COMMUNICATION AND WORK: IMPLICATIONS FOR THE DEAF WORKER

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It is evident that much effort must be expended to help the hearing-impaired student acquire the verbal skills required to function effectively in the work environment. Yet remarkably, there is a paucity of literature describing communication patterns associated with work.

The need for usch information has been expressed at NTID by counselors responsible for helping deaf students in their career planing; by communication specialists responsible for training students in communication skills necessary for successful employment in their chosen careers; and by placement personnel who must overcome the apprehensions of many employers about hiring an otherwise skilled employee who has communication deficiencies.

This study was initiated in 1970 in response to these needs. [1] It should be stated at the outset that the data collected and analyzed to date are too extensive to permit full reporting in this paper. Additionally, other data are still being analyzed. [2]

We will describe the system for collecting the communication data as briefly as possible, then move on to some selected findings as conclusions about communication and work.

THE INSTRUMENT AND POPULATION. The instrument used for data collection was a self-report protocol developed at NTID. This protocol underwent several field tests and revisions. The protocol required subjects to describe their communication around six clusters of information. (see Appendix)

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[1] The contributions of Dr. David Lacey, at that time a Research Associate with NTID, are acknowledged. Dr. Lacey was responsible for the general design of the protocal, and for the administration procedures.

[2] The full report, *Communication patterns and work* should be available on request by December, 1974.

1. Who initiated
2. With whom
3. Content
4. Mode of communication
5. Setting
6. One-to-one versus group communication

Each of these clusters contained several categories. Cluster 4, for example, contained the following categories.

1. Telephone/intercom
2. Speaking/listening face-to-face
3. Reading (limited to reading material such as letters and memos directed to the subject).
4. Writing (e.g. instructions, letters, reports, etc., initiated by the subject).
5. Physical gesture or demonstration

During individual training sessions, subjects were instructed to use protocol at half-hour intervals throughout two full eight-hour working days, yielding a potential of 32 communication episodes per subject. If at a particular point in time when they were asked to record their communication, they in fact were not engaged in communication, they were instructed to indicate "NC" on their protocol. If at a particular half-hour point they forgot to record an episode or found it inconvenient to do so, they were instructed to leave that column on their protocol blank. It is noteworthy that of the 10,624 potential episodes on which data were subsequently collected (332 subjects times 32 episodes), only 1,542 (15 percent) were left unrecorded as being either a communication episode or no communication.

Additional information was collected on each of the subjects, including supervisory role, major job functions, size of their company, and for some subjects, their level of formal education.

An effort was made to concentrate on specific occupations and occupational groupings, e.g., Health, and Business and Office, these being areas of which many NTID students are currently being trained.

A total of 332 subjects, all of whom were hearing, participated in this study. These subjects represented 29 different employers and 41 different occupations. Data were collected on 10 or more subjects from 12 specific occupations (6 from the Health area, 4 from Business and Office, and 2 from Communication and Media). All 332 subjects were hearing.

EXTENT OF COMMUNICATION. A total of 9,082 episodes were recorded by the 332 subjects as communication (4,242) or non-communication during 47 percent of the times, and were not involved in communication 53 percent of the times sampled.

Subjects were grouped in terms of the total number of employees in their company (business, hospital, etc.), specifically, whether their company employed 1 to 25, 26 to 99, 100 to 500, or more than 500. Extent of communication seemed independent of company size, except

among the 24 subjects who worked in very small companies employing 1 to 25 employees. These subjects reported communication 57 percent of the time, and non-communication, 43 percent of the time.

Data were collected on 100 subjects indicating their educational levels. These were grouped as high school or less (23), post-high school up to and including Associate degree (45), and Baccalaureate degree or beyond (32). Extent of communication seemed to be independent of educational level. For example, the 23 subjects who indicated a high school education or less reported 42 percent communication; those with Baccalaureate degrees or beyond reported 44 percent communication. It should be added that the 100 subjects who reported their educational levels also indicated less communication than the average for the total group, so they were in fact not representative, at lease on the dimension of extent of communication.

Of the 332 subjects, 72 were supervisors and 258 were non-supervisors. Supervisors reported communication 54 percent of the time, and non-supervisors 45 percent of the time, suggesting, as might be expected, that supervisors engage in relatively more communication than do non-supervisors.

The subjects were also grouped on the basis of whether they held multiple major job functions [3] ("generalists") or single major job functions ("specialists"). Of the total, 101 were generalists, and the remainder specialists. The generalist reported communication 53 percent of the time, and the specialist 43 percent of the time. Apparently, employees who engage in multiple job functions participate in more communication than those who do not. This finding can be interpreted in several ways. For example, employment in a small company may call for more multiple job functions than employment in a large company; also, a disproportionate number of the generalists may also be supervisors.

Up to this point, the reported data suggest that these 332 employees engage in communication just under one-half the time during the work day. Supervisors and those who have multiple job functions engage in relatively more communication than do their counterparts. Those who work in very small work settings appear to engage in relatively more communication than those who work in larger work settings. Finally, it has been suggested very tentatively that "extent" (not to be confused with "kind") of communication may be relatively independent of educational level.

GENERAL COMMUNICATION PATTERNS. Let us turn now to a general description of what transpired during the 4,242 recorded communication episodes.

First, it was found that 50 percent (2,130) of the reported communication episodes were initiated by the subjects, and that 50 percent (2,112) were initiated by others. This was to be expected.

[3] The Dictionary of Occupational Titles was used to make this determination.

For the purpose of determining who the subjects communicated with, data from clusters A and B of the protocol were collapsed.

Of the total, 52 percent of the subjects' communication was with fellow-employees in the same department, followed by 13 percent with fellow-employees in other departments. Communication with the subject's immediate supervisor consumed 9 percent of his communication, and communication with an employee supervised by the subject, 8 percent. Clients, customers, and visitors collectively constituted 11 percent of his communication, while 4 percent and 3 percent of his communication was with upper management and supervisors in other departments respectively.

Turning to modes of communication, we find that 83 percent of the subject's communication involved speaking and listening face-to-face. Telephone/intercom communication constituted 12 percent of his communication. Reading and writing each consumed 2 percent of his communication. [4] Physical gesture or demonstration constituted 1 percent of his communication.

For the most part, communication took place in the subject's own work place (61 percent), followed by 15 percent in a fellow employee's work place. Communication in the cafeteria, rest rooms, around the coffee machine, etc. consumed 12 percent of the communication episodes. Communication in the subject's supervisor's work place consumed 3 percent, and in upper management's work place, 2 percent. Five percent took place in other plant locations, and 2 percent in external work locations.

By a considerable margin (78 percent), communication took place on a one-to-one basis rather than in groups. Communication involved small group participation 15 percent of the time, and large group participation 2 percent of the time. Additionally, subjects led small groups (6 or less) in communication 4 percent of their total communication, and led large groups (7 or more) a mere 1 percent of their total communication.

It may well be asked what proportion of all this communication was job-related, and what proportion was personal/social. It may be recalled, for example, that subjects were asked to record their communication activities at half-hour intervals throughout the entire two working days, including lunch and coffee breaks. Subjects recorded 2,855 job-related communication episodes, and 1,380 personal/social communication episodes, constituting 67 percent job-related, and 33 percent personal/social episodes. [5]

[4] It should be remembered that both reading and writing had restricted definitions, e.g., for a medical records clerk, noting and filing a medical report would not constitute reading; nor would transcribing a letter constitute writing for a typist.

[5] An analysis is now being conducted to determine how these job-related and personal/social communication episodes distribute themselves across the patterns already described.

To summarize what has been noted about the general communication patterns of the 332 subjects, we find first that most of the communication was with fellow employees (65 percent), of which most was with fellow employees in the same department. We find also that most communication was on a speaking/listening face-to-face basis (83 percent), followed distantly by telephone/intercom (12 percent). Remarkably, only 2 percent involved reading and 2 percent involved writing. This finding, however, should be qualified by the fact that a restricted definition of reading and writing was imposed on the subjects. Subjects indicated that most communication occurred around their own work places (61 percent). Most communication was on a one-to-one basis (78 percent) rather than in groups of 3 or more (22 percent). Finally, subjects indicated that two-thirds (67 percent) of their recorded communication was job-related, and one-third (33 percent was personal/social.

COMMUNICATION PATTERNS BY OCCUPATION. It is byyond the scope of this paper to present the details of communication patterns from general career area to career area, or from specific occupation. Analysis of these data to date suggest that we are unlikely to be able to identify a distinctive pattern of communication associated with occupation x which separates it clearly from occupation y.

Since the majority of the subjects represented the Health, and the Business and Office areas, (154 and 119 subjects respecrively), let us briefly compare the subjects in these two groups.

Each group reported being engaged in communication 46 percent of the time.

Those in Health reported 55 percent of their communication was with fellow employees in the same department. Those in Business and Office reported 53 percent with fellow employees in the same department. Prevalence of communication with others was not notably different.

Those in Health reported somewhat more communication in the form of speaking/listening, face-to-face (88 percent) than those in Business and Office (75 percent), and somewhat less communication by telephone/intercom (8 percent) than those in Business and Office (16 percent).

Where the communication took place was not markedly different between the two groups. Nor was the proportion of one-to-one versus group communication notably different.

Proportions of job-related and personal/social communication were also quite similar (65 and 35 percent respectively for Health, and 69 and 31 percent respectively for Business and Office).

Inspection of the data returned by the 45 subjects in the Communication and Media area revealed patterns generally similar to those of the Health, and the Business and Office areas.

It was stated earlier that 12 specific occupations were identified for which communication data were recorded for 10 or more subjects each. Four of these occupations (hematologist, clinical chemist, general

office clerk, and accounting clerk) each were represented by 30 or more subjects, constituting a more acceptable sample. We will look briefly at the communication patterns among these four occupations.

In the same order as the listing of the four occupations above, communication with fellow employees, same department, ran 56 percent, 63 percent, 55 percent, and 57 percent. Communication of subjects with employees they supervise ran 9 percent for both Health occupations, and 4 percent and 1 percent respectively for general office clerks and accounting clerks. This would seen reasonable in view of the unlikelihood of clerical staff members supervising others. In terms of communication with their own immediate supervisors, the four occupations reported 3 percent, 9 percent, 12 percent and 6 percent, respectively. These percentages may or may not reflect real differences.[6]

Modes of communication were compared across these same four occupations. Hematologists reported 86 percent of their communication as being speaking/listening face-to-face, clinical chemists reported 93 percent, general office clerks, 78 percent, and accounting clerks, 70 percent. On the other hand, telephone/intercom accounted for 8 percent, 4 percent, 16 percent, and 17 percent of the communication of the four respective groups. The extent of these differences does suggest that those in the two health occupations engage in relatively more speaking/listening face-to-face communication, and relatively less telephone/intercom communication than those in the two Business and Office occupations.

Hematologists and clinical chemists engage in communication in their own work place 62 percent and 53 percent of the time respectively. General office clerks and accounting clerks engage in communication in their own work place 63 percent and 55 percent of the time respectively. Again, it is difficult to detemine whether these are real differences. Hematologists and clinical chemists do appear to spend more time in communication in "other plant locations" than do general office clerks and accounting clerks (11, 8, 2 percent respectively).

Proportion of one-to-one versus group communication does not seem to discriminate any of the four occupations.

Proportions of job-related to personal/social communication do not differ to any apparent degree. Job-related communication across the four occupations ran 67 percent, 66 percent, 64 percent, and 65 percent respectively.

DISCUSSION. There is considerable hazard in discussing and

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[6]Meetings have been held with faculty members who train students for these occupations, to discuss the data and their significance. Faculty members gave the opinion that some of the differences were probably real, and other differences probably artifacts of the instrument of sampling. The investigators are of the opinion that statistical tests of significance have limited application with data like these.

drawing conclusions from a study before its data are fully analyzed.

In the selection of the 332 employees who participated in this study, there was no intent to select subjects who would be representative of the entire work force. Instead, an effort was made to sample occupations resembling some of those for which NTID students are currently being trained. Nevertheless, the results may be more generalizable than first appears, since the communication patterns among those occupations sampled were more similar than different. Indeed, closer analysis might have revealed almost as much diversity in communication patterns within specific occupations as among different occupations. Despite these constraints, some general inferences which are unlikely to change can be made from these findings.

The most striking finding to emerge was the extent to which these employees engage in communication, approximately one-half of their working day. Even if we were to dismiss the communication of a personal and social nature, we would find that one-third of the working day is devoted to communication which is job-related. Iti perhaps a truism but essential to say nonetheless, that communication is integral to work. This fact, of course, has major implications for the hearing-impaired worker who is likely to have one or more communication liabilities.

A second observation from this study is the relatively high frequency of communication with fellow-workers in the same department. in contrast, for example, with the relatively infrequent communication with clients, customers, and visitors. While this pattern would likely be reversed in some other occupations, e.g., sales clerk, the former pattern was relatively consistent across those occupations sampled. This is a positive finding for the deaf employee. If one-half or more of the employee's communication is with people in his immediate environment, i.e., same department, this should afford his fellow workers the chance to become more familiar and comfortable with his oral and written communication styles, and he in turn with theirs. Also, if the deaf employee's most comfortable mode of communication is sign language and/or fingerspelling, it may be practicable for the deaf employee himself to informally teach others in his department who have an interest in the fundamentals of this mode. It may even be feasible to provide formal training to fellow-workers in his department. The prevalence of communication with fellow-employees in the same department makes the communication problem a more manageable one.

A third observation of significance to the deaf employee is the manner in which communication takes place. The preponderance of communication involves speaking and listening, constituting about 95 percent of the communication activity. The balance is primarily reading and writing. The reader is again reminded of the restricted criteria attached to what constituted reading and writing for purposes of the study.

There can be no question of the value of oral communication skills on the job, and by inference, the importance of providing the deaf person with the opportunity to acquire these skills, inclusive of speech and speechreading. The fact that the bulk of speaking/listening is face-to-face (83 percent) rather than by telephone (12 percent) is a positive finding for deaf employees, although the extent of telephone/intercom communication cannot be ignored. For those who can be trained to use the telephone, this is clearly a useful skill. For those who are unable to use the telephone, some internal accommodation is indicated.

Communication is easier for most deaf people on a one-to-one than on a group basis. The advantages of one-to-one situations are fairly evident. In this respect the findings suggest that three-fourths or more (78 percent) of the communication is individual with individual. It is not known at this time how much group communication is job-related and how much is personal and social, but it can be speculated that a considerable proportion of group communication is informal, e.g., during lunch hours. Group communication almost always involves six or less people, a more manageable situation for deaf people than large groups.

Most communication (61 percent) took place in the employee's own work setting. This can be advantageous for the deaf worker since it allows him to use his physical environment to better advantage.

Reports of extent of reading and writing were remarkably small, restricted criteria notwithstanding (two percent each). One must of course ask how important this reading and writing was to the job. In retrospect, it would have been useful to have collected reading and writing samples from the employees to assist in making this determination. It is beyond the scope of this paper to discuss how deafness can influence reading and writing skills, except to indicate that these skills are usually adversely influenced. From this standpoint, this finding, although extremely tentative, is to the advantage of most deaf employees.

To this point, discussion has centered on hearing workers, but the essential purpose of this study was to shed information to assist the deaf person in the work setting. A logical follow-up would be to study the communication patterns of deaf workers. How similar and how different are their patterns likely to be?

SPECULATION. Permit this paper to end, not with a series of conclusions, but rather with a series of speculations about what we might find among a group of 332 deaf employees distributed throughout these same occupations.

1. We would likely find the extent of communication to be less among deaf employees, particularly in the personal and social areas. The deaf employee is likely to engage in less informal conversation.

2. We might find relatively less communication with clients, customers and visitors, with more of these contacts being absorbed by fellow-employees. Since only 11 percent of the communication among hearing employees was with such persons, this should not add greatly to the task of fellow-employees.
3. Communication with supervisors and upper management would probably remain constant, while communication with those supervised by deaf employees would probably drop from the reported eight percent. This is for the regrettable reason that relatively less deaf employees hold supervisory positions. Parenthetically, numerous investigations have shown less upward occupational mobility among deaf workers than among hearing workers. Hopefully, as more deaf persons acquire more advanced training and are increasingly permitted and encouraged to demonstrate their skills, this pattern will change.
4. The greatest pattern change would likely be in what we have called mode of communication. It is probable that the following differences would appear among deaf employees *as a group.*

   (a) It is unlikely that telephone/intercom would be used directly by many deaf employees, although some with apparently severe hearing impairments would have the skill and confidence to make as much effective use of the telephone as their hearing fellow-employees. Where telephone communication was essential to their job, this would most frequently be done through a hearing fellow-employee serving as an intermediary. However, this would probably not approach the 12 percent frequency found among the hearing employees in this study. It is likely that reading and writing in the form of memo, notes, and letters would substitute for much of the telephone use. While other new telecommunication technologies have recently become available to deaf people as a substitute for the telephone, it is improbable that they will gain wide use in many work settings for some time to come.

   (b) Frequency of speaking/listening as a singular mode of communication would likely be considerably less among deaf employees, particularly in the personal and social areas, but again with numerous exceptions. Reading and writing would probably increase in frequency, both in terms of intra-and interdepartmental communication, and in terms of face-to-face communication. We would probably see an increase in combinations of modes in face-to-face communication during a single communica-

tion episode which would include speaking/listening, reading/writing, and physical gestures and demonstration.

But this remains speculative. It remains to be determined whether these patterns do in fact prevail, and what kinds of adaptations for communication deaf employees, hearing co-workers, and employers do indeed make in their mutual interest. The best of these could in turn be converted into training for the prospective deaf employee and orientation for the hearing co-worker and employer.

In the meantime, it behooves us as professionals to offer the best preparation we can provide the deaf person to enable him to step comfortably into an environment in which people communicate half or more of the time.

Common Survey

Job Title _____

Date _____

Company Name _____

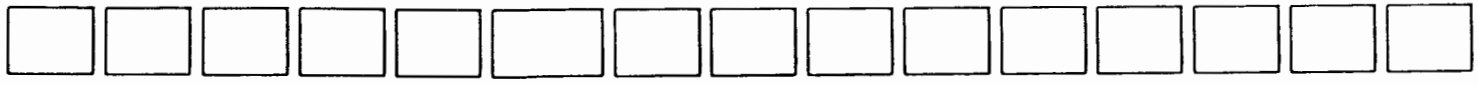
Fill in all the time boxes beginning with the 15 minutes ε hour you formally begin work and half-hour intervals thereafter.
Report communication episodes at thirty minute intervalcing appropriate number for each cluster in the box to the right.

Time Boxes

Communication Episode

Cluster A -- "Who Initiated"

1. I did
2. Fellow Employee(s), Same Department
3. Employee I Supervise
4. My Immediate Supervisor
5. Upper Management
6. Employee(s), Other Departments
7. Supervisor(s), Other Departments
8. Client(s) / Customer(s)
9. Visitor(s)

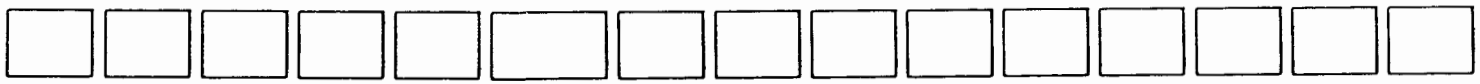


Cluster B -- "With Whom"

1. Me
2. Fellow Employee(s)
3. Employee I Supervise
4. My Immediate Supervisor
5. Upper Management
6. Employee(s), Other Departments
7. Supervisor(s), Other Departments
8. Clients(s) / Customer(s)
9. Visitor(s)

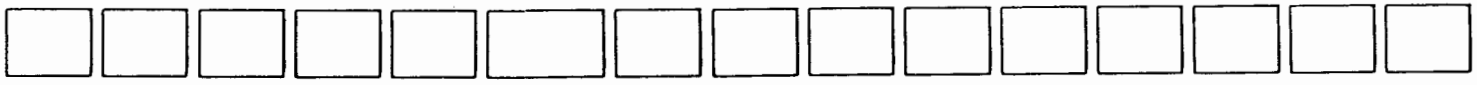
Cluster C -- "Content"

1. Job Related Communication
2. Social or Personal



Cluster D -- "How"

1. Telephone/Intercom
2. Speaking/Listening in Face to Face Communication
3. Reading (ex. instructions, memo, letter, report) personally directed to me.
4. Writing (ex. instructions, memo, letter, report) initiated by me.
5. Physical Gesture or Demonstration



Cluster E -- "Setting"

1. My Work Place
2. Fellow Employee's Work Place
3. My Supervisor's Work Place
4. Upper Management's Work Place
5. Other Plant Locations (meeting rooms, etc.)
6. Cafeteria/Coffee Machines (water cooler, aisles, rest rooms)
7. External Work Location (off the premises)

Cluster F -- "Individual vs. Group"

1. One-to-One
2. Leader of Small Group (6 or less)
3. Leader of Large Group (more than 6)
4. Participant in Small Group (6 or less)
5. Participant in Large Group (more than 6)