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THEME—REHABILITATION OF THE NON-INSTITUTIONALIZED
GERIATRIC PATIENT

A Feasibility Scale for Predicting Hearing Aid Use (FSPHAU) with Older Individuals

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PURPOSE

The prognosis for positive individual adjustment to wearable amplification cannot be made with complete accuracy before the actual fact of the professional clinical hearing aid evaluation and the subsequent trial wearing. The clinical audiologist can amass subjective information, however, together with more objective data on an elderly individual which can provide a strong provisional estimate as to ultimate daily usefulness of the patient's hearing aid.

The purpose of the present paper is to review a feasibility scale for predicting the probable effective use of a hearing aid with an older person. The Feasibility Scale for Predicting Hearing Aid Use (FSPHAU) is based on eleven prognostic factors which *cumulatively* indicate the likelihood of effective amplification.

The eleven prognostic areas include the following:

1. Motivation and mode of referral to professional services,

2. Self assessment of the individual's communicative difficulties before amplification,
3. Verbalization on the client's part as to "fault" for the communicative difficulties,
4. Magnitude of the hearing loss and understanding difficulties, in audiological units, before and after amplification,
5. Informal verbalizations during the hearing aid evaluation,
6. Estimate of patient's general state of adaptability and flexibility,
7. Age of the patient,
8. Manual finger and hand dexterity on the part of the patient,
9. Visual ability of the patient,
10. Financial resources, and
11. The presence of a significant other person to assist the client in the total rehabilitative program.

Review of Prognostic Factors

Because of the importance of these eleven signs in arriving at a predictive decision on amplification for the older American, these signs are reviewed below in depth.

Factor 1: Motivation and mode of referral to professional services

The prime factor in the ultimate positive adjustment to a hearing aid is the attitude of the potential wearer to both the limitations and benefits to be derived from the aid. If the individual is determined to follow through on the professional advice given to him and to make a concentrated effort to follow through on appropriate orientation programs and training sessions, ultimate success in effective wearing will be achieved. Such strong motivation almost guarantees ultimate positive adapting to the recommended hearing aid. A strong indication as to the motivational attitude is found in the referral approach to professional advice. If the patient himself/herself has made appropriate inquiries and has arrived at the physician's and audiologist's offices as a self referred patient, prognosis for eventual adjustment to the aid is enhanced. If conversely, the patient was strong-armed into appointments with doctor and audiologist, by well-intentioned family or friend but with very little positive attitude on the part of the client himself/herself, then the likelihood of eventual and effective follow up is reduced.

The motivational force is clearly related to the client's actual listening needs. If the successful executive is about to be demoted from his \$35,000 a year salary and level of responsibility to a deadend position at \$8,500 because of hearing inadequacies on his job, he is going to be highly motivated to take advantage of all communicative assistance possible to

maintain position, salary and to improve his hearing effectiveness.

Similarly, the kindergarten teacher, who finds at age 48 years that she is simply not hearing nor understanding her little pupils, will be highly stimulated by her professional listening needs to seek appropriate professional direction. She will be a conscientious student in the audiologic rehabilitation process.

Conversely, perhaps, the elderly grandmother, who lives far from children and grandchildren with few interpersonal contacts beyond those of talking with a very understanding and sympathetic husband, may find she does not have listening needs that interfere with her communicative goals.

How different is the story, on the other hand, of another grandmother with essentially the same kind of hearing patterns but with a quite different life style. The latter older woman wants to be active in her philanthropic and service groups, wants to hear and understand her several small grandchildren who live nearby, wants to be a contributing member of the boards of directors on which she serves, and wishes to maintain her interest in the theater. She will become a prime candidate for a full-scope aural rehabilitation program and will be seriously motivated to work at the process of improving her communicative input.

Similarly, the semi-retired engineer still active as a consultant to two industries and involved in service work in his community will be highly stimulated to carry through on an outlined program of aural receptive skill.

The extent to which a hearing loss actually interferes with one's communicative goals and one's listening needs will in a large manner guide the individual's motivation and determination to succeed in the challenging communicative task of listening effectively.

Factor 2: Self assessment of communicative difficulties

How the elderly patient actually or honestly views his/her receptive listening abilities in comparison with clinically valid audiological information becomes the second factor in the possible ultimate fulltime wearability of the hearing aid. Several self-assessment scales have been published: High, Fairbanks and Glorig (1964), Noble and Atherley (1970), and Berkowitz and Hochberg, (1971). Abbreviated scales have been reported by Shotola and Maurer (1974) and by Allen and Rupp (1975). Each of the five versions cited above has a common goal—that of determining the subject's subjective assessment of the hearing loss and its effect on the individual's communicative ability. Stated alternatively, each scale attempts to assess the extent of the disabling or handicapping nature of the hearing loss as perceived by the patient himself.

The ultimate usefulness of any employed scale for prognostic purposes is the consistency of its subjective perception compared with the relatively objective predictions based on audiological data. If there is good agreement between the two sets of information, then a valid subjective perception of the hearing loss is accepted. This means that the patient is reacting realistically to the handicapping influence of the hearing loss. If, however, audiologic data suggest a disabling hearing level, *but* the self assessment denies any communicative difficulty, then the conclusion is reached that the self perception is both untrue and unrealistic. It is assumed here that the reader understands that the use of a self-assessment scale is used in the above sense is *not* to identify by questionnaire those individuals with hearing loss but *rather* to compare two types of assessments for consistency between them. These two assessments are (1) self evaluation of hearing loss effects and (2) audiological evaluation of hearing loss performance. For example, if valid audiological observations reveal a bilateral sensori-neural hearing loss of approximately 45-50 dB HTL with understanding ability in a quiet listening environment at 48-56%, but yet the self-assessment study reveals no subjectively observed problems in listening in any of the cited example situations, then the audiological (and psychological) inference may be that the patient is attempting to deny the existence of a hearing problem.

To propose a realistic adjustment to a hearing deficit *and* a potentially good adjustment to amplification, consistency between self perception and audiological assessment is necessary. (The assumption is made here that audiological assessment data are correct.)

Factor 3: Verbalization on the part of the client as to "fault" for the communicative difficulties

Another factor that helps to pin point both realistic attitudes about the hearing difficulty and prognosis for the effective use of the hearing aid is the manner in which the patient identifies the fault or cause for his/her poor listening ability. The patient may say, "I'm tired of begging so many pardons!" She may add, "I find that I'm saying 'huh?' to everyone!" He may complain, "I just don't seem to be able to understand like I used to, especially children and women." Another comment, "I hear people, it seems, but I have trouble understanding them." These people are attributing the causes for their communicative difficulties onto the self and diminished hearing. The reader may have noticed the reference to the "I" pronoun. Consider, in contrast, the patient who projects the fault on others in the speaking interaction. You might hear statements like these: "People just don't enunciate anymore!" "Everyone mumbles all the time." "Why don't they teach elocution in the schools anymore?" "If people

would just speak up, I could hear them easily!" Or "I hear fine, but people don't know how to project their voices anymore!" This individual would attribute his/her listening difficulties on the shortcomings or expressive inadequacies of others. He/she is not the cause of the listening problems, it is caused by all the other people around him/her.

Obviously, the individual who will be most ready to pursue a full, comprehensive aural rehabilitation program, with the best prognosis, is the realistic individual who realizes that he/she has the problem. It is the self who must make some modifications in behavior in an improved approach to communication. The client who projects the "cause" on others will also be unable to understand why he/she, himself/herself must really do anything about the problem. If it is not his/her problem, he/she surmises, why then should he/she make alterations in his listening set? Prognosis with this latter client must be guarded.

Factor 4: Magnitude of the hearing loss in audiological units, before and after amplification

From the clinical observation, four basic audiologic measurements appear to be especially good estimators of an individual's need for a hearing aid. They include: The pure-tone average threshold in the better ear for 500, 1000, and 2000 Hz, the speech reception threshold in the better ear, discrimination or understanding ability in quiet in the soundfield, and understanding ability in noise in the soundfield. These four observations are gathered both without and then with an ideally worn hearing aid. Obviously, a consistent finding will emerge that the greater the four measurement deficits are before amplification, the more in need of hearing aid assistance the client will be. In like manner, the closer toward normal one's hearing performances move as he/she wears an optimal hearing instrument, the greater will be the likelihood that he/she will wear the device.

The normal baselines for the four measures are approximately as follows:

1. Pure tone average threshold: 0-15 dB HTL (ANSI—1969),
2. Speech reception threshold: 0-15 dB HTL,
3. Discrimination ability in quiet: 92-100 percent, and
(via CID W-22 lists)
4. Discrimination ability in noise: 76-80 percent
(signal: noise ratios 1:1 at 30 dB HTL)
(Briggs & Rupp, 1974; Goldsmith & Rupp, 1975)

These normal values are the reference data against which each patient's hearing performance is compared, *both* without and with a hearing aid.

For example, Mr. X's audiologic workup gives the following data:

<i>Measurement</i>	<i>Unaided scores</i>	<i>Aided scores</i>	<i>Shift</i>
1. Pure-tone average threshold:	36 dB	16 dB	20 dB
2. Speech Reception threshold:	38 dB	18 dB	20 dB
3. Discrimination ability in quiet: at 50 dB HTL	32 %	88 %	56 %
4. Discrimination ability in noise: at 50 dB HTL, Ratio 1:1	28 %	70 %	42 %

Mr. X represents an ideal client. He shows a mild-moderate listening problem with any hearing aid and shows very little problem in the clinical environment as he wears a carefully selected aid. According to the prognostic outline, Mr. X should be anticipated to become a successful hearing aid user. With his hearing aid, he functions *only slightly* below normal ideal baseline.

To cite another theoretical case, Mrs. J. gives the following audiological information:

<i>Measurement</i>	<i>Unaided Scores</i>	<i>Aided scores</i>	<i>Shift</i>
1. Pure-tone average threshold:	22 dB	18 dB	4 dB
2. Speech reception threshold:	18 dB	16 dB	2 dB
3. Discrimination ability in quiet:	68 %	74 %	6 %
4. Discrimination ability in noise:	48 %	52 %	4 %

Mrs. J's primary problem appears to be mainly one of understanding. Unfortunately, in this case, amplification gave her some improvement in all measures but not enough to warrant a strong recommendation that she should acquire the aid. She was asked to try the aid on a deferred purchase option in order to assess the subtle benefits possible in a variety of interpersonal communicative environments. Following a four-week trial, amplification recommendations were deferred for nine to twelve months. She was scheduled to be re-evaluated at that time on a "peace of mind" visit to determine whether the presently observed hearing levels have remained relatively constant over the time interval. She was given a series of information bulletins on approaches to management of communicative environments, and the audiologists did outline a fuller approach

to listening skills which were declined until after the follow up evaluation.

Ms. M. has audiological performance without a hearing aid very similar (in the four point summary) to those of Mrs. J. Her aided performances, however are much different. Her results follow :

<i>Measurement</i>	<i>Unaided scores</i>	<i>Aided scores</i>	<i>Shift</i>
1. Pure-tone average threshold :	22 dB	12 dB	10 dB
2. Speech reception threshold :	20 dB	10 dB	10 dB
3. Discrimination ability in quiet :	68 %	84 %	16 %
4. Discrimination ability in noise :	46 %	70 %	24 %

Based on the above marked improvement in aided performance scores, the recommendation to this client was that she obtain the suggested hearing aid and embark immediately on a full aural rehabilitational program.

For a final example, consider Mr. Z. He shows the following data :

<i>Measurement</i>	<i>Unaided scores</i>	<i>Aided scores</i>	<i>Shift</i>
1. Pure-tone average threshold :	58 dB	32 dB	26 dB
2. Speech reception threshold :	60 dB	34 dB	26 dB
3. Discrimination ability in quiet :			
at 50 dB HTL: (estimated)	0 %	42 %	42 %
at 65 dB HTL :	46 %	72 %	26 %
4. Discrimination ability in noise :			
at 50 dB HTL: (estimated)	0 %	38 %	38 %
at 65 dB HTL :	26 %	62 %	36 %

Obviously, of our senior clients just cited in these examples, Mr. Z has the most handicapping hearing loss, both preaided and postaided. He will probably still be a good candidate for successful amplification because he had moved from *outside* the usual intensity level of normal communication, at 50 to 55 dB HTL, to *within* the acceptable intensity range of general listening. Mr. Z will need a much more individualized and intensified program in auditory and visual listening than either Mr. X or Ms. M. We predict that each will become a more proficient listener as client and recommended aid function synchronously over time, both

during orientation and training periods and afterward.

To summarize: how well or how poorly one functions auditorily, without assistance from a hearing aid, predicts the need for amplification. Post amplified scores suggest the functional potential for the listener without any training. With training in listening, it is anticipated that the listening functions, with the hearing aid in both ideal and difficulty environments should improve even further.

Factor 5: Informal verbalizations during the hearing aid evaluation

In data gathering for this factor, the audiologist does not set out to gather exact information but rather becomes a note taker on the informal and spontaneous comments made by the client during the evaluation process. The audiologist should be especially interested in the casual yet meaningful commentary by the client regarding the size, feel and fit of the ear mold, regarding the "quality" of the sound as described by the listener, and regarding the size and weight of the aid as worn on the head or body. One client may be dismayed over ever getting used to an ear mold "so large". She becomes "on edge" at the quality of sound of every aid tried. She is concerned about how she will ever get used to such a "large box" behind her ear. This patient will not fit into the ideal category of a positive responder to aids and accessories. Conversely, consider the patient who responds in the following way to the same variables. She is surprised that the ear mold can fit so easily and after about 15 minutes is hardly aware that she has it in her ear. She is amazed and intrigued at the differences in sound quality among the various hearing aids and finds one instrument that sounds as she remembers her hearing to have been when she was about 35 years of age. Further, she is pleased that the newer ear-level aids are so light weight and concealable and even begins to manipulate her hairstyle in the testing booth to accommodate and cover the device.

Obviously, and to make the point, the two patients just described fall at opposite ends of the possible continuum on this prognostic factor. The closer that the audiologist can judge his/her patient as to a *positive* orientation regarding mold, quality of aided sound, and size of selected aid, the greater is the prognosis that the recommended aid will become part of the listener's world.

Factor 6: Audiological estimate of patient's general adaptability and flexibility

In terms of reaching some closure on an estimate of adaptability, the audiologist again attempts to judge this variable after the appointment and by drawing from several informal sources uncovered during the

appointment(s). A possible list of questions is presented as a guide to the kinds of indicators of flexibility that the clinician may wish to judge.

1. Was the client alert? Did he/she attempt to follow the discussions both auditorily and visually?
2. Was the patient inquisitive about the hearing aids and the procedures run? Did he/she pose questions to the clinician?
3. Did the client participate appropriately in the client-professional environment? Were the client and audiologist able to achieve and maintain a professional yet sympathetic distance?
4. How was the patient attired? Were his/her clothing clean and neat and in a state of good repair?
5. Was his/her posture relatively straight and erect in the absence of any known physical skeletal problems?
6. What kinds of current social/recreational/professional activities did the client report? Especially significant to the audiologist might be a question as to which of these activities the client might resume more fully if he/she could hear better?
7. What kind of reading materials did the patient enjoy? (given that vision was adequate with glasses) Did the client read a daily newspaper as well as a selection of magazines and books?
8. What kinds of hobbies or avocational interests did the client describe? Did they involve social interpersonal interaction?
9. What kind of general orientation to the world did the client present? Was she/he generally positive in attitude toward life?
10. What kind of spontaneous topics were discussed in the interview? Did the patient seem to have interests beyond those of self, self-need or self gratification?
11. Does the patient seem to have any emotional disturbance which might negatively influence the successful wearing of a conventional hearing aid?
12. Are there multiple handicaps of sufficient magnitude to reduce or remove the feasibility of wearable amplification?

Specifically, in this factor, the clinician is attempting to make a tight estimate about the general alertness or possible senescence (senility) of the client. The more involved and interested that the patient is *beyond* the self, then the greater is the positive likelihood that the challenge of adjusting positively to a hearing aid will be met by that patient. The patient who is flaccid, listless, and withdrawn from interpersonal contact does not fit nearly as well into a set for positive prognostic statement about hearing aid adaptability.

In addition to the above twelve exploratory observations, two assessments of problem solving ability and tactile two-part sensory awareness may help the audiologist further define the flexibility-adaptability set. Raven's Progressive Matrices Test (1956) measures abstract problem attack abilities; and the Face/Hand Sensory Test (Smith and Centifunti, 1975) gives a good estimate of tactile sensitivity in space. Both are useful in supplementing observations with more objective data.

Factor 7: Age of the patient

Since generalized adaptability is related to age as the yardstick, the prognosis to adjustment to a hearing aid becomes more guarded as the potential wearer moves beyond the age range of 60 to 70 years. There are *obvious* exceptions (one of the best adjusted hearing aid users known to this author was a patient who wore her first hearing aid at the age of 92 years), but a generalized concern is that many elderly clients wait too long to obtain their hearing aids and then are simply unable to make the necessary and demanding adjustment to the aid. Berkowitz (1975) cautions the audiologist "to start early while the elderly person is still able to learn, adapt, and willing to make the necessary effort".

Factor 8: Manual finger, hand and arm dexterity and mobility of the patient

Fortunately, and unfortunately, the miniaturization of hearing aids has come a long way from the hip or waist pack of the 1920's (Berger, 1974). This reduction in the size of aids has been the greatest boom to their general acceptability. It has, conversely, presented major manipulation problems to many potential wearers because they cannot effectively "manage" the very small off-on switches, volume controls, secondary adjustment dials, nor even the small, button sized batteries. Two generalized problems appear for the elderly who can effectively utilize such small ear-level aids, auditorily, but who find that they have management problems, physically. One of the aging processes is a generalized reduction in sensitivity to touch. Such an older individual does not respond as quickly to the touch of a loved one *nor* can she/he feel with earlier established fine sensitivity the touch pressure or touch recognition on the ends of the finger tips. This means that very small dials or knobs on miniaturized instruments are both difficult to find and to manipulate. In addition, sensitivity to the "seating" of an earmold is reduced in the elderly, and they may have difficulty feeling if the mold is securely inserted in the outer ear and canal. Secondly, many elderly have reduced mobility and range of motion for fingers, hands and arms (as well as all other joint-related movements). A major causal factor for this may be arthritis which erodes and immobilizes the joint under attack. The result

is that many elderly are unable to move or adjust these small attachments on a suggested hearing aid because fine dexterity of their fingers, hands and arms is missing. Two possible alternatives may be proposed. If the elderly client lives alone, the audiologist may need to consider an aid that is large enough for the client to manipulate by himself/herself. If the client lives with family, a friend, or in a residential senior citizen community, another person can daily place the smaller aid in position, initially adjust the volume control, and then leave the wearer with the single responsibility for occasional volume adjustment, if necessary. This approach would require in-depth training for just one adjustment dial on the part of the patient. Certainly, a crucial factor to ultimate success in wearing a recommended hearing aid comes from the client's ability to put it on, to adjust it as necessary during the wearing hours, and to remove the aid at the end of the day. Realistic appraisal of physical mobility and sensitivity must be included in the total assessment protocol. Following such appraisal, a functional compromise with the client's reduced manual dexterity must be made. Kleemeier and Justiss (1955) make a plea on behalf of the elderly for a hearing aid that is designed for the simplest operation possible, since their findings suggest that the greatest problem for the elderly is learning to operate their hearing aids properly.

Two additional measurement techniques useful in quantifying hand-eye coordination and dexterity are the Purdue Peg Board (Costa, et al. 1963) and Smith's Symbol Digit Modalities Test (1973). The latter task also gives a general indication of cerebral intactness beyond the direct observation of hand agility coordinated with visual skills for matching symbols and digits.

Factor 9: Visual ability

In studying this variable, the audiologist is faced with a dilemma. The less visually able that the elderly client is, the less easy will be his/her task in manipulating and checking the aid and in using speech reading as a supplementary technique. Conversely, as visual skills become more reduced and non-amenable to ophthalmological correction, the need for improved auditory ability becomes much greater. As with the other factors under discussion, the audiologist must make a specific assessment of the visual abilities of the client. If visual potential (with whatever appropriate correction has been made) is in the functional range, then the client and clinician can proceed with the rehabilitative process without primary concern for this variable. If, alternatively, significant visual limitations are obvious, *or reported*, by the client or family, then realistic approaches and procedures must be proposed to counterbalance the limitations on hearing aid adjustment created by the visual limitation. In the latter case, it may be especially important that a "team mate" take on

the responsibilities for checking batteries, for checking cleanliness of ear molds, for daily/occasionally checking the aid for minor malfunctions of the instrument. If the visual deficits are compounded by other physical and/or psychological limitations, then the responsibilities of the team mate will be markedly increased.

As an obvious overstatement, the recommendation for a program in speechreading for the client will be guided by the visual potential of the client. When visual adequacy does still exist, a program in speech reading can be effective for two reasons. First, actual visual corroboration of the auditory signal can result (O'Neill and Oyer, 1961), and second, cerebral re-orientation to auditory signals will be enhanced as the listener consciously focuses visually *and* auditorily on the speaker and the spoken signal. A very subtle benefit of obvious speech reading is the increased attention given to the auditory signal. After many years of *reduced* acuity and reduced attention to auditory signals, many elderly need a program of positive alerting and attending to sound. A speechreading program may be an effective and subtle way to foster central listening to the client's renewed world of sound.

Factor 10: Financial resources

A recurring statement in the literature is that a high percentage of the elderly live in states of near or actual poverty (Schulz, 1973). While national or regional income statistics have no actual relevance to the specific elderly individual appearing for audiologic assessment and possible subsequent aural rehabilitative programming, the audiologist must become alerted to the possible financial limitations facing the patient. If the patient, or the patient's family, denies any major financial hardships, then the assessment and full program can be planned without major concern over costs. When, however, client and family are realistically concerned about dollars available for all life sustaining activities, then audiologic recommendations may need to be made, also, in light of the limited personal budget. If the elderly individual attempts to live on a monthly stipend below actual established costs, there may be no flexibility in the budget for audiologic assessment, purchase of an optimal hearing aid, or for the extended rehabilitative project necessary to assure a successful adjustment to the aid and subsequent effective use.

Some possible resolutions do exist. Certain Old Age Assistance programs provide supplementary monthly grants to cover the cost and maintenance of a hearing aid. Certain Medicaid classifications permit purchase of amplifications as a coverable benefit. A limited number of private insurance programs include medical and audiological review as well as costs related to acquiring and adjusting to a hearing aid. Privately-organized service groups (Kiwanis, Lions, Quota, Zonta, Altrusa as a

partial list) may use hearing handicap as a project and may underwrite the costs related to successful hearing aid purchase and adjustment for elderly clients. Community conscious consumer oriented groups (Unicorn, 1975) may have limited dollars available for purchase of professional services and hearing aids. Most realistically, the very financially unable of the retiree population may have some avenues of support open to them.

The conservative and proud elderly middle class, caught in the ever present inflationary cycle with relatively fixed incomes, are the individuals most thwarted in their efforts to obtain assistance. Their incomes are slightly too high to qualify for direct governmental or service assistance, yet they do not feel that they can dip very deeply into financial reserves for the expenditures related to obtaining ideal amplification.

Hopefully, for this sizeable segment of the population, some direct and partial help may be forthcoming in the near future because of possible improvement in Medicare coverage. The Federal Government provides such direct purchase of hearing aids at the present time through the Veterans' Administration, Department of Defense, Rehabilitative Services Administration, and the Medicaid Health Programs. A further extension of such coverage under the Medicaid Programs for the elderly would seem to be simply a logical extension of services already considered essential and appropriate for other populations. Until such necessary and appropriate expansion of hearing aid purchase assistance is legislated, a sizeable elderly population will need but be unable to acquire the requisite amplification. If any "cause" needs a champion, it would be the cause on behalf of the hearing-impaired elderly to liberalize the Medicare coverage to include partial support for hearing aid purchase and associated therapeutic programs.

In a completely different framework, the audiologist will occasionally observe the financially-able but psychologically-unable client. This individual may have a considerable cash reserve in addition to a monthly income but feel that every penny must be saved against that possible "major illness" that might wipe out all cash reserves. Such a fear is not unique among the elderly. It is classed as one of the four major concerns expressed by the elderly themselves. They include: fear of failing health, fear over costly and protracted medical care, concern over generalized frailty, and fear of the end of life itself (Donahue, 1968). When carried to extremes, the following may occur. The individual may see the physician but defer the appointment with the audiologist for the hearing aid evaluation. Or, he may participate in the hearing aid evaluation but defer purchase of the hearing aid. Finally, he may buy the recommended hearing aid but refrain from using it because the batteries are used up too quickly and are too expensive. Obviously, there is no good way to deal

with such a fear. The audiologist may need to show the individual how effective the hearing aid may be when worn consistently. If the aid is purchased, perhaps the family (or friend) could give the client a pack of batteries each month, much like the book-of-the-month or plant-of-the-month club ideas. The financially able-unable client presents very special challenges to rehabilitation.

Factor 11: A significant other person who can assist the client in the rehabilitative program

The elderly are considered to be less flexible and are assumed to learn more slowly (Arenberg, 1974; Botwinick, 1966; Hulkia & Weiss, 1965). As a result a strong clinical recommendation (already discussed in part in this chapter) which should be made to each elderly client about to begin an aural rehabilitational program is to involve the participation of a significant other person *in the entire process*. This individual may be a son, daughter, niece, nephew, attorney, practical nurse, or good friend. The goal is to provide all of the counseling advice and guidance to two people at the same time so that effective transfer of correct information is assumed (if not assured). As the adaptability of the client is reduced, then the demands made on the team member are increased. Similarly, if the client has visual limitations or manual dexterity problems, then the direct assignments to the team member are greater. While the highly motivated and physically able client may need his/her team member only for psychological support and reinforcement, the teammate becomes the critical factor between the success or failure with the less able and less adaptable patient. Ideally, this supporting volunteer (or paid person) should be involved along every important step toward improved communication. The team member should listen to and understand the logic of the medical statements and recommendations, should hear and synthesize the audiological reviews and proposals, should observe the event and understand the logic of the hearing aid evaluation, should be a participant in the pre and post hearing aid counselling process, and should be a participant in the hearing aid orientation and adjustment protocols. In summary, this helping person should be as knowledgeable about the patient's hearing, hearing loss, hearing aid and associated challenges as is the patient himself/herself. The essential difference, hopefully, is that the team member can be somewhat more objective in order to help the client review the information and plan follow up assignments. In much the same way that a mother or father accompanies a child to a series of clinical appointments, so also can this teammate function in a supporting and reinforcing role with the elderly client. The presence of this strong, calm and objective individual may make the significant difference between a limited or equivocal candidate and a positive candidate for

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FEASIBILITY SCALE FOR PREDICTING HEARING AID USE (FSPHAU):

An analytic approach to predicting the probable success
of a provisional hearing aid wearer

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2-76

PROGNOSTIC FACTORS/DESCRIPTIONS (continuum, high to low)	ASSESSMENT 5-High: 0-Low	WEIGHT	WEIGHTED SCORE (Possible) Actual
1. Motivation and referral (self . . . family)	5 4 3 2 1 0	x 4	(20) _____ 1.
2. Self-assessment of listening difficulties (realistic . . . denial)	5 4 3 2 1 0	x 2	(10) _____ 2.
3. Verbalization as to "fault" of communication difficulties (self caused . . . projection)	5 4 3 2 1 0	x 1	(5) _____ 3.
4. Magnitude of loss: amplification results. A. Shift in spondaic threshold: _____ B. Discrimination in quiet: _____ at _____ dBB HTL C. Discrimination in noise: _____ at _____ dB HTL	5 4 3 2 1 0 5 4 3 2 1 0 5 4 3 2 1 0	x 1 x 1 x 1	(5) _____ (5) _____ (5) _____ 4.
5. Informal verbalizations during Hearing Aid Evaluation Re: quality of sound, mold, size (acceptable . . . awful)	5 4 3 2 1 0	x 1	(5) _____ 5.
6. Flexibility and adaptability versus senility (relates outwardly . . . self)	5 4 3 2 1 0	x 2	(10) _____ 6.
7. Age: 95 90 85 80 75 70 65 ≥ (0 0 1 2 3 4 5)	5 4 3 2 1 0	x 1.5	(7.5) _____ 7.
8. Manual hand, finger dexterity, and general mobility (good . . . limited)	5 4 3 2 1 0	x 1.5	(7.5) _____ 8.
9. Visual ability (adequate with glasses . . . limited)	5 4 3 2 1 0	x 1	(5) _____ 9.
10. Financial resources (adequate . . . very limited)	5 4 3 2 1 0	x 1.5	(7.5) _____ 10.
11. Significant other person to assist individual (available . . . none)	5 4 3 2 1 0	x 1.5	(7.5) _____ 11.
12. Other factors, please cite	?	?	? _____ 12.

Client _____ FSPHAU: (Very limited 0 to 40%)
 Age _____ (Limited 41 to 60%)
 Date _____ (Equivocal 61 to 75%)
 Audiologist _____ (Positive 76 to 100%) Total Score _____ %

Figure 1.3

Rupp (1971) ...

successful hearing aid wearing.

SYNTHESIS

The most positive prognosis that the patient will become a successful hearing aid user is based on the factors just reviewed. The potentially successful hearing candidate might be described in the following way: he/she is about 65 years of age, highly motivated, has a realistic attitude as to the cause of the communicative problem, is flexible and adaptable, has a measureable hearing loss of 25 dB HTL or more, has adequate vision and finger-hand-arm dexterity, has few actual financial worries, and has a good friend or relative who can teammate the entire process. Unfortunately, this ideal patient may not exist. The 12 part outline entitled "Prognostic Signs" is included in this section to assist the audiologist in predicting how successful will be the hearing aid experience for any specific client. The four classifications for prognosis, based on the arithmetic total, suggest the "success" prediction for the client. Five case reports from the files of the Audiology Division, Section of Speech and Hearing Sciences, the University of Michigan Medical School, are cited to illustrate the practicality of the "Prognostic Signs" Profile. When, indeed, the profile prognosis is supported by corroborating longitudinal observation indicating that the specific client *cannot* become an effective hearing aid user, then other and alternative communicative approaches must be considered.

The Feasibility Scale (FSPHAU)

The final scoring of the Scale is accomplished by the use of the single page recording form (see Figure 1). Not all of the eleven factors receive equal emphasis on the Scale. The reader will observe that motivation, self assessment, and magnitude and shift in the hearing levels are weighted more heavily because of their special importance to the elderly person.

The decision-making process on the part of the audiologist as to which numerical value to attach before weighting calculations are added is reviewed in Figure 2. This guide assists the analyzing clinician in reaching a more objective score which is then entered on the Figure 1 form (FSPHAU).

Four prognostic predictions are possible from the employment of the FSPHAU. They include the following:

- Positive—with scores of 76-100 %
- Equivocal—with scores of 61-75 %
- Limited—with scores of 41-60 %
- and Very Limited—with scores less than 41 % .

1. Motivation/Referral	5. Completely on own behalf 4. Mostly on own behalf 3. Generally on own behalf 2. Half self; half others 1. Little self; mostly others 0. Totally at urging of others																								
2. Self Assessment	5. Complete agreement 4. Strong agreement 3. General agreement 2. Some agreement 1. Little agreement 0. No agreement																								
3. Verbalization as to "fault" of communicative difficulties	5. Clearly created by hearing loss 4. Usually by loss 3. Loss and others 2. Environments and others 1. Mostly of others 0. Others totally at fault																								
4. Magnitude of loss; and results of amplification*	<table border="0" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: left;">ST shift</th> <th colspan="2" style="text-align: center;">Understanding</th> </tr> <tr> <th></th> <th style="text-align: center;">in quiet at —dB HTL</th> <th style="text-align: center;">in noise at —dB HTL</th> </tr> </thead> <tbody> <tr> <td>5. 30+dB</td> <td style="text-align: center;">90%</td> <td style="text-align: center;">70%</td> </tr> <tr> <td>4. 25</td> <td style="text-align: center;">80-88</td> <td style="text-align: center;">60-68</td> </tr> <tr> <td>3. 20</td> <td style="text-align: center;">70-78</td> <td style="text-align: center;">50-58'</td> </tr> <tr> <td>2. 15</td> <td style="text-align: center;">60-68</td> <td style="text-align: center;">40-48</td> </tr> <tr> <td>1. 10</td> <td style="text-align: center;">50-58</td> <td style="text-align: center;">30-38</td> </tr> <tr> <td>0. 5</td> <td style="text-align: center;">48</td> <td style="text-align: center;">28</td> </tr> </tbody> </table>	ST shift	Understanding			in quiet at —dB HTL	in noise at —dB HTL	5. 30+dB	90%	70%	4. 25	80-88	60-68	3. 20	70-78	50-58'	2. 15	60-68	40-48	1. 10	50-58	30-38	0. 5	48	28
ST shift	Understanding																								
	in quiet at —dB HTL	in noise at —dB HTL																							
5. 30+dB	90%	70%																							
4. 25	80-88	60-68																							
3. 20	70-78	50-58'																							
2. 15	60-68	40-48																							
1. 10	50-58	30-38																							
0. 5	48	28																							
5. Informal verbalizations during hearing aid evaluation re: quality of sound, mold, size, weight, look	5. Completely positive 4. Generally positive 3. Somewhat positive 2. Guarded 1. Generally negative 0. Completely negative																								
6. Flexibility and Adaptability	5. 90th percentile 4. 70 3. 50 2. 25 1. 10 0. 5																								
A. Questionnaire and observation	4. 70 3. 50																								
B. Raven's Progressive Matrices	2. 25 1. 10																								
C. Face/Hand Sensory Test	0. 5																								

Figure 2. Scoring the FSPHAU Factors.

7. Age	5. 65 years 4. 70 3. 75 2. 80 1. 85 0. 90+
8. Manual/Hand Dexterity via Purdue Peg Board and Symbol Digit Modalities Test	5. Superior 4. Adequate 3. Slow but steady 2. Slow and shaky 1. Slow and awkward 0. "Arthritic"
9. Visual Ability (with glasses)	5. Very good—no problems 4. Corrected, adequate 3. Adequate but safeguarded 2. Limited visibility 1. Very limited 0. Blind
10. Financial Resources	5. Unlimited resources 4. Generally unrestricted 3. Adequate 2. Adequate but close 1. Dipping into savings 0. Poverty level, on assistance
11. Significant other person	5. Always available 4. Often 3. Sometimes 2. Occasionally 1. Seldom 0. Never
<hr/>	
*Alternate scoring scheme for factor 4 in cases where the ST shift was minimal due to loss in high frequencies only.	
(Average threshold shift at 2000 and 3000 Hz)	5. 25+ dB 4. 21-25 dB 3. 16-20 dB 2. 11-15 dB 1. 6-10 dB 0. 0-5 dB

Figure 2 continued.

CASE STUDIES

To move from the theoretical to the actual, three case studies from the files of the Audiology Division of the program in Speech and Hearing Sciences at the University of Michigan are reviewed below.

Mr. W.S.A.

With a FSPHAU total score of 92% (see Figure 3), this client performs as an idealized prototype for the analytic process. He participated in an intensive orientation program to his amplification, including a structured program in speech reading; and after he was well adjusted to his first hearing aid, he insisted that he receive amplification for his second ear. He is delighted with the results of binaural help, and he maintains a very busy social program in the area.

Mr. C.H.

This client's total score of 66.5% on the FSPHAU (see Figure 4.) placed him in the "Equivocal" classification for prediction on success with amplification. Since there was a very supportive and helpful significant other person available, a provisional recommendation for a hearing aid was made with the understanding that both Mr. C.H. and his wife would participate fully in the orientation program offered by the facility. They did. We are now classifying Mr. C.H. as a successful hearing aid user, but a major portion of the training program for the client was devoted to developing a realistic orientation as to the limits of his amplification and to carefully setting the listening environments so that he would be successful in them.

Mr. R.S.

This client achieved a total score of 87.5% on the FSPHAU (see Figure 5.). Mr. R.S. was highly motivated to the task of trying to listen and to understand more effectively. He achieved a significant improvement in the spondaic threshold with the hearing aid. He demonstrated optimal flexibility and adaptability. He fell at the younger end of the older-population continuum. He and his wife participated in a senior citizen communications skills class which met for 10 weeks at their retirement facility. Initially, on the first working of the FSPHAU, Mr. R.S. scored well. Over time, he has continued to perform well and enthusiastically with his recommended hearing aid. He reports that he does not attempt communicative activities without his hearing aid. He is a successful hearing aid user. He understands both the benefits as well as the limitations of his amplification.

Audiology Area, Section of Speech and Hearing Sciences
 The University of Michigan Medical School, Ann Arbor, Michigan
FEASIBILITY SCALE FOR PREDICTING HEARING AID USE (FSPHAU):
 An analytic approach to predicting the probable success
 of a provisional hearing aid wearer
 Ralph R. Rupp, Ph.D. 2-76

PROGNOSTIC FACTORS/DESCRIPTIONS <i>(continuum, high to low)</i>	ASSESSMENT <i>5-High: 0-Low</i>	WEIGHT	WEIGHTED SCORE <i>(Possible) Actual</i>
1. Motivation and referral (self . . . family)	(5) 4 3 2 1 0	x 4	(20) <u>20</u>
2. Self-assessment of listening difficulties (realistic denial)	(5) 4 3 2 1 0	x 2	(10) <u>10</u>
3. Verbalization as to "fault" of communication difficulties (self caused . . . projection)	(5) 4 3 2 1 0	x 1	(5) <u>5</u>
4. Magnitude of loss: amplification results. A. Shift in spondaic threshold: <u>15dB</u> B. Discrimination in quiet: <u>82%</u> at <u>50</u> dB HL C. Discrimination in noise: <u>70%</u> at <u>50</u> dB HL	5 4 3 (2) 1 0 5 (4) 3 2 1 0 (5) 4 3 2 1 0	x 1 x 1 x 1	(5) <u>2</u> (5) <u>4</u> (5) <u>5</u>
5. Informal verbalizations during Hearing Aid Evaluation Re: quality of sound, mold, size (acceptable . . . awful)	5 (4) 3 2 1 0	x 1	(5) <u>4</u>
6. Flexibility and adaptability versus senility (relates outwardly . . . self)	(5) 4 3 2 1 0	x 2	(10) <u>10</u>
7. Age: 95 90 85 80 (75) 70 65 ≥ (0 0 1 2 3 4 5)	5 4 (3) 2 1 0	x 1.5	(7.5) <u>4.5</u>
8. Manual hand, finger dexterity, and general mobility (good . . . limited)	(5) 4 3 2 1 0	x 1.5	(7.5) <u>7.5</u>
9. Visual ability (adequate with glasses . . . limited)	(5) 4 3 2 1 0	x 1	(5) <u>5</u>
10. Financial resources (adequate . . . very limited)	(5) 4 3 2 1 0	x 1.5	(7.5) <u>7.5</u>
11. Significant other person to assist individual (available . . . none)	(5) 4 3 2 1 0	x 1.5	(7.5) <u>7.5</u>
12. Other factors, please cite	?	?	?

Client W.S.A. FSPHAU: Very limited 0 to 40%
Limited 41 to 60%
Equivocal 61 to 75%
Positive 76 to 100% 92 %
 Age 74
 Date 6-1-76
 Audiologist JH Total Score

Figure 3. Mr. W.S.A.

Audiology Area, Section of Speech and Hearing Sciences
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FEASIBILITY SCALE FOR PREDICTING HEARING AID USE (FSPHAU):

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 of a provisional hearing aid wearer

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2-76

PROGNOSTIC FACTORS/DESCRIPTIONS (continuum, high to low)	ASSESSMENT 5-High: 0-Low	WEIGHT	WEIGHTED SCORE (Possible) Actual
1. Motivation and referral (self . . . family)	⑤4 3 2 1 0	x 4	(20) <u>20</u> 1.
2. Self-assessment of listening difficulties (realistic . . . denial)	5 4 ③2 1 0	x 2	(10) <u>6</u> 2.
3. Verbalization as to "fault" of communication difficulties (self caused . . . projection)	5 ④3 2 1 0	x 1	(5) <u>4</u> 3.
4. Magnitude of loss: amplification results.			4.
A. Shift in spondaic threshold: <u>23dB</u>	5 4 ③2 1 0	x 1	(5) <u>3</u>
B. Discrimination in quiet: <u>56%</u> at <u>50</u> dB HTL	5 4 3 2 ①0	x 1	(5) <u>1</u>
C. Discrimination in noise: <u>42%</u> at <u>50</u> dB HTL	5 4 3 ②1 0	x 1	(5) <u>2</u>
5. Informal verbalizations during Hearing Aid Evaluation Re: quality of sound, mold, size (acceptable . . . awful)	5 ④3 2 1 0	x 1	(5) <u>4</u> 5.
6. Flexibility and adaptability versus senility (relates outwardly . . . self)	5 4 ③2 1 0	x 2	(10) <u>6</u> 6.
7. Age: 95 90 ⑧5 80 75 70 65 60 (0 0 1 2 3 4 5)	5 4 3 2 ①0	x 1.5	(7.5) <u>1.5</u> 7.
8. Manual hand, finger dexterity, and general mobility (good . . . limited)	5 ④3 2 1 0	x 1.5	(7.5) <u>6</u> 8.
9. Visual ability (adequate with glasses . . . limited)	5 4 ③2 1 0	x 1	(5) <u>3</u> 9.
10. Financial resources (adequate . . . very limited)	⑤4 3 2 1 0	x 1.5	(7.5) <u>7.5</u> 10.
11. Significant other person to assist individual (available . . . none)	⑤4 3 2 1 0	x 1.5	(7.5) <u>7.5</u> 11.
12. Other factors, please cite	?	?	? 12.

Client C.H. FSPHAU:

Very limited	0 to 40%
Limited	41 to 60%
<u>Equivocal</u>	61 to 75%
Positive	76 to 100%

66.5 %
 Age 85
 Date 6-8-76
 Audiologist JH Total Score

Figure 4. Mr. C.H.

Audiology Area, Section of Speech and Hearing Sciences
 The University of Michigan Medical School, Ann Arbor, Michigan
FEASIBILITY SCALE FOR PREDICTING HEARING AID USE (FSPHAU):
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 of a provisional hearing aid wearer
 Ralph R. Rupp, Ph.D. 2-76

PROGNOSTIC FACTORS/DESCRIPTIONS (continuum, high to low)	ASSESSMENT 5-High: 0-Low	WEIGHT	WEIGHTED SCORE (Possible) Actual
1. Motivation and referral (self . . . family)	(5) 4 3 2 1 0	x 4	(20) <u>20</u> 1.
2. Self-assessment of listening difficulties (realistic . . . denial)	5 (4) 3 2 1 0	x 2	(10) <u>8</u> 2.
3. Verbalization as to "fault" of communication difficulties (self caused . . . projection)	(5) 4 3 2 1 0	x 1	(5) <u>5</u> 3.
4. Magnitude of loss: amplification results.			4.
A. Shift in spondaic threshold: <u>25dB</u>	5 (4) 3 2 1 0	x 1	(5) <u>4</u>
B. Discrimination in quiet: <u>72%</u> at <u>50</u> dB HTL	5 4 (3) 2 1 0	x 1	(5) <u>3</u>
C. Discrimination in noise: <u>56%</u> at <u>50</u> dB HTL	5 4 (3) 2 1 0	x 1	(5) <u>3</u>
5. Informal verbalizations during Hearing Aid Evaluation Re: quality of sound, mold, size (acceptable . . . awful)	5 (4) 3 2 1 0	x 1	(5) <u>4</u> 5.
6. Flexibility and adaptability versus senility (relates outwardly . . . self)	(5) 4 3 2 1 0	x 2	(10) <u>10</u> 6.
7. Age: 95 90 85 80 75 70 (65) 60 (50 0 1 2 3 4 5)	(5) 4 3 2 1 0	x 1.5	(7.5) <u>7.5</u> 7.
8. Manual hand, finger dexterity, and general mobility (good . . . limited)	(5) 4 3 2 1 0	x 1.5	(7.5) <u>7.5</u> 8.
9. Visual ability (adequate with glasses . . . limited)	(5) 4 3 2 1 0	x 1	(5) <u>5</u> 9.
10. Financial resources (adequate . . . very limited)	5 4 (3) 2 1 0	x 1.5	(7.5) <u>4.5</u> 10.
11. Significant other person to assist individual (available . . . none)	5 (4) 3 2 1 0	x 1.5	(7.5) <u>6</u> 11.
12. Other factors, please cite	?	?	? 12.

Client R.S. FSPHAU:

Very limited	0 to 40%
Limited	41 to 60%
Equivocal	61 to 75%
Positive	76 to 100%

87.5 %
 Age 63
 Date 6-8-76
 Audiologist JH Total Score

Figure 5. Mr. R.S.

SUMMARY

The clinical employment of the Feasibility Scale for Predicting Hearing Aid Use (FSPHAU) provides us with strong support for decision making regarding the immediate usefulness of the recommended amplification for our older clients. It identifies the client who will need additional study, orientation and counselling regarding the benefits and limitations of amplification. For a limited number of clients, the Scale points out a population which may need alternative programs to help them improve their receptive language base. The Scale has become an effective instrument in that it assists the audiologist in studying key and critical areas related to the client and his/her probable success in making the adjustment to a hearing aid. It gives analytical structuring to the clinical observations made by the audiologist on behalf of the client. The Scale is an effective tool.

ACKNOWLEDGEMENT

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