

Initial Consultations in Hearing Aid Clinics in Australia

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Abstract

Fifty initial consultations in government hearing aid clinics were audiotape recorded and analyzed to study the behavior of audiologists and clients in the initial stages of hearing aid rehabilitation. Consultations averaged 34 minutes and showed a four-stage clinical routine in which clients appeared largely passive. Hearing aid fitting was initiated in 48 (96%) consultations. The consultations of individual audiologists differed significantly in total time, proportion of consultation time in which talk occurred, proportion of consultation time devoted to hearing assessment, and the number of clients' direct requests for information. Individual audiologists appeared to have one of two general patterns in hearing aid prescription. The study indicates a need for the further study of audiologist behavior and the relationship of that behavior to hearing aid rehabilitation outcomes such as client satisfaction and degree of hearing aid use.

Key Words: Audiologist-client interaction, consultation, decision making, hearing aids

Observations at the clinic site have long been employed in medical sociology for the purpose of describing clinician-client interactions. The work stemming from these observations has informed debate on a variety of topics, including client compliance with medical advice, client satisfaction with medical interactions, and client participatory behavior during consultations (Roter, 1977, 1984; Stewart, 1984; Stockwell, 1984; Stott, 1985; Roter et al, 1988).

What occurs in consultations between audiologists and their adult clients has received little empirical study. This is somewhat surprising, given our concern for optimizing clinical outcomes (McCarthy et al, 1990) and indications that our interactions and decisionmaking may on occasions be lacking (Brooks, 1985; Gray-Thompson and Richards, 1987; Martin et al, 1989a, b; Gates et al, 1990). Descriptions of audiologic consultations can inform clinical practice from a variety of perspectives, but, more importantly, are a device for considering our

own behavior in relation to meeting client needs.

The topic of interest in the present investigation was the decisionmaking process involved in hearing aid rehabilitation. The decisions facing audiologists who provide hearing aid rehabilitation include whether or not to recommend hearing aid fitting, whether monaural or binaural aiding is appropriate, which style of hearing aid (e.g., behind-the-ear [BTE] or in-the-ear [ITE]) is to be used, and what electroacoustic characteristics to prescribe. The decisions facing clients who may be suitable for hearing aid rehabilitation include whether or not to take action about their hearing problem, which type of hearing aid(s) fitting is to be tried, and whether or not to utilize the selected hearing aids (McCarthy et al, 1990; Milhinch and Doyle, 1990). The initial consultation is the arena where audiologist and client first meet to discuss these issues.

The task of providing hearing aid rehabilitation is in general ill defined and complex (Demorest, 1986) and acknowledged by many audiologists to be difficult (Doyle, 1989). The ways in which audiologists deal with the difficulties of providing hearing aid rehabilitation, and the contribution of audiologist behavior to outcomes such as client satisfaction and amount of hearing aid use, are unknown. Given the

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continuing disappointing levels of client compliance with hearing aid use (Brooks, 1981, 1985; Gates et al, 1990) and the general imperative for health care providers to be more accountable to their consumers (Mathews and Feinstein, 1989; McCarthy et al, 1990; Baker, 1991), it is clearly relevant for audiologists to address the role of their behavior in the delivery of hearing health care.

A first step in understanding audiologist behavior is to describe activity as it occurs naturally in the clinic. Such field studies have strong potential for the discovery of important clinician behaviors (Carroll and Johnson, 1990) and are necessary for the development of an ecologically valid clinical database relating to audiologic decisionmaking (Thomas et al, 1990).

The aim of the present exploratory study was to describe a sample of audiologic consultations in terms of overt audiologist decision behavior for the task of recommending hearing aid amplification, the use of consultation time, types of information sought by audiologists and by clients, and the general character of the interpersonal interaction. Such data have the potential to identify features of audiologist-client interaction that may be important to processes and outcomes in hearing aid rehabilitation.

METHOD

Field Study Clinics

The study was carried out in three metropolitan hearing centers operated by Australian Hearing Services, formerly the National Acoustic Laboratories (NAL). In these centers, initial consultations with adult clients were routinely scheduled for 45 minutes, although the audiologist was able to allot more time if necessary. The usual practice was to decide on the appropriateness of hearing aid amplification and to implement that decision during the initial consultation.

Data Collection

The principal method was the audiotape recordings of 50 initial consultations, comprising five recordings from each of 10 audiologists. The first 10 audiologists who were approached agreed to take part in the investigation. The postgraduate clinical experience of these clinicians ranged from 9 months to 14 years, with a mean of 7.13 years.

Each audiologist was requested to audiotape initial consultations with five adult English-speaking clients. English-speaking clients were specified in order to ensure the opportunity to assess client input to the consultation. Each client gave informed consent to the audiotaping of their consultation.

In order to keep the consultations as natural as possible, the investigator was not present during the consultations. A written protocol for taping was issued to each audiologist. Taping commenced after the audiologist had escorted the client into the clinic and obtained the client's permission. Taping concluded at the point when the audiologist left the clinic area to escort the client back to reception. The intervening consultation was recorded uninterrupted, including periods of conversational silence when various procedures were carried out and periods when audiologist and client were moving between rooms within the clinic area. Separate TDK D-120 cassette tapes were used for each consultation. Recorders were Realistic minisette-20 compact style, coupled to Realistic ultra-thin omnidirectional microphones.

Recorded consultations were transcribed verbatim. Transcripts were reviewed to check for accuracy against the audio recording. Recordings were then replayed and timed with a DSE cumulative stopwatch to allow insertion of timing markers throughout transcripts. Any period of 10 sec or more during which no speech occurred was identified as a period of conversational silence.

Summary data was calculated for each consultation as follows:

1. A word count was made of the utterances of each audiologist and client. Utterances such as "umm" were omitted from the word count when embedded in a phrase or a sentence as a dysfluency or filler, but included in the word count when they occurred in isolation as a conversational turn. Word counts for each participant were then computed as a percentage of total talk occurring in the consultation.
2. A count was made of the total number of questions asked by each clinician and client. The question count was carried out by studying the transcripts while listening to the corresponding audiotape recording. This process allowed inclusion of questions that in the written form might appear as a statement (for example, "You haven't used a hearing aid before") and yet could obviously

be classified as a question by the intonation of the speaker and the conversational context. Questions were then examined to distinguish direct requests for information from questions that were rhetorical or social or requests for repeats.

3. Time spent in conversational silence versus speech was noted in total minutes and seconds and expressed as a percentage of the total consultation time.
4. Timing markers were inspected to calculate the time spent on various components of the consultation, such as history taking and hearing testing.
5. The audiologic procedures carried out in each consultation were noted in the order of their occurrence.
6. The overt decisions about hearing aid amplification were noted for each case.

The detailed content of the transcripts was then examined to determine the character of the audiologist-client interaction (Szasz and Hollender, 1956) and the basic process that appeared to be operating.

RESULTS

Clients

Client age was documented for 41 of the 50 cases. The age of these persons ranged from 34 to 89 years, with a mean of 73.75 years and a standard deviation of 9.95 years. Transcripts of the clients whose age was not recorded indicated that they were all retired and hence likely to be over 65 years of age. The majority of clients were aged pensioners. Twenty-seven clients were female and 23 were male.

Hearing Aid Decisions

The aid or no aid decision was made within this initial consultation in every case. It was decided to proceed with hearing aid fitting in 48 of the 50 consultations (96%). This incidence of hearing aid prescription exactly matches previously documented NAL fitting rates (Upfold and Smither, 1981). The majority of clients ($n = 36, 72\%$) had not previously used hearing aid amplification.

The most common aid fitting prescribed was the monaural BTE style (25 of the 48 cases to be aided or 52%). This matches the incidence of monaural BTE fitting for adult clients reported by Scherr et al (1983) a decade ago but is

inconsistent with the current preference of many clients for ITE hearing aids. In a further 18 cases, binaural aids were prescribed (16 cases BTE aids, 1 case ITE aids, and 1 case style unspecified). In 2 cases, the decision was to provide a contralateral routing of signal (CROS) system.

In one of the two cases in which hearing aid amplification was not prescribed, the audiologist and client agreed that the degree of hearing loss did not warrant aiding. In the other, the audiologist and client agreed on the need for an aid, but the client, who had previous experience of an ITE aid purchased privately, declined to accept the BTE aid offered.

Inspection of transcripts showed that individual audiologists used varying approaches to the BTE/ITE decision. Audiologist #4, for example, in three of the five recorded consultations, offered the option of BTE or ITE aiding but stressed the limitations of the available ITE aid. One of these clients chose ITE and two chose BTE fittings. In the remaining two cases, this same audiologist simply stated that an ITE fitting was not appropriate because of dexterity problems or because the hearing loss was too great. Hence, in some cases, the audiologists independently made decisions on audiologic grounds and, in other cases, offered or encouraged joint decisionmaking, presumably when, in their view, audiologic criteria did not preclude ITE fitting.

The monaural/binaural decision appeared to vary with the audiologist concerned. This point is elaborated in a later section of this paper.

Consultation Time and its Use

Table 1 summarizes the use of consultation time. The mean length of taped clinical interaction was 34.42 minutes. This did not include time used by the audiologist escorting the client to and from the waiting area and making subsequent appointments for the client. Given the age range of the clients concerned and the corresponding need for physical assistance, coupled with the physical layout of the clinics, several additional minutes could be estimated as necessary to escort the client to and from the waiting room. An additional practice apparent during these consultations was for the audiologist to remain with the client after the consultation sufficiently long to arrange subsequent appointments. Together these data indicate that audiologists used all or most of the 45-

Table 1 Use of Consultation Time

	Minutes		
	Mean	Range	SD
Consultation Length	34.42	22.12 - 51.17	6.24
Time Use			
History	5.67	2.80 - 12.37	2.04
Testing	12.12	0 - 25.75	4.90
Discussion	6.07	2.27 - 15.17	2.83
Impression Taking	10.40	0 - 17.57	3.80
Talk Time	24.85	8.17 - 37.90	7.25
Silence Time	9.71	2.13 - 22.75	4.86

In one case, the recorder was not switched on for the history taking. In another case, battery problems precluded accurate timing of transcription content after the period of history taking. Hence, the talk time and silence time figures were derived from 48 cases, and the remainder of the figures from 49 cases.

minute allotted appointment in personal contact with the client, leaving little or no time to privately write up files or consult with colleagues. An exception was audiologist #2, whose consultation tapes averaged 26.78 minutes in length.

The proportion of consultation time in which some talk occurred could be computed in 48 cases and was on average 72 percent (range = 26-92%; SD = 14.81%).

The consultations consistently showed four major components. These were, in sequence: (a) history taking; (b) audiologic testing; (c) discussion of test results and hearing aids; and (d) ear impression taking. The fourth step in the sequence was the initial implementation of the hearing aid decisions taken during the consultation.

The four-step sequence appeared to be a relatively universal routine, with the majority of time devoted to testing and implementation. On average, about 6 minutes were spent on history taking, 12 minutes on hearing assessment procedures, 6 minutes on discussion of the results with the client, and 10 minutes on ear impression taking. In only one case, formal assessment of hearing was not carried out. In this case, the audiologist prescribed hearing aid amplification on the basis of test results obtained elsewhere by another unspecified person. In the remaining 49 consultations, the diagnostic procedures apparently considered essential were air-conduction threshold testing and auroscopic inspection. Speech audiometry was also frequently used. In two cases, implementation did not occur because of the decision not to proceed with hearing aid fitting.

Table 2 Questions Asked in the Consultations

Total Questions per Consultation (n)	Mean	Range	SD
Audiologist	38.08	20-71	11.17
Client	10.39	1-48	8.58

Questions Directly Requesting Information per Consultation (n)	Mean	Range	SD
Audiologist	16.55	8-25	4.16
Client	4.78	0-19	4.66
Female clients	5.23	0-19	4.63
Male clients	4.26	0-18	4.50

Audiologist Questions Directly Requesting Information

Category	Total Number across Consultations	% of Total Requests for Information
Symptoms/etiology	404	43.41
Client opinion/knowledge	240	25.94
Communication/hearing	181	19.40
Audiologic	105	11.79
Total	930	100

Client Questions Directly Requesting Information

Category	Total Number across Consultations	% of Total Requests for Information
Hearing aids	115	49.15
Process involved	72	30.77
Hearing/ears	40	17.09
General	7	2.99
Total	234	100

In one case (audiologist #1, case #1), the recorder was not switched on for the history taking. Hence, the figures in this table are derived from 49 consultations.

Question Asking

Questions are the obvious indicator of information-seeking behavior and a mechanism for participation in the clinical process (Roter, 1984).

Table 2 shows that the average number of total questions asked by audiologists per consultation was 38.08 (SD = 11.17) and by clients was 10.39 (SD = 8.58). As might be expected, consultations in which audiologists asked a great many questions were those in which clients asked fewer questions.

The total question count included direct requests for information relevant to hearing

and hearing aids (for example, "Have you ever worn a hearing aid before?"), rhetorical questions (for example, "Gosh, that's no good, is it?"), client requests for clarification and repeats (for example, "Pardon?", "What did you say then?") and purely social questions (for example, "Did you see that program about the 80-year-old rower last night?"). Direct requests for information comprised slightly less than half the total number of questions asked. On average, 45 percent of total audiologist questions (range = 28–69%) and 47 percent of total client questions (range = 0–100%) were direct requests for information.

Nature of Audiologists' Direct Requests for Information

Audiologists' direct requests for information fell into four general categories (Table 2). The majority of questions (43%) related to the symptoms and etiology of hearing loss (for example, "How long have you noticed that your hearing has been getting worse?"). As might be expected, these questions were generally asked during the initial portion of the consultations.

The second category (26% of direct requests for information) comprised questions seeking client opinion and/or knowledge (for example, "What do you think...would you like to try two hearing aids or one?" and "Have you heard of that term?"). A further 20 percent of questions sought details of communication and hearing function (for example, "Do you have trouble hearing the telephone ringing?"). The fourth category was formed of what may be termed "audiologic" questions. These questions sought information more specific to issues, such as how easily the client might participate in the testing and what physical limitations the client may have regarding hearing aid management. Examples of such questions are: "Have you had a hearing test before?" and "Are you right or left handed?".

Nature of Clients' Direct Requests for Information

Clients' direct requests for information most often concerned hearing aids (Table 2). Supplementary Table 3 shows that the majority of these hearing aid questions related to either aid benefit and use (for example, "Will a hearing aid help at all?" and "Does it interfere with the wearing of glasses, spectacles?") or to cosmetic aspects (for example, "It's only a small hearing

Table 3 Breakdown of Clients' Questions about Hearing Aids

Category	Total Number across Consultations	% of Hearing Aid Questions	% of Total Direct Requests for Information
Use/benefit	36	31.30	15.39
Cosmetics	31	26.96	13.25
Audiologist's opinion	26	22.61	11.11
Aid function	17	14.78	7.27
Cost	5	4.35	2.14
Total	115	100	100

In one case, the recorder was not switched on for the history taking. Hence, the figures in this table are derived from 49 consultations.

aid, isn't it?" and "Is that the most invisible one you've got, is it?"). Of the remaining hearing aid questions, 23 percent solicited the audiologist's opinion (for example, "...and do you think it is necessary to have a hearing aid?"), 15 percent concerned hearing aid function (for example, "How long do the batteries last...do they last very long?"), and 5 percent addressed cost (for example, "No charges on those is there for pensioners?" and "How much are they?").

Other categories of client direct requests for information were (Table 2) the process of hearing assessment and aid fitting (for example, "How long does it take to get the hearing aid?"); hearing and/ears (for example, "but will it go away...the rushing noise?"); and more general knowledge (for example, "What about all those electric bands and things?").

Interpersonal Character of the Consultations

Speech occurred during the majority of the taped interactions. Consultations contained an average 24.85 minutes during which some speech occurred (Table 1). Speech was largely conversational but included instructions and reinforcement by the audiologists and responses of the clients to speech discrimination testing. Almost all speech was focused on the client's hearing problems. Audiologists did most of the talking, across consultations contributing on average 65.71 percent of all talk (range = 43–84%, SD = 10.41%).

The transcripts suggest that audiologists were the dominant force in the interaction and

moved clients through a clinical routine during the consultation. This is evidenced by the proportion of talk contributed by audiologists and by the fact that on average approximately two thirds of consultation time was devoted to testing and implementation procedures in which audiologists had a clearly authoritative role and clients appeared to be generally passive. Client passivity was most evident during the initial portion of the consultation and during the post-test discussions. In the initial portion of the consultation, the interaction was characterized by audiologists asking a series of questions about symptoms and etiology of the hearing loss and client input generally being limited to answering those questions. An example is seen in Table 4. Studies of medical visits have shown that such client passivity in the early consultation stage is known to encourage a pattern of interaction in which clinicians control the communication (Roter, 1977). In the post-test discussions, clients' verbalizations were relatively limited (Tables 5 and 6).

The post-test discussions were characterized by the audiologists giving information about the client's now documented hearing loss and then moving the client directly into a discussion of hearing aid amplification. Table 5 shows two examples of the initial portion of the post-testing discussion. Both are from transcripts of the same audiologist. Two features of these typical extracts are immediately obvious. First, the core content of the information given is identical. This information comprised a description of the audiogram including a statement of the normal range (note that the notion of "normal" differed slightly), the client's sensitivity loss across audiometric frequencies, and

the relative hearing loss in each ear. The second observation is that the audiologist often used essentially the same words in the two cases.

Six of the 10 audiologists used the client's audiogram as the focus of their informational counselling. All 10 audiologists tended to have a routine method of presenting information. This observation is consistent with survey data obtained by Martin et al (1989a), who reported that audiologists in both the USA and Australia "appear primarily to proceed in standard and preset ways in conveying what is considered to be important information" (p. 50).

Information counselling focussing on hearing aid characteristics was followed by a discussion about the client's suitability for hearing aid amplification. Table 6 illustrates that in general audiologists appeared to drive this discussion. Additionally, audiologists often appeared to be tempting the client to accept hearing aid amplification. Such 'tempting' was characterized by remarks such as "You wouldn't have to wear it all the time," "They are free anyway," and "You are entitled to two hearing aids." This appeared to involve three factors: the audiologist being convinced of the client's need for amplification; the client having a real or assumed negative response to the suggestion of a hearing aid; and the audiologist having a strong desire to convince the client to accept aiding.

Clients did not show any verbal objection to the manner in which the consultation proceeded and many expressed their appreciation to the audiologist. It is necessary to comment here that the written transcripts of consultations do not allow an appreciation of the warmth and mutual respect between participants that was apparent on many of the audio tapes.

Table 4 Example of Initial Portion of Consultation

<i>Transcript</i>	<i>Notes</i>
Audiologist: I would just like to ask you a few questions.	
Client: Right.	
Audiologist: So when do you have trouble hearing?	Client mishears question and describes onset of loss.
Client: Well, it gradually started probably the last 10 or 15 years.	
Audiologist: So your hearing has just gradually deteriorated?	
Client: Gradually, yes.	Verifies gradual onset.
Audiologist: Is one ear worse than the other?	
Client: Yes. That was from my birth. All my left side is better than the right.	Ear difference.
Audiologist: Any balance problems? Vertigo?	Vertigo.
Client: No.	
Audiologist: And do you hear noises in your head or your ears?	Tinnitus.
Client: No.	
Audiologist: Good. And have you ever worn a hearing aid?	Previous aid use.

Table 5 Examples of Informational Counselling

<i>Example A (Case #1)</i>	
<i>Transcript</i>	<i>Notes</i>
Audiologist: Now I will show you what we found. That is a diagram of what your hearing is like. It goes from the very low-pitched sounds you heard up to the very high-pitched whistles. Client: Yeah.	Audiologist uses audiogram as a basis for discussion.
Audiologist: And from the softest sounds you...people can hear it 0 to the very loud sounds down at the bottom. Normal is anywhere up there above 25. Client: Mmm.	Definition of normal result.
Audiologist: The circles are your right ear and the crosses are your left. So basically it shows that for the low-pitched sounds your hearing is very near normal; it is only down just a fraction. Client: Yeah.	Explanation of audiogram.
Audiologist: For the high-pitched sound, your hearing slowly drifts down, so you have got a mild loss for those higher-pitched sounds. Client: Yeah, that is what I find.	Diagnosis of high-frequency hearing loss. Client acknowledges that diagnosis matches life experience.
<i>Example B (Case #2)</i>	
<i>Transcript</i>	<i>Notes</i>
Audiologist: That is a diagram of what your hearing is like; it goes from the low-pitched sounds you heard up to the very high-pitched whistles. Client: Yeah.	Audiologist uses audiogram as a basis for discussion.
Audiologist: And the softest sounds people can hear from 0 down to very loud sounds at the bottom, normally is there above 25. So basically for the very low-pitched sounds your hearing is just within normal limits, but then it steadily drops away for the high-pitched sounds, so that for the very high-pitched sounds like a telephone ring, you have lost more than half your hearing, which is why it was worth your while getting that different telephone, because otherwise you would find it quite hard to hear the bell now if you still had a normal telephone.	Definition of normal result. Diagnosis of high-frequency hearing loss.
Client: Sometimes when I am with somebody and the telephone rings and I don't know I might be talking and telling them something and suddenly I realize somebody has gone to the telephone and I haven't heard it.	Relates diagnosis to client's need for special telephone. Client reports continuing problem with telephone.
Audiologist: Yeah, that sort of thing, your hearing for those high-pitched sounds is very, quite poor.	Audiologist repeats diagnosis.

Interaudiologist Analyses

The data were examined to determine possible audiologist effects on the various aspects of the consultations so far described. Analysis of variance (ANOVA) was employed. Because of the potential for Type 1 error associated with repeated applications of ANOVA to these data, an alpha level of .01 was applied for statistical significance (Keppell, 1982).

No relationship was found between the sex of the audiologist or the order in which each audiologist's consultations were recorded and any of the basic consultation measures.

ANOVA, however, showed that audiologists differed significantly in the total consulta-

tion time, the proportion of consultation time in which some talk occurred, the number of clients' direct requests for information, and the proportion of consultation time devoted to testing (Table 7).

Two other observations not based on statistical examination are worthy of mention. First, the style of interaction in the post-testing discussions varied. Some audiologists appeared to adopt a style consistent with Szasz and Hollender's (1956) mutual participation model of decisionmaking, in which the audiologist sought the client's reactions to the given information and invited client participation in the hearing aid decisions. Other audiologists demonstrated a guidance-cooperation style (Szasz

Table 6 Examples of Post-Testing Discussions of Hearing Aids

<i>Transcript</i>	<i>Notes</i>
Audiologist: So you are not hearing as well. Client: Yes. Audiologist: And unfortunately once that happens, it stays that way. Client: Yes.	Audiologist states permanency of loss. Client acknowledgment.
Audiologist: So, we, I think you should definitely benefit from a hearing aid. Client: Yes.	Recommends hearing aid.
Audiologist: You wouldn't have to wear it necessarily all the time, if you didn't want to. Client: No.	Audiologist explains client may decide on degree of use.
Audiologist: They are not all that difficult to use. Client: No.	Further encouragement, but difficult to judge client's reaction.
Audiologist: Have you any problems with your hands, like arthritis or numbness? Client: No.	
Audiologist: That's good, because of course when you use the hearing aid, you have got to put it in your ear. With your eyesight, I don't think that will be a major problem. No with this, you don't have to really see anything like letters, you just have to see a switch and a volume control, which I am showing you. Client: Hmm.	More encouragement regarding ability to use aid. Client non committal.
Audiologist: And after a while most people do it just by feeling for it anyway, because the hearing aid is behind the ear. Client: Yes.	

and Hollender, 1956), which in some consultations bordered on an active-passive approach (Szasz and Hollender, 1956).

Second, consistency of hearing aid decisions varied among the 10 audiologists, as evidenced in the pattern of hearing aids prescribed by each audiologist over their five consultations. Five audiologists prescribed the same aid style (BTE or ITE) and fitting (monaural or binaural) in at least four of their five cases. In contrast, the remaining 5 audiologists were more variable in their basic prescription pattern. These latter 5 audiologists spent about 5 minutes more in consultation with clients, generally in history and testing, and on average had slightly less clinical experience than those audiologists who tended to prescribe similar fittings.

Interclient Analyses

There was no statistically significant relationship (at the .01 level) of the sex or age of the client to any consultation measures. Given the general level of client passivity in the observed consultations, it is worth noting that analysis of client talk input and question asking was not significantly different between male and female clients. Male clients, however, did tend to contribute more talk in consultations (mean = 37.74% of total talk) than female (mean =

31.16%) clients ($F [1, 47] = 5.255, p = .0264, NS, 49$ cases). On the other hand, female clients tended to ask slightly more questions that were direct requests for information than did male clients (female clients: mean = 5.23 questions, range = 0–19 questions, $SD = 4.63$; male clients: mean = 4.26 questions, range = 0–18 questions, $SD = 4.50$), but this was not statistically significant ($F [1, 47] = .832, p = .3664, NS, 49$ cases).

DISCUSSION

Most clinical professions now acknowledge the importance of client input to the management of clinical problems. Hence, the verbal passivity of clients in this study is of concern. Since three quarters of consultation time involved verbal communication between audiologists and clients (Table 1), there appeared to be potential for greater client input into decisionmaking than was evident. Whether client passivity and relative lack of input was a result or a cause of the audiologists' apparent verbal dominance is not obvious. Studies of medical visits have shown that client passivity in the early consultation stage, as was evident in the present study, is known to encourage a pattern of interaction in which clinicians control the communication (Roter, 1977). Audiologist control of the consultation routine and the technical nature of the assessment may have

Table 7 ANOVA Results for Consultation Features by Audiologist

Consultation length	F (9, 39) = 5.44	p < .001
Proportion of talk time	F (9, 38) = 5.24	p < .001
Relative proportion of talk contributed by audiologists	F (9, 39) = 1.41	p = .2176
Number of clients' direct requests for information	F (9, 39) = 2.941	p < .001
Total number of questions asked by audiologists	F (9, 39) = 2.615	p = .0181
Total number of questions asked by clients	F (9, 39) = 2.579	p = .0195
Proportion of time devoted to history taking	F (9, 39) = 2.707	p = .015
Proportion of time devoted to testing	F (9, 38) = 4.878	p < .001
Proportion of time devoted to post-testing discussion	F (9, 38) = 1.041	p < .394
Proportion of time devoted to impression taking	F (9, 38) = 1.146	p = .3552

In one case, the recorder was not switched on for the history taking. In another case, battery problems precluded accurate timing of transcription content after the period of history taking. Hence, each of these results was derived from 48 or 49 cases.

promoted client passivity. Conversely, audiologists' apparent domination may reflect pre-existing client passivity, rather than assertion of control by audiologists. Client passivity has been an underlying issue in many studies of medical consultations, as has professional dominance by the clinician (Roter, 1977, 1984; Pendelton, 1983; Feinberg, 1988; Beisecker and Beisecker, 1990; Brock and Wartman, 1990). The interaction of these two issues is complex.

It may be that clients had in some cases made the decision to accept aiding before they attended the consultation. If that were so, the audiologist-client interaction would have a confirmatory role. The apparent dominant-passive, audiologist-client decision process may therefore in some cases and to some degree simply reflect a temporal overlapping of client and audiologist decisionmaking. Preconsultation client decisions to accept hearing aid fitting may be the result of client acceptance of the need for assistance or a response to family pressure (Milhinch and Doyle, 1990).

Question asking by audiologists and clients indicated the apparently different agendas for the two participants. Audiologists' requests for information reflected their orientation to the task of documenting the client's hearing loss and moving to the yes or no hearing aid decision. Clients' requests for information reflected

a need for knowledge about the use, benefit, and appearance of hearing aids. Consistent with their generally passive role, clients often directly solicited audiologist opinion in decisionmaking. The audiologist's advice, in combination with information about aid use, benefit, and appearance, is therefore presumed to contain cues critical to client decisionmaking.

The finding of greater clinical interest, however, is the variation in consultation characteristics with audiologist. The 10 audiologists concerned practiced in the same broad clinical environment and had similar clientele and similar resources. Their differing patterns of hearing aid prescription and consultation behavior indicate that the individual clinician may have a powerful effect on hearing aid rehabilitation processes and, perhaps, outcomes. There are many questions that flow from the initial observations documented in this study. Those of principal interest include: Is there a relationship between temporal aspects of consultations, such as the amount or proportion of time spent in information exchange, and client satisfaction with the clinical encounter? Does apparent client passivity decrease in subsequent consultations with the same audiologist? Can the benefit of hearing aid fitting, as defined, for example, by the amount of aid use, be linked to particular aspects of audiologist behavior?

It appears important, therefore, to further explore the decisionmaking of audiologists and their clients. Future studies could profitably address the behavior of individual audiologist-client dyads in subsequent consultations relating to hearing aid provision, the modelling of audiologists' decision behavior for a range of hearing aid decisions, and the relationship of that behavior to outcome measures such as client satisfaction and the degree of hearing aid use.

Acknowledgment. I am grateful to Shane Thomas, Norm Erber, Chris Lind, Ross Dineen, and Jan Milhinch of La Trobe University for their helpful discussions and their comments on earlier drafts of this paper. Al Montgomery, while a visiting fellow to La Trobe University's Department of Communication Disorders, provided insightful discussion. The help of Susan Banacheck and Karen Hofer, who assisted with data collection and analysis, is much appreciated. Special thanks go to the audiologists and clients who agreed to the observation of their clinical interaction.

REFERENCES

- Baker R. (1991). The reliability and criterion validity of a measure of patients' satisfaction with their general practice. *Fam Pract* 8:171-177.

- Beisecker AE, Beisecker TD. (1990). Patient information-seeking behavior when communicating with doctors. *Med Care* 28:19-28.
- Brock DW, Wartman SA. (1990). When competent patients make irrational choices. *N Engl J Med* 322:1595-1599.
- Brooks DN. (1981). Use of post aural hearing aids by NHS patients. *Br J Audiol* 15:79-86.
- Brooks DN. (1985). Factors relating to the under-use of post aural hearing aids. *Br J Audiol* 19:211-217.
- Carroll JS, Johnson EJ. (1990). *Decision Analysis: A Field Guide*. (Applied Social Research Methods Series, vol. 22). New York: Praeger.
- Demorest ME. (1986). Problem solving: stages, strategies and stumbling blocks. *J Acad Rehabil Audiol* 19:13-26.
- Doyle J. (1989). A survey of Australian audiologists' clinical decision making. *Aust J Audiol* 11:75-88.
- Feinberg J. (1988). The effect of patient-practitioner interaction on compliance: a review of the literature and application in rheumatoid arthritis. *Pat Educ Couns* 11:171-187.
- Gates GA, Cooper JC, Kannel WB, Miller NB. (1990). Hearing in the elderly: the Framingham cohort 1983-1985. *Ear Hear* 11:247-256.
- Gray-Thompson M, Richards S. (1987). A computer program for hearing aid selection: its trial and development. *Aust J Audiol* 9:19-23.
- Keppell G. (1982). *Design and Analysis: A Researcher's Handbook*. 2nd ed. Englewood Cliffs, NJ: Prentice-Hall.
- McCarthy PA, Montgomery AA, Mueller HG. (1990). Decision making in rehabilitative audiology. *J Am Acad Audiol* 1:23-30.
- Mathews DA, Feinstein AR. (1989). A new instrument for patients' ratings of physician performance in the hospital setting. *J Intern Med* 4:14-22.
- Martin FN, Adabie KT, Descouzis D. (1989a). Counselling families of hearing-impaired children: comparisons of activities of Australian versus American parents and audiologists. *Aust J Audiol* 11:41-54.
- Martin FN, Krall L, O'Neal J. (1989b). The diagnosis of acquired hearing loss. *ASHA* 31:47-50.
- Milhinch JC, Doyle J. (1990). Client decision-making: choosing a hearing health care service. *Aust J Audiol* 12:45-53.
- Pendelton D. (1983). Doctor-patient communication: a review. In: Pendelton D, Hasler J, eds. *Doctor-Patient Communication*. London: Academic Press, 5-53.
- Roter DL. (1977). Patient participation in the patient-provider interaction: the effects of patient question-asking on the quality of interaction, satisfaction and compliance. *Health Educ Monogr* 5:281-315.
- Roter DL. (1984). Patient question-asking in physician-patient interaction. *Health Psychol* 3:395-409.
- Roter DL, Hall JA. (1989). Studies of doctor-patient interaction. *Annu Rev Public Health* 10:163-180.
- Roter DL, Hall JA, Katz NR. (1988). Patient-physician communication: a description summary of the literature. *Pat Educ Couns* 12:99-119.
- Scherr CK, Schwartz DM, Montgomery AA. (1983). Follow-up survey of new hearing aid users. *J Acad Rehab Audiol* 12:202-209.
- Stewart MA. (1984). What is a successful doctor-patient interview? A study of interactions and outcomes. *Soc Sci Med* 19:167-175.
- Stockwell F. (1984). *The Unpopular Patient*. London: Croom Helm.
- Stott, NCH. (1985). The surface anatomy of primary health care. Does consultation analysis contribute? In: Sheldon M, Brooke J, Rector A, eds. *Decision-making in General Practice*. New York: Stockton Press, 169-170.
- Szasz TD, Hollender MH. (1956). A contribution to the philosophy of medicine. *Arch Intern Med* 10:585-593.
- Thomas SA, Doyle J, Browning C. (1990). Clinical decision making: What do we know of real-world performance? *Commentary: Journal of the National University of Singapore Society*, 8:31-35.
- Upfold LJ, Smither MF. (1981). Hearing aid fitting protocol. *Br J Audiol* 15:181-188.