

Chapter 14

**Communication Therapy:  
Theory and Practice**

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**Abstract**

**Rehabilitation as Communication Therapy**

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Self-Awareness/Hearing Difficulty

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**Summary and Conclusion**

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Communication Therapy methods are described which employ conversation as the framework for intervention. A model is used to demonstrate relations between typical components of conversation in which people with hearing impairments participate (initiating utterance, stimulus sentence, clarification request, modified stimulus). Strategies for modifying partner behavior are outlined, emphasizing the need for development of self-awareness, meta-communication,

and assertiveness in the client. Methods for training partners in clear production of speech and language are discussed. Directions are provided for creating realistic assessment and therapy procedures with interactive and adaptive characteristics.

Professionals who provide therapy to people with impaired hearing are experiencing a period of enlightened change. New concepts are emerging that effectively combine daily conversational experiences with clinical practice and applied research. We are educating a new generation of clinicians – not only with regard to application of modern technology, but also in pragmatic theory and applied conversational methods. The chapters in this text strongly suggest that future assessment and therapy will place as much emphasis on the language and communication skills of our clients as on their ears and amplification devices. In the future, perhaps both audiologists and speech-language pathologists will play the role of Communication Therapist! Oh the times, AR a'changin' . . .

Before we present our view of the future, we will briefly examine current rehabilitative practices. Typically, the goal has been to restore normal functioning to a person with impaired hearing through direct sensory intervention (e.g., by means of a cochlear prosthesis) and through compensation for perceptual loss (e.g., by means of hearing aids, assistive listening devices, auditory training, and speechreading). In each case, the primary aim has been to direct the intervention toward reducing the negative effects of hearing loss on speech reception. Consequently, a variety of clinical procedures have been created to assist in the assessment and training of perceptual function, from the detection of phonemes and discrimination of words, to identification of sentences and comprehension of narrative (Erber, 1982).

Through virtually all of these perceptual tasks, traditional rehabilitation for hearing loss has concentrated on two basic components of spoken interchange: the stimulus and the response. Clinicians tend to feel comfortable with stimulus-response procedures, because the stimulus items can be collected and ordered in advance, and responses can be sorted and counted to define clinical outcomes. Yet, sometimes it is difficult to create practice materials faster than the client can learn them. The clinician either must constantly create new stimuli (leading to exhaustion) or repeatedly present old stimuli (leading to boredom). More importantly, the client may question the utility of the activities. Even when practicing with sentence-based materials as part of a "synthetic" intervention technique, the client may not generalize newly learned skills because of the low degree of conversational realism inherent in the clinical task.

### **REHABILITATION AS COMMUNICATION THERAPY**

The conversational structure by which any person communicates is flexible, and thus adaptable to clinical objectives. Only recently, however, has the conversation itself been used as a focus for therapeutic intervention or for the application of strategies/tactics (Erber, 1988; Kaplan, Bally, & Garretson, 1985; Tye-

Murray & Schum, 1994). In a conversational approach to rehabilitation for hearing loss, the clinician identifies the elements of daily interaction which are (most likely to be) affected and then adapts them for use in the clinical setting. Communication Therapy employs conversation-based activities that are of high utility (which motivates clients) and that provide an unlimited supply of spontaneously generated material without the need for extensive preparation (which motivates clinicians). We will briefly describe the way that current rehabilitation practices are subject to influence by the Communication Therapy approach.

#### *Speechreading/Auditory Training*

Researchers have become increasingly interested in the situational/contextual cues that can enhance speechreading and auditory speech perception. Clinicians now routinely employ a "synthetic" (synthesis) approach in many of their rehabilitation programs. Yet because of the many sources of linguistic information available and because of the variety of potential investigative methods, no comprehensive view of the synthetic nature of speech perception yet exists (Gailey, 1987). In discussing types of synthetic cues, Boothroyd (1988) identified six elements that can provide linguistic redundancy. Of these, the most familiar and frequently investigated are those which exert their effects primarily within the confines of the sentence, namely syntactic, semantic, lexical, and morphological cues. Some clinicians consider any assessment and intervention technique that employs sentence-based stimuli to be "synthetic" because of these intra-sentential linguistic cues. We feel that it is more appropriate to label such sentence-based procedures as "Conversational Analytic," because they present the sentence as an idealized conversational unit without influence from the many additional cues that are inherent in actual *conversation*.

Recent studies by Gagné, Tugby, and Michaud (1991) and Erber (1992b) have required adult subjects to speechread a (target) sentence following the presentation of a related (initiator) sentence. In each case, the target sentences were identified with greater accuracy when they followed the utterances that contained semantically related cues than when the target sentences were presented under control conditions. Two-utterance sequences such as these are not truly "conversational," however, especially when each target sentence is pre-recorded. Yet, providing contextual cues outside the boundary of the stimulus sentence itself represents a major step toward the development of more conversationally realistic (and therefore more generalizable) clinical and research procedures in which sentence-sequences play a major role (see Blamey & Alcántara, 1994; Gagné, 1994).

#### *Amplification*

Speechreading a talker in silence or with severely restricted acoustic cues is usually very difficult, despite the range of visible and linguistic information available (Summerfield, 1983). Speechreading is much more effective as a means of communication if the person with a hearing-impairment simultaneously

listens through an adequate amplification system. Here, the term "adequate" means more than a hearing aid matched correctly to one's sensitivity loss. Instead, it means an amplification system that helps the person to communicate better in realistic conditions, and also a system that the person and partner are able to use appropriately.

It is well known that many people with a hearing loss are not aid owners, and that many aid owners are not aid users (Franks & Beckmann, 1985; Smedley & Schow, 1990), some preferring assistive listening devices instead (Garstecki, 1994), and others no amplification at all. Background noise is a commonly reported source of annoyance and communication difficulty. When the hearing aid microphone is worn on the person and thus is 1-2 meters from the partner's mouth, as is the usual situation, the amplification system probably is not adequate in typically noisy real-life situations. Obviously, a remote microphone or a wireless transmitter near the partner's mouth can increase the adequacy of amplification in such cases and make communication much easier.

Some audiological tests are available to help the clinician estimate the magnitude of these difficulties by assessing speech perception under (simulated) noisy conditions (e.g., the SPIN Test: Kalikow, Stevens, & Elliott, 1977). Unfortunately, in most cases the test parameters (speech signal, noise type, environment, response task) do not accurately reflect the daily situations in which people with hearing loss typically interact. Several authors (Seewald, 1994; Tyler, 1994; Walden, Demorest, & Hepler, 1984; Ward & Gowers, 1981a, 1981b) have outlined more realistic intervention and assessment techniques, situation-specific procedures, and attitude measures for use in hearing aid fitting. Recent studies (Dillon et al., 1991a, 1991b) also have attempted to integrate hearing aid provision and rehabilitation by means of Goal Attainment Scaling (McKenna, 1987). Results suggest that clients benefit according to the rehabilitation goals they set with the audiologist prior to provision of hearing aids. More work is needed to establish the relation between a client's expectations and that individual's continued use of hearing aids.

#### *Communication Tactics/Strategies*

Communication activities in which the client asks for the communication partner's cooperation may be labelled as "tactics" or "strategies." Such tactics/strategies include requests for the partner to alter speech characteristics (volume, speech rate, clarity), to adapt positioning or distance, or to cooperate in the use of assistive listening devices.

Because some clients consider overt self-help techniques to be disruptive and to diminish the ease or "naturalness" of their conversations, they avoid using these strategies. Successful use of tactics usually requires the application of meta-communication techniques by both participants (discussed below). Teachers and therapists, as skilled communication partners, learn to modify their speech and language characteristics appropriately (e.g., maintain voice level) and to use assistive devices (e.g., hold a remote microphone) when necessary.

But even a motivated and well-informed partner may not always alter communication as desired. Methods for encouraging spouses, friends, nurses, or strangers to reliably use similar tactics remains an important clinical challenge. We still do not know how best to train partners to maintain successful communication by carefully attending to what they are saying and how they are saying it.

#### *Control of the Environment*

Most clients also learn to respond to difficulties associated with the physical nature of the communication setting (lighting, distance, background noise). While some conversational settings can be modified to meet their needs, many noisy places cannot be made quiet (e.g., a football stadium, a restaurant, a dining room in a nursing home). Places that are specifically designed and/or intended for social interaction are often not suited to someone with a significant hearing impairment (e.g., a nightclub).

If the environment can be controlled, the person with impaired hearing must be skilled in methods to initiate necessary changes. If the environment cannot be controlled, then avoidance of that environment may be a more realistic approach. If avoidance is not possible, one may need to defer important communication for a later time. Most people with a hearing impairment can specify places that are optimal for communication; likewise places that are impossible. Often a person can identify unacceptable places and avoid them on the basis of visible appearance (e.g., a restaurant with food preparation and consumption in the same area; hard reverberant floors) (Tye-Murray, 1992, 1994). Sometimes, however, noise sources are not so visible (e.g., music introduced via loudspeaker). Research is needed on methods for training clients and also their frequent communication partners to identify disruptive environmental factors and avoid difficult situations.

#### *Meta-Communication*

Meta-communication includes the ability to think about and talk about language, as well as the ability to analyze both the form and content of an utterance in the context of a conversation (Erber, 1988). Given the inevitability of communication breakdown, it is extremely important that people with a hearing impairment think about and talk about communication breakdown and its repair.

Table 1 lists common sources of difficulty and socially acceptable requests that a person can employ to resolve those difficulties. The use of such clarification requests can be very beneficial, although the best way to phrase them to achieve compliance from partners is still unclear.

A major obstacle is the client's inability to correctly identify sources of communication breakdown within an ongoing conversation. Some clients are unable to do more than report that a particular situation is difficult. They cannot provide any detail about the sources of difficulty and thus do not benefit readily from current meta-communication techniques. Without the ability to identify and solve communication problems, a person with a hearing impairment may achieve

**Table 1**  
Some Common Sources of Communication Difficulty  
and Socially Acceptable Phrases That a Person can Employ for Their Resolution

<b>What was the communication problem?</b>	<b>How can you ask for help?</b>
You understood only part of the sentence.	First, repeat the part that you understood. Then, ask for the part that you didn't understand. (e.g., "You flew to Paris?")
You couldn't see his/her mouth.	"Would you please put your hand down."
He/she was speaking too fast.	"Please speak a little slower!"
His/her speech was too soft.	"Please speak a little louder!"
The sentence was too long.	"Shorter please!"
His/her speech was not clear enough.	"Speak a little more clearly, please!"
The sentence was too complicated.	"Please say that in a different way!"
You don't know what caused the problem.	"Please say that again!"

little conversational satisfaction. Moreover, frequent partners can become distressed if they are given the major responsibility for solving recurrent problems. Those people who are most able to analyze and discuss their own communication habits and the communication habits of their partners are those most likely to benefit from conscious problem-solving techniques.

Relevant training might include manipulation of the conversational setting. Hallberg and Carlsson (1991) present a method for qualitative analysis of an individual's conversation-management skills, incorporating the use of simple tactics/strategies in response to difficult situations. Future directions for research include: the development of tests to identify people with poor meta-communication ability; the creation of methods to increase their skill; comparison of client-partner and small group processes as effective training formats.

#### *Assertiveness*

We may distinguish between: (a) those tactics/strategies which divert the flow of conversation (overt requests for help) and which usually require the conscious assistance of the communication partner; and (b) those which can be naturally implemented within the flow of conversation, often without the noticeable cooperation of the communication partner (conversational strategies). During therapy sessions, clients can experience simulated communication difficulties and can practice employing effective strategies that lead to successful communication. This learning process usually occurs under the "benevolent eye" of the clinician in a supportive environment. Successful execution of tactics/strategies in the clinic relies on the maintenance of cooperative communication and client self-esteem.

Some clients who can successfully employ tactics in the clinic, however, report that when faced with the indifference of real communication partners throughout the day, they lose their resolve to repeatedly incorporate the practiced procedures. Many people with a hearing impairment report that, in social settings, they use only those tactics/strategies that *do not* disrupt the conversation and draw attention to their hearing loss. Others do directly request help from partners, but not persistently. The strategies they tend to rely on are those which they consider to be within the range of "normal" conversational behaviors. They report feeling concerned about being labelled as *uncooperative* conversational partners (Gagné, Stelmachovich, & Yovetich, 1991; Wardhaugh, 1985).

The clinician may devote time to assertiveness training to overcome this obstacle. Tye-Murray (1994) and Trychin and colleagues (Forgatch & Trychin, 1989; Trychin, 1987, 1988; Trychin & Wright, 1989) have outlined the principles and practices of assertiveness. These authors suggest that assertiveness can be used to increase the cooperation of the communication partner and maintain the equality of all participants in a conversation.

Clients can take several steps to establish conversational equality. First, the client explains to the communication partner the reason for the difficulties either before they occur (e.g., the communication environment is recognized as potentially disruptive) or immediately after they occur. Second, the client identifies the specific behaviors that require cooperation. Third, the client presents all these explanations and requests in assertive language, without apportioning blame or guilt. Fourth, the client reminds the partner when desired behaviors cease to be used. Treating the communication partner and oneself as equals is a major goal of assertiveness training. Although not everyone is aware of or successful at applying these skills, assertiveness and conversational manipulation are integral parts of everyone's daily interaction, and can be adapted to any Communication Therapy program. Research is needed to establish the best ways to train assertiveness such that learned behaviors are applied reliably outside therapy sessions.

#### *Self-Awareness/Hearing Difficulty*

Self-assessment of hearing difficulty with scales such as the Hearing Handicap Inventory for the Elderly (Ventry & Weinstein, 1982, 1983; Weinstein & Ventry, 1983) and of communication function with instruments such as the Communication Profile for the Hearing Impaired (Demorest & Erdman, 1986, 1987, 1988) have become popular clinical procedures. Clients judge whether printed statements describe their typical experiences, yielding an overall (quantifiable) description of communication difficulty. Results typically are *not* highly correlated with traditional audiometric indices (Demorest & Walden, 1984). For example, some clients who exhibit little pure-tone sensitivity loss report considerable communication difficulty, perhaps because of auditory distortion, processing difficulty, or noisy environments. In contrast, other clients who exhibit considerable pure-tone sensitivity loss claim that their communication is satisfactory, perhaps

because of cooperative partners, or skilled use of conversation-management strategies.

These observations are reinforced by the results of parallel scales, one for the client and one for the frequent communication partner or "significant other" (McCarthy & Alpiner, 1983; Schow & Nerbonne, 1982). Such paired questionnaires often yield different judgements, indicating that two people may not agree about the way one's hearing loss influences their mutual communication. This disagreement can reflect the hearing-impaired individual's lack of awareness of: (a) the breakdowns that periodically occur in conversation; and (b) the partner's contribution to conversational repair. Clinical progress can be enhanced by participation of the client in identifying the source(s) of communication failure from both perspectives. Problem-solving techniques may assist in increasing such awareness (Montgomery, 1994).

The clinician must recognize that discrepant results are not always directly related to communication between the partners. For example, in responding to a questionnaire, a client may attempt to "please" the clinician or deny the effects of hearing loss. In cases where self-assessment or a partner's assessment is inconsistent with the clinician's assessment, it is desirable to examine the specific situations in which communication breakdown is reported to occur.

Communication difficulty may be reflected in and affected by the stress level of the client or the partner. To this extent, disability and handicap are interrelated. Luterman (1979, 1984, 1987) and Rollin (1987) have discussed the effects of hearing loss and communication breakdown on family and social life. Awareness of family and lifestyle issues may increase the effectiveness of clinical intervention.

### CONVERSATION MANAGEMENT

How might we describe the theoretical model that underlies this "conversation-based" approach to rehabilitation of hearing loss? In the section that follows, we look at some ways that clinicians can view the structure of those problematic conversations which our clients commonly experience. In Figure 1, a "talking heads" diagram, complete with obligatory arrows, is used to highlight several key aspects of conversational structure and management.

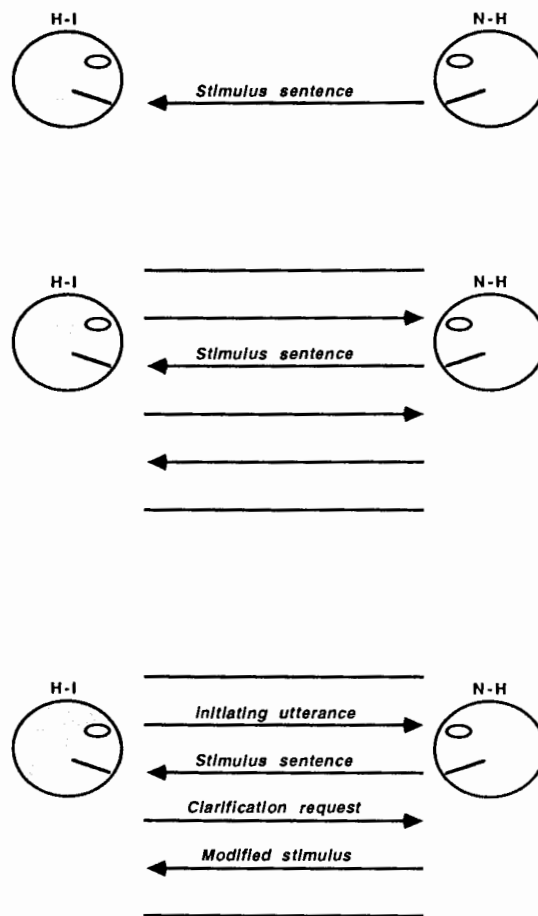
Figure 1a describes any of the common stimulus-response activities mentioned earlier in this chapter. For example, the person with normal hearing (spouse, friend, teacher, clinician) speaks a sentence to the person with hearing loss, and then expects a response (for a discussion of head placement and arrow direction, see Erber, 1988). In many traditional clinics, perceptual assessment and therapy procedures follow this basic model, presenting lists of syllables, words, or sentences. The expected responses in these clinics, however, are usually repetitions of the stimuli, suggesting that accuracy of *repetition* is somehow a realistic measure of one's performance as a communicator.

We all have undoubtedly observed that a response in real life is seldom if



ever simply a repetition of the partner's utterance. Instead in daily interchange, a partner's stimulus sentence not only requires an *interactive* response (e.g., an answer to a question), but the partner's stimulus usually is given in the context of a conversation. And so, it is common for one to receive each stimulus sentence as part of a turn-taking sequence – just after speaking, and also just before speaking. In conversation, people take turns according to social conventions (Duncan, 1983), expressing thoughts leading to a “mutually shared perspective” (Myllyniemi, 1986). Each sentence in the sequence tends to be topically and semantically related to others in proximity. These speaking turns in context are shown by a succession of arrows in Figure 1b.

Most of the components in a turn-sequence have been described and studied



**Figure 1.** A stimulus sentence may be presented: (a) in isolation, (b) in the general context of a turn-taking sequence, and (c) in the context of a conversation requiring repair.

in great detail, and linguists have given names to particular types of speech acts: question, assertion, acknowledgment, etc. (Austin, 1962; Clarke, 1983; Searle, 1976; Wilson, 1989). The labels shown in Figure 1c describe several important speaking turns that commonly occur in conversations in which a person with impaired hearing participates (Erber, 1988). On a number of occasions, that person speaks first. If so, this spoken sentence can be called the "initiating utterance." The partner's sentence that follows (e.g., containing requested information) may be considered the "stimulus" – the traditional unit of language presented in the clinic, to which the client is expected to give a response. But because in real life, the person with impaired hearing often receives a stimulus sentence as an unclear or incomplete pattern, the next sentence may not be a "response" at all, but a "clarification request."

The partner then presents a "modified stimulus," according to the client's request for clarification. This sequence may appear in conversation as a cycle, one that permits successful transmission of a spoken message to the hearing-impaired person – who then is able to give a "response." This response is often the utterance that initiates the next conversational turn. The full repair cycle occurs only when communication breaks down, and so when this cycle does occur, it is extremely important to conversational continuity.

We will examine in greater detail several parts of the sequence and the interrelations between them. Some recent research has investigated links (dependencies and contingencies) between the various components.

#### *Initiating Utterance > Stimulus Sentence*

Let us first consider the link between the client's initiating utterance and the partner's spoken stimulus that is received in return. In conversations, logical turn-taking sequences commonly occur – to provide the communicators with mutual understanding that permits social affiliation, information to be obtained, and beliefs to be verified. These conversational sequences have been labelled "adjacency pairs" (Brown & Yule, 1983; Clark, 1979; Levinson, 1983) (e.g., greeting > greeting; question > answer; compliment > acknowledgment). Some of these paired sequences (i.e., greetings) are very structured (Schegloff & Sacks, 1973), which assures high predictability and therefore conversational success. However, such practiced routines are seldom highly rewarding, as their predictability limits the amount of new information conveyed. By contrast, the form of the assertion > response sequence is not so assured, perhaps yielding acknowledgment, (dis)agreement, elaboration, or another form. Different people will produce different types of response to the same assertion, and because the potential range of conversationally appropriate utterances is so great, predictability is diminished.

An individual person's pattern of response, however, may be consistent and thus predictable. A particular partner may be very consistent when responding to assertions (e.g., a spouse may nearly always respond to assertions with counter-assertions, never requesting more information). Such consistencies can lead

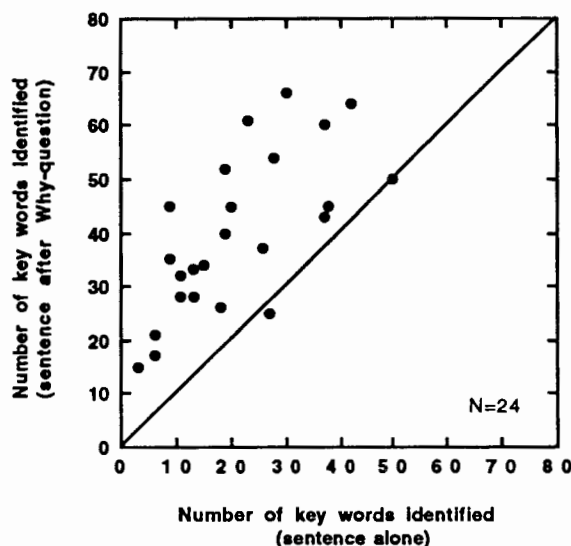
to high sentence intelligibility – if the client expects the form of response that is typically given. But of course, if one's expectations and a partner's response tendencies do not coincide, then sentence intelligibility can be low.

The ASQUE procedure (Erber, 1988) employs some of the concepts described above to provide clinical practice in sentence identification. This activity employs sets of initiators of various types: Yes/No Questions, Choice Questions, Wh-Questions, How/Why Questions, and Assertions. In practice, the client initiates turn-sequences in these various ways, anticipating the form of response. The client then attempts to identify the clinician's spoken response, and also judges the difficulty of the identification task. Typically, people with hearing impairment are able to predict and identify spoken responses to Yes/No or Choice Questions more easily than spoken responses to Assertions – when produced by familiar and cooperative partners who possess good meta-communication skills (Erber, 1988).

In a recent study (Erber, 1992b), we created 40 stimulus sentences (e.g., "I'm going to my cousin's wedding on Saturday.") and also 40 related Why-Questions which may have served as initiating utterances in conversation (e.g., "Why have you bought a new suit?"). Twenty-four older adults with acquired hearing losses attempted to speechread a videotaped talker producing the 40 stimulus sentences. Half the sentences were presented in isolation, while half the sentences were presented just after the subject spoke the related Why-Questions to the talker on the television screen. The results demonstrate the clear advantage of speechreading sentences when they follow self-initiated questions than when they are received in isolation (i.e., the partner speaks without context) (see Figure 2). Further research is required to examine the benefits of other types of initiating utterance. There are implications for the development of specific conversation-management strategies.

The results of this study, in which stimulus sentences were easier for clients to identify when the sentences followed Why-Questions, illustrate the importance of presenting speech materials in a conversation-like context. Predicting conversational success by presenting unrelated sentences in contextual isolation possesses no face validity. These results provide us with the necessary permission and direction to develop *interactive* materials for assessing speech perception, so that clinical findings will more closely reflect the client's conversational performance in real life.

It is important to acknowledge that not all people are cooperative or capable conversational partners. In one recent study (Erber, 1991), we found that even people who are experienced partners differ greatly in the way that they respond to initiating utterances. For example, the mean length of spoken responses to assertions ranged from 2.9 syllables to 26.9 syllables for particular speakers. Individual speakers were very consistent in their production of short or long responses. There also were differences in what might be called "degree of cooperation" (see Table 2). Many of our clients have reported difficulty communicating with uncooperative communicators (those who do not respond with of-



**Figure 2.** Visual identification of key words as a function of sentence context. From "Effects of a Question-Answer Format on Visual Perception of Sentences" by N.P. Erber, 1992, *Journal of the Academy of Rehabilitative Audiology*, 25, p. 117. Copyright 1992 by the Academy of Rehabilitative Audiology. Reprinted by permission.

ferred choices, avoid questions, or change topics). Some clients have claimed that their spouses use this technique for gaining power in the relationship. So, although management of the initiator > stimulus sequence can assist the client in stimulus identification, the expected stimulus is not always spoken, and confusion can result (McHoul, 1987).

#### *Stimulus Sentence > Clarification Request*

We now wish to consider the link between the stimulus sentence and the clarification request. Let us presume that the person with impaired hearing has produced an initiating utterance. The partner has spoken in return, but this stimulus sentence is not understood. An important component of meta-communication is the ability to recognize that such a problem has occurred.

If the conversation is to proceed, either (a) the client must pretend to understand, (b) the client must request modification of the stimulus, or (c) the partner must provide clarification without being directed to do so. Legitimate requests for clarification may be either specific or non-specific in nature. A specific request for modification of the stimulus may be an overt plea for help such as, "Could you please speak more slowly?", or it may be presented covertly as a clarifying question within the conversational context such as, "Did you say that you were in San Francisco last summer?" In either case, this type of request is much more directive and useful than: (a) a non-specific request such as "Huh?"

which does not inform the partner of the nature of the problem and only admits a general lack of understanding, or (b) pretended understanding conveyed through bluffing behavior (Rupp & Heavenrich, 1982). These contingencies can be defined, examples of each practiced in the clinic, and their effectiveness studied.

Some clients report that: (a) they are reluctant to make requests other than for repetition or louder speech; (b) some partners do not know how to comply with more detailed requests anyway; and (c) many partners demonstrate no apparent learning, and need to be reminded repeatedly to slow down, speak louder, etc. The clinician may introduce a range of strategies which not only match an individual's capacity but also suit everyday situations.

Use of clarification requests may be promoted by establishing a ("simulated") conversation and then speaking to the client with difficulties artificially imposed on the stimulus sentences (e.g., speaking too softly, too quickly, unclearly, with

**Table 2**  
Differences in Response to Initiating Utterances of Various Types

a. Predictable
"Do you sing when you're having a shower?" (yes or no)
"Yes, I do." (yes: emphatic form)
"Did you buy the book, or did you forget?" (choice)
"I forgot." (choice #2)
"What sort of pen do you prefer to use?" (information-seeking)
"One with a fiber-tip!" (desired information)
"How can we improve public transport?" (opinion-seeking)
"Build a train line to the northeastern suburbs!" (opinion)
"It's easy to cook for a big family!" (assertion)
"Yes, if you plan ahead!" (agreement, elaboration)
b. Unpredictable
"Do you sing when you're having a shower?" (yes or no)
"I whistle." (new information)
"Did you buy the book, or did you forget?" (choice)
"I remembered this time." (choice denoted through implication)
"What sort of pen do you prefer to use?" (information-seeking)
"Anything that writes!" (relevant, but nonspecific)
"How can we improve public transport?" (opinion-seeking)
"I think that needs further study." (avoidance of opinion)
"It's easy to cook for a big family!" (assertion)
"Do you think so?" (rhetorical question)

*Note.* From *Stimulus-Response Patterns in Adult Verbal Interaction* by N.P. Erber, 1991, Unpublished manuscript. Reprinted by permission.

**Table 3**  
Using QUEST?AR to Provide Practice in Identification of Difficulties  
and to Promote the Use of Clarification Requests

	<b>Difficulty added</b>	<b>Difficulty identified?</b>
1. Why did you go there?		
2. When did you go?	fast	×
3. How many people went with you?		
4. Who were they? (relations/names)	soft	✓
5. What did you take with you?	long	✓
6. Where is ( <i>the place where you went</i> )?		
7. How did you get there?		
8. What did you see on the way?	fast	✓
9. What time did you get there?		
10. What did you do first?		
11. What did you see?	long	×
12. How many? What color? How big? etc.	soft	✓
13. What happened at ( <i>the place where you went</i> )?		
14. What else did you do?		
15. What were other people doing at ( <i>the place where you went</i> )?	fast	×
16. What was the most interesting thing that you saw?	soft	✓
17. What was the most interesting thing that you did?	long	✓
18. What did you buy?		
19. What kind? Which flavor? What color? etc.	soft	✓
20. How much did it/they cost?		
21. Did anything unusual happen? What?		
22. How long did you stay?	fast	✓
23. What did you do just before you came home?	long	✓
24. What time did you leave?		
25. How did you get home?		
26. What happened on the way home?	soft	✓
27. What time did you get home?		
28. How did you feel then?	fast	×
29. When are you going back?	long	✓
30. Do you think that I should go sometime? Why?		

mouth obscured, with complex syntax, or use of rare words) (Erber, 1988). The client's task is to identify the stimulus sentence in each instance. If this cannot be done, then the client is to identify the source of difficulty. Table 3 illustrates how the method is used clinically with QUEST?AR. All 30 questions in the QUEST?AR sequence are listed; the clinician writes conversational difficulties in advance to cue modification of each spoken sentence; and a column is provided

to indicate whether the client was able to identify each imposed difficulty.

Some people with impaired hearing confuse syntax which is “complex” with speech that is “too fast” – both appear to create an information overload. To develop use of appropriate strategies, the therapist may introduce structured scenarios in which these distinctions are possible. As discussed above, the success of any (anticipatory, conversational, or environmental) tactic/strategy or problem-solving technique depends upon the ability to consciously analyze each communication setting.

Most people with mild/moderate hearing losses can easily identify difficulties that are conveyed by the sentence *pattern*, such as “too fast” (rapid bursts of energy) or “too soft” (weak bursts of energy). For greater hearing losses, simulated with HELOS (Gagné & Erber, 1987), we have observed that not only are the contents of stimulus sentences more difficult to identify, but sources of imposed difficulty also are harder to identify (Erber, 1989). This is especially apparent for content related difficulties such as complex syntax or rare words. If the partner is obviously speaking clearly, slowly, and sufficiently loudly, and the message still is not understood, then the source of difficulty probably is related to sentence *content*. In this situation, the client may be advised that a reasonable and conversationally appropriate request is, “Could you please say that another way?” Thus, for a person with a severe/profound hearing loss, a cooperative partner is a valuable asset. Further research is required on effective strategies for identifying sources of communication difficulty, and ways to develop these abilities in our clients.

#### *Clarification Request > Modified Stimulus*

We will now consider the link between the clarification request and the modified stimulus. What does the partner do when the client requests help? Valian and Wales (1976) asked each of their subjects to read sentences to a listener in an adjacent room (this person was the experimenter’s assistant, unknown to the subject). According to a prescribed plan, the listener requested help on approximately 80% of trials by asking “What?” This simulated the use of a non-specific clarification request following communication breakdown. The subjects modified the stimulus in whatever way they thought was appropriate in that situation. Under these conditions, the subjects repeated the sentence 55% of the time and rephrased the sentence 45% of the time.

Chelst, Tait, and Gallagher (1990) studied conversational interaction of six wife-husband pairs under conditions in which each husband simulated mild/moderate hearing loss with earplugs and earmuffs. The most common strategies employed by wives in response to communication difficulty included attention-getting, reduction in utterance length, repetition, re-phrasing, spelling of words, and verification of comprehension. There is a great need for further ecological study of conversations between people with impaired hearing and their frequent communication partners – to establish how communication breakdown is effectively resolved in real-life situations (e.g., see Erber & Greer, 1973).

## THE INFORMED COMMUNICATION PARTNER

### *Clear Production of a Stimulus Sentence*

As stated before, it is common for clinicians to present stimulus sentences and to ask the client to: (a) repeat what is said (identification response), or (b) respond to what is said (comprehension response). Several research studies have considered speech production factors that can affect the intelligibility of stimulus sentences. For example, Kricos and Lesner (1982) studied production of consonant visemes by six adults. Two of these talkers produced only four consonant mouth shapes; two produced six consonant shapes; and two produced eight distinctive mouth shapes. There was a general relation between a talker's ability to clearly articulate consonants and that person's visual sentence intelligibility when speaking to speechreaders. Picheny, Durlach, and Braida (1985, 1986, 1989) demonstrated differences in intelligibility between carefully and casually produced speech, describing the acoustic characteristics of each presentation style. Carefully produced speech was about 10-20% more intelligible, primarily as the result of elongating vowels and stressing unstressed syllables. Thus it is possible for linguistically naive speakers to make their stimulus sentences more intelligible by speaking with greater *clarity* to people with impaired hearing, if they do not know how to simplify the *content* of their messages.

The intelligibility of sentences also can be increased by manipulating their semantic redundancy, as exemplified by the low- and high-predictability sentences of the SPIN test (Kalikow et al., 1977). While the syntactic structures of these low- and high-predictability sentences are similar, the words in the high predictability sentences are more closely related – that is, when one word is perceived (e.g., “ticking”), another is immediately expected (e.g., “clock”).

The syntactic structure of stimulus sentences can be varied in complexity. Studies into the effects of syntactic variation on speechreading performance (Bergman, 1980; Erber 1988; Fehr & Trotter, 1975; Schwartz & Black, 1967) highlight the importance of “manageable” syntax in aiding speech perception.

In summary, important variables affecting sentence intelligibility appear to include prominence of auditory and visual cues (e.g., number of consonant blends, number of high-frequency consonants, proportion of multi-syllabic words), semantic redundancy (e.g., word/lexical association, proportion of common words), and syntactic complexity (e.g., inversion, negative, passive). One can modify spoken sentences in many ways to increase/decrease their intelligibility independent of the conversational context.

### *Remedial Clarification of a Stimulus Sentence*

Often, a person with impaired hearing will not understand even a clearly produced sentence, and will request clarification. In some situations, however, that person is not aware that clarification is required, and instead the partner will provide clarification without being asked (e.g., especially when speaking to a very young child or a very old adult, who may appear not to perceive, or does



not reliably respond). This process is exemplified by the SENT-IDENT screening procedure (Erber, 1988, 1992a). Here, each test sentence is repeated if it is not first identified by listening alone (mouth covered). Then clarification is employed. If the client still cannot understand the stimulus sentence, then the clinician makes one word visible (mouth briefly uncovered). If necessary, the sentence is presented once again with all words visible (mouth uncovered). This sequence reflects the spontaneous use of strategies by many health-care providers (e.g., physical therapists, podiatrists, nurses), who tend to be busy elsewhere (e.g., with the client's back, feet, or bed), and face the client only after numerous attempts to communicate without visible cues. Some clinicians who use the Tracking procedure employ clarification in a similar hierarchical sequence (Danz & Binnie, 1983; Lind, 1989; Owens & Raggio, 1987).

The results of the Erber (1992a) study, in which SENT-IDENT was presented to 56 older adults, clearly indicate the importance of speaking sentences adaptively by presenting them more than once and clarifying when necessary. In most cases, the individual's final cumulative score (number of test sentences ultimately identified) could not be reliably predicted from that person's ability to understand sentences upon initial presentation. Obviously, our methods for assessing speech perception must change if we hope to obtain clinical data that reflect a client's real-life performance. These results give us permission to begin to evaluate our clients by means of *adaptive* assessment procedures.

Nevertheless, it is important for informed partners to establish what the other person needs in order to converse successfully, and then to provide this assistance on the first attempt rather than continually approach communication as a remedial task (Erber, 1993). Even for the experienced clinician, fluent conversation may remain a challenge, as clients present with such a wide (and unpredictable) range of communication needs. To develop desired skills, the partner may benefit from communicating in noise or via an electronic hearing-loss simulator such as HELOS in order to personally discover some of the recurrent conversational difficulties experienced by hearing-impaired individuals (Erber, 1988; Gagné & Erber, 1987). We need to develop effective methods for training partners to reliably produce clear speech, simple language, and appropriate clarification.

## SUMMARY AND CONCLUSION

### *The Clinic: Modification of Stimulus Materials*

The communication abilities/potential of many clients probably is grossly underestimated by current speech-perception assessment procedures. We all know people who score lower than 20% on word-list identification, yet with whom we can converse fluently face-to-face (at a 1-m distance in quiet). There is a need for more realistic assessment procedures: materials that reflect what people say and how they say it in the real world; audible and visible environments that mimic the real world; and communication partners who respond, or do not cooperate, like those in the real world.

*The Real World: Awareness of Hearing Loss*

We firmly believe that the public needs to be informed that hearing loss can produce irreversible effects which can be very disruptive to one's life and relationships (see Robards-Armstrong & Stone, 1994; Binnie, 1994). Sometimes acquired hearing loss, poor acoustic environments, and uncooperative partners cannot easily be overcome. Many of our clients discover that some environments (e.g., restaurants, parties) are no longer optimal locations for intimate conversation. Yet these same people report that it is very difficult to change their familiar, preferred methods of socialization in order to accommodate an acquired hearing loss. They may feel "sociable" only in large, noisy groups; they may not know how to establish one-to-one conversations; they may even experience great discomfort in one-to-one conversations, finding these situations too intimate and threatening. Unfortunately, many people with acquired hearing loss can only communicate successfully when close to a partner and face-to-face, but they do not consciously arrange, and may even actively resist, such one-to-one situations. Adjustment to sensory loss is a necessary part of growing older (communication therapists must learn how to counsel clients regarding this fact). Everyone must prepare for change, which is easiest early in one's life. Unfortunately, few young people are able to acknowledge that they too will grow old.

We need to recognize that we cannot solve all the communication problems of our clients. We need to admit this both to ourselves and to our clients. We need to consider that modern technology alone may not always provide desired help. Even directional microphones, noise-reducing sound processors, and cochlear implants are not miracle cures. Present-day technology cannot eliminate all stress in difficult situations. It only defers it, slowing the fatigue process. Dissatisfaction with technological solutions usually follows unrealistic expectations. We must remember that hearing loss is a human communication disorder, to be resolved ultimately by humans – perhaps by the person with the hearing loss, perhaps in conjunction with family and friends, and perhaps with the help of a supportive therapist.

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