

Perceptions by Persons With Hearing Impairment, Audiologists, and Employers of the Obstacles to Work Integration

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The purpose of the present study was to report perceptions of persons with hearing loss, of audiologists, and of employers regarding the potential barriers to job integration. Statements were gathered using a focus group and a nominal group technique and were organized according to whether they were perceived as related to the individual, to the organization, or to society. Qualitative differences were noted among the 3 groups, but they were unanimous in identifying barriers that were judged as relating to working conditions, the use of electronic tools, having to communicate in groups, the interview and selection process, expectations related to productivity, and attitudes of persons with whom they must interact. Suggestions for strategies for eliminating these barriers were also collected.

Many technological advancements have modified the workplace and, as a result, have increased the need for communication (Kutscher, 1992). By the year 2000, 90% of new jobs will be in the service areas (Carey & Franklin, 1992) where communication dependent equipment (e.g., telephone, voice mail, voice activated computers) is rampant. In addition, the increased emphasis on teamwork requires individuals to be able to communicate in group situations. Added to these work-related changes are the facts that the present workforce (i.e., the baby boomers)

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is aging, and the incidence of hearing disorders is likely to increase.

If employers think that people with hearing loss inherently have communication problems, then there is a potential cause for job discrimination in the workplace. Through the Americans with Disabilities Act (1990) in the United States, the complaints presented by persons having hearing problems are increasing every year. At the Canadian level, the Canadian Human Rights Commission has received complaints in the last few years from people claiming to have been discriminated against in the workplace because of their hearing problems.

According to Davis (1989), 9% of the population with hearing impairment in Great Britain has had to give up some activity or, in some instances, their job. Beattie (1981) has found that 41% of the people with acquired hearing loss in Great Britain have significant problems at work and that in 23% of these cases, people have had to change jobs or redirect their career. Phillippe and Auvenshine (1985) have concluded that people with hearing impairment are less likely to be employed or occupy well-paying jobs than people with normal hearing. Parving and Christensen (1993) found that individuals with congenital hearing difficulties have, on average, lower levels of education than persons with acquired hearing impairments and receive less on-the-job training. In addition, Thomas and Herbst (1980) and MacLeod-Gallinger (1992) suggested that persons with hearing impairment have equal chances of being hired as persons with normal hearing, but that the severity of impairment influenced their chances of keeping their jobs. In fact, MacLeod-Gallinger (1992) noted that deaf women have equal chances of being hired for non-professional jobs as women with no hearing impairment. However, they also report that deaf women were employed at one third the rate of hearing women in managerial and professional positions and were twice as likely to occupy jobs judged as unskilled.

Decreased job satisfaction is another documented difference in persons with hearing loss. Individuals with hearing loss were found to be significantly less happy in their jobs (Backenroth, 1995; Beattie, 1981; Grant & Welsh, 1981; Kyle & Wood, 1985; Thomas & Herbst, 1980). They expressed dissatisfaction with perceived intrinsic job characteristics such as degree of autonomy and influence, status, and career development. However, Grant and Welsh (1981) have found that individuals with hearing loss having a bachelor degree are more satisfied with their jobs than persons with a post-secondary certificate. More recently, Geyer and Schroedel (1998) challenged these conclusions. Based on their review of the literature, they report that the majority of participants perceive themselves as satisfied or very satisfied with their jobs. Only a few participants expressed dissatisfaction.

Many studies have concentrated on individuals with noise-induced hearing loss (Hallberg & Barrenäs, 1993; Hallberg & Carlsson, 1991; Hamel & Lemoine, 1998; Héту, Getty, & Tran Quoc, 1995). These authors have noted that the effects on employment are complex and seem to relate to the communication demands

of the job, and the degree of hearing loss of the individual, as well as various personal factors. These studies reveal a decrease in opportunities for promotion, a reduction in work-related responsibilities, and an increase in difficulty when communicating with coworkers and the public.

In short, many factors can influence level of work satisfaction and performance of a person with hearing loss. Löfberg (1978) noted that it is important to consider competence, education level, interests, and desires, as well as physical and mental factors, when evaluating the social participation in the workplace of a person with hearing loss. Traditionally, these types of models have been centered on factors related to the individual rather than on his or her surroundings. Recently, many models have been developed in order to rectify this situation. These most current models claim that environmental factors also play an important role in the realization of daily habits (Fougeyrollas et al., 1999; Healey, 1996; Héту, 1993).

In fact, Héту (1993) and Healey (1996) have both developed models that rely on the interaction between the individual and his/her work environment in order to determine if the individual's auditory capacities allow him/her to accomplish the tasks required by the position he/she occupies. These models identify the incompatibilities and explain them through either the individual's limits or those of the environment. The authors note that as soon as the incompatibilities are identified, it is necessary to either modify the environment or provide technological aids in order to minimize the individual's difficulties. In a noisy work environment for example, individuals with occupational hearing loss can have difficulties perceiving speech. In order to maximize speech perception, hearing aids could be provided along with infrared or FM technologies to provide a better signal-to-noise ratio to the individual's ear. When using closed molds, hearing aids could also provide hearing protection (Héту, 1993).

Keeping in the same mind set as the models presented above, the International Classification of Impairments, Disabilities and Handicaps (ICIDH; World Health Organization [WHO], 1980) was developed by the WHO to explain the functional consequences of a disease process. One of the difficulties with this initial model is that it does not explain how these consequences were created. Since the creation of the original ICIDH model, Fougeyrollas et al. (1999) have proposed a more socio-anthropological model describing how some of the components of the ICIDH model might interact (see Lepage, Noreau, & Bernard, 1998). The advantage of this model, called the Disability Creation Process Model (DCPM; see Figure 1), is that it provides a model of human development that offers a hypothetical explanation of how a situation of handicap might occur. The handicap is not seen as inherent to the individual but rather as a situation that might occur following the interaction of so-called *personal factors* and *environmental factors*. Environmental factors may range from very physical factors such as "noise," to social ones such as "the attitudes of your colleagues at work." For instance, a person with a hearing loss might find that electronic mail is a facilitator to the re-

alization of his work but that the telephone is a barrier. According to this perspective, in spite of having the exact same functional limitation, a person with hearing loss would be living in a situation of handicap if he were forced to use the telephone for his job but might experience full participation in work if allowed to use e-mail.

Thus, the growing initiatives of the WHO in classifying the social consequences of disease and the trend towards the legislation of the social integration of persons with disabilities (Americans with Disabilities Act, 1990) imply that we cannot accept the premise that hearing loss leads to less satisfaction at work or to the inability to find or to return to work, without systematically studying the social consequences of hearing loss in more detail.

The purpose of the present study was to describe the barriers to work reintegration of persons with hearing loss as perceived by employers, audiologists, and persons with hearing loss. The results reported here are part of a larger study

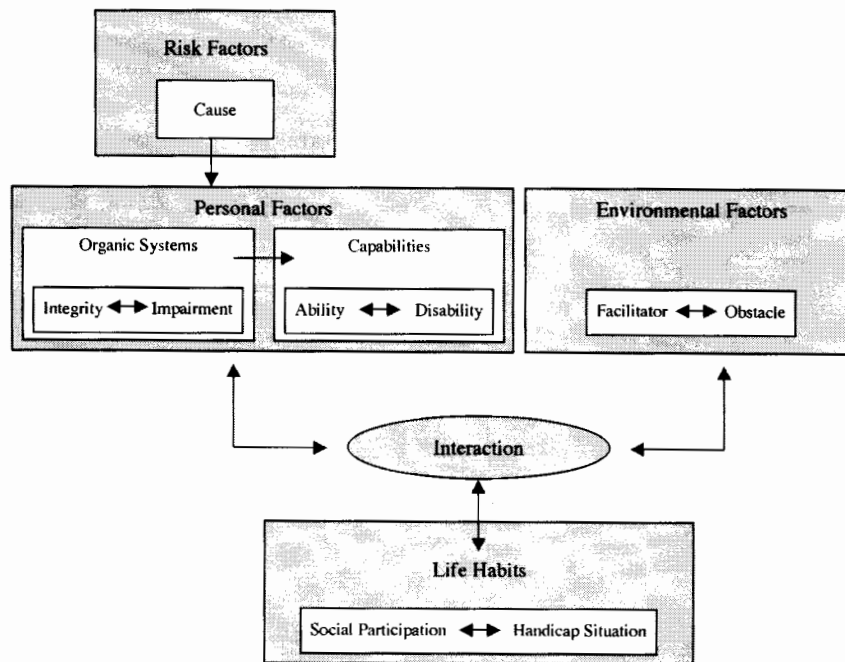


Figure 1. Disability Creation Process Model. This model illustrates the interaction of personal and environmental factors in the creation of different levels of realization of life habits. *Note.* From *The Quebec Classification: Disability Creation Process* (p. 10) by P. Fougere et al., 1999, Lac St.-Charles, Québec, Canada: International Network on the Handicap Creation Process. Copyright 1999 by the International Network on the Handicap Creation Process. Reprinted with permission.

whose goal was to identify common barriers to work (re)integration across different types of communication disorders. We have extracted from these data those results that pertain to persons with hearing loss only. Data pertaining to persons with aphasia have been published elsewhere (Garcia, Barrette, & Laroche, 2000). In addition to identifying the barriers to integration, strategies for overcoming these barriers were also collected.

METHOD

Participants

Three sets of participants took part in this study. The present results are taken from 13 persons with hearing loss, 15 audiologists, and 22 employers. The perceptions of both the audiologists and the employers concerned persons with communication disorders. All statements addressing specific groups of communication disorders, such as persons who stutter or persons with laryngectomies, were excluded. It is to be noted that audiologists and employers were not chosen because of their expertise in reintegrating persons with hearing loss into the workplace. In fact, in Canada, very few audiologists specialize in work reintegration of persons with hearing loss. All participant employers were human resource personnel and were familiar with procedures associated with the integration of persons with other disabilities. Many had persons in their organizations who had communication disorders, some of whom had hearing loss.

Persons with Hearing Loss (HI)

Thirteen persons with hearing loss (7 female, 6 male) participated in three separate focus groups. Two of the respondents were in the 31-40 year range, five were in the 41-50 year range, five were in the 51-60 year range, and one was in the 61 and over range. In terms of education, one had 6 years of education, three had 11 years, eight had 13 or more years, and the information was not available for one of the participants. Eight of the respondents were engaged in full-time employment, two were employed part-time, one was retired, and the information was not available for two of the participants. Five participants declared having profound hearing loss and three mild or moderate hearing loss. The degree of hearing loss was unknown by five of the respondents. Nine participants made use of hearing aids (no information is available on the type or duration of use). One participant mentioned that he could potentially benefit from hearing aids but did not want to wear them. The other three used sign language and reported that they did not need hearing aids. Demographic information pertaining to the persons with hearing loss is summarized in Table 1.

Audiologists

Fifteen audiologists (all female) took part in this study. They ranged in work experience from 3 to 20 years with a median of 12 years. Twelve were aged be-

Table 1
Demographic Information – Persons With Hearing Impairment

Identification no.	Sex	Age	Education (years)	Severity and			Form of communication	Actual employment	Number of years worked
				type of hearing impairment	Hearing aids	hearing impairment			
HI 1	M	41-50	11	Profound	Y	Oral, signs	Researcher	34	
HI 2	M	31-40	11	Profound	N	Signs	N/A	N/A	
HI 3	F	51-60	6	Profound	N	Oral, signs	N/A	N/A	
HI 4	F	41-50	11	Profound	N	Oral, signs	Clerk	N/A	
HI 5	M	41-50	17	N/A	Y	Oral	Analyst	24	
HI 6	F	51-60	17	Moderate	Y	Oral	Computer analyst	29	
HI 7 ^a	F	41-50	17	N/A	Y	Oral	Social worker	30	
HI 8	F	61-70	N/A	Moderate	Y	Oral	Retired	20	
HI 9 ^a	M	51-60	17	N/A	Y	Oral	Teacher	35	
HI 10	F	51-60	17	Profound	Y	Oral	Program manager	33	
HI 11	F	41-50	17	N/A	Y	Oral	Teacher	23	
HI 12	M	31-40	13	N/A	Y	Oral	Responsible of material management	20	
HI 13	M	51-60	17	Mild	N	Oral	Financial analyst	30	

Note. NA: not available. Y: Yes. N: No.
^aWork part-time.

tween 31-40, two between 41-50, and one between 20-30. Eleven participants worked in hospital settings, one within a rehabilitation center, and three in community health centers. Table 2 summarizes the demographic data related to the audiologists.

Employers

Twenty-two employers (13 females, 9 males) took part in the study. A little less than half of the participants were between the ages of 41-50 ($n = 9$), six were in the 31-40 age range, and five were in the 51-60 age range. Only two participants were in the 21-30 age range. Twelve employers worked in a service area (tertiary) organization (e.g., bank, office) and 10 worked in the industrial sector (secondary; e.g., manual work). All were human resources personnel and had experience ranging from 5 months to 26 years (median = 15 years) in this type of position. Demographic data relating to this group can be found in Table 3.

Material

All focus group sessions were recorded using a Sony Conference tape recorder, Model BM-246, and four Senneheiser unidirectional tabletop microphones, Model MD-421. Tapes were available for consultation by the research team in

Table 2
Demographic Information – Audiologists

Identification no.	Sex	Age	Years of experience	Workplace
Audio 1	F	31-40	9	Hospital
Audio 2	F	31-40	7	Hospital
Audio 3	M	31-40	12	Hospital
Audio 4	M	31-40	6	Hospital
Audio 5	F	31-40	13	Hospital
Audio 6	F	20-30	3	Hospital
Audio 7	F	31-40	7	Hospital
Audio 8	F	31-40	11	Hospital
Audio 9	F	41-50	16	Community health center
Audio 10	F	31-40	15	Hospital
Audio 11	F	41-50	20	Hospital
Audio 12	F	31-40	10	Rehabilitation center
Audio 13	F	31-40	17	Hospital
Audio 14	F	31-40	16	Community health center
Audio 15	F	31-40	16	Community health center

the event that information was needed for verification. Consent was obtained prior to recording.

Procedure

Subjects with hearing loss were recruited from the Canadian Hard of Hearing Society and from local audiologists. Employers were primarily recruited through a Montreal consultant and through the local business community. Audiologists were recruited through audiology departments (hospitals and rehabilitation centers) in both Montreal and Ottawa.

All data-gathering sessions took the form of a focus group (Brotherson, 1994; Morgan, 1988) and a nominal group technique (Brunelle & Tousignant, 1988) during the same session. Groups were limited to a maximum of 8 participants. There were 3 sessions for people with hearing loss ($N = 6, 4,$ and 3), 2 for audiologists ($N = 7$ and 8), and 4 for employers ($N = 4, 6, 5,$ and 7), for a total of 9 sessions. For one of these groups, an interpreter was present in order to facilitate

Table 3
Demographic Information – Employers

Identification no.	Sex	Age	Years of experience in human resources management	Work sector of firm
EMP 1	F	31-40	6	Secondary
EMP 2	M	31-40	4	Secondary
EMP 3	F	31-40	9	Secondary
EMP 4	F	21-30	2	Secondary
EMP 5	M	51-60	13	Secondary
EMP 6	M	31-40	16	Secondary
EMP 7	F	21-30	7	Tertiary
EMP 8	F	41-50	20	Tertiary
EMP 9	M	51-60	11	Tertiary
EMP 10	F	31-40	10	Tertiary
EMP 11	F	41-50	5 months	Tertiary
EMP 12	F	41-50	22	Tertiary
EMP 13	M	41-50	15	Tertiary
EMP 14	F	41-50	15	Tertiary
EMP 15	F	41-50	8	Tertiary
EMP 16	F	41-50	26	Tertiary
EMP 17	F	41-50	15	Tertiary
EMP 18	M	41-50	20	Tertiary
EMP 19	M	51-60	22	Secondary
EMP 20	F	51-60	18	Secondary
EMP 21	M	51-60	20	Secondary
EMP 22	M	31-40	15	Secondary

communication between the researchers and the participants who used sign language. Sessions lasted from 2 to 3 hours and always included at least one group facilitator and one assistant.

In light of the fact that employers were only slightly familiar with communication disorders, a video of different samples of persons with communication disorders was shown to all employer participants followed by a question period. During the sessions, posters describing the hearing and speech/language characteristics of each type of communication disorder were in view for all employer participants. For the hearing loss category, the following information was written on the poster:

A problem associated with the reception of an auditory message can induce: difficulty to hear some sounds, difficulty to understand speech in noise, difficulty to localize sound sources, ringing or buzzing in the ear, problems with integrating auditory information at the brain level.

During the question period, it was obvious that most of the employers knew about the difficulty to hear some sounds but were less familiar with the other difficulties. The group facilitator made sure that all the participants understand the overall difficulties associated with hearing impairment.

Phase 1: Identification of Barriers

Once the goal of the study had been explained, participants were asked to share their perceptions of the barriers to integration in the workplace of persons with communication disorders. Each barrier mentioned by the participants was verbally summarized and then written on flip-chart paper by the research assistant. Hence, the group facilitator (a member of the research team) rephrased the barrier and, when needed, participants were asked to confirm that the statement on the flip-chart paper reflected what had been said. Participants with hearing loss were encouraged to think about their present jobs or jobs they had previously occupied. Employers were encouraged to think about barriers in their personal work environments, and audiologists were encouraged to think about job positions their clients occupied.

In order to facilitate the generation of additional barriers, two job descriptions, which contained many duties related to communication (i.e., one of a police officer and one of a travel agent), were read aloud to the participants. These job descriptions were specifically chosen because they increased the chances of identifying barriers related to communication. Therefore, the chances that participants would find barriers in addition to the ones they had already mentioned were high. After each job description, participants were asked to imagine themselves (in the case of participants with hearing loss) or imagine a person with a communication disorder (in the case of the audiologists and the employers) performing those duties.

Phase 2: Identification of the Most Important Barriers

Once all barriers were written and numbered, the group facilitator eliminated all repetitive barriers. However, no barrier was removed from the list without first obtaining the group's consent. Employers generated lists containing from 27 to 34 barriers (mean = 32). One group of audiologists generated 34 barriers and the other 43 barriers. In the groups of persons with hearing loss, the first group generated 35 barriers, the second group 50, and the third group 39 barriers.

As recommended by the nominal group technique (Brunelle & Tousignant, 1988), participants voted on the most important barriers from the above-mentioned lists. This technique suggests that nine factors be retained when the total list is larger than 22 items. Hence, each employer, audiologist, and person with a hearing loss in the present study selected nine barriers from the total list generated by their group. Each participant was given a series of index cards on which they individually chose the most important barriers from the list. On each card, they were asked to write the number of the barrier from the longer list and to rank the order of importance of this same barrier. From this information, the group facilitator and research assistant were able to reduce the list of barriers to a shorter list of most important barriers as judged by the group as a whole.

Phase 3: Identification of the Potential Strategies

Each of the most important barriers chosen by the group was then re-introduced one at a time. Each barrier was re-written and participants were asked to suggest strategies that could aid in the removal or reduction of the barrier. These strategies were written on flip-chart paper under the appropriate barrier. Participants were encouraged to suggest strategies for all persons concerned (i.e., employees, service providers, and/or employers).

Phase 4: Classification of Barriers

Four stages of classification took place when all sessions were completed. Given that a qualitative approach was used, the intention was to extract common points from among the perceptions of the three participant groups (i.e., person with hearing loss, audiologist, and employer).

Stage 1. The purpose of this first stage of classification was to extract from the data a preliminary list of categories under which the barriers could be classified (e.g., interview process). A list was generated based on preliminary definitions taken in part from Fougeyrollas, Cloutier, et al. (1997). For training purposes, 50 barriers from among those that had not been voted on were randomly chosen and classified by three raters who were familiar with the research project. When barriers could not be classified into categories or were controversial, they were noted, and the classification categories were re-worked by members of the research team who were not involved in the ratings.

Stage 2. During the second stage, the re-worked classification system was

tested using the same 50 barriers that were again randomized. The same three raters were involved in stage 2.

Stage 3. During stage 3, the re-worked classification was adjusted according to the results of stage 2, and the barriers that had been selected as most important were then classified individually by four raters who were familiar with the study. If a barrier's classification was not agreed upon by at least 75% of the raters, two additional raters reclassified it, and a final decision was made through consensus. The barriers were then expressed as neutral factors as suggested by Fougeyrollas, Noreau, and St. Michel (1997). The obstacle "unable to listen in groups" thus became "task execution – number of interlocutors – more than one."

Stage 4. During stage 4, the authors used this final, more neutral classification scheme to classify the barriers that had been voted upon as being most important. The results from the present study are expressed in terms of this final classification. Table 4 displays a listing of the categories.

Phase 5: Classification of Strategies

The final phase consisted of a classification of the strategies suggested by the participants to eliminate the barriers to work integration. These were classified according to the person or persons who were perceived to be in the best position to eliminate the obstacles and hence facilitate intervention. The three authors judged all strategies mentioned by the groups. Judgements were made as to whether the initiation of the strategies was primarily the responsibility of the person with the communication disorder, the audiologist or another service provider, the organization (including employer and colleagues), or of society-at-large. For instance, "preparing the interviewer" might be seen as a strategy aimed at the employer while "repeat the message to verify" might be seen as a strategy initiated by the person with hearing loss.

RESULTS

The classification process led to the creation of three large sets of barrier categories: Organizational, Societal, and Personal, with several smaller subcategories. Table 4 shows sub-categories associated with these factors. The results of the present research are reported in the next sections according to the qualitative differences in perception among the participant groups. For each group of barriers (see Table 5), a summary of the types of strategies (see Table 6) suggested by the participants is also presented in the text.

General Results – Barriers

All groups perceived barriers associated with the execution of work-related tasks. Obstacles related to getting to and from work. Other more physically-oriented aspects of the job were not brought forth by any of the groups. All groups

Table 4
Classification – Personal, Organizational, and Societal Factors

1. Personal factors	
1.1 Integrity of the organic system	
1.2 Behavior	
2. Organizational factors	
2.1 Task demands	
2.1.1 Working conditions	
2.1.1.1 Safety and emergency aspects	
2.1.1.2 Noise	
2.1.1.3 Physical aspects of the environment (i.e., quality of the air, lighting, etc.)	
2.1.1.4 Physical tasks	
2.1.2 Electronic tools	
2.1.2.1 Videoconferences	
2.1.2.2 Telephones	
2.1.3 Number of speakers	
2.1.3.1 Individuals	
2.1.3.2 Groups	
2.1.4 Type of speakers	
2.1.4.1 Internal (i.e., colleagues, supervisors, etc.)	
2.1.4.2 External (i.e., clients, public, etc.)	
2.1.4.3 Specific characteristics of the speaker (i.e., accent, rate of speech, etc.)	
2.1.5 Type of communication tasks	
2.1.5.1 Oral	
2.1.5.1.1 Speaking	
2.1.5.1.2 Listening	
2.1.5.2 Written	
2.1.5.2.1 Writing	
2.1.5.2.2 Reading	
2.1.6 Diversity of tasks	
2.1.6.1 Simultaneous tasks	
2.1.6.2 Sequential tasks	
2.1.7 Other factors linked to task demands. Specify.	
2.2 Interview process	
2.3 Selection process – hiring criteria	
2.4 Ability to intervene	
2.4.1 Financial	
2.4.2 Corporate orientation/organizational structure	
2.5 Expectations related to productivity	
2.5.1 Speed	
2.5.2 Quantity	
2.5.2.1 Work hours	
2.5.2.2 Workload	

Continued on next page

Table 4 *Continued from previous page*

3. Societal factors
3.1 Attitudes of the interlocutors
3.1.1 Speakers at work (i.e., clients, colleagues, supervisors, etc.)
3.1.2 Service providers
3.2 Awareness of the disorder
3.3 Realities of the job market
3.4 Socio-economic support programs
3.5 Technical aids

identified barriers associated with working conditions, electronic tools, interview and selection process, attitudes of the interlocutors, and awareness of the disorder (see Table 5). Noise, number of speakers, attitudes of the interlocutors, awareness of the disorder, and expectations related to levels of productivity produced the greatest barriers. Most of the barriers associated with society-at-large related to attitudes and behaviors and to the lack of sensitization and education regarding communication disorders. Only employers shared concerns regarding the important barriers associated with the realities of the job market. Persons with hearing loss did not identify barriers related to the type and diversity of communication tasks nor to the expectations related to productivity, whereas both audiologist and employer groups identified barriers in these areas. Moreover, audiologists represented the only groups that did not identify barriers related to the number and type of speakers.

General Results – Strategies

Table 6 provides a summary of the number of strategies suggested by each group. Just over half of the strategies suggested by the employer groups (55%; $n = 99$) aimed the organization. Strategies proposed by audiologists had about an equal distribution across the groups aimed. Close to 55% of the strategies suggested by persons with hearing loss were suggested for themselves. Generally speaking, 35% ($n = 162$) of all the strategies were aimed at the person with the communication disorder, and another 41% ($n = 193$) were aimed at the employer. All strategies considered, audiologists and society-at-large were each perceived as occupying a role in 12% of the strategies.

Table 7 gives the breakdown of the number of strategies by environmental factor. Of the strategies aimed towards the person with hearing loss, 25% ($n = 41/162$) came from the audiologists and were primarily focused on barriers related to the diversity of tasks and the awareness of the disorder. Fifty-one percent ($n = 83/162$) of the strategies for persons with hearing loss came from persons with hearing loss themselves, and they addressed working conditions, such

as noise, number and type of speakers, and similarly to those from audiologists, the awareness of the disorder. The remaining 23% ($n = 38/162$) of strategies for persons with hearing loss came from employers and were mainly aimed at dealing with productivity (i.e., quantity of tasks and speed of execution).

Table 5
Environmental Factors Perceived as Barriers by the Various Participant Groups

Environmental factor	Employer groups	Audiologist groups	Hearing loss groups
2.1.1 Working conditions	× (safety & emergency; physical tasks)	× (noise, physical environment)	× (nature of work, noise, see people)
2.1.2 Electronic tools	× (general; ^a videoconferences)	× (general)	× (telephones)
2.1.3 Number of speakers	× (groups)		× (groups)
2.1.4 Type of speakers	× (external, internal)		× (characteristics of interlocutors)
2.1.5 Type of communication tasks	× (oral)	× (oral)	
2.1.6 Diversity of tasks	×	×	
2.2 Interview process	×		
2.3 Selection process	×	×	×
2.4 Ability to intervene	×		×
2.5 Expectations related to productivity	× (general; speed)	× (general)	
3.1 Attitudes of the interlocutors	×	×	×
3.2 Awareness of the disorder	×	×	×
3.3 Realities of the job market	×		
3.4 Socio-economic support programs		×	
3.5 Technical aids			×

^aGeneral: signifies that the barrier was classified by the judges under the general category because it did not fit in any of the subclassifications.

Of the 193 strategies aimed toward the organization, 51% ($n = 99$) came from the employers themselves. They proposed ways of dealing with the interview process, diminishing the effect of communication-related tasks, dealing with interlocutors outside of the organization (e.g., clients), and dealing with employer expectations of productivity and attitudes. Both persons with hearing loss and audiologists proposed a similar number of strategies for the organization (28% and 21%, respectively). Whereas both proposed a large number of strategies for dealing with working conditions (especially noise), the audiologists further concentrated on electronic tools such as the telephone. Persons with hearing loss were more productive in the number of strategies for employers to deal with working conditions, awareness of the disorder, and number of speakers.

Comparatively few strategies were aimed at the audiologists (12%; $n = 58$) and at society-at-large (12%; $n = 58$). Both employers and audiologists saw an important role for audiologists in improving awareness of the disorder. Employers had strategies for audiologists to help persons with communication disorders deal with the realities of the job market and audiologists had strategies for themselves in helping people change attitudes. Society was seen as another major player in reducing obstacles related to attitudes, giving more socio-economic support, and changing the realities of the job market.

Finally, only individuals with hearing loss identified strategies related to technical aids. These strategies were aimed at all groups, excluding employers.

A more detailed breakdown of the obstacles and strategies by level of environmental factor will now be presented.

1. Personal Level Factors

According to the DCPM, personal factors refer to personal characteristics, such as organic systems and capabilities. These characteristics can be seen as impaired or intact or as abilities or disabilities. By definition, they are not environmental factors and therefore are not included in Table 4. Nonetheless, these factors will be examined briefly because the participants perceived them as being

Table 6
Distribution of the Number of Strategies by Participant Group

Suggested by:	Strategy aiming				Total
	Persons with hearing impairment	Audiologists	Work organization	Society in general	
Employer	38 (21%)	18 (10%)	99 (55%)	23 (13%)	178
Audio	41 (29%)	30 (22%)	40 (29%)	28 (20%)	139
Hearing imp.	83 (54%)	10 (6%)	54 (35%)	7 (5%)	154
	162 (35%)	58 (12%)	193 (41%)	58 (12%)	471

Table 7
Breakdown of the Number of Strategies by Environmental Factor

	Suggested by:	Aims			
		Persons with hearing loss	Audiologists	Organization	Society
2.1.1 Working conditions (N = 74)	Employers	2	0	7	0
	Audiologists	6	5	15	1
	Persons with hearing loss	22	2	14	0
2.1.2 Electronic tools (N = 25)	Employers	2	0	4	1
	Audiologists	2	0	11	0
	Persons with hearing loss	2	0	3	0
2.1.3 Number of speakers (N = 39)	Employers	1	0	4	0
	Audiologists	0	0	0	0
	Persons with hearing loss	21	1	12	0
2.1.4 Types of speakers (N = 31)	Employers	5	1	10	0
	Audiologists	0	0	0	0
	Persons with hearing loss	11	0	4	0
2.1.5 Type of communication tasks (N = 30)	Employers	5	1	13	0
	Audiologists	6	0	5	0
	Persons with hearing loss	0	0	0	0
2.1.6 Diversity of tasks (N = 21)	Employers	1	0	3	3
	Audiologists	10	0	4	0
	Persons with hearing loss	0	0	0	0
2.2 Interview and	Employers	1	3	10	2
2.3 Selection process (N = 33)	Audiologists	0	2	1	5
	Persons with hearing loss	6	0	3	0

Continued on next page

Table 7 Continued from previous page

	Suggested by:	Aims			
		Persons with hearing loss	Audiologists	Organization	Society
2.4 Ability to intervene (N = 14)	Employers	0	0	10	0
	Audiologists	0	0	0	0
	Persons with hearing loss	1	0	3	0
2.5 Expectations related to productivity (N = 43)	Employers	12	3	19	3
	Audiologists	3	1	1	1
	Persons with hearing loss	0	0	0	0
3.1 Attitudes of the interlocutors (N = 24)	Employers	1	1	2	0
	Audiologists	5	7	1	6
	Persons with hearing loss	1	0	0	0
3.2 Awareness of the disorder (N = 72)	Employers	1	5	8	5
	Audiologists	7	11	0	3
	Persons with hearing loss	11	3	15	3
3.3 Realities of the job market (N = 31)	Employers	7	6	9	9
	Audiologists	0	0	0	0
	Persons with hearing loss	0	0	0	0
3.4 Socio-economic support programs (N = 20)	Employers	0	0	0	0
	Audiologists	2	4	2	12
	Persons with hearing loss	0	0	0	0
3.5 Technical aids (N = 16)	Employers	0	0	0	0
	Audiologists	0	0	0	0
	Persons with hearing loss	8	4	0	4

obstacles to integration. Two large categories of personal factors were revealed by the data: those related to the integrity of the organic system (e.g., the nature of the hearing loss itself and its concomitant symptoms) and those related to behavioral factors (e.g., self confidence).

1.1 Integrity of the Organic System

Only one group of individuals with hearing loss mentioned physical fatigue and increased concentration as personal factors contributing to difficulties in integration. Many strategies were suggested in order to reduce fatigue and facilitate concentration. For example, among the 11 strategies mentioned, the participants suggested sufficient rest, stress avoidance, reduced personal demands, and limited overtime.

1.2 Behavior

At least one group of employers, audiologists, and individuals with hearing loss mentioned obstacles in this category. However, out of the 35 obstacles mentioned, employers only mentioned two of them. These obstacles referred more broadly to the person's ability to overcome the "handicap." On the other hand, audiologists mentioned 4 of the 19 obstacles in this category: perception of self, lack of self-esteem, unwillingness to disclose, and reluctance to express needs. Finally, the individuals with hearing loss only mentioned 2 obstacles out of 26: feelings of isolation and the need to hide their handicap. Some strategies brought forth to minimize the effect of these obstacles were the acceptance of one's handicap, explanation and demystification of hearing impairments, therapy, communication with coworkers, projection of a sure and positive image, increased funding for audiological rehabilitation, and finally, knowledge and assertion of one's rights.

2. Organizational Factors

Organizational factors refer to those environmental factors, in this case barriers, associated with the place of employment. Since the objective of this study was to look at work reintegration, it is not surprising that the majority of barriers identified by our participants fell within this second largest category. Five large subcategories of barriers were identified within the organizational factors (Table 4). The category that gathered by far the largest number of organizational barriers, as identified by our participants, was the sub-category encompassing task demands.

2.1 Task Demands

2.1.1 Working conditions. Different working conditions were seen as potential barriers by participants. According to the audiologists and individuals with hearing loss, noise is the most prevalent obstacle. Employers, on the other hand,

were more concerned with security. Many strategies to minimize the impact of noise were proposed by audiologists and individuals with hearing loss. These strategies were generally aimed at the organization. Isolated offices, noise barriers, and installation of induction loop systems and carpets were among the numerous examples of strategies proposed. Individuals with hearing loss also proposed strategies such as asking others to move or moving themselves, using gestures, going to a quieter location, and turning their hearing aid down or off.

2.1.2 Electronic tools. Although not judged significant at the time of the votes, some groups noted the use of electronic tools as problematic. Employers mentioned video conferences whereas individuals with hearing loss mentioned the telephone. The strategies brought forth in this category were generally aimed at the organization (18/25) and included improving the level of focus on the speaker, having telephones with amplifiers, using an FM system, and having a fax machine.

2.1.3 Number of speakers. The number of speakers was a main preoccupation for individuals with hearing loss. Problems arise when it is necessary to listen to many people at once, as in meetings for example. The majority of strategies to avoid this problem were suggested by the individuals with hearing loss (34/39) and addressed them specifically. Avoiding the situation, having a quiet room to retreat, explaining communication strategies to all members, and positioning yourself to be able to see and hear the speaker well (i.e., round table) are all examples of strategies brought forth by the individuals with hearing loss. Employers mentioned some strategies addressing themselves such as informing the chairperson about the needs of the individual with a communication disorder in order to run the meeting more effectively, and informing the other participants that a person with a hearing loss will be present.

2.1.4 Type of speakers. Individuals with hearing loss paid a great deal of attention to the speaker's characteristics. The tone of someone's voice, people speaking too softly, faulty elocution, and accents are all problematic for them. Employers, on the other hand, insisted on inter-colleague exchanges, client expectations, and public speaking. As for the strategies, the participants with hearing loss mostly mentioned things they could do to improve the situation, whereas employers concentrated on a better work environment. Therefore, as the individuals with hearing loss were suggesting asking others to repeat themselves and asking the person to articulate as best they can, employers were mentioning that it would be necessary to inform the public of the presence of the person with a communication disorder and to provide a supportive work environment.

2.1.5 Type of communication tasks. This next category is related to the realization of work-related tasks. These tasks demand different types of communication modes such as oral versus written. Employers and audiologists were the only ones to mention this barrier but did so without putting much emphasis on it. The large majority of strategies suggested by employers were aimed at the or-

ganization itself and concerned, among other things, the adaptation or utilization of technologies, proper evaluation of the individual's capabilities, and proper job placement. On the other hand, audiologists suggested using other communication modalities, limiting communications, or modifying the organization of the work environment.

2.1.6 Diversity of tasks. Only employers and audiologists identified barriers suggestive of limitations imposed by the diversity of job-related tasks. They proposed strategies that implied a better organization of the work tasks and a greater level of support from the environment. The strategies aimed at the person with a communication disorder concerned the development of their own abilities and creation of a niche of specialization. Employers also suggested that it would be beneficial for consumer associations to work together so that multi-skilled teams could be created.

2.2 Interview and 2.3 Selection Process

All three groups noted obstacles in the interview and selection process category. The strategies proposed by the employers towards the organization concerned methods for preparing the interviewer and anticipating the needs of the person with the communication disorder. Strategies aimed at the potential employee suggested that he/she might disclose and explain the nature of his or her disorder to the interviewer. On the other hand, the participants with hearing loss noted that individuals should not indicate in advance a weakness or disability unless assistance would be required (sign language). As for the audiologists, they mentioned that employers should demedicalize their criteria. They also acknowledged society's important role in increasing the level of involvement from government agencies and the guidance to proper resources, as well as the amount of funding.

2.4 Ability to Intervene

This category refers to the organization's ability to adapt job positions, either with financial support or some other means. The employers suggested that the inability of an organization to intervene might be a barrier to integration. Consequently, strategies were aimed at the organization itself and referred to alternatives for bypassing financial constraints, structural barriers, and barriers related to corporate strategic orientation. Individuals with hearing loss cited the supervisor's lack of knowledge of sign language and lack of e-mail access as barriers. Their strategies therefore addressed the organization in order to teach basic sign language and make e-mail more accessible.

2.5 Expectations Related to Productivity

Employers and audiologists both perceived the employer's expectations, in regard to the quantity of work demanded and/or the speed with which the work

needs to be completed, as barriers. Employers did not differentiate between expectations related to quantity and those related to speed. Audiologists expressed concerns regarding the efficiency, the flexibility, and the absences. As for the solutions, employers suggested strategies for everyone. Those strategies aimed at the organizations revolved around the adaptation of the job positions and the reduction of the expectations themselves. Those that targeted the person with the communication disorder involved the development of a more assertive attitude. Employers suggested strategies aimed at society-at-large for dealing with expectations of quantity. They proposed the creation of a database of possible positions for persons with communication disorders and a more efficient use of consumer associations. Audiologists suggested fewer strategies and those proposed generally aimed the individual with hearing loss. The strategies suggested that individuals with hearing loss prove and explain their abilities at work and increase their effort to perform.

3. Societal Factors

The following barriers concern not only the organization of the work itself but also the barriers associated with general societal attitudes/policies, which can impede work reintegration.

3.1 Attitudes of the Interlocutors

The attitudes of the people that come in contact with persons with hearing loss were seen as potential barriers by all three groups of participants. Audiologists suggested the greatest number of strategies in this category, and these were aimed at all groups. For example, they suggested that (a) employers request information about the communication disorder and offer ways to assist the employee in dealing with behaviors, (b) audiologists themselves get more involved in public education about communication disorders and visit the place of employment, (c) persons with communication disorders disclose and explain their disability to others, and (d) society-at-large implement accessibility laws and increase budgets for rehabilitation. The strategies suggested by the employers were aimed at the organization (e.g., implementation of policies to favor integration) and the same strategies were suggested to the persons with hearing loss and audiologists (e.g., increased sensitization at all levels of the organization). The only strategy mentioned by people with hearing impairment was to "remind them to tell me what they heard about meetings, work."

3.2 Awareness of the Disorder

A significant barrier noted by all groups was the lack of awareness of the disorder. All groups reported strategies that were aimed at other groups. The employers suggested that the audiologists be involved in training employers. Persons with hearing impairment suggested that the audiologists educate the public

and explain strategies. Finally, the audiologists recommended that they be more involved in public education and lobby audiologists to use non-medical models of intervention. Employers also recommended strategies for the organization, such as developing closer ties with consumer associations and the inclusion of adapted supervision. For their part, audiologists recommended that persons with hearing impairment tell others about their disorder and about hearing aids and explain how they feel about social image. People with hearing impairment mentioned, among other things, that they should be more involved in their organization, use human rights legislation, and diffuse information on hearing disorders and strategies.

3.3 Realities of the Job Market

Only the employers identified barriers that were classified under this section. They proposed a variety of strategies aimed at each group. The strategies targeting the organization were as diverse as offering a variety of services (e.g., training, career planning, placement), creating ties across industries, allowing employees to share tasks, and applying the law. The strategies which were aimed at the audiologists concerned their participation in placement programs, better preparation of persons with communication disorders to face the job market, and better distribution of information to organizations. The strategies aimed at the persons with communication disorders concerned their personal development while those aimed at society-at-large referred to financial support for consumer associations and employers.

3.4 Socio-Economic Support Programs

Only the audiologists identified obstacles related to a lack of socio-economic support programs. They mentioned financial and administrative limitations and provided strategies aimed at all groups. It was suggested that the employer pay for support programs. Moreover, audiologists noted that individuals with hearing loss should use their hearing aids. As for their own role, audiologists suggested that they occupy governmental positions and contribute to public and employer awareness. The greatest number of strategies was aimed at society-at-large. Audiologists proposed an increase in the number of placement agencies and stronger fights for accessibility through insurance plans, in addition to greater involvement from the government, the professional associations, and the colleges.

3.5 Technical Aids

Individuals with hearing loss were the only ones to identify obstacles in this category. They all referred to the technical and physical problems related to hearing aids. Most strategies in this category involve the person with hearing loss. Examples include maintenance of hearing aids, assertion of one's needs, and having an audiologist. It was also suggested that audiologists give more information

concerning the different types of technologies available as well as their advantages and disadvantages. Finally, according to individuals with hearing loss, society-at-large (more specifically, hearing aid manufacturers) should provide information on the different products that are available and ensure the accessibility to different levels of attenuation and the possibility of self-adjustment.

DISCUSSION AND CONCLUSION

The results of this study suggest that, for persons with hearing loss, the difficulties associated with full participation at work may be related to many factors. The hearing loss itself and/or its behavioral changes are just one component of the entire picture. In fact, only 9 obstacles (11%) of the 80 obstacles mentioned were associated with personal factors. It could be hypothesized that the topic of conversation (i.e., the work environment) influenced the focus group participants and therefore caused them to neglect to mention some obstacles related to the auditory deficiency itself. It is also possible that the participants in this study perceived barriers associated with behavior to be unimportant, or that the focus group format intimidated these participants from voicing any difficulties associated with self-confidence or other behavioral issues. The researcher's instructions were nonetheless clear from the beginning of each session; the obstacles could be related to either the individual or the work environment.

Although audiologists had little to say about the communication disorder itself, they did mention the obstacles generally cited in the literature: the lack of self-esteem, self-perception, the unwillingness to disclose, and the reluctance to express needs (Hétu et al., 1995). These barriers further explain why people with hearing impairments have not been inclined to express the personal limitations associated with their hearing loss. Intervention to improve communication involving personal factors has traditionally been the subject of research in clinical audiology, but the role other factors might play in the fulfillment of one's life goals is much more complex and may necessitate a different theoretical framework. Hétu and colleagues have attempted to address this issue (Hétu & Getty, 1992; Hétu et al., 1995). Their work has led to the proposition of a model that allows for a proper analysis of the precursory factors related to the consequences of professional hearing impairment on the individual, his/her family, and his/her environment. Among these factors are many related to the environment and the individuals who interact with the persons with hearing loss, such as an inadequate physical environment, negative reactions from the environment, and lack of information.

The environmental factors expressed in this study as both organizational and societal, can greatly contribute to the creation of a situation of handicap in DCPM terms for persons with hearing loss. The three groups were unanimous in identifying barriers that were judged as relating to working conditions, the use of electronic tools (especially telephones), having to communicate in groups, the inter-

view and selection process, expectations related to productivity, and attitudes of persons with whom they must interact. These barriers suggest that, for persons with hearing loss, many obstacles are associated with the physical environment and the attitudes of others. Therefore, as opposed to what was seen for persons with aphasia (Garcia et al., 2000), intervention policies should focus more on the environment rather than on the nature of the tasks. Both employer and audiologist groups mentioned barriers associated with type and diversity of tasks and expectations related to productivity. Persons with hearing loss, however, did not suggest any important barriers that could be classified under these categories. In order to explain this result, it is important to note that the absence of barriers in a given category neither indicated that the participants did not see this category as relevant, nor did it mean that the participants had not mentioned it. It could have been mentioned yet not retained after the vote. The categories in this study were derived from the data, and judgements were made as to what should be included in these categories. The categories had not been proposed as such to the participants. Secondly, this result should not be interpreted as suggesting that persons with hearing loss do not experience difficulties associated with work tasks. These groups of participants could, in fact, express a difficulty in integrating oral information, but this would have been expressed as associated with the perception of information, a personal factor. This is a fine distinction that relates to the DCPM. This suggests that the reasons for the situation of handicap might be perceived as more heavily weighted on the hearing loss symptoms themselves rather than on the environmental factors. The focus is on the hearing loss of the person, not on the type or diversity of tasks.

As for the audiologists, they did not mention any obstacles relating to the number and type of speakers nor to the ability to intervene. We could suppose that, for many audiologists, the noise factor is related to the number of speakers and that they therefore judged it irrelevant to mention both factors. As for the type of speakers (internal, external, interlocutor characteristics), it is surprising that the audiologists did not find it among the most important factors because they are usually sensitive to the influence of the interlocutor's characteristics (e.g., beards, accents, etc.) on speech comprehension.

Interestingly, technical aids were not mentioned by the audiologists nor the employers. Yet, audiologists are very familiar with the limits of these aids. Once again, this factor was probably associated with the individual with hearing loss rather than the environmental factors.

When it comes to strategies, employers are perceived to play an important role, as 55% of the strategies were aimed at them. This outcome was not expected by the researchers, who assumed that the majority of strategies would be aimed at the person with the hearing loss. It is possible that this outcome is related to the employers' desire to look good in the focus groups. Moreover, as the objective was to enumerate obstacles in work integration, employers probably thought this

meant that they could not limit themselves to the personal factors of individuals with hearing loss. Nonetheless, employers did perceive a great number of organizational barriers and suggested many strategies relating to the adaptation of job tasks, as well as to the creation of support systems both within and outside the work environment. In fact, employers offered the greatest number of strategies and the most varied number of groups for implementing the strategies. This, of course, did not suggest that employers would readily implement all of these strategies, but it did suggest that the employers in this study were very creative in thinking of ways to reduce situations of handicap for persons with communication disorders. One might argue that employers were much more aware of what could be done about these areas of employment than are the persons with hearing loss or the audiologists.

It can be questioned why there were too few roles attributed to the audiologists (10% of strategies are aimed at them according to employers). One could hypothesize that employers are not aware of the audiologists' roles, especially concerning work intervention. This can be due to the lack of audiologists specializing in this type of intervention.

Although audiologists mostly concentrated on the roles of individuals with hearing loss as well as those of the employer (29%), they did not however neglect their own implication (22%) nor society's (20%). It can be suggested that the fact that audiologists do not believe themselves to be very implicated is related to the above-mentioned lack of professionals specialized in this type of intervention. It would therefore be a vicious cycle; seeing that there are few audiologists in the field, they have difficulty recognizing their possible roles in that field.

Individuals with hearing loss assume the responsibility for many strategies (54%). It may reflect the belief of persons with hearing loss that their functional limitations have a primary impact on the situation, as opposed to what can be modified in the environment and in society-at-large. On a broader level, DCPM's application encourages the person with a hearing loss to realize that functional limitations alone do not account for all handicaps. It is important to note that participants with hearing loss did perceive an important role for the organization in the application of strategies (35%).

The most surprising data, and the most troublesome for audiologists, were those related to their role. Only 6% of the strategies brought forth by the individuals with hearing loss were aimed at audiologists. Once again, one can question the amount of knowledge concerning the audiologist's role in the work environment and if something should be done to make this role more evident.

Upon examination of the relative totals for strategies across groups, it could be seen that the audiologists' role as well as society's was negligible (12% in both instances). However, the organization had a slightly more important role (41%) than the person with a hearing loss (35%). Although the percentages would somewhat vary if this study were repeated, this variability would not eliminate

the significant information concerning the strategies that need to be established. It is hoped that the data of this study will motivate work environments, people with a hearing loss, and audiologists to reflect on their respective roles, and that they will work together to improve hiring conditions and working environments.

In conclusion, the present study has proposed an alternative method for exploring the integration of persons with hearing loss into the workplace by using a social model of handicap called the DCPM. The results suggest that the notion of handicap can be viewed as a dynamic process influenced by both personal and environmental factors. In light of this model, it is important to realize that one cannot make decisions regarding work reintegration based solely on personal factors such as abilities. This study supports the perceptions of other authors (Healey, 1996; Héту, 1993) that change in organizational factors, mainly working conditions (e.g., noise), electronic tools (e.g., telephone, communication in groups, the interview and selection process), and societal factors (such as attitudes of persons with whom they must interact) might facilitate work reintegration for persons with hearing loss. From the results of this study, several recommendations can be made and are identical to the ones from Garcia et al. (2000) for aphasia:

1. The results of the present study are only perceptions and need to be verified in real work situations.
2. It would be beneficial if more audiologists developed expertise in assessing the work environments of their clients with hearing loss. They have a role to play in sensitizing employers and colleagues, in appropriately evaluating the client and his work environment for communication-oriented tasks, and in consulting for disability management programs including persons with hearing loss.
3. All those involved in the work reintegration of persons with hearing loss need to verify their perceptions with other concerned groups and work together in a concerted fashion with these groups to eliminate barriers.
4. Persons with hearing loss need to be counseled regarding strategies aimed at groups other than themselves for facilitating reintegration.

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