability, in both, allowed them to pay less attention to their children's limitations.

In parents of children with developmental delays (such as Down syndrome and cerebral palsy), mothers reported lower optimism levels than mothers of the control group. Additionally, higher optimism in both parents positively correlated

with parental well-being and marital adjustment; as well as negatively with levels of depression (Baker, Blacher & Olsson, 2005), behavior problems in the child and parental stress (Paczkowski & Baker, 2008).

Finally, we found three studies whose samples consisted in parents of children with a variety of disabilities. The first research found that optimism was positively associated with life satisfaction in both mothers and fathers; children of this study presented several rare disabilities, such as adrenogenital syndrome, fragile X syndrome, Prader-Willi syndrome, among others (Dellve et al., 2006). The second research, reported that higher levels of optimism correlated with lower levels of stress, also, optimism was a predictor of problem-focused coping style in parents; children of this sample had cognitive and physical disabilities, as well as autism, genetic/chromosomal disability and fetal alcohol syndrome (Peer, 2011). The third study's sample consisted of mothers of adult children with Down syndrome, schizophrenia or autism. The authors found no difference in levels of optimism between the three groups; and optimism correlated with lower depressive symptoms, higher levels of psychological well-being and better physical health in all groups of mothers (Greenberg et al., 2004).

As can be seen, optimism is a variable that has positive effects in mothers and fathers of children with disability. Indeed, it is unfortunate that we could not find studies concerning optimism specifically in mothers of deaf children, but with this research we are hoping to open this research line.

CHAPTER III

METHOD

The aim of the present study is to describe the relationship between perceived stress, coping strategies and optimism level in mothers of deaf children, as well as to analyze differences concerning sociodemographic variables.

Participants

Eligibility and exclusion criteria

We included in the study hearing mothers whose children had a diagnosis of prelocutive profound deafness; who had at least 18 years of age, had a minimum education of elementary school, and knew how to read and write. The maximum age permitted for the deaf child was 15 years old, and she or he had to be regularly attending the Centro de Atención Múltiple (Multiple Attention Center).

Among the exclusion criteria were deaf mothers, since the questionnaires used were not adapted to deaf population. Also, hearing mothers with mental disorders or unable to read and write; and finally, children with a different deafness diagnosis than prelocutive profound and/or other disabilities besides deafness.

Demographic characteristics

The sample consisted on 30 participants between 25 and 50 years of age ($M = 36.80$, $SD = 6.52$). Level of education achieved varied from elementary (six years after kindergarten) (36.70%), middle school (three years after elementary) (36.70%) and high school (two years after middle school) (26.70%). Socioeconomic status ranged between low (50%) and middle (50%). Of the total, 87% had no paid job.

Most of the participants lived in the Metropolitan Area, with the highest percentages being Monterrey (33.30%), General Escobedo (23.30%), García (10%) and Benito Juárez (10%).

Marital status was divided into three categories: married, cohabitating (*unión libre*), and separated, with rates of 46.70%, 40%, and 13.30% respectively. Number of children (deaf and hearing) ranged from 1 to 4, with a mean of 2.27 ($SD = 1.02$).

The deaf children's age were between 5 and 15 years old ($M = 9.80$, $SD = 2.58$). Sixty percent were boys, whereas 40% were girls. The mean age of diagnosis was 16.67 months ($SD = 10.52$). Ninety percent of the participants reported they did not receive psychological attention at the moment of diagnosis.

In answer to the question: Do you only have deaf children? Thirty percent of the participants answered affirmatively, while 70% report having both deaf and hearing children. Of the total sample, 13% declares having more than one deaf child; and 70% reports having at least one deaf family member.

The method of communication used by *all* the participants when socializing with their deaf child was Mexican Sign Language; with proficiency levels ranging from medium (90%) to high (10%). In relation to the sign language proficiency of partners or former partners, 13.30% reported medium level, 56.70% said low level and 30% reported their partner or former partner had no knowledge of sign language.

The mean age at which deaf children entered the institute was 63.63 months ($SD = 32.30$); 93% of the participants reported being satisfied with the service offered in the institute.

Measure instruments

In Table 1, at the end of this subheading, we show the summarized descriptive statistics for the measure instruments used in the study, according to their adapted version to Mexican population.

Stress

We will use the Perceived Stress Scale (PSS) of Cohen, Kamarck and Mermelstein (1983), in its adapted version for Mexican population by González and Landero (2007b). This instrument measures the degree to which people find their lives unpredictable, uncontrollable or loaded.

The PSS is a self-report questionnaire with 14 items, and response options from 0 (*never*) to 4 (*very often*). Items 4, 5, 6, 7, 9, 10 and 13 are reversed. The score range is 0 to 56 points; the higher the score, the higher is the perceived stress. Cohen and Williamson (1988) recommend using 30 as a cut-off point for stress diagnosis; considering also that it is one standard deviation over the mean of the study by González and Landero (2007b).

The adapted Mexican version of the PSS had adequate internal consistency ($\alpha = .83$), with a mean of 21.90 and a standard deviation of 7.03. Confirmatory factor analysis corroborated a two-factor structure. Factor 1 explained 42.80% of the variance, grouping items 4, 5, 6, 7, 9, 10 and 13; while Factor 2 explained 53.20%, with items 1, 2, 3, 8, 11, 12 and 14 grouped together. The internal consistency of the factors was .83 and .78 respectively. Correlation among factors was -.46. There were no significant differences in means of women and men.

Coping

We will use the Coping Strategies Questionnaire (CSQ) of Sandín and Chorot (2003), in its adapted version for Mexican population by González and Landero (2007a). The questionnaire assesses the use of seven basic coping strategies: problem-solving, positive reappraisal, social support seeking, negative auto-focused, overt emotional expression, avoidance and religion.

It is a self-report questionnaire with 42 items, with answer options from 0 (*never*) to 4 (*very often*). The score range is 0 to 24 points per subscale. According to Martínez and Moral (2009), scores between 0 and 6 reflect a low frequency use of the strategy, between 7 and 18 is a medium frequency and between 19 and 24 a high frequency. Basing on these cut-off points, it can be interpreted whether a strategy is dominant (high frequency) or not (low frequency).

The adapted version of the CSQ had internal consistency indexes ranging from $\alpha = .66$ to $\alpha = .91$ depending on the subscale, with a mean of 21.94 and standard deviation of 7.03. By means of exploratory factor analysis it was obtained seven first-order factors (corresponding to the seven subscales) and two higher-order factors (corresponding to emotion-focused and problem-focused coping styles). Correlations among first-order factors ranged from .01 to -.25, which confirm their relative independence. The correlation between the two-higher order factors was .02; they both explained 43.63% of the variance

The subscales corresponding to emotion-focused coping style were: overt emotional expression (items 4, 11, 18, 25, 32 and 39), avoidance (items 5, 12, 19, 26, 33 and 40), and negative auto-focused (items 2, 9, 16, 23, 30 and 37). Whereas the subscales of problem-focused coping were: social support seeking (items 6, 13, 20, 27, 34 and 41), problem-solving (items 1, 8, 15, 22, 29 and 36), positive reappraisal (items 3, 10, 17, 24, 31 and 38) and religion (items 7, 14, 21, 28, 35 and 42). This last scale was part of emotion-focused style in the study by Sandin

and Chorot (2003), however, in the Mexican adaptation it corresponded to problem-focused.

There were sex differences in relation to coping strategies used; women had higher means in avoidance ($M = 9.90$, $SD = 3.80$), social support seeking ($M = 14.34$, $SD = 5.81$) and religion ($M = 8.06$, $SD = 5.74$), whereas men in problem-solving ($M = 16.52$, $SD = 4.28$).

Optimism

We will use the Life Orientation Test (LOT), originally by Scheier and Carver (1985) and later revised by Scheier et al. (LOT-R; 1994), in its adapted version by Landero and González (2009). This test measures generalized expectations for positive versus negative outcomes.

It is a self-report questionnaire with 10 items, with response options from 0 (*highly disagree*) to 4 (*highly agree*). Items 3, 7 and 9 are reversed, and items 2, 5, 6 and 8 are filler and do not count for the total score. The score range is 0 to 24; there are no cut-off points. Higher scores imply higher optimism.

The adapted version of the LOT-R had adequate internal consistency ($\alpha = .81$), with a mean of 20.28 and standard deviation of 4.85. Exploratory factor analysis suggests a 1-Factor structure, explaining 47.73% of the variance. However, the authors report that the better adjusted model is one consisting of three factors: two of first-order (optimism and pessimism), and one higher-order factor. This higher-order factor explains 83.10% of the variance. The correlation among the first-order factors was $-.75$. Items corresponding to optimism factor are 1, 4 and 10; whereas items 3, 7 and 9 correspond to the pessimism factor.

Table 1. Descriptive statistics for the instruments used in the study.

	PSS	CSQ	LOT-R
Items	14	42	10
Range of scores	0 – 56	0 – 24 (per scale)	0 – 24
Internal consistency	.83	PSF = .83 PRA = .67 SSS = .91 RLG = .87 NAF = .66 OEE = .79 AVD = .68	.81
Mean	21.90	21.94	20.28
Standard Deviation	7.03	7.03	4.85

PSS: Perceived Stress Scale; CSQ: Coping Strategies Questionnaire; LOT-R: Life Orientation Test Revised; PSF: Problem-solving; PRA: Positive reappraisal; SSS: Social support seeking; RLG: Religion; NAF: Negative auto-focused; OEE: Overt emotional expression; AVD: Avoidance.

Procedure

Research design

To achieve the general and specific objectives of this research, a nonexperimental type of study was chosen, with a transversal, descriptive and correlational design. The type of sampling used was nonprobability.

Data collection

Among the different multiple attention centers in Monterrey, México aimed at children with a variety of special education needs, we chose the Instituto Sertoma de Audición y Lenguaje (Sertoma Institute of Audition and Language) because its population consisted almost entirely of deaf students.

For the first stage of the study, we assisted to the Sertoma Institute to request for the appropriate permission to conduct the study. Initially we had meetings with the headmistress and psychologist of the school to explain them what the research was about and its objectives; and afterwards we got the authorization.

In the second stage of the study, we identified the mothers who fulfilled the eligibility criteria; and we proceeded to give them the information sheet, the consent form and the questionnaires in a sealed envelope.

The information sheet and the consent form explained the nature of the study and assured them the confidentiality and anonymity of the data and the results. Besides the previously mentioned instruments, another questionnaire was sent to obtain sociodemographic data.

We sent 40 envelopes through the students, with the instructions of giving them to their mothers; and 30 envelopes we personally delivered to the participants, since several of them waited in the institute premises while their child was taking classes. The participation was voluntary and there was no economic remuneration.

Ethical standards

The Ethics Code of the American Psychological Association (APA; 2010) consists of several ethic standards that psychologist must apply to when conducting research with humans and animals. The standard and sections that correspond and apply to this research are mentioned below.

In the present study we certify that we followed Standard 8: Research and Publication and the next sections:

Section 1. When institutional approval is required, psychologists provide accurate information about their research proposals and obtain approval prior to conducting the research. They conduct the research in accordance with the approved research protocol.

Section 2. When obtaining informed consent, psychologist inform participants about (a) the purpose of the research, expected duration and procedures; (b) their right to decline to participate and to withdraw from the research once participation has begun; (c) the foreseeable consequences of declining or withdrawing; (d) reasonably foreseeable factors that may be expected to influence their willingness to participate such as potential risks, discomfort or adverse effects; (e) any prospective research benefits; (f) limits of confidentiality; (g) incentives for participation; and (h) whom to contact for questions about the research and research participants' rights.

Section 8. Psychologists provide a prompt opportunity for participants to obtain appropriate information about the nature, results, and conclusions of the research, and they take reasonable steps to correct any misconceptions that participants may have of which the psychologists are aware.

Data analyses

After the recollection of the questionnaires, we proceeded to capture the information into the SPSS statistical package, version 18, to perform the statistical analyses.

It was first calculated the internal consistency of each of the questionnaires used in the study, by means of the Cronbach's index. Then we conducted the statistical analyses corresponding to each specific objective (Table 2).

Table 2. Correspondence of specific objectives and statistical analysis.

Specific objectives	Statistical analysis
1. To determine the level of perceived stress in a sample of mothers with deaf children.	Descriptive analysis.
2. To identify the predominant coping strategies in a sample of mothers with deaf children.	Descriptive analysis.
3. To determine the level of optimism in a sample of mothers with deaf children.	Descriptive analysis.
4. To study the relation of stress and coping strategies in a sample of mothers with deaf children.	Pearson product-moment correlation coefficient.
5. To study the relation of optimism and coping strategies in a sample of mothers with deaf children.	Pearson product-moment correlation coefficient.
6. To study the relation of optimism and stress in a sample of mothers with deaf children.	Pearson product-moment correlation coefficient.
7. To analyze the differences of perceived stress level, optimism level, and use of coping strategies in mothers, in relation to sociodemographic variables of their children.	Student's t-test.
8. To analyze the differences of perceived stress level, optimism level, and use of coping strategies in relation to sociodemographic variables of mothers.	Student's t-test and one-way ANOVA.

CHAPTER IV

RESULTS

The main objective of this study was to describe the relationship between perceived stress, coping strategies and optimism level in mothers of deaf children, as well as to analyze differences concerning sociodemographic variables. First of all we will describe the reliability analyses for the instruments used.

The internal consistency of the measure instruments we used in the study showed to be acceptable for the three scales; as well as for the seven subscales of the Coping Strategies Questionnaire (Table 3).

Table 3. Internal consistency of instruments.

Instrument	Cronbach's Alpha	N of Items
Perceived Stress Scale	.71	14
Coping Strategies Questionnaire	.90	42
Problem-solving	.76	6
Positive reappraisal	.74	6
Social support seeking	.93	6
Religion	.85	6
Negative auto-focused	.60	6
Overt emotional expression	.82	6
Avoidance	.62	6
Life Orientation Test Revised	.61	10

The results of the specific objectives of the study are described below as subthemes.

Objective 1. To determine the level of perceived stress in a sample of mothers with deaf children.

The total sample obtained a mean score in the Perceived Stress Scale of 26.73 ($SD = 8.84$). Table 4 shows the frequencies of scores obtained in the scale by the participants.

Table 4. Frequencies of scores of Perceived Stress Scale.

Scores	Frequency	%	$\Sigma\%$
10 to 19	7	23.30	23.30
20 to 29	10	33.30	56.70
30 to 39	12	40.00	96.70
40 to 50	1	3.30	100.00
Total	30	100.00	

Cohen and Williamson (1988) recommend using 30 as a cut-off point for clinical stress diagnosis; we took this score as cut-off point for this study, considering also that it is one standard deviation over the mean of the study by González and Landero (2007b). The descriptive statistics of the participants who fit into the clinical cut-off point are on Table 5.

Table 5. Participants with clinical stress diagnosis.

	N	Mean	Median	SD	Minimum	Maximum
PSS \geq 30	13	35.15	36.00	4.02	31	46

PSS: Perceived Stress Scale.

Objective 2. To identify the predominant coping strategies in a sample of mothers with deaf children.

In relation to the use of coping strategies, Martínez and Moral (2009) recommend utilizing scores of 7 and 19 as cut-off points to differentiate between low, medium and high frequency of use. Therefore, a low frequency would be

between 0 and 6, a medium between 7 and 18, and a high frequency between 19 and 24.

According to these cut-off points, all seven coping strategies were used by the participants in a medium frequency; with the highest being positive reappraisal and problem-solving (see Table 6).

Table 6. Descriptive statistics of coping strategies used by participants.

	Mean	Median	SD	Minimum	Maximum
PRA	13.43	13.50	4.55	7	24
PSF	11.90	11.00	4.72	4	23
AVD	10.67	9.00	4.14	5	19
RLG	10.53	9.50	5.88	0	22
SSS	9.10	7.00	6.63	0	24
NAF	8.43	9.00	3.79	2	16
OEE	7.57	5.50	5.08	1	23

PRA: Positive reappraisal; PSF: Problem-solving; AVD: Avoidance; RLG: Religion; SSS: Social support seeking; NAF: Negative auto-focused; OEE: Overt emotional expression.

Objective 3. To determine the level of optimism in a sample of mothers with deaf children.

The sample obtained a mean score in the Life Orientation Test Revised of 14.33 ($SD = 2.85$). There are no cut-off points in this instrument; higher scores indicate higher optimism. Table 7 shows the descriptive statistics obtained in the scale by the participants.

Table 7. Score of Life Orientation Test Revised.

	N	Mean	Median	SD	Minimum	Maximum
LOT-R	30	14.33	14.50	2.85	9	19

LOT-R: Life Orientation Test Revised.

Objective 4. To study the relation of stress and coping strategies in a sample of mothers with deaf children.

For this objective we used the Pearson product-moment coefficient to assess significant correlations between stress and coping strategies (Table 8).

Table 8. Correlation between stress and coping strategies.

		PSS (T)	PSS (S)
Problem-solving	r	-.30	-.06
	p	.11	.85
Positive reappraisal	r	-.36*	.10
	p	.05	.74
Social support seeking	r	-.03	-.03
	p	.87	.93
Religion	r	-.33	-.16
	p	.08	.59
Negative auto-focused	r	.47**	.39
	p	.01	.18
Overt emotional expression	r	.27	.08
	p	.14	.79
Avoidance	r	-.11	.04
	p	.56	.90

PSS: Perceived Stress Scale; (T): Total sample; (S): Clinically stressed sample.

* Correlation is significant at the .05 level (2-tailed).

** Correlation is significant at the .01 level (2-tailed).

In the total sample, the significant correlations between variables correspond to stress and negative auto-focused ($r = .47$, $p = .01$); as well as, stress and positive reappraisal ($r = -.36$, $p = .05$). Meaning that the higher the stress score, the higher negative auto-focused and the less positive reappraisal.

In the clinically stressed sample there were no significant correlations of stress with any of the coping strategies.

Objective 5. To study the relation of optimism and coping strategies in a sample of mothers with deaf children.

We used the Pearson product-moment correlation coefficient to test if there were significant correlations between levels of optimism and coping strategies. The results indicate significant correlations both in the total sample and in the clinically stressed sample (Table 9).

Table 9. Correlation between optimism and coping strategies.

		LOT-R (T)	LOT-R (S)
Problem-solving	r	.24	.39
	p	.20	.19
Positive reappraisal	r	.31	.28
	p	.09	.35
Social support seeking	r	.37*	.46
	p	.05	.11
Religion	r	.14	.39
	p	.48	.19
Negative auto-focused	r	-.57**	-.63*
	p	.00	.02
Overt emotional expression	r	.22	.25
	p	.25	.41
Avoidance	r	.38*	.63*
	p	.04	.02

LOT-R: Life Orientation Test Revised; (T): Total sample; (S): Clinically stressed sample.

* Correlation is significant at the .05 level (2-tailed).

** Correlation is significant at the .01 level (2-tailed).

In the total sample, there are positive correlations of optimism with avoidance ($r = .38, p = .04$) and social support seeking ($r = .37, p = .05$); as well as a negative correlation with negative auto-focused ($r = -.57, p = .00$). In the clinically

stressed sample, there was positive correlation of optimism with avoidance ($r = .63$, $p = .02$), and a negative correlation with negative auto-focused ($r = -.63$, $p = .02$).

Objective 6. To study the relation of optimism and stress in a sample of mothers with deaf children.

We used the Pearson product-moment correlation coefficient to verify if there was a significant correlation between stress and optimism in the sample. Results shown in Table 10 indicate no significant correlations, neither in the total sample nor in the clinically stressed sample.

Table 10. Correlation between optimism and stress.

		PSS (T)	PSS (S)
Life Orientation Test Revised	r	-.23	.11
	p	.22	.73
	N	30	13

PSS: Perceived Stress Scale; (T): Total sample; (S): Clinically stressed sample.

Objective 7. To analyze the differences of perceived stress levels, optimism levels, and use of coping strategies in mothers, in relation to sociodemographic variables of their children.

We used the Student's t-test for independent samples to analyze differences in the next sociodemographic variables: age of deaf children, sex of deaf children and age of diagnosis.

Age of deaf children

Basing on the median ($Mdn = 10$), we divided the ages of deaf children between younger (5 to 9 years old, $n = 14$) and older (10 to 15 years old, $n = 16$); we then proceeded to compare the means between these two groups in relation of

perceived stress, optimism and coping strategies to analyze if there were significant differences between them.

The Levene's test for equality of variances was significant only for avoidance coping ($F = 6.44, p = .02$), for all the other variables it was nonsignificant. As can be seen in Table 11, there were no significant differences between younger and older children groups in relation to the study's variables.

Table 11. Student's t-test according to range of age in children.

Variable	Range of age	Mean	SD	t-test		
				t	df	p
PSS	Younger	28.14	9.75	.81	28	.42
	Older	25.50	8.07			
LOT-R	Younger	14.57	2.88	.42	28	.68
	Older	14.13	2.90			
PSF	Younger	12.07	4.01	.18	28	.86
	Older	11.75	5.39			
PRA	Younger	13.21	4.30	-.24	28	.81
	Older	13.63	4.90			
SSS	Younger	8.36	5.81	-.57	28	.58
	Older	9.75	7.40			
RLG	Younger	10.57	5.68	.03	28	.97
	Older	10.50	6.23			
NAF	Younger	7.50	4.20	-1.28	28	.21
	Older	9.25	3.30			
OEE	Younger	7.79	4.73	.22	28	.83
	Older	7.38	5.52			
AVD	Younger	9.29	3.25	-1.81	27	.08
	Older	11.88	4.54			

PSS: Perceived Stress Scale; LOT-R: Life Orientation Test Revised; PSF: Problem-solving; PRA: Positive reappraisal; SSS: Social support seeking; RLG: Religion; NAF: Negative auto-focused; OEE: Overt emotional expression; AVD: Avoidance.

Sex of deaf children

Children were divided in accordance to their sex, resulting in 12 girls and 18 boys; afterwards we proceeded to compare the means among these two groups in relation to the study's variables. The Levene's test for equality of variances was not significant for any of the variables, therefore, equal variances were assumed.

Table 12. Student's t-test according to sex of children.

Variable	Sex	Mean	SD	t-test		
				t	df	p
PSS	Girl	25.25	10.10	-.75	28	.46
	Boy	27.72	8.04			
LOT-R	Girl	15.25	2.83	1.47	28	.15
	Boy	13.72	2.76			
PSF	Girl	12.33	4.40	.41	28	.69
	Boy	11.61	5.02			
PRA	Girl	14.25	5.14	.80	28	.43
	Boy	12.89	4.19			
SSS	Girl	11.50	6.76	1.67	28	.11
	Boy	7.50	6.21			
RLG	Girl	10.83	6.65	.23	28	.82
	Boy	10.33	5.50			
NAF	Girl	6.00	4.05	-3.34	28	.00
	Boy	10.06	2.62			
OEE	Girl	9.42	6.36	1.68	28	.11
	Boy	6.33	3.73			
AVD	Girl	10.50	4.80	-.18	28	.86
	Boy	10.78	3.78			

PSS: Perceived Stress Scale; LOT-R: Life Orientation Test Revised; PSF: Problem-solving; PRA: Positive reappraisal; SSS: Social support seeking; RLG: Religion; NAF: Negative auto-focused; OEE: Overt emotional expression; AVD: Avoidance.

The results of the Student's t-test show a significant difference among groups in the coping strategy negative auto-focused, $t(28) = -3.34$, $p = .00$ (Table 12); where mothers who have boys ($M = 10.06$, $SD = 2.62$) utilize negative auto-focused coping strategy more often than mothers who have girls ($M = 6.00$, $SD = 4.05$).

Age of diagnosis of deafness

Basing on the median ($Mdn = 13$), we divided children between being diagnosed by 12 months old ($n = 14$), and diagnosis at 13 months or older ($n = 16$); we then proceeded to compare the means among these two groups in relation to perceived stress level, optimism level and use of coping strategies.

The Levene's test for equality of variances was not significant for any of the variables, therefore, equal variances were assumed. The results of the Student's t-test show significant differences among groups in four coping strategies: problem solving, $t(28) = 2.28$, $p = .03$; positive reappraisal, $t(28) = 2.12$, $p = .04$; social support seeking, $t(28) = 2.21$, $p = .04$; and religion, $t(28) = 2.39$, $p = .02$ (Table 13).

This indicates that mothers whose children got diagnosed at 12 months of age or earlier, use problem solving ($M = 13.86$, $SD = 3.37$), positive reappraisal ($M = 15.21$, $SD = 4.44$), social support seeking ($M = 11.79$, $SD = 6.95$) and religion coping ($M = 13.07$, $SD = 5.61$) more often than mothers whose children were diagnosed after 13 months of age.

Table 13. Student's t-test according to age of diagnosis of deafness.

Variable	Age of Dx	Mean	SD	t-test		
				t	df	p
PSS	0 – 12 mo.	27.29	9.79	.32	28	.76
	13 mo. or older	26.25	8.21			
LOT-R	0 – 12 mo.	14.86	2.71	.94	28	.35
	13 mo. or older	13.88	2.96			
PSF	0 – 12 mo.	13.86	3.37	2.28	28	.03
	13 mo. or older	10.19	5.14			
PRA	0 – 12 mo.	15.21	4.44	2.12	28	.04
	13 mo. or older	11.88	4.18			
SSS	0 – 12 mo.	11.79	6.95	2.21	28	.04
	13 mo. or older	6.75	5.52			
RLG	0 – 12 mo.	13.07	5.61	2.39	28	.02
	13 mo. or older	8.31	5.31			
NAF	0 – 12 mo.	9.00	3.98	.76	28	.45
	13 mo. or older	7.94	3.66			
OEE	0 – 12 mo.	7.50	5.36	-.07	28	.95
	13 mo. or older	7.63	5.01			
AVD	0 – 12 mo.	11.71	4.58	1.31	28	.20
	13 mo. or older	9.75	3.61			

PSS: Perceived Stress Scale; LOT-R: Life Orientation Test Revised; PSF: Problem-solving; PRA: Positive reappraisal; SSS: Social support seeking; RLG: Religion; NAF: Negative auto-focused; OEE: Overt emotional expression; AVD: Avoidance.

Objective 8. To analyze the differences of perceived stress levels, optimism levels, and use of coping strategies in relation to sociodemographic variables of mothers.

We used the Student's t-test for independent samples to study differences in relation to age of mothers and socioeconomic status; as well as one-way Analysis of Variance (ANOVA) for analyses with educational level, marital status and knowledge of sign language in partner.

Age of mothers

Basing on the median ($Mdn = 37.50$), we divided the sample of mothers between younger (37 years old or less; $n = 15$) and older (38 years old or more; $n = 15$); we then proceeded to compare the means between these groups in relation to the study's variables.

Table 14. Student's t-test according to range of age in mothers.

Variable	Range of age	Mean	SD	t-test		
				t	df	p
PSS	Younger	26.40	10.76	-.20	23.58	.84
	Older	27.07	6.77			
LOT-R	Younger	14.93	2.74	1.16	28	.26
	Older	13.73	2.92			
PSF	Younger	12.87	4.39	1.13	28	.27
	Older	10.93	4.98			
PRA	Younger	13.33	3.85	-.12	28	.91
	Older	13.53	5.30			
SSS	Younger	9.60	5.55	.41	28	.69
	Older	8.60	7.73			
RLG	Younger	11.40	6.20	.80	28	.43
	Older	9.67	5.62			
NAF	Younger	6.53	3.50	-3.14	28	.00
	Older	10.33	3.11			
OEE	Younger	7.87	4.61	.32	28	.75
	Older	7.27	5.66			
AVD	Younger	10.13	4.37	-.70	28	.49
	Older	11.20	3.97			

PSS: Perceived Stress Scale; LOT-R: Life Orientation Test Revised; PSF: Problem-solving; PRA: Positive reappraisal; SSS: Social support seeking; RLG: Religion; NAF: Negative auto-focused; OEE: Overt emotional expression; AVD: Avoidance.

The Levene's test for equality of variances was significant only for perceived stress ($F = 5.94$, $p = .02$); for all the other variables, equal variances were assumed.

Table 14 shows the results of the Student's t-test. There is a significant difference among groups in negative auto-focused, $t(28) = -3.14$, $p = .00$. This means that older mothers ($M = 10.33$, $SD = 3.11$) use negative auto-focused strategy in a higher frequency than younger mothers ($M = 6.53$, $SD = 3.50$).

Socioeconomic status

Sample was divided according to the reported socioeconomic status, ranging between low ($n = 15$) and middle ($n = 15$); afterwards we proceeded to compare means among these two groups in relation to perceived stress level, optimism level and use of coping strategies.

The Levene's test for equality of variances was not significant for any of the variables; therefore, equal variances were assumed. Furthermore, results of the analysis show no significant differences among groups in any of the variables, as can be seen in Table 15.

Table 15. Student's t-test according to socioeconomic status.

Variable	Economic status	Mean	SD	t-test		
				t	df	p
PSS	Low	27.67	9.90	.57	28	.57
	Middle	25.80	7.87			
LOT-R	Low	14.80	2.60	.90	28	.38
	Middle	13.87	3.10			
PSF	Low	12.47	4.58	.65	28	.52
	Middle	11.33	4.94			
PRA	Low	13.00	4.58	-.52	28	.61
	Middle	13.87	4.64			
SSS	Low	9.40	6.56	.24	28	.81
	Middle	8.80	6.92			
RLG	Low	12.53	5.64	1.95	28	.06
	Middle	8.53	5.58			
NAF	Low	8.40	3.85	-.05	28	.96
	Middle	8.47	3.85			
OEE	Low	8.80	5.97	1.35	28	.19
	Middle	6.33	3.83			
AVD	Low	11.73	3.99	1.44	28	.16
	Middle	9.60	4.14			

PSS: Perceived Stress Scale; LOT-R: Life Orientation Test Revised; PSF: Problem-solving; PRA: Positive reappraisal; SSS: Social support seeking; RLG: Religion; NAF: Negative auto-focused; OEE: Overt emotional expression; AVD: Avoidance.

Educational level

Sample was divided according to the highest level of education achieved by the participants, ranging from elementary (the six years after kindergarten) ($n = 11$), middle school (the three years after elementary) ($n = 11$) and high school (the two years after middle school) ($n = 8$); we then proceeded to compare the means among these three groups in relation to the variables of the study.

Table 16. Analysis of variance according to educational level.

Variable	Education	Mean	SD	ANOVA	
				F	p
PSS	Elementary	26.91	10.98	.34	.71
	Middle school	28.09	6.43		
	High school	24.63	9.18		
LOT-R	Elementary	15.09	2.74	2.05	.15
	Middle school	13.00	2.68		
	High school	15.13	2.85		
PSF	Elementary	12.73	4.61	.40	.67
	Middle school	10.91	3.53		
	High school	12.13	6.42		
PRA	Elementary	14.27	4.52	.35	.71
	Middle school	13.27	4.41		
	High school	12.50	5.18		
SSS	Elementary	11.64	7.22	1.40	.27
	Middle school	7.09	6.53		
	High school	8.38	5.45		
RLG	Elementary	12.45	6.01	1.18	.32
	Middle school	8.64	5.57		
	High school	10.50	5.98		
NAF	Elementary	8.82	4.05	.64	.53
	Middle school	9.00	3.82		
	High school	7.13	3.52		
OEE	Elementary	8.18	5.86	.98	.39
	Middle school	5.91	4.13		
	High school	9.00	5.13		
AVD	Elementary	12.55	4.87	2.22	.13
	Middle school	9.00	3.49		
	High school	10.38	3.11		

PSS: Perceived Stress Scale; LOT-R: Life Orientation Test Revised; PSF: Problem-solving; PRA: Positive reappraisal; SSS: Social support seeking; RLG: Religion; NAF: Negative auto-focused; OEE: Overt emotional expression; AVD: Avoidance.

The Levene's statistic for homogeneity of variances was not significant for any of the variables. Table 16 shows the results of the one-way ANOVA. As can be seen, there were no significant differences among educational groups in perceived stress levels, optimism levels or use of coping strategies.

Marital status

Sample was divided according to marital status reported by the participants, resulting in a differentiation between married ($n = 14$), cohabitating ($n = 12$) and separated ($n = 4$). Afterwards we proceeded to compare the means of these three groups in relation to perceived stress level, optimism level and use of coping strategies.

The Levene's statistic for homogeneity of variances was significant for optimism, social support seeking and avoidance (Table 17).

Table 17. Test of homogeneity of variances.

Variable	Levene Statistic	df1	df2	p
PSS	.39	2	27	.68
LOT-R	4.05	2	27	.03
PSF	.60	2	27	.56
PRA	1.36	2	27	.28
SSS	4.14	2	27	.03
RLG	.26	2	27	.78
NAF	1.66	2	27	.21
OEE	2.64	2	27	.09
AVD	5.09	2	27	.01

PSS: Perceived Stress Scale; LOT-R: Life Orientation Test Revised; PSF: Problem-solving; PRA: Positive reappraisal; SSS: Social support seeking; RLG: Religion; NAF: Negative auto-focused; OEE: Overt emotional expression; AVD: Avoidance.

Table 18. Analysis of variance according to marital status.

Variable	Marital status	Mean	SD	ANOVA	
				F	p
PSS	Married	27.50	8.50	4.25	.03
	Cohabiting	22.75	7.68		
	Separated	36.00	6.68		
LOT-R	Married	14.29	3.12	3.13	.06
	Cohabiting	15.33	2.35		
	Separated	11.50	1.00		
PSF	Married	12.64	5.37	.68	.52
	Cohabiting	11.83	4.39		
	Separated	9.50	3.00		
PRA	Married	12.93	4.39	4.36	.02
	Cohabiting	15.58	4.23		
	Separated	8.75	1.50		
SSS	Married	9.64	6.30	.35	.71
	Cohabiting	9.33	8.12		
	Separated	6.50	1.00		
RLG	Married	11.07	6.44	.23	.80
	Cohabiting	10.50	5.27		
	Separated	8.75	6.85		
NAF	Married	8.57	3.69	2.05	.15
	Cohabiting	7.25	3.98		
	Separated	11.50	1.73		
OEE	Married	5.79	3.31	1.74	.20
	Cohabiting	8.92	6.57		
	Separated	9.75	3.95		
AVD	Married	10.29	3.58	1.57	.23
	Cohabiting	12.00	4.99		
	Separated	8.00	1.16		

PSS: Perceived Stress Scale; LOT-R: Life Orientation Test Revised; PSF: Problem-solving; PRA: Positive reappraisal; SSS: Social support seeking; RLG: Religion; NAF: Negative auto-focused; OEE: Overt emotional expression; AVD: Avoidance.

The results of the one-way ANOVA show significant differences at the $p < .05$ level in the variables stress, $F(2, 27) = 4.25, p = .03$; and positive reappraisal strategy, $F(2, 27) = 4.36, p = .02$ (Table 18). For this reason, we decided to perform post-hoc analysis with Tukey HSD test.

Post-hoc comparison using the Tukey HSD test for the variable stress indicated that the mean score for cohabitating status ($M = 22.75, SD = 7.68$) was significantly different than separated status ($M = 36.00, SD = 6.68$). However, the married status ($M = 27.50, SD = 8.50$) did not significantly differ from cohabitating and separated status (Table 19).

This means that stress level is significantly different between cohabitating and separated participants. Separated mothers show higher levels of stress than mothers who cohabit with a partner.

Table 19. Post-hoc analyses with Tukey test for stress.

Marital status		Mean difference	Std. Error	Sig.	95% Confidence interval	
					Lower bound	Upper bound
Married	Cohabitating	4.75	3.14	.30	-3.04	12.54
	Separated	-8.50	4.53	.17	-19.73	2.73
Cohabitating	Married	-4.75	3.14	.30	-12.54	3.04
	Separated	-13.25*	4.61	.02	-24.68	-1.82
Separated	Married	8.50	4.53	.17	-2.73	19.73
	Cohabitating	13.25*	4.61	.02	1.82	24.68

* The mean difference is significant at the .05 level.

Post-hoc comparison using the Tukey HSD test for positive reappraisal coping indicated that the mean score for cohabitating status ($M = 15.58, SD = 4.23$) was significantly different than separated status ($M = 8.75, SD = 1.50$). However,

married status ($M = 12.93$, $SD = 4.39$) did not significantly differ from cohabitating and separated status (Table 20).

This implies that the use of positive reappraisal strategy is significantly different among cohabitating and separated participants. Cohabitating participants use positive reappraisal in a higher frequency than separated participants.

Table 20. Post-hoc analyses with Tukey test for positive reappraisal.

Marital status		Mean difference	Std. error	Sig.	95% Confidence interval	
					Lower bound	Upper bound
Married	Cohabitating	-2.66	1.61	.25	-6.66	1.35
	Separated	4.18	2.33	.19	-1.59	9.95
Cohabitating	Married	2.66	1.61	.25	-1.35	6.66
	Separated	6.83*	2.37	.02	.96	12.71
Separated	Married	-4.18	2.33	.19	-9.95	1.59
	Cohabitating	-6.83*	2.37	.02	-12.71	-.96

* The mean difference is significant at the .05 level.

Knowledge of sign language in partner

Sample was divided according to what participants reported was the sign language proficiency of their partner or former partner. After this division we obtained three groups: partners or former partners who signed at a medium level ($n = 4$), partners or former partners who signed at a low level ($n = 17$) and partners or former partners who did not sign at all ($n = 9$). We then proceeded to compare the means of these three groups in relation to perceived stress level, optimism level and use of coping strategies.

The Levene's statistic for homogeneity of variances was not significant for any of the variables.

Table 21. Analysis of Variance according to sign language of partner.

Variable	SL of partner	Mean	SD	ANOVA	
				F	p
PSS	None	31.89	6.75	3.50	.04
	Low	25.71	9.26		
	Medium	19.50	4.51		
LOT-R	None	13.56	2.40	1.03	.37
	Low	14.35	3.16		
	Medium	16.00	2.00		
PSF	None	9.44	3.21	1.89	.17
	Low	12.82	4.57		
	Medium	13.50	7.05		
PRA	None	10.44	3.25	3.44	.05
	Low	15.00	4.65		
	Medium	13.50	4.04		
SSS	None	7.11	4.89	.70	.51
	Low	9.59	7.62		
	Medium	11.50	5.51		
RLG	None	8.11	4.76	1.14	.34
	Low	11.41	6.35		
	Medium	12.25	5.74		
NAF	None	9.22	3.07	.33	.73
	Low	8.24	4.24		
	Medium	7.50	3.79		
OEE	None	8.56	4.25	.76	.48
	Low	6.59	5.21		
	Medium	9.50	6.61		
AVD	None	9.67	3.35	.76	.48
	Low	10.71	4.73		
	Medium	12.75	2.75		

PSS: Perceived Stress Scale; LOT-R: Life Orientation Test Revised; PSF: Problem-solving; PRA: Positive reappraisal; SSS: Social support seeking; RLG: Religion; NAF: Negative auto-focused; OEE: Overt emotional expression; AVD: Avoidance.

The results of the one-way ANOVA show significant differences at the $p < .05$ level in the variable stress, $F(2, 27) = 3.50$, $p = .04$; and positive reappraisal coping, $F(2, 27) = 3.44$, $p = .05$ (Table 21). For this reason, we decided to perform post-hoc analysis with Tukey HSD test.

Post-hoc comparison using the Tukey HSD test for the variable stress indicated that the mean score for medium level of sign language ($M = 19.50$, $SD = 4.51$) was significantly different than no sign language at all ($M = 31.89$, $SD = 6.75$). However, the low level of sign language ($M = 25.71$, $SD = 9.26$) did not significantly differ from medium level and no sign language at all (Table 22).

This implies that stress level is significantly different in participants, depending if their partner or former partner signs at a medium level or if they do not sign at all. Mothers who have partners or former partners who do not know sign language have higher levels of stress than mothers whose partner or former partner knows this language at a medium level.

Table 22. Post-hoc analysis with Tukey test for stress.

Sign language level of partner		Mean difference	Std. error	Sig.	95% Confidence interval	
					Lower bound	Upper bound
None	Low	6.18	3.36	.18	-2.16	14.52
	Medium	12.39*	4.90	.05	.23	24.55
Low	None	-6.18	3.36	.18	-14.52	2.16
	Medium	6.21	4.53	.37	-5.04	17.45
Medium	None	-12.39*	4.90	.05	-24.55	-.23
	Low	-6.21	4.53	.37	-17.45	5.04

* The mean difference is significant at the .05 level.

Post-comparison using the Tukey HSD test for positive reappraisal coping indicated that the mean score for low level of sign language ($M = 15.00$, $SD = 4.65$) was significantly different than no sign language at all ($M = 10.44$, $SD = 3.25$). However, the medium level of sign language ($M = 13.50$, $SD = 4.04$) did not significantly differ from low level and no sign language at all (Table 23).

This means that the use of positive reappraisal coping is significantly different between participants whose partner or former partner signs at a low level or if they do not sign at all. Mothers who have partners or former partners who know sign language at a low level use positive reappraisal in a higher frequency than mothers whose partner or former partner does not know sign language.

Table 23. Post-hoc analysis with Tukey test for positive reappraisal.

Sign language level of partner		Mean difference	Std. error	Sig.	95% Confidence interval	
					Lower bound	Upper bound
None	Low	-4.56*	1.74	.04	-8.86	-.25
	Medium	-3.06	2.53	.46	-9.33	3.22
Low	None	4.56*	1.74	.04	.25	8.86
	Medium	1.50	2.34	.80	-4.30	7.30
Medium	None	3.06	2.53	.46	-3.22	9.33
	Low	-1.50	2.34	.80	-7.30	4.30

* The mean difference is significant at the .05 level.

CHAPTER V

DISCUSSION AND CONCLUSIONS

The results in the previous chapter were presented according to the order of the specific objectives; in this chapter we will follow the same order.

In relation to the level of stress reported by the participants, the mean can be considered high ($M = 26.73$). Even though the total sample did not reach the cut-off point of 30, almost half of the sample ($n = 12$) reported a level of clinical stress; one of the participants even reported a score over 40.

The mean of stress level shown by the participants was higher than those reported by other types of samples, such as general population women ($M = 20.02$, $SD = 7.80$; Cohen & Williamson, 1988), housewives ($M = 21.78$, $SD = 7.58$; Moral, González & Landero, 2011), female university students ($M = 22.29$, $SD = 7.20$; González & Landero, 2008), and single mothers ($M = 23.50$, $SD = 6.75$; Landero & González, 2011). However, it was much alike the level reported by mothers with a child with cancer ($M = 26.27$, $SD = 8.41$; Martínez & Moral, 2009), and lower than in women addicted to substances ($M = 31.10$, $SD = 10.60$; Pedrero & Olivar, 2010) and women with depression ($M = 37.80$, $SD = 6.2$; Farabaugh et al., 2004).

Therefore, the level of stress in mothers of our sample tended to be higher than that of general population women or women with regular children; resembling more to the reported in mothers who have a child with a chronic disease, such as cancer.

Nevertheless, the stress level reported by mothers of a child with cancer (Martínez & Moral, 2009) had a mean of 3.40 weeks of having received the cancer diagnosis. In our sample, mothers had a mean of over 8 years ($M = 103.73$ [months], $SD = 31.61$) of having received the deafness diagnosis in their child. This

difference implies that mothers of deaf children continue to experience higher levels of stress even after a long period of time after the diagnosis.

As regards to the coping strategies used by the participants, all seven fall into the category of medium frequency of use (between 7 and 18), according to cut-off points by Martínez and Moral (2009). The highest scores correspond to positive reappraisal and problem-solving, followed by avoidance and religion, and the lowest scores were for social support seeking, negative auto-focused and overt emotional expression.

Positive reappraisal refers to focusing on good aspects of a situation or seeing the positive of past events; while problem-solving concerns directly addressing a problematic situation through well-thought steps and planning. These two strategies, considered to be part of problem-focused style of coping, have also been reported as the most used by female university students (González & Landero, 2007a; Sandín & Chorot, 2003), health-workers (Contreras, Juárez & Murrain, 2008), and pregnant women who had previously suffered a miscarriage (Marín-Morales, Carmona-Monge, Peñacoba-Puente, Díaz-Sánchez & García-Huete, 2011). Avoidance and religion strategies, on the other hand, fall into the emotion-focused style of coping. Avoidance was the most common strategy used by cancer patients during chemotherapeutic treatment (Gaviria, Vinaccia, Riveros & Quiceno, 2007); whereas religion was second most used strategy reported by mothers with a child with cancer (Moral & Martínez, 2009).

Summarizing, the most used strategies by mothers of deaf children are related to problem-focused coping style; however, they also use a medium frequency of emotion-focused strategies when dealing with stress. As was mentioned in a previous chapter, the styles of coping are not exclusive, and can happen simultaneously or successively (Lazarus & Folkman, 1984).

The use of both problem-focused and emotion-focused styles of coping can be explained by how mothers appraise a stressful situation. Problem-focused style is most used when something can be done to solve or to alter a stressful situation; whereas emotion-focused style when the stressful situation cannot be changed and instead the efforts are addressed to reduce or manage the feelings arising from it (Carver et al., 1989; Folkman & Lazarus, 1980). Therefore, mothers of deaf children could use problem-solving and positive reappraisal strategies on events that can be changed, and use avoidance and religion when facing a situation that cannot be altered, for example, the deafness of their child.

Respecting to the level of optimism, the Life Orientation Test Revised does not have cut-off points; the score of this test ranges from 0 to 24, and higher scores imply higher optimism. Participants of this study obtained a mean score of 14.33 ($SD = 2.85$); this is lower than that reported by parents of healthy children ($M = 16.40$, $SD = 4.10$; Fotiadou, Barlow, Powell & Langton, 2008), caregivers of children with developmental disabilities ($M = 15.94$, $SD = 4.75$; Peer, 2011), and female patients awaiting bypass surgery ($M = 14.92$, $SD = 3.97$; Scheier et al., 1994). However, the optimism score of participants was similar to that described by patients with fibromyalgia ($M = 14.28$; Landero & González, 2009) and it was higher than the reported by parents of children with cancer ($M = 13.00$; Fotiadou et al., 2008).

These findings imply that, even though mothers of deaf children are *less* optimistic than parents of regular children and parents of children with developmental disabilities, they are *more* optimistic than parents of children with cancer.

On the matter of the relation between stress and coping strategies, we found significant correlations of stress with positive reappraisal ($r = -.36$, $p = .05$) and with negative auto-focused ($r = .47$, $p = .01$). In all the other coping strategies (problem-

solving, social support seeking, religion, overt emotional expression and avoidance) there were no significant correlations found.

Results in this matter mean that mothers in our sample with *lower* levels of stress have a tendency to use positive reappraisal as a coping strategy. This association between stress and positive reappraisal was also found in fathers of children with cancer (Martínez & Moral, 2009) and in university students (González & Landero, 2007a). On the contrary, mothers in our sample with *higher* levels of stress were more likely to use negative auto-focused as a coping strategy. This correlation is also consistent with findings of González and Landero (2007a) in university students.

The subscales of positive reappraisal and negative auto-focused measure opposite efforts of dealing with a stressful situation; whereas positive reappraisal is focused on seeing the good of the event, negative auto-focused refers to helplessness and pessimism. Therefore, it makes sense than these correlate with stress in a positive and negative way, respectively. The lack of association of stress with the rest of the strategies indicates that the efforts to provide psychological attention to this kind of population must be primarily focused on increasing positive reappraisal and decreasing negative auto-focused, since these strategies were the most associated with stress in our sample.

With regard to the relation of optimism and coping strategies, we found significant correlations with social support seeking ($r = .37, p = .05$), avoidance ($r = .38, p = .04$) and negative auto-focused ($r = -.57, p = .00$). This means that, in the total sample of mothers, *higher* levels of optimism associated with a *higher* use of avoidance and social support seeking as coping strategies, as well as *lower* use of negative auto-focused. Specifically in clinically stressed participants, *higher* levels of optimism related to *higher* avoidance coping ($r = .63, p = .02$) and *less* negative auto-focused ($r = -.63, p = .02$).

The use of social support seeking and negative auto-focused coping are two strategies that studies show are associated with the level of optimism. Correlations between *higher* optimism and *higher* social support seeking have been found in parents of regular children (Fotiadou et al., 2008) and first-year college students (Brissette et al., 2002). Whereas relations of *higher* negative auto-focused and *lower* optimism were confirmed in university students (Martínez-Correa, Reyes, García-León & González-Jareño, 2006).

On the contrary, the association between *higher* level of optimism and *higher* use of avoidance as a coping strategy, both in the total sample and in the clinically stressed sample, is an unpredicted finding; it is even contrary to previous researches that have found a correlation between the frequent use of avoidance coping and *lower* levels of optimism (Brissette et al., 2002; Chico, 2002; Nes & Segerstrom, 2006).

Previous findings are not helpful to explain how a high use of avoidance coping is related to a higher level of optimism, when the theory actually mentions the opposite. An explanation can be made by exploring the items that measure avoidance coping in the Coping Strategies Questionnaire. The statements of the avoidance subscale make reference to abstaining from thinking of the problematic situation or focusing on other activities instead, such as work, sports or hobbies.

Even though the avoidance strategy is theoretically associated with lower levels of optimism in people and can be seen as an ineffective way to cope with a stressful situation, it appears that specifically in our sample of mothers this strategy has positive effects in their level of optimism. This can be explained taking into account that mothers reported that their children all had profound prelocutive deafness and none had cochlear implant nor used hearing aids; meaning that the deafness in their children was something they could not change or alter. As was mentioned in the theoretical framework, emotion-focused coping is predominant when the person feels they have no control over a problematic situation.

Therefore, the use of avoidance coping could mean that mothers accept the deafness of their children as something unchangeable, decide to focus on other activities instead, and are more optimistic about it; or the other way around, that optimistic mothers do not see the deafness as a problematic situation and decide to focus on other things or activities.

Concerning the relation of optimism and stress, we found no association between these two variables. This was something unpredicted, since we expected to find a relationship basing on the findings by previous studies. *Higher* parental stress has been found to correlate with *lower* levels of optimism in caregivers of children with developmental disabilities (Peer, 2011), mothers of children with autism spectrum disorder (Ekas et al., 2010), persons diagnosed with fibromyalgia (Landeró & González, 2009) and university students (Ferrando, Chico & Tous, 2002). However, we found no such relation; this indicates that the level of stress is not directly associated to optimism in our sample.

Nevertheless, we previously mentioned that stress correlated with negative auto-focused; this coping strategy, in turn, was related to optimism. Therefore, this helps us explain the absence of direct association between stress and optimism. According to our results, optimism does not influence stress, but the coping strategies; and these, in turn, do have influence over the level of stress. Theory supports this, when stating that there are certain personal characteristics or resources that influence the coping process in a positive way; one of these characteristics is optimism (Hintermair, 2004; Lazarus, 1999). Summarizing, our explanation of the absence of relation between stress and optimism is because optimism has influence over the coping strategies and not on the level of stress directly.

With reference to the difference of perceived stress levels, optimism levels and use of coping strategies in mothers, in relation to sociodemographic variables of children, we found significant variations.

The age of the deaf child (divided in younger and older) showed no difference in the levels of stress, optimism and use of coping strategies in mothers. However, we did find differences according to sex and age of deafness diagnosis.

Results show that mothers of boys use negative auto-focused strategy more likely than mothers of girls. Literature in this aspect has declared that the sex of the child has no influence over the level of parental *stress* (Mapp & Hudson, 1997; Martínez & Moral, 2009); however little is known about sex of the child and its relation to *coping* strategies.

A relevant research that can shed light in this subject was carried out by Hintermair (2006), who reported a significant correlation between sex of the deaf child and conduct problems reported by mothers; with boys showing more behavioral problems than girls. If we relate both researches, we can rationalize that mothers of boys in our sample utilize more negative auto-focused coping because they perceive more behavioral problems in their male children than in girls. Nevertheless, more information is needed about this relation, since we have not found researches with similar results.

About the age of diagnosis and differences in the coping strategies used by mothers, we found several expected relationships. We divided our sample between mothers who reported their child was diagnosed before 12 months of age, and those diagnosed at 13 months or older; this group difference was based on the median ($Mdn = 13$) and about what is considered an early diagnosis.

The differences we found were related to problem-solving, positive reappraisal, social support seeking and religion strategies; which mainly

correspond to what is considered problem-focused style of coping. Specifically, we found that mothers of children diagnosed *before* 12 months of age, used a problem-focused style of coping in a *higher* frequency than mothers of children diagnosed at 13 months or older.

The implications of these results are of great importance, since they prove that an early diagnosis of deafness relates to the use of problem-focused coping afterwards, and particularly to positive strategies such as positive reappraisal and social support seeking. The research field about the importance of an early diagnosis is currently growing; however, we found no other studies that explored *coping* and its specific relation to *age of diagnosis* in this kind of population so as to compare results. This implies that a new area of opportunity can develop from these findings.

Regarding the last objective, we found differences in the study's variables concerning age of mothers, marital status and sign language knowledge of their partners. On the contrary, there were no significant differences among groups in relation to socioeconomic status and educational level.

We were expecting to find differences in the scores of the variables in relation to the educational level of mothers, as was suggested by the literature. Stress has been shown to be *lower* when the educational level is *higher*, such was the case in a probability sample (Cohen & Williamson, 1988), in housewives (Landeró & González, 2002) and in mothers of deaf children (Silvestre, 2009). Nevertheless it appears that, specifically in our sample, stress, optimism and use of coping strategies show no difference in relation to educational level of mothers.

With respect to the age of the participants, mothers who we categorized as younger (37 years old or less) reported a *lower* use of negative auto-focused, than older mothers (38 years of age or older). Previous researches have found no relation of parents' age with the use of certain coping strategies (Mapp & Hudson,

1997) or with stress (Peer, 2011). This means that whether the parent was young or old did not influence the stress they experienced or the coping strategies they used.

Our finding differs from these previous results, since we found that older mothers have a more negative point of view about stressful events than younger mothers. This group difference was another unexpected finding of the study, and more in depth information is needed in this aspect. Especially in relation to psychological attention to decrease the use of negative auto-focused in older mothers; since this strategy has shown to be correlated with higher levels of stress.

Referring to marital status of participants and knowledge of sign language in their partners we found significant differences in stress level and in the use of positive reappraisal strategy.

More specifically, *separated* mothers reported *higher* levels of stress and *lower* use of positive reappraisal than mothers who were *cohabitating* with their partner. These results confirm an association made in previous researches. For example, Cohen and Williamson (1988) showed that separated women had higher levels of stress than married or cohabitating women of their sample. In parents of children with rare disabilities, parental stress was high among single mothers (Dellve et al., 2006); and in mothers of deaf children, less social support correlated with higher stress (Pipp-Siegel et al., 2002).

This difference of stress and positive reappraisal use in separate and cohabitating mothers can be explained taking into account the social support mothers can receive from their partners, especially when having a child with disability. Indeed, it has been proven that social support is a variable that can buffer stress (Cohen, 1988). Similar findings were reported in mothers of children with autism, where lower partner support correlated with higher levels of stress (Ekas et al., 2010).

The knowledge of sign language in partners is also an important variable related to social support. Unexpectedly (and fortunately), all of the mothers from our sample knew sign language and used it to communicate with their deaf child. This has great impact on children, since all of them had a diagnosis of profound deafness and it is legally their right to use signs as first language.

Therefore, it is no surprise that our results showed that knowledge of sign language in partners had an influence on stress and positive reappraisal coping in mothers, since it implies social support when having a deaf child. We consider this last finding as highly significant, because it proves the importance of partners learning sign language to be able to communicate with their deaf child, not leaving the responsibility of parenting only to mothers.

Summarizing, the conclusions from our study are as follows:

- The level of stress in our sample can be considered high. Although the mean did not reach the cut-off point of the scale, almost half of the sample did score as being clinically stressed.
- The predominant coping strategies used by the participants correspond to problem-focused style of coping (positive reappraisal and problem-solving).
- The level of optimism of the sample can be considered medium; it was lower than parents of regular children, but it was higher than parents of children with cancer.
- Stress level in the total sample correlated with the use of certain coping strategies, specifically positive reappraisal and negative auto-focused. Participants with *lower* levels of stress tended to use *more* positive reappraisal and less *negative* auto-focused.

- The level of optimism in the total sample correlated with the frequency of use of social support seeking, avoidance and negative auto-focused strategies. Optimistic mothers tended to use *more* social support seeking and avoidance, and *less* negative auto-focused.
- Optimism and stress were not directly correlated in our sample. However, optimism was related to coping strategies, as was stress, therefore implying an indirect influence.
- In relation to sociodemographic variables of children and differences in stress, optimism and coping; we found that mothers who had boys tended to use negative auto-focused strategy *more likely* than mothers of girls. Also, that an early diagnosis of deafness (at 12 months of age or before) was associated to a *higher* use of problem-focused style of coping; with these mothers using problem-solving, positive reappraisal, social support seeking and religion more likely than mothers of children diagnosed later.
- Finally, related to sociodemographic variables of mothers, we found that older mothers tended to use *more* negative auto-focused strategy than younger mothers. In addition, mothers who cohabitated with their partner reported a *higher* use of positive reappraisal strategy and *lower* levels of stress than separated mothers. And participants whose partners knew sign language had *lower* levels of stress and used *more* positive reappraisal strategy of coping.

The objective of this study was to describe the relationship between perceived stress, coping strategies and optimism in mothers of deaf children, as well as to analyze differences concerning sociodemographic variables. As a final conclusion we can say we found differences related to sociodemographic variables, both in mothers' and children's. Specifically, these were: sex of the deaf child, age

of diagnosis of deafness, age of mothers, marital status and sign language knowledge in partners of the participants.

Recommendations for future studies

This research proves there are differences in stress, optimism and use of coping strategies in mothers in relation to sociodemographic variables; however, there are still several aspects that require deeper information and can be considered areas of opportunity for future studies. These are:

- To include fathers of deaf children in the sample, since this can be a comparison group and can help analyze if stress, coping and optimism are similar or different compared to mothers.
- To measure stress levels in parents within the first weeks of having received the deafness diagnosis, and in a longitudinal study if possible. If the stress levels are considered high even after 8 years of knowing about their child's deafness, it is important to measure stress right after the diagnosis and to offer psychological services to them; especially because 90% of our participants reported not having received psychological attention at the moment of diagnosis.
- To focus psychological attention on increasing positive reappraisal and decreasing negative auto-focused, since these coping strategies correlated with the level of stress in mothers.
- To deeply explore the correlation found between higher optimism and higher avoidance coping. Previous researches found an opposite association, so it could be that this specific kind of population sees as something positive to focus on other activities and not thinking about the problematic situation. Further information in this aspect can help psychological attention by

providing mothers a space and time where they can focus on their activities and hobbies.

- To investigate the association found between sex of the deaf child and use of negative auto-focused. If this relation is indeed because of the higher complains of mothers about behavioral problems in their boys, then psychological attention must adjust to take into account the sex of the child.
- To analyze the importance that an early diagnosis of deafness has on the coping style of parents. Other findings are necessary to help corroborate or argue our findings about problem-focused style of coping being predominant.
- To measure social support variable in parents of deaf children, specifically if parents have contact with other parents of deaf children and with deaf adults that could be role models for children.

Limitations

Participants of our study consisted only of mothers of deaf children; therefore, we cannot assume that other caregivers or relatives would have similar results to the reported here.

Also, it must be taken into account that all the participants of our sample had knowledge of sign language and used it to communicate with their child; however, due to the existence of several communication methods, our results could only apply to mothers who use sign language as the main method of communication.

The study is also limited due to the small size of the sample. It is possible that mothers who participated in our study are not representative of the whole population.

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