Augmentative Communication News

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INSIDE THIS ISSUE . . .

UPFRONT

Culture! That is what anthropologists study right?...the Aztecs, Mayans, Romans, Greeks? True, however today we are all students of culture.

- Television, telecommunications, and a global market carry a culturally diverse world into our homes.
- Traveling, we learn first hand that people live, think and do things differently.
- Cultural and linguistic differences are increasingly obvious in our daily lives (e.g., in restaurants or stores).

I grew up during the 1950s in the small suburb of a New England city. Almost everyone was white, Anglo-American. My friends included children from our only two ethnic neighborhoods: Jewish and Italian. However, I had no contact with the African-American and Puerto Rican children who lived nearby in the city. Also, I don't recall meeting anyone with a disability until my 15th summer when some teenagers from the School for the Deaf began coming to the nearby park to swim. We became friends. They introduced me to sign language, and I learned to "flirt" using nonverbal techniques.

In school I was taught the United States is a melting pot. It's not! Twenty five years later, my home town and the nearby city are more ethnically and racially diverse, but the same ethnic neighborhoods exist and so does the School for the Deaf. As Taylor says, "the United States is more like a stew."[1] *(cont. on page 2)*

For Consumers

Culture in the AAC community

Culture is what individuals need to know to be functional members of a community and to regulate interaction with other members of the community and with individuals from backgrounds different from their own (pg. 48).[3]

Everyone belongs to a culture. Culture is a framework against which we approach life and communicate. People all over the world are gradually becoming more *acculturated*. More and more people are *bi- or multi-cultural* and *bi-or multi-lingual*:

- **Acculturation:** Adaptation to a new or different culture—a continuum; the mutual influence of different cultures.
- **Bi- or multi-cultural:** Belonging to several cultures simultaneously.
- **Bi- or multi-lingual:** Ability to understand and converse in two or more languages.

Culture is learned. Yet, it is so much an integral part of who we are, what we do, how we behave and communicate, and what we think, that we may not be conscious of how it affects our perceptions, values, attitudes, beliefs and modes of conduct. The fact is, culture pervades our:

- family structure
- important events in the life cycle
- roles of individual members
- rules of interpersonal interactions
- communication and linguistic rules
- rules for decorum and discipline
- religious beliefs
- standards for health and hygiene
- food preferences
- dress and personal appearance
- history and traditions
- holidays and celebrations
- value and methods of education
- perception of work and play
- perceptions of time and space
- explanation of natural phenomena
- attitudes towards pets and animals
- artistic and musical values and tastes
- life expectations and aspirations.(pg. 4)[4]

(Continued on page 2)

(UPFRONT *continued from page 2)*

Ideally, the ingredients blend, thus enhancing the flavor, each ingredient retaining its identity. The ideal, however, is rarely a reality. Just watch the world News!

This issue of ACN is about culture, language, cultural diversity, and acculturation. Communication interventions need to consider not only the listener and speaker and their means of interacting, but also their social and cultural worlds.[2] The goal is to raise awareness of multicultural and multilinguistic issues and encourage an increase in our knowledge base within the field. **For Consumers** addresses how cultural issues affect the daily lives of people with severe communication disorders and other members of the AAC community. The **Clinical News** section considers issues and strategies for professionals who deliver AAC services and/or equipment to people from ethnic, religious, or racial groups with cultural backgrounds different from their own. The **University/Research** section introduces ethnographic research and gives some examples. **Governmental** describes two projects designed to encourage the successful delivery of assistive technology to minority groups. Finally, issues related to culturally-valid symbol sets/systems and multi-lingual speech output devices are discussed in the **Equipment** section. Many thanks to those who sent me materials and shared their knowledge and work. They are listed as resources on page 10, along with the references and selected readings.

You'll find a questionnaire in this issue. Please take time to complete and return it. I plan to use the results in preparing the September issue of ACN on employment of augmentative and alternative communication (AAC) users. In late June, I will go to Lisbon, Portugal. I am eagerly looking forward to meeting and working with colleagues there. During my absence, the Hotline won't be available. However, Claudia Heinle, my assistant, will be able to answer questions about subscriptions.

Sarah Blackstone, Ph.D.

For Consumers *(cont. from page 1)*

Culture provides individuals with rules for behaving and for interpreting the behavior of others, but it is not a rigid mold of behaviors or characteristics.[5] Like a career, culture influences, but does not define what an individual does at any particular moment. Behavior, especially communication behavior, is influenced more by contextual variables, i.e., where it occurs, interactants, purposes of interaction, and especially important for AAC users, how one communicates. Nevertheless, cultural characteristics play an important part.

AAC users, like everyone else, belong first to their family. As such, they are automatic members of either the dominant culture or a minority culture. Every AAC user is a member of at least one minority— *Persons with Disabilities.* This diverse group is the largest minority in the United States, far surpassing African-Americans and those from Hispanic cultures.[6] People with severe expressive communication disorders are represented in every cultural and socioeconomic level throughout the world. However, for those who are members of ethnic and cultural minorities, particularly if the family does not speak the dominant language, access to AAC services and equipment may be very limited.

Most professionals, including those specializing in AAC, are members of the mainstream culture. While familiar with characteristics of people from various disability subgroups, we are rarely well informed about the ethnic and cultural characteristics of people with backgrounds different from our own. The fact is, too few AAC professionals are truly bi- or multicultural or bi-or multilingual.

A model depicting factors most directly influencing individuals with disabilities is illustrated in Figure 1 on page 3. The inner circle contains family relationships, life cycles and structure. The second circle depicts the family's informal and formal support systems, and the outer circle contains the family's sociohistorical context or culture.[7] Yoder and Foehl maintain the influence of sociohistorical context (or culture) is pervasive, as described below.[8]

Sociohistorical context. How a family values and accepts services for a person with a disability can vary widely across and within cultures. For example, Mexican-Americans and refugees from Southeast Asia may consider a child with a disability a punishment for past transgressions. The Amish community may resist some technological devices because of religious beliefs.[9] In many cultures, assistive devices for communication and mobility may be accepted only after approval of the church or community. While each augmented communicator is different, and intervention must be individualized, consideration of cultural norms, in addition to social and economic factors, is likely to increase the success of intervention.[10]

Support Systems. How families cope with and view a family member with a disability is influenced by their informal (neighbors and friends) and formal (professional) support systems. While the need for and availability of support will vary over time, the family's perception that an appropriate amount of support is being given, relative to the degree of need, is what counts. With an understanding of the sociohistorical context, on the one hand, and family dynamics, on the other, professionals are more likely to provide the support that is needed, when it is needed.

Family: Culture also influences each family's life cycle, structure, and relationships. When a family member is disabled, other members may need to function in ways not defined by cultural norms. Some families

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from *Winton, P. (1986, pg. 226) as described in Yoder and Foehl (1992, p.3)*

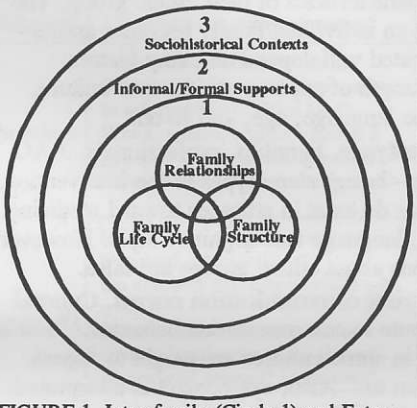


FIGURE 1. Intra-family (Circle 1) and Extra-family (Circles 2 and 3) variables impacting the lives of persons with disabilities.

adapt well; others do not. Identifying factors promoting adaptation is a difficult, but necessary task. Professionals should be aware that cultural characteristics often underlie personal reactions to intervention. For example, researchers have found persons from minority groups may feel[11]:

- **skepticism and mistrust** of public service delivery systems as a result of their group's experience with the delivery systems;
- **lack of interest** in service delivery systems because the family members view the disability as a punishment which must be borne for sins committed by an individual or their parents;
- **lack of knowledge** about or familiarity with rehabilitation service delivery systems;
- **ambivalence, resistance, and fear** of experiencing treatment that further lowers self-worth.

The AAC Community

Communication among members of any group (*e.g., ethnic, racial, religious, professional, age*) is essential to the development of identity, support, and a sense of community within the group. This is generally lacking across the broad spectrum of disabilities, except in some subgroups.

Consider people who are deaf. Like AAC users, they have severe communication difficulties. Unlike AAC users, however, they have a distinct culture, language and traditions, which they pass from one generation to the next. There is ongoing interaction among members of the group. Although professionals are members of the deaf community, they do not define it.

AAC users are a far more diverse group, often with multiple and severe impairments. However, they too share characteristics in how they communicate and use language:[12]

- Reliance on nonverbal forms, graphic symbols, print, and signs instead of spoken words.
- simple, shorter, and less varied linguistic productions, which do not necessarily reflect the linguistic competence of the user.
- Use of unique acceleration techniques, coding strategies, and speech output technologies.
- Dependence, at least to some extent, on able-bodied communication partners to co-construct messages. Partners assume atypical roles.

Culture is more than a set of behaviors people have in common. It is an organizational concept. A major difference between the deaf and AAC community is that AAC users rarely communicate with each other. Given the severity of communication and other problems, and the low incidence of the AAC population, this situation is not surprising. This isolation, however, one from the other, precludes the development of an identity defined by them, and bestows an identity defined for them, by "us."

This isolation, one from the other, precludes the development of an identity defined by them, and bestows an identity defined for them, by "us."

To summarize, individuals who use AAC techniques are likely to be members of several minorities. Some belong to families from minority cultures or groups; all are persons with disabilities and AAC users. These affiliations should be taken into account, understood, and honored. Family members, friends, and professionals are a part of the AAC community. However, without interaction among people who use AAC techniques, the development of a strong sense of identity can not happen. Hopefully, expectations, tools and instructional technologies will someday assist in the emergence of a more cohesive group. Communication is, after all, and more than anything, a fabric of personal, social and cultural identity—and empowerment.

Clinical News

Cultural sensitivy and AAC services

A cultural sensitive refocusing of intervention practices is long overdue (p.100).[13]

When AAC intervention is designed primarily from the perspective of professionals from the dominant culture, cultural and linguistic diversity and the degree of an individual's and family's acculturation may not be taken into account. This failure may diminish the effectiveness of AAC services, even in the presence of state-of-the-art technology or the most up-to-date clinical procedures.[14] In a recent study, for example, Smith-Lewis found that families of students from minority cultures (African-American, Italian and Latino) and the clinicians providing AAC services (Anglo-American) perceived the communication competence of the children and usefulness of AAC devices very differently.[15] See **University/Research** (page 6) for further discussion.

Preparing for Intervention

Knowledge of and sensitivity to each individual's culture and language are valuable from the first contact. Clinicians who are aware of sociocultural patterns when they conduct communication evaluations and plan intervention can do a better job. Likewise, manufacturers and their representatives who understand characteristics of AAC users from different language groups and cultures can provide more appropriately designed products to a wider range of customers. Professionals can take the following steps to enhance their interactions with AAC users from culturally diverse groups, their family and friends.

Step 1.

Be aware of your own cultural values and beliefs. Attitudes and behaviors affect the quality of our interactions. Thus, it is important for professionals to be aware of how they perceive their own group as well as culturally diverse groups. Torres-Davis suggests several exercises designed to increase awareness.[16] In one, she assigns ethnic and cultural characteristics to groups in training events *(cont. on pg. 4)*

(e.g., *Young, white, anglo-american male* or *Elderly, Vietnamese woman*). Then, she asks each group to "Pretend you are members of the assigned group. Make a list of things people say about you that are not fair." Each group shares their lists and participates in subsequent discussions. Participants report increased insight into how they perceive others, and how they are perceived by others.[17]

Two additional exercises are summarized in Table I. These may be done alone or in a group. Answer each item and then reflect on your responses. There are no "right or wrong" answers. The goal is to become more self-aware.

Table I.
(from Torres-Davis, 1993 as adapted from Axelson, 1985)[16]

Exercise A - Acknowledging your cultural heritage.
What ethnic group, socioeconomic class, religion, age group, and community do you belong to?
What experiences have you had with people from ethnic groups, socioeconomic classes, religions, age groups or communities different from your own?
When you were growing up, what did your parents and others say about people who were different?
What sociocultural factors in your background might contribute to being rejected by members of other cultures?
What personal qualities do you have that help to establish interpersonal relationships with persons from other cultural groups? What personal qualities may be detrimental?
What do you find embarrassing/wish you could change about your ethnic, racial, age, religious group?

Exercise B - Exploring beliefs and attitudes	Agree	Disagree
I feel uncomfortable in groups in which I am an ethnic minority.		
I respond with compassion to impoverished people.		
I think interracial marriage is a good thing.		
I accept opinions different from my own.		
I invite people from different ethnic groups to my home.		
I believe the Ku Klux Klan has its good points.		
My country should tighten its immigration policy.		
I am concerned about the treatment of minorities in employment and in health care.		
I tell (or laugh at) ethnic jokes.		
Refugees should be forced to return home.		
I feel uncomfortable in low income neighborhoods.		
I spend time worrying about social injustices without doing much about them.		
I believe anyone who wants to can get a good job.		
I have a close friend from another race or ethnic group.		

Step 2.

Consider how you may be perceived by people from different cultural or ethnic groups. A second step is to be more aware of how others are likely to interpret your behavior. Dolores Butt[18] sent Guidelines for increasing the likelihood of successful interactions during intervention. These included basic rules such as *"show respect, be patient, practice active listening, and take time to develop mutual respect."* Additional suggestions are:

- **Be open.** Each person is an individual and may (or may not) have any characteristics of their ethnic group. The degree to which an individual/family becomes assimilated or acculturated will depend on many factors, including their length of exposure to the new culture, knowledge of the language, age, and so on.
- **Beware of stereotypes.** Families, professionals, AAC users—everyone—brings stereotypes to the intervention table. Differences do exist in attitudes toward medicine, religion, family, language and cognitive style. However, many assumptions about ethnic groups are false.
- **Recognize different communication norms.** Cultural elements contribute to communication behavior.[19] For example, children in some cultures are taught to "speak only when spoken to." Also, eye contact is interpreted quite differently by different cultures. Asking oneself the questions in Table II during intervention can lead to an increased awareness and understanding.
- **Understand language differences.** Often, professional terms are not easily translated. Interpretation and translation should be done carefully and well. Guidelines for interpreters are listed in Table III.
- **Be aware of different cognitive styles:** English speakers tend to use linear thinking while speakers of Romance languages have an associative thinking style.
- **Understand how decisions are made.** Age, family, and sex roles influence behavior and affect the decision-making process. For example, some families may be open to new ideas and to AAC but will not respond positively until after a family council is called.

Step 3.

Know about the cultural groups you are in contact with. Awareness of and sensitivity to cultural characteristics can be gained by listening to a lecture, being oriented at work, or reading something like this issue of ACN. However, true knowledge of a culture or an ethnic group is gained more gradually and through an experientially-based process. Ways to increase knowledge of ethnic and cultural groups include: attending their church services and festivals, developing friendships, and spending time in the communities and homes of AAC users from culturally-diverse groups. In addition, cultural knowledge of the AAC user and family may be systematically sought by:[20]

- Sampling the language of the AAC user's partners. This will help determine some of the rules for interaction and syntax, and give insight into vocabulary usage and needs.
- Investigating methods and patterns of communication that the AAC user and family have established prior to professional involvement.
- Asking questions about cultural norms and their impact on communication behaviors, as illustrated in Table II.

Finally, two cautions!

- Some AAC users may act quite differently in a majority language setting under the observation of a clinician, than in a more relaxed environment with family and cultural peers.
- Even after careful observation, cultural norms may not be easy to identify, especially when an AAC user is bilingual

Table II. Role of Cultural Elements in Communication Behaviors (adapted from Ovetta Harris, 1993)[20]

Behavior	What are cultural norms?	Behavior	What are cultural norms?
Questions	Who asks questions to whom? When and Where is it appropriate to ask questions? What kind? When, where, and to whom is it not appropriate to ask questions? How should questions be formed?	**Silence**	Is silence expected while others are talking? Is it seen as necessary to show respect? for learning? gaining knowledge? Is it seen as not showing interest or a lack of understanding?
Eye contact	Is eye contact expected when listening? when talking? Do children make eye contact with adults? Does a lack of eye contact have social significance, i.e., sign of disrespect? respect? insincerity?	**Non-verbal**	Is touching/hand holding a norm? Are there gender differences for nonverbal communication? Is displaying a particular body part offensive? Is it appropriate to position one's face close or far when talking?
Semantics	Are certain lexical items particular to a culture? How are lexical items interpreted in a culture?	**Syntax**	What metaphoric phrases are particular to a culture? What syntactic rules are used in native languages? in dialects?
Discourse	Is the same information repeated several times? Is turntaking consecutive or co-existing? Is laughter a communication device? Are interruptions acceptable? When, how, with whom does communicaiton style change, i.e, peers, adults, persons outside of culture, persons within culture?	**Literacy**	Is written language prevalent? Is one genre of literacy more dominant than another? Is reading most often a group activity? an individual activity? a recreational activity? Is reading used for real life purposes? Who governs the interpretation of print?
Narratives	Who is allowed to tell stories to whom? What are dominant story genres? What is an expected level of knowledge in story telling? When are stories told–religious ceremonies, bedtime, structured and unstructured times? Are stories linear or circular in style? Are stories a primary way to access cultural knowledge? Are short or long stories desirable?		

and understands one language at home and a second in a different setting such as school or work.

Bilingual Issues

Meeting the AAC needs of bilingual individuals can seem overwhelming. For example, in some cities 70 different languages are spoken. The following guidelines are derived from interviews conducted by Cumley[21] in 1991 with AAC specialists who work with large minority populations and from my recent discussions with master clinicians and researchers.

Best Practices Guidelines

- **1.** Accommodate the primary language.
- **2.** Account for the language(s) of the person's communication partners.
- **3.** Assume a bilingual augmented system can be developed. Bilingual children will need an AAC system for school and for home.
- **4.** Most languages have multiple dialects. Chose the person's native dialect, if possible.
- **5.** Work closely with families. Always use an interpreter, if necessary. (see Table III.)
- **6.** Be aware that direct translations are not always possible or semantically equivalent. For example, "hotdog" in Greek becomes "dog on heat."
- **7.** Know how the family perceives the individual with a severe communication impairment, AAC services, and technology. Know their goals and perceptions for the future.
- **8.** When selecting vocabulary, the lexical, dialectical and customary ways of interacting should be considered. Always have selections reviewed by a person highly familiar with the native language and culture.
- **9.** Be sensitive to the fact that symbols in commercially available sets may not be meaningful to individuals from ethnic, language, cultural groups different from the manufacturer's background. Use culturally meaningful symbols.[22]
- **10.** Label symbols in both languages.
- **11.** Use digitized speech, if the foreign language or dialect of the user is not already available in an appropriate text-to-speech device.
- **12.** Remember gestures and other nonverbal communication behaviors are culturally bound.
- **13.** Always respect the culture of the family. Try to learn as much as you can about the group and incorporate that information into all phases of intervention.

Interpreters

Interpreters translate orally; translators decipher language in written form. In selecting an interpreter the following considerations are important: [24]

- **Knowledge** of a culture is as important as knowledge of the language.
- **The best interpreter** probably is a native speaker of the culture, who is a specialist in AAC.
- **Second best,** a native speaker who is a professional interpreter.
- **Third,** a professional in a related field who is a native speaker.
- **Fourth**, a family member or friend, after some training.
- **If all else fails,** anyone who has some knowledge of the language and culture can help. However, be sure to orient them well.

Table III summarizes a 3-step process for using interpreters effectively.

Table III. Using Interpreters[23]

1. BRIEFING: A meeting between the professional and interpreter in preparation for the session to review purpose, plans, and expectations; to develop an agenda; to discuss cultural aspects and convey any questions and concerns.
2. INTERACTION: The agenda is used as the guide. The AAC specialist remains aware of verbal and nonverbal interactions. Language is kept simple and short. Professional jargon is avoided. Communication is honest and respectful.
3. DEBRIEFING: Discuss behavior and outcomes along with questions and concerns.

University & Research

Ethnographic research in AAC

Ethnographic research uses principles and methods of cultural anthropology to study aspects of daily life within a social group. Studies can be linked to or complement traditional quantitative/experimental research to establish a broader view of a culture or cultural phenomena, e.g., communication. The ethnography of communication (or sociolinguistic ethnography) was first described by Hymes in 1962.[25] It seeks to examine cultural patterns of language and communication and the functions they serve in daily life. What distinguishes ethnographic studies of communication (whether carried out in a classroom, hospital, playground, home or bar) is consideration by the researcher of methods and theories from cultural anthropology. By definition, such studies accommodate the multi-faceted, complex patterns of interpersonal communication, including a detailed analysis of verbal and nonverbal communication between and among individuals in particular social contexts. The orientation of an ethnographic study is descriptive. Its analytic procedures are open-ended. Its focus tends to be activity-based, and it occurs in social settings. It requires both emic (insider) and etic (outsider) descriptions, and a cyclical collection and comparison of data.[26]

- **Emic description**: Descriptions of socially, linguistically and culturally meaningful behavior from the perspective of the participants, i.e, individuals within the group. Research methods include formal and informal interviews and take into account the opinions, views, feelings, and interpretations of those with first-hand involvement in the activity.
- **Etic description**: Descriptions from outside the participants' perspective (e.g., quantitative data on language functioning, communication device use, reading abilities). Techniques employed include transcripts and videotapes of interactions.
- **Cyclical collection and analysis**. There is a continual attempt to define and redefine appropriate research questions. Data collection and analysis is recurrent.
- **Comparison of data**. The researcher constantly compares what is observed in one situation to similar situations within and across groups. This helps identify and explain the cultural beliefs and practices of the group under study.

An ethnographic approach to research is probably essential to gaining a true picture of the communication abilities and needs of individuals who use AAC, especially those who are bilingual and from minority groups. Studies are likely to contribute substantial information to our attempts to define communicative competence, the efficacy of intervention strategies, delivery and use of technology, and partner training. To date, a small number of ethnographic studies have been conducted. Space precludes all but a brief description.

Ethnographic study of classroom reading and writing instruction with severely speech and physically impaired children. *Ovetta Harris. University of Rhode Island.*[27]
Dr. Harris investigated the social context of literacy development for AAC users in the "classroom community." Given the importance of literacy to AAC users, her study offers valuable insights into the process. Participants were two students with severe speech and physical impairments (SSPI). Cognitive/language abilities were in the low normal/mildly retarded range. Each classroom's approach to Literacy was different.

- The 10 year old boy used a language board with 700 words, a computer with Dr. Peat's word processing software and a Unicorn board for access. He was enrolled in a 4th grade regular education class with 30 students and was assigned an instructional aide. Reading and writing instruction took place during the "Author's Circle." Participating were a teacher, 7 or 8 students and the instructional aide. Peers were familiar with the SSPI student's AAC system components, as many had been classmates since 1st grade. The instructional philosophy of the classroom was whole language and cooperative learning. Students either read a story and wrote about it or wrote something original. Students edited each others work and then re-wrote their stories. Interaction was peer directed (e.g., rules included *Always ask a peer first*; *Always use a peer to edit your work.*)
- The 11 year old girl was enrolled in a self-contained special education classroom. The classroom consisted of 4 aides, one teacher, several therapists, and 7 students. She relied on an eyegaze system that could accommodate 8 symbols simultaneously. Attempts to "use technology" had not been successful and she had no independent writing system. She was born in Puerto Rico and had immigrated to the U.S. 5 years earlier. Literacy training was conducted with 3 adults and 3 children present. A "language experience" approach was used with an emphasis placed on skill development. Discussions were teacher directed. Children dictated stories that were written on an easel. Reading was defined as an oral activity. i.e., one of the students read for her. Writing was something the teacher did.

Among Harris' extensive findings was: "The terms used to label students within reading/writing groups, the title given to each classroom group, the language used to construct social roles within groups, and the focus on attending within the group contributed to the construction of a student's identity as a reader and a writer."

Culturally diverse nonspeakers: Home/school interactions
Marsha Smith-Lewis, Hunter College, New York.[28]
Dr. Smith-Lewis followed ten families: 3 African-American, 2 Latino, 2 Italian, and 3 Euro-American, most for over a two year period. Only the Euro-Americans spoke standard English in the home. All students were enrolled in Middle or High school programs and had been receiving AAC services for at least 3 or 4 years. Two children had electronic devices, which one used spontaneously. Others were being taught low tech devices or sign language. Among the questions she explored were:

- **How did the family and school perceive the child?** When asked to describe each child, school personnel used medical diagnostic terms. One got no sense of the child's personality. Families gave a psychosocial perspective and told you about their child's likes/dislikes and certain personality traits (e.g., he's stubborn.). When videotapes of the children's interaction at home were shown to their speech-language pathologists, they were surprised by the children's communicative competence.

- **What did families think about devices, communication boards, sign language, and so on.** Expectations for communication were different. At home children were made to produce oral communication. On the other hand, speech was rarely facilitated at school. No family felt they had agreed to the AAC system that was being used. Instead they had "left it up to professionals." Only the Anglo-Americans expressed an interest in technology. Not surprisingly, AAC systems were not being used at home or in the community. Rather the child was expected to speak and many were understood by family members in their native language. Smith-Lewis observed the use of American sign language further separated one child from her family, who spoke Spanish.

- **How did families deal with information coming from the school.** Families had a perspective, different from the schools re: the value of AAC systems, technology, use of multiple systems, and the decision making process. All therapists felt they had collaborated with the family, but no family felt they were full partners in the decision-making process.

In summary, communication occurs in a social and cultural context in the midst of a myriad of variables. To investigate the AAC process of interaction requires a broad-based research approach. Watching people communicate in their natural environment provides clues to their communicative competence. Ethnography offers a good option.

Governmental

Encouraging the use of assistive technology

Demographics are constantly changing. Trends include an increasing number of elderly and people with disabilities, and an expansion of ethnic, cultural, and linguistic diversity due to sociopolitical, economic, and technologic changes in the world. Governments, businesses, practionners, and manufacturers are trying to respond. One way governments encourage accommodation to changing trends is to fund Projects. The National Institutes for Disability and Rehabilitation Research is supporting projects to make information about assistive technology accessible to culturally diverse populations.

Project Reaching Out. The goal of this 3 year project is to develop, evaluate, implement and disseminate two curriculums that address assisted technology in a culturally sensitive manner for African-American and Hispanic persons with low incidence disability. Persons with disabilities, family members, representatives of consumer or advocacy organizations and professionals that serve African-American and Latino communities are targeted. Modules provide an overview of information on assistive technology in a manner that respects differences in beliefs, interpersonal styles and behaviors. The Curricula can be used for training consumers, trainers, and service providers and contain the following modules:

- ☐ Introduction
- ☐ Benefits and Uses of Assistive Technology
- ☐ Legislation Affecting the Provision of Assistive Technology
- ☐ Funding and Advocacy.

Because a primary goal is to improve cultural awareness and knowledge of trainers and service providers, staff prepared additional sections for professionals. These are designed to help establish successful relationships with people from ethnic and cultural minorities.

- ☐ Lists of cultural awareness exercises (see Clinical News, page 4 for examples).
- ☐ Suggestions on how to market training sessions.
- ☐ Samples of overheads for presentations.
- ☐ Evaluation forms

The African-American curriculum will be completed this summer and disseminated to all state Assisted Technology Projects funded by the Tech Act. The Latino curriculum is currently being developed and will be pilot tested in August.

For more information contact: Proj. Director, Lucy Trivelli or Proj. Coordinator, Ana Torres-Davis, RESNA, 1101 Connecticut Avenue, N.W. Suite 700, Washington, DC 20036. Phone (202) 857-1140.

Training sessions are arranged by first soliciting the support of a respected community "gatekeeper," a trusted member of a culture group (e.g., Buddhist Monk, Catholic Priest, community leader).

Utilizing community resources to provide assistive technology training to cultural/linguistic minority individuals with disabilities and their families. This two year project is designed to develop an assistive technology training curriculum that respects Latino, Cambodian, Portuguese-Brazilian-Azorean cultural attitudes and belief systems regarding disability, use of assistive technology, service provision and training/presentation style. The format encourages the greatest amount of trainee follow-through and is more effective than traditional presentation formats.

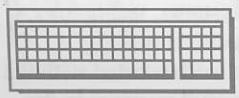
- Training specialists hired by the project are native Portuguese, Spanish and Khmer speakers who are active and involved in their respective communities.
- Training sessions are arranged by first soliciting the support of a respected community "gatekeeper," a trusted member of a culture group (e.g., Buddhist Monk, Catholic Priest, community leader).
- Training is conducted in the group's native language.
- Materials are available in six languages (English, Vietnamese, Spanish, Cambodian, Haitian-Creole, Portuguese).
- A case study approach illustrates individuals from each cultural group using assistive technology.
- Information about assistive technology devices, service system structures, funding and procurement information is presented.
- The training curriculum focuses on the entire family, not just the member with a disability.
- Cultural beliefs and traditions, such as respect for the roles of parents and elders, are reflected.
- Training incorporates "hands on experience" with assistive technology.
- Pre/post tests are given but may be conducted verbally, as a group discussion with responses summarized by the trainer.

Available materials include:

- ☐ Independence Through Technology. Videotape (available in 6 languages: English, Vietnamese, Spanish, Cambodian, Haitian-Creole, Portuguese)
- ☐ Poster in 6 languages
- ☐ List of U.S. resources in 6 languages
- ☐ Written information with large print or audiotape options (Accessibility guidelines, Presentation guidelines, Discussion Guidelines).

For more information contact: Paula Sotnik, Project Coordinator, Seaside Education Associates, Inc. P.O. Box 341, Lincoln Center, MA 01773 (800) 886-8477

Equipment



To serve the communication needs of AAC users around the world, speech output in multiple languages is required and cultural valid symbol sets are needed.

- **Ideally,** voice output devices would allow for nonstandard dialects, first languages and the standard language. Then the bi-lingual/bi-cultural AAC user could "code switch," as situationally appropriate.
- **The reality is** that limitations of current synthesized speech technology make this impossible. Until recently, most AAC users who did not understand English or whose communication partners did not understand English had very limited access to speech output devices.
- **Ideally,** culturally valid symbols would be available to directly represent vocabulary relevant in all ethnic, linguistic, and cultural groups.
- **The reality is** that in most cases, little consideration is given to whether (or not) symbols being used represent the cultural or linguistic background of the user, his family or friends.

Culturally-valid symbols

Language is the most important tool in socializing individuals into their culture. Graphic symbols are the means by which many AAC users represent language. Fortunately, 35 (more or less) symbol sets and systems are commercially available. However, little research has been done to validate whether (or not) a particular set of symbols is culturally and ethnically meaningful to a particular group outside the dominant culture. Instead, professionals have tended to use readily available symbols and translate the text into the user's native language. This can be a mistake. Not only can the translation itself be a problem (see **Clinical News**), but the symbols may have minimal, or no, cultural relevance to the user and his or her partners. For example the $ can hardly be considered a universal symbol for money when most countries use other currencies. Harris and Hetzron[29] have encouraged professionals to consider a person's culture when selecting symbols. Nigam and Karlan[30] are currently conducting a research project to culturally validate the Mayer Johnson graphic symbol set in India. Native speakers are reviewing existing symbols and after modifications are made will validate proposed changes. In another project, Soto[31] has explored whether the acquisition of Blissymbolics may be, to some extent, a bilingual issue. She investigated the language used by three Spanish speaking adults with cerebral palsy who have used Blissymbol displays for more than 7 years.

Text-to-speech synthesis.

The availability of text-to-speech synthesis in a particular language or dialect depends on market considerations, linguistic issues and the feasibility of implementation. Development costs are justified in terms of the size of the potential market, the technological level of the speakers of the language, and the economic viability and political stability of the speech community. As a result, much initial work in text-to-speech synthesis concentrated on English. Why? The English speaking community consists of 350 million native speakers, with millions more who speak English fluently, and even more who have a functional command of the language.[32]

Text-to-speech synthesis is now available in many languages. For example, the Infovox text-to-speech converters are available in 9 languages, i.e., American English, British English, Danish, French, German, Italian Norwegian, Spanish, Swedish. To date, emphasis in the development of speech synthesis systems has been on intelligibility and on the provision of voices identifying a person's age and sex. Naturalness and dialectical issues are only beginning to be addressed.

How It Works. According to Vitale,[33] the optimal input for a text-to-speech system occurs when there are rules that take a letter and convert it to a sound in a given "environment." While Spanish requires only 35-40 such rules, English necessitates over 1000. The gap between the graphemic (text) and phonemic (sound) systems in English is wide for several reasons:

- English has had no orthographic reform since around 500 AD. For languages that have had recent spelling reforms (e.g., Czech) or have developed orthographic systems only recently (e.g., Swahili), the fit between the phonetics and the orthography can be virtually identical.
- English has borrowed as many as 75% of words from other languages. Because of the disparate origins of lexical items orthographically similar sequences may have quite different phonetic realizations (e.g., cough; enough; though; bough wrought and hiccough.

Even more challenging are languages in which the orthographic system contains less than minimal information for precise letter to sound conversion. Arabic and Hebrew script, for example, has only some of the vowels or none at all. In Japanese a single symbol can stand for a syllable. With ideographic systems a character stands for an entire word or idea. Also pitch patterns affect meaning in these and other tonal languages.

What doesn't Work. Any attempt to program a speech synthesizer in another language will result in speech that (at best) sounds like a tourist trying to pronounce words in a foreign language. For example, an English synthesizer can not be expected to produce sounds which exist in other languages but not in English. Examples are French nasal vowels, e.g., [b] BON, German ichlaut and echlaut [c] in ICH, [c] in ACH, Spanish trilled [r], e.g., PERRO and so on. In addition, sounds that a naive listener may judge to be acoustically the same will sound quite different to a native speaker. The orthographic TH in Spanish as in the word CASA is not the same as the TH in English BATH. In general, the more accurate a synthesis system is for language X, the less accurate it will be for a second language.

Dialects: Providing access to dialectical variations using speech synthesizers is a low priority. For one thing, many dialects exist. In the British Isles alone, for example, there are 33 dialects. Given where technology is today identifying and synthesizing major phonetic, syntactic and prosodic variations of multiple dialects is not possible. In the future, however, we may be able to

use a switch to turn on or off a particular dialect. The Spanish DecTalk will soon feature two such modes: Latin and Castillian.

Digitized speech

Digitized speech enables people to use any language and to capture the nuances of dialect, intonation and emphasis. To date, clinicians have relied on digitized speech for AAC users whose primary language differs from language stored in available devices. Many people in English speaking countries speak Spanish or Vietnamese in the home. Digitized devices such as the Macaw, Parrot, IntroTalker, System 2000, Speak Easy allow a native speaker/family member to program the device using the primary language.

Table IV gives some examples of currently available devices that offer multilinguistic options. The products listed represent only a sample of those available. The information is not complete. However, conversations with company representatives indicate a growing interest in serving the worldwide needs of persons with severe communication impairments in ways that are both culturally and linguistically relevant. The growing number of languages that are synthesized, the increasing memory options in devices so digitized and eventually bilingual products will be available and the awareness that symbols need to have cultural relevance will result in exciting progress over the next few years.

Table IV. Examples of electronic devices with multilingual options

Device	Language/speech output options	Symbol options	Company
Speak Easy **Digitized**	Any language or dialect	Not included. User determined	**ABLENET** 1081 Tenth Avenue S.E., Minneapolis, MN 55414 (800) 322-0956. (612) 379-0956,
DAC **Digitized**	Any language or dialect. Have instructions available in Swiss, German, Swedish. Up to 72 minutes	Not included. User determined	**Adaptive Communication Systems** PO Box 12440 Pittsburgh, PA 15231 (800) 274-3433 (412) 264-2288
Canon Communicators **Digitized**	6 - Spanish, French, German, Nordic, Japanese, English - CC7S - 240 seconds	Alphanumeric keyboard for each language	**Canon USA,** 1 Canon Plaza, Lake Success, NY 11042 (516) 763-1407
TouchTalker LightTalker Liberator **Synthesized**	English & German - DECtalk Italian, French, French Canadian, Swedish - INFOVOX English - DECtalk	Culturally relevant icons for application programs for most languages. Others in progress.	**Prentke Romich Co.** 1022 Heyl Road, Wooster, OH 44691. (800) 262-1990 (216) 262-8031
IntroTalker **Digitized**	Any language or dialect - 1 to 2 minutes	Icons developed for English American	
DynaVox **Synthesized** **Digitized**	English - DecTalk synthesizer Swedish, Finland, German - INFOVOX synthesizer Can do small amount of other languages/dialect using digitized speech option	Picsyms/Dynasyms alphanumeric keyboard English/ Eurokeyboard	**Sentient Systems** 5001 Baum Blvd. Pittsburgh, PA 15213 (800) 344-1778) (412) 682-0144
DigiVox	Any language or dialect. - 4 1/2 to 35 1/2 minutes available	Not included. User determined	
E-Z Keys family Talking Screen **Synthesized**	4 - Swedish, Spanish (Latino) English, French(Canadian) - MultiVoice	Alphanumeric keyboard for each language Blissymbolics, Mayer Johnson, alphanumeric options	**Words+, Inc.** PO Box 1229 Lancaster, CA 93584 (800) 869-8521
Message Mates System 2000 **Digitized**	Any language or dialect	Blissymbols Makaton Mayer Johnson	
Macaw (s) Parrot QED Scribe **Digitized**	Any language or dialect MACAW - 2 to 8.5 minutes available	Imaginart stickers with MACAW & PARROT alphanumeric	**Zygo Industries, Inc.** PO Box 1008 Portalnd, OR 97207 (800) 234-6006 (503)684-6006
PolyCom/Talk Zygo Notebook **Synthesized**	English (Amer. & British), Swedish, Canadian, W. Germany, Switzerland, France, Belgium, Norway, Denmark, Holland, Spain, Italy) - INFOVOX synthesizer	Alphanumeric keyboard Swedish, English, Norweigian, Danish	Note: MACAW video available in English, Spanish or Swedish subtitles/Spanish or French voice-over.

YOUR RESOURCES

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Tony Vitale, Digital Equipment Company, 146 Main Street, ML054-E43, Maynard, MA 01754 (508) 493-0145.

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Using devices with dynamic displays to create a low tech display

In the last issue of ACN, which focused on the design and development of low tech displays, I failed to mention that devices with dynamic displays, e.g., **DynaVox** and **Talking Screen** can be used to create low tech displays. You do a "screen dump," that is you print what is on the screen. This feature allows teachers and clinicians to make low tech versions of high tech displays. To learn more, contact Sentient Systems and Words+, Inc.

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