
Hearing Accessibility in a University Setting: Reflections on the Audiological Therapeutic Process

Accessibilité des services audiolologiques pour les étudiants, professeurs, employés sur un campus universitaire

Marianne McCormick, MSc
Vancouver Health Department

M. Kathleen Pichora-Fuller, PhD
School of Audiology and Speech Sciences
University of British Columbia

Dan Paccioretti, MSc
Vancouver Health Centre

Noelle Lamb, MSc
School of Audiology and Speech Sciences
University of British Columbia

Key words: disability, hearing, post-secondary

Abstract

Healthy young and middle-aged adults have typically not been a target group for hearing services (except perhaps for workers exposed to noise). Recently, increasing awareness of the obstacles faced by people with disabilities has promoted efforts to address the accessibility needs of these age groups. A one-year project was conducted at the University of British Columbia to study the hearing accessibility needs of students, faculty, and staff. While diagnostic services were well used, a sense emerged that rehabilitative services were under-utilized relative to expectations of need for such services (estimated from measures of hearing impairment). This suggests a mismatch between audiologists' interpretation of diagnostic test results and the hard-of-hearing individuals' perception of their own hearing handicap. Differences and similarities between the experiences of students, faculty, and staff will be presented. Possible factors underlying this mismatch will be discussed.

divergence entre les résultats des examens audiolologiques et la perception qu'ont les personnes malentendantes de leur problème. Différences et ressemblances entre les expériences individuelles seront présentées et discutées, et des explications à ces écarts seront proposées.

Just as the nature of hearing impairment and its effects on daily life are complex, so also must be the therapeutic process by which audiologists and their patients act cooperatively to alleviate the handicapping effects of hearing impairment. Unfortunately, few clinical audiologists undertake service provision with an explicit model of this therapeutic process in mind; few consider, for example, the process's set of possible actions and goals, a time frame, and the beliefs, expectations, and responsibilities of each participant. Noe, Gagné, and Kaspar (1994) point out that research in audiological rehabilitation has generally proceeded without a model of the psychological and social factors that influence a patient's health-seeking behaviour, so it is perhaps not surprising that we as clinicians do not often consider how such factors affect our interactions with patients, particularly as long as these interactions seem to run according to our expectations.

Abrégé

En général les adultes entre 18 et 60 ans ne sont pas un groupe cible des services audiolologiques (sauf peut-être les cas des personnes exposées à des niveaux de bruit élevés). Depuis un certain temps, une sensibilisation croissante aux obstacles rencontrés par les personnes handicapées de toutes sortes a résulté en des efforts accrus pour promouvoir l'accessibilité à ces groupes d'âge. Un projet-pilote d'une année a été organisé dans ce but à l'Université de Colombie-Britannique pour étudier les problèmes et besoins d'accès des étudiants, professeurs, et employés. Si les services diagnostiques ont bien été mis à contribution, les services de réadaptation, par contre, ont été sous-utilisés par rapport à ce que l'on aurait attendu à la suite des diagnostics. Il existe donc une

This essay arose as a reflection on the experiences of a clinical audiologist (MM) who provided services to a university population during a one-year project on Post-Secondary Hearing Accessibility. In particular, the ways in which the expectations about the outcome of this project were *not* fulfilled were at first surprising and disappointing. An invitation to present the project's findings at the Annual Conference of the Canadian Anthropology Society in May

1994 provided an opportunity to explore the assumptions underlying these unfulfilled expectations. Our expectations were consistent with an implicitly held model of hearing disability in the context of the therapeutic process in audiology; this model demanded revision to make the project's outcome more explicable. Our original model embodied a traditional medical view of health care, in which the patient is a passive and ideally compliant recipient of clinical treatment. Our revised model, however, incorporates ideas from the fields of public health and sociology, which argue that an effective therapeutic process must take into account the hearing-impaired individual's psychological, social, and cultural context. We make no claims for the validity of the revised model, but we believe that it has implications for research and clinical practice in audiological rehabilitation.

The Post-Secondary Hearing Accessibility Project: Expectations

The Post-Secondary Hearing Accessibility Project was undertaken in response to an increasing awareness of the obstacles faced in a university setting by individuals with hearing impairment. The aim of the project was to provide on-campus audiologic diagnostic services to students, staff, and faculty, who were members of the university community, and to provide individualized audiological rehabilitation for those who required it. Rehabilitative measures were intended to include the application of a wide array of assistive listening devices and training in communication strategies, in addition to or instead of the more traditional recommendation of a hearing aid.

Prior to her assignment to the Post-Secondary Hearing Accessibility Project, MM had worked primarily with pediatric patients, who are often "non-compliant" in the rehabilitative effort to fit hearing aids and assistive listening devices, presumably because they have generally not requested these services and may not even have recognized that they have a disabling impairment. In contrast, the Post-Secondary Hearing Accessibility Project provided MM with an opportunity to work with adults who willingly sought services. At the outset of the project, we assumed that in a community of over 35,000 people, there would be many individuals with hearing impairment, some of whom had never accessed audiological services, because healthy working-age adults are typically not a target group for such services unless they work in hazardous noise environments. It was expected that even individuals with mild hearing impairments who have little communication difficulty in ideal listening conditions would experience handicap in the university environment, with its high verbal and cognitive

demands, and frequently non-optimal acoustic environments. MM began the project looking forward to working with adults who would voluntarily seek audiological services because they recognized the disabling nature of their impairments and could foresee the potential benefits of rehabilitative measures. We expected that these adults, who were highly motivated for academic, occupational, and professional success, would willingly cooperate in the process deemed to be necessary to reduce their hearing handicap.

The expectation of the motivated, compliant—that is, ideal—adult patient was consistent with certain assumptions about the nature of hearing impairment and disability, and how these concepts figure in the audiological therapeutic process. This initial model is described in the next section.

An Initial Model of the Therapeutic Process in Audiology: Assumptions

Impairment, Disability, and Handicap

The World Health Organization (1980) has developed a trio of concepts: (a) impairment, which is the loss or abnormality of a biological structure or function; (b) disability, which is the resultant restriction or lack of ability to perform an activity; and (c) handicap, which is the social disadvantage experienced by an individual with an impairment. The relationship between these components can be viewed most simply as a linear, unidirectional, causal chain where disability is solely a function of impairment and handicap is the direct outcome of disability. This interpretation appears to be supported by certain statements by Badley (1993) who suggests in her introduction to these concepts that "disability focuses on the expression of the consequences of impairment in everyday life in terms of changes in overall activities without registering the value attached to the result of these changes" (p. 163) while "it is the impact of the inability to carry out [these] activities which takes the disability in to the area of handicap. Handicap addresses the consequences of restrictions in these activities in the social and cultural setting in which individuals find themselves" (p. 166).

This three-part conceptualization has been applied to the hard of hearing (for example, Stephens & Héту, 1991). Hearing *impairment* is the auditory deficit that is measurable by clinical electrophysiological and psychoacoustic tests. In the case, for example, of an individual with a mild high-frequency sensorineural hearing loss, the physiological aspect of hearing impairment would be some permanent dysfunction of sensory cells in the inner ear that could be measured by otoacoustic emission testing. The related perceptual aspects of the impairment would be reduced

Hearing Accessibility in a University Setting

auditory sensitivity, discrimination, and ability to localize certain acoustic stimuli as measured using psychoacoustic tests. Note that the individual is not likely to be aware of the exact nature of his or her hearing impairment (pre-diagnosis); in fact, he or she may not be aware of the presence of the impairment *per se*. According to this scheme, the *disability* resulting from a hearing impairment is the set of everyday auditory difficulties experienced by the individual. Someone with mild high-frequency sensorineural hearing loss, for example, would have problems hearing speech clearly in the presence of background noise. In a simple, linear interpretation of the model, the ultimate hearing *handicap* is the set of non-auditory consequences of disability; this handicap depends on the individual's social, educational, and vocational roles. For example, an undergraduate student with a mild high-frequency sensorineural hearing loss may experience the educational handicap of being unable to achieve academic success commensurate with effort and intellectual ability because he or she has difficulty taking notes. A faculty member with the same impairment and disability may suffer the professional handicap of being unable to participate fully in meetings and seminars. Individuals are likely to seek audiological or medical help because they recognize that they are handicapped in some way, even if they have little understanding of the specific nature of their impairment or disability.

The Therapeutic Process in Audiology

The therapeutic process in audiology seems to proceed in orderly steps that follow this three-component chain of impairment-disability-handicap. Although concerns about hearing handicap most likely motivate an individual to enter the therapeutic process, this process begins with diagnosis which traditionally focuses on obtaining a description of the impairment (for example, "You have a mild high-frequency sensorineural hearing loss with fair speech discrimination bilaterally"). After the initial step of diagnosis, the patient may be discharged from the therapeutic process only if (a) no significant impairment is found or (b) the impairment appears amenable to medical treatment, in which case a referral to another health professional (and another therapeutic process) is made.

If a significant, incurable hearing impairment is diagnosed, the patient remains in the therapeutic process for the next step of rehabilitation, which primarily targets the reduction of communication disability (Coyte, 1992). Most audiological rehabilitation seeks to modify the acoustic signal in some way (for example, through the use of hearing aids and/or assistive listening devices) or to alter the conditions under which the acoustic signal is heard (using, for example, assertiveness and communication strategies).

Although no single technique in the audiological rehabilitation "tool-kit" is adequate for every patient with hearing impairment, audiologists believe that hearing disability can be reduced for most patients with the correct choice and application of rehabilitative techniques. Furthermore, because handicap is assumed to be the social consequence of disability, there is an expectation that patients will experience reduced handicap as a result of effective audiological rehabilitation. For example, a student with a hearing impairment should experience greater academic success as a result of using a personal FM system in lectures. Once the patient has accepted and applied the recommended rehabilitative treatment, the therapeutic process is considered to be essentially complete, although follow-up diagnostic and technical maintenance services may be offered.

Clinician and Patient Roles

In the therapeutic process described above, the audiologist is the primary decision-maker, because he or she has technical and scientific knowledge about the relationship between hearing impairment and disability; such knowledge is necessary (although perhaps not sufficient) to make appropriate rehabilitative choices. The patient, however, may be granted some minor decision-making power, such as a choice in style of hearing aid. Once the patient has taken the step to seek audiological services, he or she becomes, essentially, a passive recipient of services. Indeed, the term *compliance*, meant in a clinical context to denote the patient's willing participation in the therapeutic process, has a more general meaning of unquestioning agreement with definite recommendations. Any failure of the patient to comply with the audiologist's recommendations is viewed as a breakdown of the therapeutic process, possibly attributable to factors such as irrational patient denial of the hearing impairment (for example, Demorest & Erdman, 1987), inadequate audiological counselling, or the audiologist's lack of authority or persuasiveness.

Time Frame of the Audiological Therapeutic Process

Finally, there must be a schedule or time frame according to which the therapeutic process takes place. Although such a schedule may not be explicitly stated, time constraints (such as the length of appointments, the number of audiologists to serve a given population and, in our case, the one-year duration of the project) are implicit in clinical practice. There seems to be an assumption that the therapeutic process should be accomplished fairly rapidly. Indeed, Heaton (1992) suggested that a short time frame for the therapeutic

process may be an index of the quality of care to (a) society, whose expectations are that the patient's needs will be met "in a timely, efficient and effective manner" (p. 264), and (b) funding agencies, which value "volume of patients discharged" (p. 267).

The Post-Secondary Hearing Accessibility Project: Outcome

The outcome of the Post-Secondary Hearing Accessibility Project was mixed with respect to our initial expectations. Identification and diagnostic services were very popular, but rehabilitative services were not heavily used by those individuals we believed would benefit the most: those who had not previously accessed audiological services.

Identification and Diagnosis

A total of 548 people participated in two three-day voluntary identification campaigns conducted in sound-treated audiometric vans. Hearing was screened at 25 dB HL for 500, 1000, 2000, and 4000 Hz bilaterally; pure-tone air-conduction thresholds were obtained for all participants who failed the screening. Hearing loss was identified in 13.7% (75 individuals) of those who were screened. One hundred and eleven people came to the project's campus-based clinic for services, which consisted of a standard audiological diagnostic test battery (pure-tone air- and bone-conduction audiometry, speech audiometry, and acoustic immittance). Of these, 23 had previously received our screening services. The others were from a variety of referral sources, with self-referral being the most frequent source (45%). We found that almost 60% (66 individuals) of those who received diagnostic testing had some hearing impairment, as defined by one or more pure-tone air-conduction thresholds poorer than 25 dB HL at any of the clinical test frequencies from 250 to 8000 Hz in either ear. Of the individuals identified or diagnosed with hearing loss, at least five had tried hearing aids in the past but were not currently using amplification, and six were regular hearing-aid users when they first made contact with the project.

Rehabilitation

Twelve individuals participated in rehabilitative services; of these, five were regular hearing-aid users, indicating that they had already taken advantage of existing audiological rehabilitation services elsewhere. An additional participant had previously undergone an unsuccessful trial period with a hearing aid. Of the seven rehabilitation participants who were not using hearing aids at the beginning of the project's rehabilitation phase, only two became successful users of

listening technology (one used hearing aids, one used a personal headphone FM system), while three others indicated that they had benefited from the knowledge and communication strategies they had acquired. In general, the extent to which our rehabilitation services were utilized by individuals who had previously accessed audiological services was disproportionately high when compared to their numbers within the pool of people identified with hearing loss.

But what of the other individuals with hearing impairment? Many had losses so minimal (for example, at 8000 Hz only) that rehabilitation was judged by the audiologist to be unnecessary. Others, however, expressed genuine distress about the negative effects of their hearing impairments, yet did not respond to our offers of rehabilitative services. These included the professor who felt his classroom teaching abilities were so compromised by a hearing loss above 2000 Hz that he was considering early retirement, the professor who indicated that he had stopped asking questions as a pedagogical tool because he was unable to hear students' responses, and numerous students with mild or unilateral losses who did not come for scheduled diagnostic testing following screening, or who reported difficulty hearing in their large lecture classes but were unwilling to try measures such as a personal FM system in class. We had assumed that individuals with such problems would benefit greatly from the project, yet their participation in the therapeutic process was incomplete. Our initial model of this process cannot account for why these individuals so enthusiastically sought identification or diagnostic services, yet declined and, in some cases, even evaded our offers of rehabilitation services.

A Revised Model of the Therapeutic Process in Audiology

We believe that we have reached a better understanding of these patients' behaviours by reconsidering our view of how impairment, disability, and handicap interact and of the patient's role in the therapeutic process. In the revised model, the patient is an active, rational participant in the therapeutic process and must consider information from a variety of sources in order to ultimately choose whether or not to come out into the open as a hard-of-hearing person. In the revised model, the nature of the relationship between impairment, disability, and handicap is more complex than previously proposed and the time course of the therapeutic process is not under the strict control of clinical practices.

The Patient's Role

The notion of compliance with health care instructions suggests an unquestioning adherence to the health-care provider's authoritative recommendations, with the implica-

tion that patient non-compliance is unacceptable and deviant behaviour. Donovan and Blake (1992) point out, however, that because non-compliance in health care may be at least as common as compliance, it cannot be rightly viewed as abnormal. They argue that compliance may not even be considered an issue by patients who make their own decisions about accepting treatment based on a cost-benefit analysis of all the information at their disposal; the health-care professional's contribution is only a part of this information. Prior to accepting treatment, the patient must decide if the likely benefits of recommended treatments outweigh the costs. Noe et al. (1994) suggest that patients' perceptions of the benefits and barriers associated with prescribed audiological treatments may be one set of factors that could predict their compliance with such treatments.

For participants in the Post-Secondary Hearing Accessibility Project, the most obvious costs associated with audiological rehabilitation were related to money (for example, the cost of a hearing aid or assistive device) and time (for example, the commitment required to attend a course of communication therapy sessions). Both these resources are generally in short supply in the student population. University faculty and staff may not experience the same financial constraints as students but they are typically very busy, with time being at a premium. Curiously, these types of costs, particularly the time investment, should have been roughly the same for individuals who were already users of some type of rehabilitation technology and those who had never accessed audiological services, yet the former group utilized our services to a disproportionately high extent. There must, therefore, be additional costs to those individuals who had never undergone audiological rehabilitation. One of these costs, we believe, is related to the public visibility of the individual's hearing impairment that comes from using technology to reduce hearing disability.

Impairment, Disability, and Handicap Reconsidered

Our initial model assumed that handicap in cases of hearing impairment is directly a function of disability and therefore only indirectly caused by impairment. Handicap can, however, be related to physical impairment in a manner that is not strictly mediated by disability, to the extent that a visible sign of the impairment causes the individual to fear or experience *stigmatization*: a priori discrimination and negative assumptions by others in social interactions because of the possession of a deviant attribute. Individuals may perceive that hearing impairment carries negative connotations of "stupidity and senility" (Noble, 1993, p. 300). Paradoxically, hearing loss is an invisible impairment — in the terminology of Goffman (1963), a hidden and potentially

"discreditable" stigma. But the very audiological rehabilitation measures designed to reduce hearing disability render the impairment visible — according to Goffman, a "discredited" stigma. Generally, in fact, the more potential an audiological rehabilitation tool has to decrease disability, the more apparent it makes the presence of the impairment. Larger hearing aids have more strength and flexibility than smaller instruments. Assistive listening devices that have the potential to overcome the ubiquitous background noise problem are larger than hearing aids and require the cooperative use of a remote microphone by a communication partner. Even assertiveness and communication strategies may require disclosure about the individual's hearing impairment. In a university environment, where appearances of cognitive and verbal competence are highly valued, some participants of the Post-Secondary Hearing Accessibility Project may have decided that the stigma (perceived or real) of a publicly displayed hearing impairment outweighed the potential benefits of disability-reducing rehabilitative measures, and that the course of action with the most favorable cost-benefit analysis was to continue making the effort needed to pass as normal hearing persons.

Is the stigma that individuals may calculate as a heavy cost of audiological rehabilitation real or imagined? While we do not know if such stigmatization exists in a university environment, the social stigmatization of individuals with disabilities has been objectively demonstrated in other contexts. For example, Ravaut, Madiot, and Ville (1992) found that when unsolicited job applications were sent to employers, hypothetical "able-bodied" applicants were 1.78 times more likely to receive a favorable response than equally well-qualified applicants who noted that they had paraplegia. Héту, Riverin, Getty, Lalande, and St. Cyr (1990) found that hearing-impaired industrial workers who disclosed the fact of their hearing loss suffered insulting comments from co-workers. Noble (1993, 1994) proposes that, given the *real* potential for an individual with hearing impairment to suffer stigma, it is in fact utterly rational that a person with hearing loss should hide the disability's existence if he or she can continue to do so. Thus, an individual's refusal of audiological rehabilitation may be better explained by *reluctance* to publicize the impairment rather than *denial* of the impairment's existence (Hogan, Ewan, Noble, & Munnerley, 1994). The notion of reluctance seems a much more consistent and satisfying explanation of the behaviour of intelligent, self-reliant, adult participants in the Post-Secondary Hearing Accessibility Project, most of whom had come to us voluntarily for screening and diagnosis.

Social stigma can be considered a "negative side-effect" of audiological rehabilitation in that it may contribute to the very hearing handicap that rehabilitation aims to alleviate. Incorporating the concept of stigma into our initial model

implies, however, that handicap is a function only of disability and non-negotiable social attitudes regarding the impairment, without any contribution from the individual in the construction of his or her social identity. Nevertheless, individuals with similar impairments facing presumably the same social attitudes often differ in their ability to cope with or overcome a handicapping impairment. The input of the individual must also play a role in the experience of handicap. Ville, Ravaud, Marchal, Paicheler, and Fardeau (1992) propose a social interactionist model of handicap in which each individual constructs his or her own identity in a specific sociocultural context through interpersonal negotiations. At the onset of an impairment (or, in the case of hearing impairment, at the moment when the individual decides to publicly display signs of the impairment), the individual must reconstruct his or her sense of self; this requires the deployment of cognitive and emotional resources and new interpersonal negotiations—another source of costs in the therapeutic process.

Revised Time Frame in the Audiological Therapeutic Process

On the one hand, we have posited that some individuals participating in the Post-Secondary Hearing Accessibility Project may have decided not to proceed with rehabilitative measures because of the cost of stigmatization. On the other hand, the social interactionist view of identity construction suggests that some individuals may not have ruled out audiological rehabilitation as a course of action, but were in the process of mobilizing the cognitive and emotional resources they would need to reconstruct their social identities. The time course of our project may not have been long enough and our treatments may not have provided adequate support for this process. As an example of the potentially long time-course of the therapeutic process in audiology, Getty and Héту (1994) found that several years may elapse between the time that a hearing-impaired industrial worker is informed about possibly helpful audiological rehabilitation and the time that he or she takes action.

Conclusion

Our initially surprising finding of “non-compliance” with recommended rehabilitation in a group of intelligent, independent, and presumably motivated adults in a university community has led us to revise our assumptions regarding the audiological therapeutic process and its effect on hearing handicap. From a simple model in which the patient willingly submits to treatments which indirectly alleviate handicap through reduction of disability, we have moved to a model in which the patient is viewed as a rational, active

participant whose experience of hearing handicap is a function of (at least) auditory disability, social attitudes regarding hearing impairment, and the individual’s ability to build a self-identity as a visibly hard-of-hearing person through interpersonal negotiations. This revised model suggests some directions for research and clinical practice. First, we have formulated two hypothetical categories of apparently “non-compliant” patients: those who decide not to continue with the therapeutic process because of the negative stigmatizing effects of its treatments, and those whose need to mobilize cognitive and emotional resources in order to reconstruct their social identities cannot be accommodated in the prevailing therapeutic process. Demonstrating the existence of both types of individuals is open to experimental inquiry. If these categories of people can be shown to exist, then the nature of social stigma in hearing impairment, and the cognitive and emotional processes and interpersonal negotiations that can overcome or manage this stigma must be more fully described. A description of the stigma of hearing impairment is necessary; clinicians have an ethical obligation to inform their patients of the potential negative side effects of treatment.

There are other clinical implications of the revised model. If we acknowledge people’s right to decide *not* to publicly display signs of hearing impairment, then we should extend our range of rehabilitative techniques to include those that do not draw attention to any particular individual. Along this line, Nobel and Héту (1994) recommend intervention in the physical environment (for example, improved room acoustics and public address systems) and in the social environment (for example, public health promotion campaigns aimed at demystifying and destigmatizing hearing impairment). A further implication of the revised model is that the clinical time frame may need to be more flexible to accommodate patients’ decision processes.

Finally, the current audiological therapeutic process does not adequately address the dimensions of handicap that are related to stigma and an individual’s reconstruction of his or her social identity as a visibly hearing-impaired person. Typically, audiologists are not trained to offer extensive psychosocial support to individuals going through this process. It is not obvious that this type of support can best come from an audiologist. Getty and Héту (1993) have found, for example, that the process of successful audiological rehabilitation of industrial workers depends on the support of their spouses. In other cases, support may be provided by hard-of-hearing individuals (for example, peers and consumer groups such as the Canadian Hard of Hearing Association) who have already successfully formed self and group identities. In any case, the audiological therapeutic process cannot view the audiologist as the sole agent of reduction of hearing handicap.

Author Note

The Post-Secondary Hearing Accessibility Project was funded by the British Columbia Medical Services Foundation (grant 92-54). We would like to acknowledge the support of the following centres: the Vancouver Health Department Audiology Centre, the School of Audiology and Speech Sciences at the University of British Columbia, and the Disability Resource Centre of the University of British Columbia.

Please address all correspondence to: Marianne McCormick, Vancouver Health Department Audiology Centre, 250-555 West 12th Avenue, Vancouver, BC V5Z 3X7

References

- Badley, E.M. (1993). An introduction to the concepts and classifications of the international classification of impairments, disabilities, and handicaps. *Disability and Rehabilitation, 15*(4), 161-178.
- Coyte, P.C. (1992). Outcome measurements in speech-language pathology and audiology. *Journal of Speech-language Pathology and Audiology, 16*(4), 275-285.
- Demorest, M.E., & Erdman, S.A. (1987). Development of the communication profile for the hearing impaired. *Journal of Speech and Hearing Disorders, 52*, 129-143.
- Donovan, J.L., & Blake, D.R. (1992). Patient non-compliance: Deviance or reasoned decision-making? *Social Science and Medicine, 34*(5), 507-513.
- Getty, L., & Héту, R. (1994, May). *Is there a culture of hard-of-hearing workers?* Paper presented at the 21st Annual Conference of the Canadian Anthropology Society, University of British Columbia, Vancouver.
- Goffman, E. (1963). *Stigma*. Englewood Cliffs, NJ: Prentice Hall.
- Heaton, E.M. (1992). The numerous facets of quality care. *Journal of Speech-language Pathology and Audiology, 16*(4), 263-273.
- Héту, R., Riverin, L., Getty, L., Lalande, N., & St. Cyr, C. (1990). The reluctance to acknowledge hearing problems among noise exposed workers. *British Journal of Audiology, 24*, 265-276.
- Hogan, A., Ewan, C., Noble, W., & Munnerley, G. (1994). Coping with occupational hearing loss: An application in Australia of the University of Montréal Acoustic Group Rehabilitation Program. *Journal of Occupational Health and Safety, 10*(2), 107-118.
- Noble, W. (1993). A historical perspective on self-assessment in audiology. *Seminars in Hearing, 4*(4), 299-302.
- Noble, W. (1994, April). "Individual subject" vs "person in context" in behavioural research on health. Revision of paper presented at the conference: *Researching health care: Methods, ethics and responsibility*. St. Vincent's Hospital: Melbourne, Australia.
- Noble, W., & Héту, R. (1994). An ecological approach to disability and handicap in relation to impaired hearing. *Audiology, 33*, 117-126.
- Noe, S., Gagné, J.-P., & Kaspar, V. (1994). Models of health behaviors and compliance: Applications to audiological rehabilitation research. In *Research in audiological rehabilitation: Current trends and future directions*, J.-P. Gagné & N. Tye-Murray (Eds.), *Journal of the Academy of Rehabilitative Audiology, Monograph Supplement, 27*, 375-389.
- Ravaud, J.-F., Madiot, B., & Ville, I. (1992). Discrimination towards disabled people seeking employment. *Social Science and Medicine, 35*(8), 951-958.
- Stephens, D., & Héту, R. (1991). Impairment, disability and handicap in audiology: Towards a consensus. *Audiology, 30*, 185-200.
- Ville, I., Ravaud, J.-F., Marchal, F., Paicheler, H., & Fardeau, M. (1992). Social identity and the international classification of handicaps: An evaluation of the consequences of facioscapulothoracic muscular dystrophy. *Disability and Rehabilitation, 14*(4), 168-175.
- WHO (1980). *The International Classification of Impairments, Disabilities, and Handicaps: A Manual Relating to the Consequences of Disease*. Geneva, Switzerland: World Health Organization.