NTID RESEARCH BULLETIN

Inclusive Instruction and Learning for Deaf Students in Postsecondary Education

by Susan Foster, Gary Long, and Karen Snell

Background

Deaf students are attending mainstream post-secondary educational programs in ever-increasing numbers. Currently, 20,000 deaf and hard-of-hearing students are mainstreamed in approximately 2,360 postsecondary programs (Lewes et al., 1994), and the provision of support services, such as interpreters, notetakers, and tutors, has come a long way. Yet we have not systematically documented what works and does not work regarding full inclusion of this population. There is always the danger that instructors and students will perceive the presence of support services in their classes as "full accommodation." In fact, this is only the first step. Some examples:

• Deaf students using an interpreter experience a "lag time" in receiving information. The interpreter will finish signing what has been said about 5-10 seconds after the speaker stops speaking, which can exclude deaf students from participating.

• Some deaf students rely on speechreading for information. Yet often instructors break visual contact between the student and their speech while writing on the board, reading from papers held too close to their faces, or pacing back and forth.

• In labs or computer courses, instructors may speak while manipulating physical objects or performing tasks on a projected screen. Deaf students must choose whether to watch the interpreter or the instructor/screen.

• Deaf students are rarely included in informal exchanges among hearing students regarding instructor expectations, study tips, and unspoken rules for class behavior and organization.

These examples demonstrate that there is more to inclusive instruction than physical proximity and the provision of support services. Informal conversations, instructor styles and behaviors, student interactions, and the nature of the information being conveyed subtly but significantly shape the teaching and learning experience.

The National Technical Institute for the Deaf (NTID) is in a unique position to identify the efficacy of inclusive education in achieving the goal of equal opportunity and access to the general curriculum. More than 400 deaf students who are fully matriculated in the other six colleges of the Rochester Institute of Technology (RIT) receive support services through NTID. Thus, RIT/NTID has a wealth of experience and expertise in providing tutoring, notetaking and interpreting for students who are deaf.

The purpose of this project is to describe strategies and conditions which affect access to teaching and participation in learning by deaf postsecondary students in mainstream class settings. Critical areas explored include the perceptions of deaf and hearing students regarding communication and engagement within the class, and the perceptions of instructors regarding their teaching experiences with deaf students.

Research Design

During the 1996/97 academic year, instructors and

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Notes of Note

Harry Lang was invited to present the banquet speech for the 25th Anniversary Celebration of the Rochester Tele-Com Association of the Deaf (RTCAD). As in many other cities, Rochester's Deaf Community established RTCAD as an advocacy organization to collect, rebuild and distribute the old teleprinters to deaf people's homes. Lang reviewed the history of the TTY, based on his research for a book on that subject. For more information, contact Lang at *HGL9008@RIT.EDU*

An article co-authored by **Robert Whitehead** and **Brenda Whitehead** of NTID, and Nicholas Schiavetti and Dale Metz of the State University of New York, Geneseo, titled "Effect of Fingerspelling Task on Temporal Characteristics and Perceived Naturalness of Speech," appeared in the February, 1998, issue of the *Journal of Speech, Language, and Hearing Research* (vol. 41, pages 5-17). The article

Thirty Years of Educating Deaf Men and Women: Much to Celebrate

Jim DeCaro has served as dean of NTID since 1985. He will step down on June 30, 1998. After an administrative leave of absence, he will return to NTID in his home department, Educational and Career Research.

This academic year marks NTID's 30th anniversary of educating and serving deaf men and women at RIT. As a high technology college nested within the fabric of a national technological university, we have much to celebrate.

First, the deaf graduates of NTID and the other colleges of RIT continue to enter society and the workplace in fields where deaf people had limited access a brief 30 years ago. Graduates' rates of employment exceed national averages and their earnings are comparable to their hearing peers. The excellence, credibility and integrity of our academic programs and services and the quality of our graduates continue to speak volumes to our nation's employers. This is not to say that we can become satisfied and complacent. To paraphrase Will Rogers, "We are on the right track and continue to move in the right direction. But, we had better not stop or we might just get run over by the train."

I will introduce the next area with an anecdote. In my second year as dean of this college, I sat with Dr. Richard Silverman, the person who deserves a majority of the credit for drafting the guidelines to establish NTID. I asked Dick if we had met his expectations; he responded, "I had hoped there would be significantly more deaf students pursuing baccalaureate degrees at RIT"—about 14 percent of our students were doing so at the time (1987). Now, approximately 40 percent of the deaf students at RIT are in the baccalaureate programs. This increase is a testament to the excellent work of our support faculty, interpreters, counselors, notetakers, and the faculty in our technical and arts and sciences programs who prepare students to pursue the baccalaureate.

Third, and probably most important, we at NTID have the privilege of serving a group of men and women who historically have encountered incredible obstacles in the acquisition of an education. We have been provided the unique opportunity to tear down barriers to educational success and to facilitate student persistence. This is a gift that many academic enterprises leave unopened. We, on the other hand, have chosen to embrace this gift through our strategic plan.

Before I end, I must mention a characteristic that has allowed us to become the excellent educational enterprise we are—*tolerance*. NTID is an amazingly tolerant community. I recall an invited speaker for an NTID college-wide convocation offering a rousing indictment of education (NTID included) that bordered on the inflammatory and intolerant. A faculty participant clearly became progressively agitated as this presentation unfolded. About halfway through, this individual rose in aggravation and walked out. But within two minutes, the person was back in the same seat and stayed for the entire presentation. The moral of the story? *We might not like what we hear or see. And we may vent our frustration. But we always return to confront an issue directly. In this college, we don't often see the summary dismissal of an idea that is not to our liking.*

It makes me proud to be part of a place where this is the case. Indeed, we have much to celebrate!

James J. DeCaro, Dean

Karen Snell is an associate professor in the Audiology Department, Center for Baccalaureate and Graduate Studies, at NTID.

"One way of assessing how successfully an inclusive environment promotes equal access to instruction is to compare the perceptions of deaf and hearing students about their ease or difficulty in communicating."

Inclusive Instruction continued from page 1

support faculty working with deaf RIT students majoring in business, computer science or information technology were invited to participate in a collaborative study of academic mainstreaming. Quantitative and qualitative research methods were used to collect data from students, instructors, and support faculty regarding academic inclusion. Quantitative tools included the Academic Engagement Form (AEF) and the Classroom Communication Ease Scale (CCES). Qualitative tools included interviews with instructors using both open-ended and semi-structured techniques.

Academic Engagement Form: Engagement refers to the extent that students' efforts, persistence, and emotional states during learning activities reflect a commitment to learning and successful academic performance (Skinner et al., 1990). Engaged students show persistence and interest in academic tasks, and tend to achieve well academically. In this study, students were asked to respond to 110 items designed to assess affective and behavioral aspects of engagement. Items look at aspects of active learning, perceptions of teachers, strength of association with other students in class and feelings of belonging at RIT. These items were adopted from the Rochester Assessment Package for Schools (RAPS), an instrument designed to assess a number of motivational dimensions with hearing students (Skinner et al., 1990). Additionally, students were asked four open-ended questions covering class participation and belonging.

Classroom Communication Ease Scale: One way of assessing how successfully an inclusive environment promotes equal access to instruction is to compare the perceptions of deaf and hearing students about their ease or difficulty in communicating. For this study, a modified version of the CCES was used, in which communication ease is conceptualized as having two dimensions—a cognitive dimension and an affective one. The CCES (Garrison et al., 1993), uses a six alternative Likert Scale to examine each dimension. The cognitive dimension is concerned with self-perceptions about the amount and quality of information that students receive and send. The affective dimension asks students to rate how they feel when communicating with hearing and deaf peers, teachers and support staff. Both positive (feeling good, relaxed, comfortable, confident) and negative (frustrated, nervous, upset) affective responses are explored with students responding to a total of 108 items. Additionally, students were asked two open-ended questions regarding their best and worst classroom communication experiences.

Seventy-six students (46 deaf and 30 hearing) responded to our questionnaires. The average student was 23 years old; 26 were female and 50 were male. Hearing students were matched by gender, course and major with the deaf students.

Instructor Interviews: Interviews (Spradley, 1979) are a conventional qualitative research technique used to explore in detail with research participants their experiences, beliefs and perspectives regarding a particular idea, practice, circumstance or event. By asking individuals general questions and encouraging them to elaborate on their ideas through personal stories and examples, data are collected which can then be analyzed for

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reports that as fingerspelling complexity increases in simultaneous communication, it results in prolonged speech, an increase in the duration of pauses, and speech which is perceived as being more unnatural.

Marc Marschark's seventh book, *Psychological Perspectives on Deafness*, vol. II, with M. Diane Clark (Shippensburg University), has just been published by Lawrence Erlbaum. Composed of review chapters that reflect cutting-edge views from well-known international researchers within the field, this book surveys issues such as cognition, learning disabilities, social development, language development and psychopathology. It also highlights the many new and exciting findings currently emerging from researchers across a variety of disciplines— psychology, education, linguistics and child development. The chapters will engage, challenge, and lead the field on to productive empirical and psychological perspectives in deafness.

code categories, i.e. groupings of types of responses which are similar in nature. This approach often yields information which is inaccessible through traditional quantitative collection strategies.

Semi-structured interviews were conducted with 17 instructors (11 males and 6 females) teaching courses in business (n=8), computer science (n=4), or information technology (N=5). In developing instructor lists, consideration was given to the diversity of the group: new instructors were identified as well as those who had worked at RIT for many years (the range was from 2 to 23 years with an average of 12 years), and instructors who had different teaching styles and course structures, e.g., lecture vs discussion, were included.

Core topics covered include instructors' perceptions of deaf students enrolled in their classes, barriers to access within their classes, and strategies they use to facilitate access to their course materials.

Results and Implication

Two themes emerged as important across both quantitative and qualitative findings. First, the perceptions of deaf students are generally not significantly different than those of hearing students. Both express similar levels of classroom engagement and communication ease. Both define participation and understanding of course material as central to their feeling a part of the class. Both indicate that instructors' pace influences their ease of communication in class settings. Their differences are more related to the specific vehicles through which they interact within their classes.

"Two themes emerged as important across both quantitative and qualitative findings. First, the perceptions of deaf students are generally not significantly different than those of hearing students.

Second, instructors' understandings of who is responsible for the success of deaf students in their classes can best be understood as a continuum which affects both deaf and hearing students."

For example, while overall communication ease is similar for both groups, deaf students emphasize the role of the interpreter in effective communication of information; hearing students focus on the role of instructors. Also, while both agree that participation is important for feeling a part of the class, deaf students express this sentiment less frequently than hearing students, a result probably influenced by the constraints imposed by indirect communications with instructors and hearing students.

Second, instructors' understandings of who is responsible for the success of deaf students in their classes can best be understood as a continuum which affects *both* deaf and hearing students. At the one end are teachers who assume it is their responsibility to share information in a way that helps all students learn, regardless of hearing status. These teachers do not differentiate between the responsibility that they have for hearing and deaf students. Instead, they assume there is something wrong with the interface between the teacher and the student, or perhaps with their own presentation, rather than something wrong with students who do not understand information. They want all their students to "get it."

At the other end of the continuum are teachers who assume that it is primarily the students' responsibility to understand information as presented. They emphasize that all students must learn for themselves and that the teacher is not responsible if someone doesn't "get it." While the special needs of deaf students push both ends of the continuum to extremes, the model can be applied to all students and instructors.

What specific recommendations for practice emerge from this study? First, emphasis should be given to the similarities between deaf and hearing

Notes of Note

An article in this text by Marschark and Thomas Mayer (American University), "Mental representation and memory in deaf adults and children," provides a comprehensive review of research concerning memory for verbal (signed and written) and nonverbal information by deaf adults and children. Primary emphasis is given to ways in which observed differences in memory functioning and memory strategies may influence teaching and learning.

Several NTID faculty were participants at the 1998 American Educational Research Association (AERA) annual meeting, Special Interest Group: Research on Education of Deaf Persons, chaired by **Ila Parasnis** with **Paula Brown**, program chair. Papers at the session "Issues in Deafness: Inclusion, Assessment, Communication, and Reading" were presented by **Susan Foster**, **Gary Long** and **Karen Snell** ("Facilitating Inclusive Teaching and Learning in Mainstream College Classes"); **Gary Long**, **Michael Stinson** and **Ron Kelly** ("The Relationship Between

The majority of Gary Long's research efforts have focused on the interplay of cognitive and social/emotional variables that impact on academic achievement for persons who are deaf. He has published extensively, and has also developed instruments that help researchers better understand the extent to which students identify with their schools, are actively engaged in learning, and feel that they can communicate clearly with their instructors. For more information, contact Long at GLLERD@RIT.EDU

In addition to her work with Drs. Foster and Long, Karen Snell provides audiological services to the RIT community, teaches a course titled 'Communication Technologies' offered through the Center for Arts and Sciences at NTID, and studies the effects of aging on hearing in a research program at the International Center for Hearing and Speech Research at RIT, which is supported by a five-year Program Project Grant from the National Institute on Aging. For more information, contact Snell at KBSNCP@RIT.EDU

students. For example, some hearing students commented that the slower pace of instruction used when deaf students are present is beneficial to them. Several instructors indicated that, while they tend not to make adaptations specifically for deaf students, they would do things to improve their overall teaching effectiveness if it enhanced their student ratings. It is therefore important to identify teaching practices that both meet deaf students' needs and are beneficial to all students.

Second, instructors should be selected for interventions who are interested and willing to modify their teaching strategies to facilitate inclusion of all students. Furthermore, they should have sufficient and continuous exposure to deaf students in their classes. These instructors can then encourage and model good practices for their colleagues.

"Mainstream postsecondary educational settings pose special challenges for deaf students. Interventions must be designed which are specific, involve changes in the behaviors of both students and instructors, and target and reward best practices and educational models."

Third, intervention strategies should be practical and reasonably easy to implement. For example, it is not helpful to suggest that instructors "be more sensitive to deaf learners." More practical suggestions might include seating interpreters near the lectern in order to decrease the visual distance between the instructor and the interpreter, providing handouts of notes which will be displayed on the board during class, or pausing and counting to five after asking a question to facilitate inclusion of deaf students, as well as hearing students who may need an additional few seconds to process information.

Fourth, strategies should be disseminated through user friendly vehicles. For example, a web page which can be accessed at any time with a list of options (strategies, personal stories of frustrations and successes, and a chat room) may be preferable to traditional workshops which often disrupt busy schedules and require travel to central locations on campus.

Fifth, excellence in teaching should be rewarded. The power of professional recognition, merit increments, and positive appraisals cannot be underestimated in changing the behaviors of instructors.

In conclusion, mainstream postsecondary educational settings pose special challenges for deaf students. Interventions must be designed which are specific, involve changes in the behaviors of both students and instructors, and target and reward best practices and educational models. Additionally, efforts to focus attention only on deaf students is almost certain to meet with defeat; there are relatively small numbers of these students and college faculty are often reluctant to modify their practices for a single target group. As a result, extending the benefits of improved access to instruction *to all students* must be emphasized in any intervention plan.

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Students' Ratings of Classroom Communication and the SCPI Ratings of Their Instructors"); and Christopher McAulliffe, former NTID intern, **Ila Parasnis**, and **Vince Samar** ("The Effect of Context on Word Reading in Skilled and Less-Skilled Deaf and Hearing Readers." A roundtable discussion was led by **Lisa Elliot**, **Susan Foster**, **Mike Stinson** and **Judy Colwell** ("Perceptions of Learning with a Speech-to-Print System"). For information about these presentations, contact the primary author c/o NTID.

The Center for Research, Teaching and Learning at NTID has just published the *1998 Papers and Publications*, a list of recent scholarly papers and publications available through the CRTL-based Department of Educational Resources. The list is available on the WWW at *http://www.rit.edu/ NTID/CRTL/pubs.html*, or may be requested by e-mail, *ASKCRTL@RIT.EDU*, or by writing the Department of Educational Resources, National Technical Institute for the Deaf, 52 Lomb Memorial Drive, Rochester, NY 14623-5604.

Temporal Characteristics of Speech Produced by Inexperienced Signers During Simultaneous Communication

by Robert Whitehead

Bob Whitehead is a professor in the Department of Applied Language and Cognition Research at NTID.

"The present study investigated speech timing characteristics of inexperienced signers for sentences produced under three separate independent variable conditions: speech, speech combined with signed English, and speech combined with signed English and fingerspelling."

Recent studies have documented the temporal changes in speech which accompany simultaneous communication (SC) for *experienced* signers (Whitehead et al., 1995; Schiavetti et al., 1998). These changes include increased sentence, word, vowel, and interword interval durations and further segment duration increases occasioned by the addition of fingerspelling to the signing in the SC task. However, despite these temporal disruptions in SC, it has been reported that experienced signers maintain selected temporal rules of spoken English during SC, thereby providing an accurate speech model to deaf children.

There does not appear to be any data concerning the effect of SC on the speech of *inexperienced* signers; such research is important for three reasons:
• Many deaf and hard-of-hearing children use SC with inexperienced signers such as their hearing parents, siblings, peers, school teachers, and service providers. For example, Woodward and Allen (1993) reported that 21% of residential school teachers of the deaf and 52% of nonresidential school teachers of the deaf rated their sign language skills as "greatly inferior" to their English skills, implying that they were not the kind of advanced, experienced signers studied in the Whitehead et al. (1995) and Schiavetti et al. (1998) research.
• Temporal speech disruption during SC for such inexperienced signers may be quite different from that seen with experienced signers, thereby complicating the language learning environment of already at-risk deaf and hard-of-hearing children. A mere slowing of speech would indicate that a speaker attempts simultaneity by approximating speech rate to the slower manual task. But a violation of linguistic temporal rules would indicate that the manual task detracts from the communicative effectiveness of the speech task, possibly jeopardizing speech intelligibility and providing an inadequate model to the developing deaf child.
• Lodge-Miller and Elfenbein (1994) have shown that inexperienced signers tend to over estimate

their signing ability. If inexperienced signers also over estimate their SC ability, they may be trying to use a system that demands more experience than they realize for effective communication.

The present study investigated speech timing characteristics of inexperienced signers for sentences produced under three separate independent variable conditions: speech, speech combined with signed English, and speech combined with signed English and fingerspelling. The temporal features investigated as dependent variables included sentence duration, experimental consonant-vowel-consonant (CVC) word duration, vowel duration in experimental CVC words, interword interval duration before experimental CVC words, and interword interval duration after experimental CVC words. In addition, speakers were studied at two different levels of inexperience during the first and last weeks of an introductory sign language class.

Method
Twelve undergraduate students at the State University of New York, Geneseo, who were inexperienced as both signers and users of simultaneous communication, were tested during the first and last weeks of an undergraduate introductory sign language course. The speakers each recorded a set of test stimuli under three experimental conditions: speech alone, SC employing speech and sign, and SC employing speech, sign, and fingerspelling. The speech samples investigated consisted of the carrier sentence, "I can say _____ again," and eight experiential CVC words which included the vowels /a/ and /I/. The final consonant of each CVC word was a plosive and was systematically varied in order to examine the effect of voicing and place of articulation on vowel duration. The initial consonant of each CVC was also varied to create a stimulus word which met the criterion of being associated with a sign. Since one purpose of the investigation was to study fingerspelling combined with speech, the phonemes which composed the CVCs had to be orthographically and phonemically consistent. That is, the vowel /a/ had to always be fingerspelled with the letter 'o' and the vowel /I/ had to always be fingerspelled with the letter 'i'. The stimuli consisted of the words: job/hop, god/hot, fib/rip, kid/hit.

For each speech sample, duration measures in

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milliseconds were determined for the entire sentence, the CVC word, the vowel within each CVC word, the silent interval preceding the CVC word, and the silent interval following the CVC word. The speakers uttered each experimental sentence, with its embedded CVC word, under conditions of speech, speech combined with signed English for every word in the sentence, and speech combined with signed English for all words in the sentence except the experimental CVC word, which was fingerspelled.

Audio recordings of the experimental sentences were low-pass filtered at 4khz, digitized at 10 khz using a laboratory computer, and stored onto hard disk. For data analysis, an in-house waveform editor on the computer was used with a graphics terminal to calculate the five duration measures for each sentence.

Results

The data indicated that speech is elongated in duration when it is combined with signed English and fingerspelled in SC by inexperienced signers in much the same fashion as with experienced signers, but the magnitude of the effect was much greater for inexperienced signers. Sentences, interword intervals, experimental CVCs, and vowels were always significantly longer in duration in the speech/sign/fingerspelling condition, followed by the speech/sign condition, with the speech condition being shortest in duration.

Further, although vowel durations were longer compared with experienced signers at both the beginning and end of the sign language class, the vowel durations followed the temporal rules of spoken English concerning durational differences based on voicing feature of the following consonant and vowel height. Thus even inexperienced signers using SC conform to these selected temporal rules of English in the speech they present to hard-of-hearing children and adults, despite the extensive temporal elongations in speech segments and interword intervals.

The magnitude of the sentence, word, and vowel duration effects for inexperienced signers were approximately one and one-half times as large as the effects seen for the experienced signers. Interestingly, vowel durations were longer at the end rather than at the beginning of the class. Further, the magnitude of the interword interval duration

effects for inexperienced signers in the first week of class were approximately twice as large as the effects seen for experienced signers, and were closer to one and one-half times as large in the last week of the course. These comparisons show a shifting on the part of the inexperienced signers from greater elongation of *interword* intervals (silent periods) during the first week of the course to greater elongation of *segmental* characteristics during the last week of the course. This finding may indicate a learning pattern in which beginning signers first sign and fingerspell between words in SC (extending interword intervals), and then, as they gain experience using sign language, shift toward attempting to simultaneously sign or fingerspell while producing the words.

We recommend that future research on the use of SC should be directed at the empirical analysis of its relative benefits in facilitating communicative success between hearing and deaf or hard-of-hearing persons, especially for those who have recently learned sign language in order to communicate with the new deaf or hard-of-hearing persons in their environments.

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NTID RESEARCH BULLETIN

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We have come a long way in terms of providing support services such as interpreters, notetakers, and tutors. Yet we have not systematically documented what works and does not work regarding full inclusion of mainstream postsecondary deaf and hard-of-hearing students. See the article on page 1, "Inclusive Instruction and Learning for Deaf Students in Postsecondary Education," for the state of current research in this area at NTID.

In 1993, the National Technical Institute for the Deaf established the Center for Research, Teaching and Learning. A primary mission of the Center is to "foster advances in teaching and learning that enhance the academic, professional, social and personal lives of people who are deaf or hard of hearing." Among its other functions, the Center both conducts research relevant to that goal and supports research conducted by colleagues from across NTID.

As part of our collaborative efforts, the Center regularly undertakes the collection and dissemination of relevant research findings from across NTID. Included for each publication is a description of the implications of the research findings the author thinks will be most relevant for NTID's audiences.

Parasnis, I., Samar, V., Bettger, J., & Santhe, K. (1996). Does deafness lead to enhancement of visual spatial cognition in children? Negative evidence from deaf non-signers. *Journal of Deaf Studies and Deaf Education, 1,* 145-152.
Tests that measured digit span and visual spatial skills were given to deaf and hearing school children in India. The deaf group showed a shorter digit span than the hearing group, but did not display differences on the visual spatial skills tests, including one in which deaf ASL signers have been found to perform better than hearing non-signers. These results suggest that deafness by itself may not lead to better visual spatial skills. Early exposure to sign language and fluent sign skills may be the critical factors that influence the development of visual spatial skills in deaf people.
Implications:
There is considerable evidence that deaf signers perform better than hearing non-signers on many visual tasks. The results of this study, however, suggest that a deaf child is not necessarily better than a hearing child in visual skills, and deaf children among themselves may differ in their visual skills. Some deaf children may be stronger visual learners than others, perhaps based on their sign language background.

Barefoot, S.M., Bochner, J.H., Johnson, B.A., & vom Eigen, B.A. (1993). Rating deaf speakers' comprehensibility: An exploratory investigation. *American Journal of Speech-Language Pathology, 2,* 31-35.
Comprehensibility, operationally defined as the extent to which a listener understands utterances produced by a speaker in a communication context, was studied in deaf college students in relation to various dimensions of communication efficacy. Two hearing undergraduate students who did not know sign language and were not acquainted with any of the deaf students participated as interlocutors. Four normal-hearing professionals trained in the use of the rating procedure viewed the videotaped conversations and evaluated the comprehensibility of utterances produced by the deaf students using a nine-point rating scale. When comprehensibility ratings were studied in relation to independent assessments of speech intelligibility, English language proficiency, speech discrimination, reading comprehension, and hearing loss, it was demonstrated that comprehensibility is most strongly associated with speech intelligibility and language proficiency.

Implications:
Ratings of comprehensibility, a construct used previously in the field of second-language acquisition, could be reliably obtained for deaf college students engaged in conversational interactions with their normal-hearing peers. This study also suggests that the construct of comprehensibility has an instructional utility: it takes into account speech and language factors known to influence a listener's understanding. Since it is assessed in actual conversations, comprehensibility more closely approximates the ultimate instructional function, to address communication in situations that are of practical importance to the speaker.

Kelly, J., & O'Brien, E. (1992). Using video resumes to teach deaf college students job search skills and improve their communication. *American Annals of the Deaf, 137,* **404-410.**
This paper describes the instruction and evaluation of a course developed to produce employment resumes in a video format. The evaluation process included the perspectives of NTID instructors, students and other technical professionals, employers who have hired NTID students, and those who had no familiarity with employees who are deaf. Their comments give valuable insights into the often different perspectives of deafness between those who have worked with deaf employees and those who lack such experience. Video resumes were found to be a viable tool in introducing employers to potential new employees.

Implications:
When instruction focused on language which is important to the student, the level of motivation and communication greatly improved. The use of a video presentation along with a conventional resume for deaf as well as hearing job applicants was viewed positively. Employers, whether they were familiar with deafness or not, found the video a unique and professional job search tool. In 1992, the authors were concerned with the difficulty of sending videos and the problem with employers who might not have access to video equipment. However, students producing these videos in 1997 are planning to add them to their own home pages on the World Wide Web, greatly increasing their accessibility to employers.

If you would like to obtain information in an area beyond what you see listed, you can write to the first author of closely related papers, c/o NTID. If you are unable to obtain one of the publications on this sheet from your local library, you may send this form to: Staff Resource Center, National Technical Institute for the Deaf, 52 Lomb Memorial Drive, Rochester, NY 14623-5604.

_____ *Parasnis et al. Does deafness lead to enhancement of visual spatial cognition in children?*
_____ *Barefoot et al. Rating deaf speakers' comprehensibility: An exploratory investigation.*
_____ *Kelly and O'Brien. Using video resumes to teach deaf college students job search skills and improve their communication.*

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