



PSYCHOSOCIAL VARIABLES IN A HEARING CONSERVATION PROGRAMM ADDRESSED TO THE YOUNG

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ABSTRACT

The study on the hearing consequences of the non-occupational noise exposure in the young requires the development of interdisciplinary researches for establishing the relationship among three important aspects: audiological, psychosocial and acoustical. This paper describes the psychosocial study that is being carried out in the frame of a Hearing Conservation Programm addressed to the young, implemented at CINTRA. To consider the psychosocial aspect contributes: 1) to relate the auditory function with the personal characteristics, the recreational habits and the sound immersion; 2) to formulate a complete diagnosis and to give personal advice and assistance; 3) to obtain valid and reliable guidelines for planning and launching educational campaigns. The measurement instruments applied are depicted; those developed ad hoc, as the Questionnaire of Out-of-school Activities and the Attitudes and Semantic Differential Scales; and those, already standardized, as the Personality test. The results of the first year of work are described.

INTRODUCTION

In the field of hearing conservation, it is important to find a scientific answer to a social problem which is related to the high percentage of young people —20 to 25 years old— who despite not having ear disease, are rejected after the pre-employment medical examination due to hearing loss, as is the case in Argentina. This hearing loss, which appears as early as the beginning of their working life and which has no medical history to explain it, can probably be attributed to non-occupational noise.

Young people participate frequently in noisy recreational activities and are exposed to loud music in particular when attending discos and live concerts or when using walkman, diskman, MP3, etc. [1] [2] [3] [4]. Other activities that can affect the hearing on the young are the use of guns, firecrackers, noisy tools or the practice of noisy sports [5] [6]. Studies published in the past two decades on the exposure to music at discos and rock concerts show a mean of sound levels of 103.4 dBA [7]. Our measurements, carried out in the city of Córdoba (Argentina), yielded values between 105 dBA and 109 dBA with peaks of up to 119 dBA at some discos [8].

German researchers [9] [10] stress the incidence of personal factors on the behavior of adolescents in relation to their consumption of music and their participation in noisy recreational activities. Popular literature suggests that the young find noisy environments to be exciting and in accordance with an exuberant behavior. Calvert and col. [11] used the expression “social noise phenomenon” to describe the tendency of youngsters to frequent dancing halls and to participate in other noisy activities, thus hypothesizing that the high sound levels in those places contribute to avoiding communication and, as a consequence, to not having to demonstrate intelligence, wit or other social skills. Noise becomes an equalizer which depersonalizes the environment.

At CINTRA, we have been doing research on this issue for many years. We have finished the first stage of the work [12] [13] [14] and have just started the second stage by means of a

Program for the Conservation and Promotion of Hearing in search of a scientific answer to the problem and to actions aiming at its prevention. We have always focused our research —first and second stages— in an interdisciplinary way in order to stablish the relationship among three important aspects: audiological, psychosocial and acoustical.

This time, we are interested to show the importance of the psychosocial variables in this kind of research with the aim of: 1) to relate the auditory function with the personal characteristics, the recreational habits and the sound immission; 2) to formulate a complete diagnosis and to give personal advice and assistance; 3) to obtain valid and reliable guidelines for planning and launching educational campaigns.

PSYCHOSOCIAL STUDY

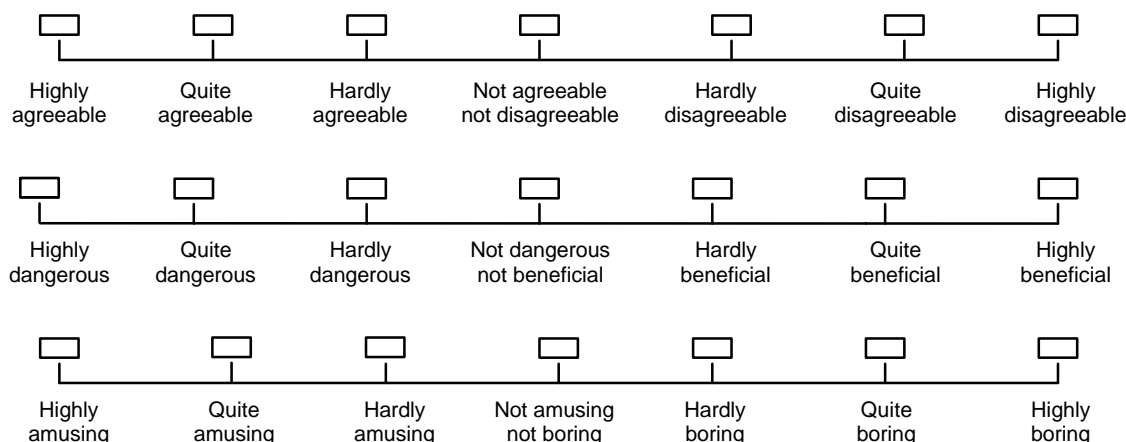
Material

In order to fulfil the purpose of this aspect, some specific tests were developed ad hoc and others were adapted. The material applied in the psychosocial study is described in detail below.

1. *Questionnaire of Out-of-school Activities (QOSA)*, to learn in detail about different activities performed by the adolescents outside the school timetable and in special, those which involve exposure to high sound levels, besides the frequency of attendance at such activities, the time spent on them, etc. It consists of 65 questions, built ad hoc at our Laboratory (CINTRA) on the basis of the questionnaire employed at the Faculty of Medicine of the Otto von Guericke University, Magdeburg, Germany [15]. It let us to analyze the following variables: a) the favourite recreational habits; b) the practice of noisy sport; c) the preference for musical activities; d) the exposure to music at home; e) the playing of musical instrument; f) the participation in musical group; g) the live concert attendance; h) the attendance at discos; i) the use of personal music players; j) the effects on ears after the exposure to music.

2. *Scale of Attitudes Towards Loud Music (SATLM)*, designed at the Centro Interdisciplinario de Investigación en Psicología, Matemáticas y Experimental (CIIPME), Buenos Aires and built in accordance with the Thurstone method [16]. The Scale consists of 90 statements: 37 favourable, 42 unfavourable and 10 neutrals. It is applied in order to know the attitudes towards loud music heard in different situations, letting to qualify them as “favourable”, “neutral” and “unfavourable” to noise.

3. *Differential Semantic Scales (DSS)*. A group of scales were designed at our Laboratory, according to the Osgood, Suci & Tannenbaum technique [17] [18], to assess different situations related to noise. Three scales were selected from this group in order that the adolescents assess the following situations related to music: 1) to hear loud music; 2) to use personal music player; 3) to attend at discos; 4) sound levels of music at discos. The three scales are shown below.



4. *Personality test*. A standardized and commercial test applied in order to gather data on the psychological attributes characteristic of the adolescents. It allows the quantifying of the

relationships between the traits that can integrate the diverse features salient in teenagers and their recreational habits.

Participants and procedure

First stage (finished). An interdisciplinary long-term study was developed over four years with adolescents of both genders in two middle-class schools—one for boys, another for girls—in the city of Córdoba, Argentina. The study began with all the students attending their third year of high school –14/15 years of age- in both selected schools and these adolescents were studied during four years when they turned 17/18. In this stage, the personal feedback of the findings was made at the end of the whole research.

Second stage (in development). On the basis of the first stage a Hearing Conservation Programm (HCP) has been implemented addressed, this time, to the students of Technical Schools in the City of Cordoba, Argentina, because upon graduation, their diploma will enable them to work in factories or the like as Specialist Technicians in the area they have decided to major. The program has just started with those students (ages 14/15) doing their third year of high school and they will be re-tested three years later during their sixth and last year of the school. This time, the personal feedback of the findings including suitable counseling and if necessary an interview with the adolescents’ parents or tutors is arranged after finishing the first year of the study. In case of detecting hearing disorders, the students are referred to specialized institutions in order to confirm the diagnosis and to set up the suitable treatment and rehabilitation.

In both stages, all the tests were administered on small groups of no more than 10 adolescents, in a quiet room of the school.

Outstanding results

A - Questionnaire of Out-of-school Activities

In the first stage, the analysis of the *Questionnaire of Out-of-school Activities*, applied yearly, let to determine about the whole group that: a) the preferred recreational activities of the adolescents studied were related with music; b) the participation in such activities increased year by year along the study; c) the favourite musical activity was “attendance at discos”, followed by “use of personal music players”; d) “live concert attendance” increased in the last year of the study; e) “playing of musical instrument” and “participation in musical group” were more popular among the boys than among the girls.

Figures 1 and 2 show the annual increase of the adolescents’ participation in music-related recreational activities. Figure 1 include the participation in all music-related recreational activities gathered as “Total Exposure to Music” (TEM). Figure 2 show the participation in the favourite entertainment “attendance at discos” (AD)

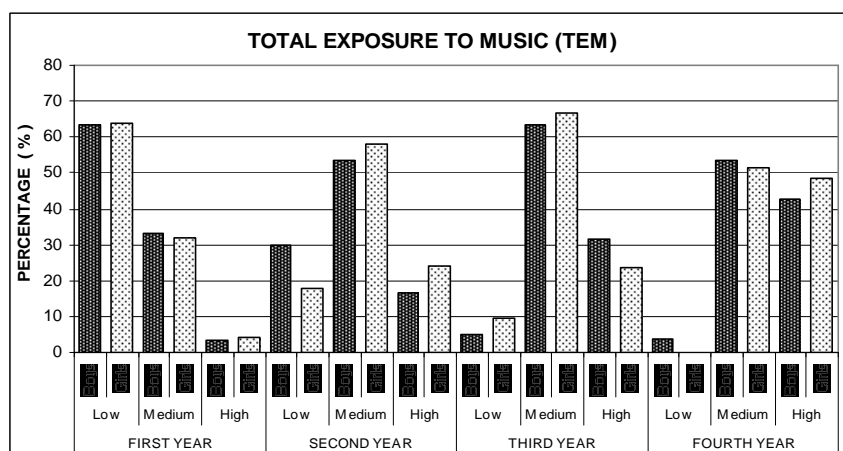


Figure 1.- Total exposure to music (TEM): annual percentage of adolescents participating in music-related recreational activities in general

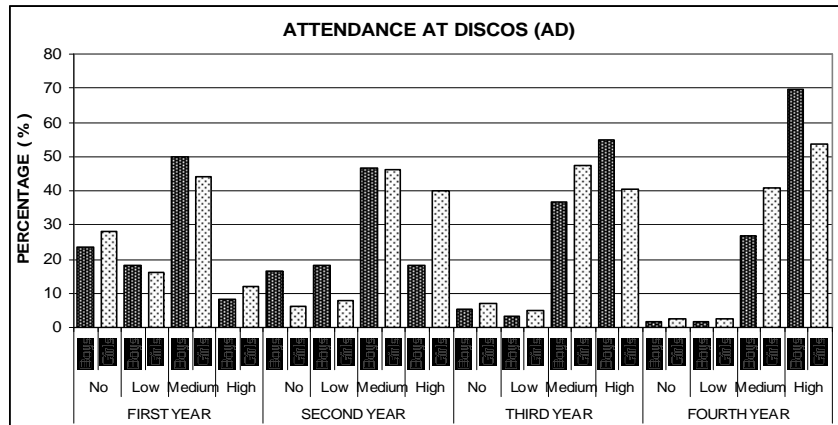


Figure 2.- Attendance at discos (AD): annual percentage of adolescents' attendance

When a hearing impairment was found, it was possible to identify accurately the sound immission of these adolescents during their recreational activities in order to establish valid relationships among audiological, psychosocial and acoustical aspects. As examples, two typical cases of adolescents, with significant hearing threshold level (HTL) shift along the study, are shown in the Figures 3 and 4, with a brief description of their sound exposure during such activities.

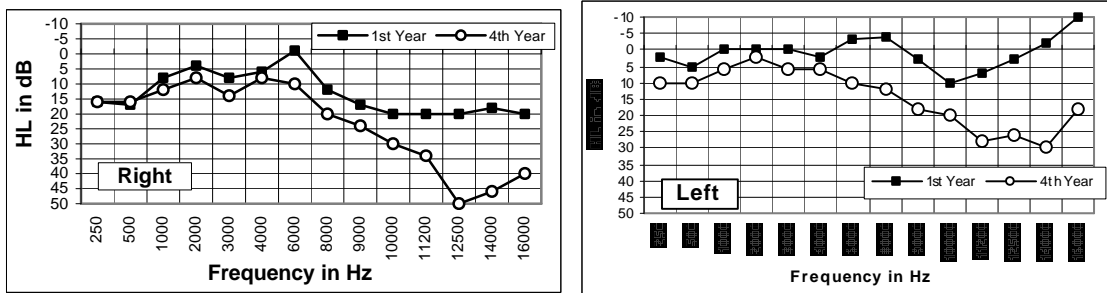


Figure 3.- HTL of an adolescent with tender ears and with high participation in musical and non-musical recreational activities

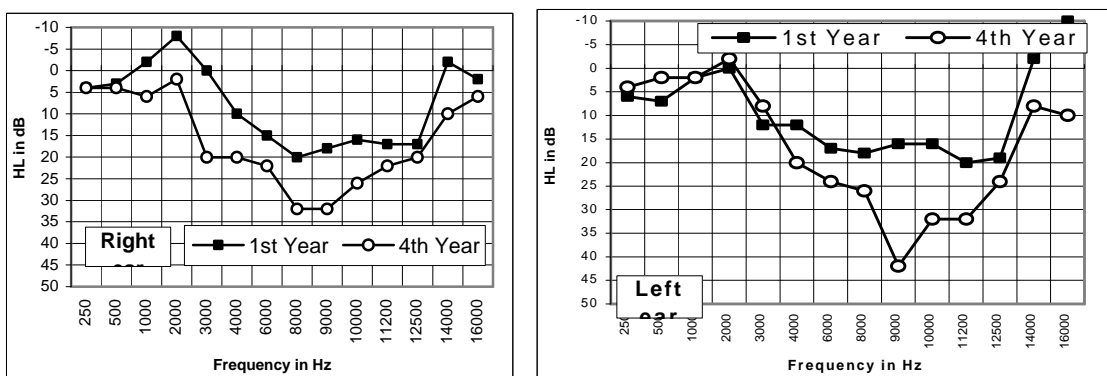


Figure 4.- HTL of an adolescent with tender ears and with high exposure to music: very frequent attendance at discos and loud music at home

In the second stage, the Questionnaire was applied only in the first Technical School where the HCP has just started. It has shown that a percentage of the adolescents studied —14/15 years of age— have already had a *higher level* of exposure to non-occupational noise as a result of their participation in recreational activities characterized by loud music, mainly, “disco

attendance” (frequent – very frequent). Of the remaining, a group of them is about to define their recreational habits, therefore the level of exposure to non-occupational noise is lower (often). The rest does not yet take part in entertainment that could be deemed as “risky” to the hearing health. This group of adolescents finds music-related activities as less important (rarely – no). Figure 5 shows the adolescents’ degree of participation to the different music-related activities.

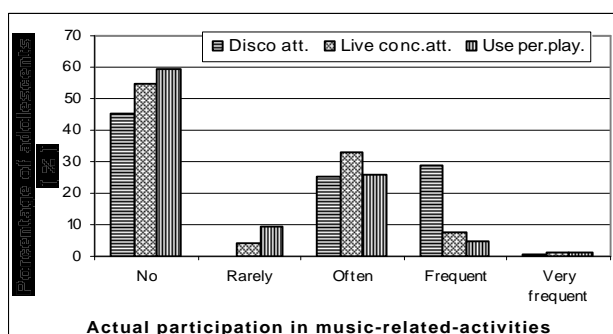


Figure 5.- Actual participation in music-related activities

B - Scale of Attitudes Towards Loud Music

This Scale shows that a high percentage of all the adolescents studied till now —first and second stages— tends to be attracted to behaviors and situations which involve “Admiration for music at a very high sound level” and/ or “Willingness to experiment and get used to music at very high sound level”, both considered as “Risk Indicators” for the hearing health. However, a percentage of those adolescents also show “Awareness of the negative effects of very loud music” and /or “Resistance to listening to very loud music”, both regarded as “Prevention Indicators”. In many cases, some of the adolescents under the “Risk Indicators” group also show awareness of the risks to being exposed to such high sound levels, yet not the willingness to change that behaviour. In Table 1 the percentages of adolescents attracted to behaviours and situations considered as “Risk Indicators” and “Prevention Indicators” are shown.

Table 1.- Percentage of adolescents attracted to behaviours and situations considered as “Risk Indicators” and “Prevention Indicators”

Risk Indicators		Prevention Indicators	
Admiration for music at very high level	Willingness to experiment music at very high level	Awareness of negative effects of loud music	Resistance to listening to very loud music
%	%	%	%
42.47	40.26	33.61	22.90

C - Differential Semantic Scales

The situations related to music: “to hear loud music”; “to use personal music player”; “to attend at discos”; “sound levels of music at discos” have been assessed —first and second stages— through the DDS, as follow:

- a group of adolescents as agreeable, amusing and beneficial;
- other group, as agreeable and amusing, but dangerous;
- a third group as amusing, but disagreeable and dangerous.

CONCLUSIONS

Through the *Questionnaire of Out-of-school Activities* is possible to identify the different activities performed by the adolescents outside the school timetable and in special, those which involve exposure to high sound levels, besides the frequency of attendance at such activities, the time spent on them and other characteristics, all of them very important when the adolescents’ sound immersion must be determine and the relationships with the audiological aspect must be established.

Through the *Scale of Attitudes Towards Loud Music* and the *Differential Semantic Scales* is possible to learn about the adolescents' attitudes towards loud music heard in different contexts and their assessments of situations related to music. According the results, a high percentage of the adolescents studied till now are totally unaware of the importance of good hearing to their future productivity and their quality of life. Other percentage of adolescents, in spite of having awareness of the risks of loud music on the auditory function, they assess it as agreeable and amusing. Only a minor percentage of adolescents show awareness of the negative effects of loud music and, at the same time, they show resistance to listening it.

All these data are being taken into account for planning the educational campaign addressed to the young, in order to raise awareness on noise and its consequences and the importance of hearing health to a person's quality of life and to their future job performance. It will be launched in the next year.

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