

# Augmentative Communication News

March, 1990 Vol.3, No.2

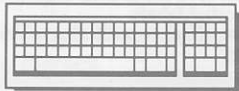
## INSIDE THIS ISSUE . . .

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### Equipment



Graphic symbol sets and systems:  
Some current tools and  
a glimpse at the future

### Clinical News



Decisions, decisions, decisions:  
Careful.....!

### Governmental



Title 2 Monies in U.S.  
Ready your projects!

### University and Research



The Institute for  
Rehabilitation Research  
in the Netherlands

## UPFRONT

As we settle into the 1990s, language and cognitive issues are being revisited (e.g., literacy, language learning/relearning and the cognitive load of using augmentative techniques.) This issue is about graphic symbols. It is also about rethinking some basic assumptions.

Many, many thanks to the professionals I interviewed (see list of resources and references). Their insights, willingness to engage in long discussions and to share their research and experiences were invaluable! There are many unanswered questions about the use of graphic symbols in AAC. However, an army of researchers (small, but powerful) will help us find some answers. In

the meantime, we'll need to be cautious as we make clinical decisions for and with people whose method of representing language is through graphics.

In **For Consumers**, research findings are shared and major issues are raised. The **Equipment** section highlights the need for professionals to be familiar with their "tools" (i.e., commercially available graphic symbol sets and systems). You'll also read about some new developments. In **Clinical News** the processes clinicians face in decision-making are discussed. For the **Governmental** section we shift gears and focus on money. **University & Research** highlights exciting work in the Netherlands at the

(continued on page 2)

## For Consumers

"The medium  
is the message"



We are besieged by graphics. Graphics (pictures, signs, charts, logos, computer programs) inform, educate, influence and entertain us daily. Whereas artists, photographers, and advertisers use graphic symbols as a medium for expression, individuals with severe expressive communication disorders use graphic symbol sets and systems in qualitatively and quantitatively different ways, i.e., as a primary means for language representation and interaction. Graphic symbols may:

- 1. Stand for an individual's internal representation of the environment
- 2. Help individuals refine their knowledge of the world and influence their development of communication competence, cognition, language, and use of technology
- 3. Serve as medium of expression
- 4. Provide a window through which families/teachers/clinicians can learn about how individuals who don't speak, organize their experiences conceptually and linguistically.

As a field, we face major, unanswered questions about the processes connected with the perception, comprehension and use of photos, pictures, and commercially available graphic symbol sets and systems. Many feel it is time to refocus on these issues. After all, it is one's knowledge about the world and ability to express it that allows communication to occur.

Studies reveal visual perceptual skills develop early, but mature use of graphic symbols is not observed until ages 7 or 8 years when children use them to read, write, do math, etc.

- At 3 months babies can discriminate their mother's face from a stranger and between 2 strangers.
- By 6 months infants can "transfer" from live faces to highly realistic representations (color photographs) and "prefer" happy to angry or neutral faces.

(continued on page 2)



**Upfront  
(cont.)**  
Institute  
for Rehabilitation  
Research  
(IRV).

Spring and/or  
Fall will soon  
be here (de-

pending on your hemisphere)! I hope  
you'll take time to smell the flowers!  
Remember, The Hotline Number is  
(408) 649-3050.

*Sarah Blackstone, Ph.D., Author, ACN*

### For Consumers (cont. from pg. 1)

- By 12-18 months infants demonstrate comprehension of photos/pictures paired with spoken words.
- 24 month old infants discriminate between real and pictured objects. Only after 28 months, can they use pictorial representations functionally.
- Between 2 and 7 years children make perceptual judgments about how things look, focusing on 1 variable at a time.
- 3 to 6 year old children can imitate a live model significantly better than a photo, a doll, or a line drawing. However, many 3 year olds have difficulty labeling actions of line drawings. (Mineo, review paper)

Research within AAC is addressing many issues directly related to graphic symbols. Table I summarizes some studies involving non-disabled adults and children as subjects. Questions include how easily symbols from various sets/systems are guessed, what perceptual and linguistic features may contribute to iconicity, and how adults and children approach graphic symbols. Table II, on the other hand, summarizes studies carried out with individuals who use, or are potential users, of AAC symbols to communicate. These studies begin asking what learning processes are involved for targeted groups to comprehend and use graphic symbols.

Issues related to graphic symbols are complex in AAC, but we've clearly made a start. For example, we have learned that:

1. *Perceptual features can affect an individual's ability to attach meaning to symbols. Color, shape, complex-*

**Table I. Studies of AAC symbols with normal children and adults**

Author	Subjects	Symbols	Task	Result
Yovetich & Young (1988)	Adults	Blissymbols	Guess meaning of symbols for concrete concepts	Degree to which symbol represents concept affects learning
Fuller & Lloyd (1987)	Adults	Blissymbols	Rate according to complexity	Best predictors are: # semantic elements (comprehension) # of strokes (perceptual)
Luftig & Bersani (1985)	Adults	Blissymbols		Translucency better predictor of learning than component complexity.
Fuller (1988)	Adults/ Children	Blissymbols	Taught to label or point to symbols	Adults learned more. Complexity influenced children's learning in positive way. Adult data generalized to nondisabled children. Learned superimposed symbols easily
Musselwhite-Ruscello (1984)	Children Adults	Blissymbols Picsyms	Recognition of symbols	Performance improves with age Picsyms & Rebus more guessable.
Raghavendra & Fristoe (1990)	Children	Blissymbols standard/ enhanced	Guess meaning 10 actions, 10 attributes 10 entities	Identified perceptual features, letters shapes, numbers. Related to objects re: experience & world knowledge Focused on parts. Beginning reading
Bloomberg (1984)	Adults	Bliss, Picsyms PCS, PIC, Rebus	Rated translucency nouns, verbs, modifiers	Rebus most translucent across 3 linguistic classes
Ecklund & Reichle (1987)	Children	Blissymbols Rebus	Recall 15 symbols after repeated exposures	Performed well, Rebus recalled somewhat better. Children who pointed remembered more than those who used verbal labels
LePage Mills (submitted)	Children	PCS	Used during reading instruction	Positive effect on attitudes toward reading

**Table II. Studies of AAC symbols with special populations**

Author	Subjects	Findings
Mizuko & Reichle (1989)	Adults SMR	For nouns, Picsyms, PCS more readily associated with spoken words, than Bliss. For verbs and descriptors, no significant differences
Mirenda & Locke (1989)	Children MMR-SMR some PH	Compared transparency of 11 symbol types representing objects. Results suggested a hierarchy of difficulty
Hurlbut, Iwata, & Green (1982)	Severe physical/ cognitive handicaps	Taught symbols representing known objects. Labels for iconic line drawings acquired more rapidly, maintained longer, generalized more frequently than labels for Blissymbols
Sevcik & Romski (1986)	Children Adoles. SMR	Learned arbitrary symbols as well as iconic symbols Those with nonfunctional language had more difficulty with line drawings than objects or photos.
Dixon (1981)	Adoles. SMR	Those who failed to match objects with photo may have had problems with perceptual properties. Using cut-out figures facilitated matching
Mineo (in prep)	Adults SMR	Match to sample paradigm within and between picture representation. Error analysis suggests size is a crucial feature.
Helm-Estabrooks	SMR	Description of Visual Action Therapy (e.g., progression from tracing, picture, matching, picture commands, gestures) resulted in significant improvement
Fitzpatrick Barresi (1982)	Adults w/aphasia	
Esser & Mizuko (1989)	Children MMR	Use of graphic mode via VOIS 136 increased when aided language-stimulation was provided
Pecyna (1988)	Child w/ Downs	Developmental level and level of communicative function may influence effectiveness of instructional program to teach graphic symbols

ity, figure/ground, and size are important considerations.

2. *While visual perception/discrimination influences symbol learning, it is an individual's ability to relate perceptually-based information to their experiences and knowledge of things, ideas, relationships or events that is most important.*

3. *Translucency seems to have a positive effect on learning when individuals are learning to pair an al-*

*ready known, spoken word with a symbol.*

4. *Iconic symbols (i.e., those easily guessed) are "easier to learn." However, most "iconic" symbols represent concrete objects/entities. Depicting actions, location, attributes, more abstract nouns, etc. requires the use of more abstract graphic symbols.*

5. *We need to take into account the learning styles of individuals. Different models for introducing and using graphic symbols with different populations are likely to emerge. For example, teaching symbols to normal talking individuals is different than*  
*(continued on page 3)*

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teaching symbols to nonspeaking individuals who already know what a word means, and is different than teaching symbols to nonspeaking, cognitively delayed individuals with no language.

6. Individuals with severe retardation can attach meaning to and use abstract graphic symbols after appropriate instruction.

7. It is still unclear if children and adults attach meaning to symbols using similar strategies.

8. Graphic symbols make language and concept development easier for some persons (e.g., those with autism, severe cognitive disabilities, and/or language disabilities).

9. Graphics symbols provide a bridge to literacy.

#### Major questions remain unexplored:

- What effects do graphic symbols have on cognition, language, communication, and literacy skills? How do we decide to use a graphic symbol set or system and then, which one?
- Does the early introduction of graphic symbols make a difference? How early? For which populations? Under what circumstances?
- What are the processes used by individuals with various handicapping conditions (e.g., aphasia, dementia, severe spastic quadriplegia). What is the interaction between the individual's level of functioning, what they're exposed to, what they learn, and how they use graphic symbols?
- What instructional techniques should we use to enhance an individual's ability to perceive, comprehend, & use graphic symbols?
- When and how should we make transitions from one type of symbolic representation to another?
- What is involved in symbol learning beyond the initial phase? What about the 100th symbol, 200th symbol, etc.?



## Equipment

What's happening and What's coming!

Commercially available graphic symbols were developed for multiple reasons, i.e., international peace, travel, to teach reading, and for use with severely speech-impaired individuals. Educators and/or speech-language pathologists have been involved in the development of nearly all AAC symbols. We owe our colleagues a hearty "thanks!" for the hours of work they continue to save us. Despite the increasing number of commercially available graphic symbols, most professionals are familiar with only a few...and that is what their clients use. Perhaps that's okay. Probably, it's not. We need to find out! Comprehensive, easy to read, thoughtful discussions by Lloyd and Vanderheiden (1986) and Musselwhite and St. Louis (1988) are a good place to start.

Graphic symbol sets<sup>1</sup> and systems<sup>2</sup> can be categorized according to their type of symbolic representation as McNaughton does in *A Beginning Look at Graphics*.<sup>3</sup>

- Letter-sound relationships: e.g., Rebus
- Direct representation, pictures and line drawings: e.g., Compic, Oakland Picture Dictionary, Picture Communication Symbols, Imaginart symbols, Talking Pictures, PIC, and many more.
- Logical, meaning-based depiction of meaning: e.g., Picsyms, Blissymbols, Jet Era Glyphs
- Portrayal of body movement, hand shape and/or hand position of a sign or gesture: e.g., World sign; Sigsymbols
- Associations of other related concepts: Minspeak icons

To illustrate 3 of the most commonly used types of symbolic representation, I interviewed professionals involved in bringing graphic symbols to "market." Among other questions I asked was "What is your favorite symbol?" Their responses are the symbols pictured on pages 3 and 4. *Note: This is all in fun, and a means of introducing them to you!*

#### 1. Direct representation sets

- 1 Set of symbols. No clearly defined expansion rules
- 2 Set of symbols designed to work together to allow maximum communication. Has rules for expansion beyond current system.
- 3 Available from the Easter Seals Communication Institute, 250 Ferrand Drive, Don Mills, Canada. Send \$5 with order.

#### Picture Communication Symbols

Roxanna Johnston developed these for children with mental retardation and autism as a simple, generic, iconic picture set. Current users are adults and children of all disability types. Some adults may find symbols childlike. 1700+ symbols (2 sizes) represent vocabulary that enables targeted populations to carry on everyday conversations. **Materials:** 2 dictionaries of symbols (\$45-49); printed on colored or white paper. Stamps and other supportive instructional materials available. Computer programs generate symbols on the Macintosh using Hypercard (Boardmaker \$299 and Board Builder \$149)

Distributed by Don Johnston Developmental Equipment, P.O. Box 639, Wauconda, IL 60084 and Mayer-Johnson, P.O. Box AD, Solana Beach, CA 92075-0838

#### Oakland Schools Picture Dictionary

Ina Kirstein

originally developed this set to provide students with moderate retardation a symbol set they could understand with

little or no instruction. Current users include children and adults of all disability types. Not appropriate for some with low vision or individuals who can manipulate abstract concepts, symbols and syntax. Vocabulary of 500 symbols (3 sizes) selected to address needs of target population. **Materials:** *Picture Dictionary* (\$45).

Distributed by Don Johnston Devel. Equip. and Oakland Schools, Communication Enhancement Center, 2100 Pontiac Lake Road, Pontiac, MI 48054

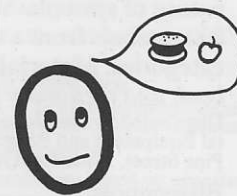
#### Imaginart

Cindy Drolet developed this initially for travelers and adapted it for use with children (cont. p. 4)

#### SILLY



#### HUNGRY



#### NOISY



and those with mental retardation. Currently adults and children use them. Not appropriate for visually impaired and the very young or elderly. Vocabulary of 600 symbols (2 sizes) is oriented toward target population. Color and black and white symbols. **Materials:** *Pick 'n Stick Color Packs* (\$43.95), *Touch 'n Talk Communication Stickers* (\$28.95) and *Touch 'n Talk Micros* (\$25.50).

From Imaginart, P.O. Box 1868, Idyllwild, CA 92349 and Winslow Press outside U.S.

## 2. Logical, meaning-based systems

### Picsyms

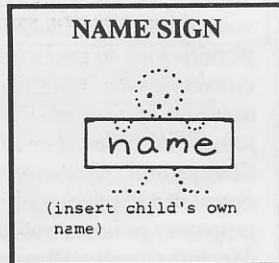
*Faith Carlson* developed the system as a dynamic therapy tool for preschool children. She teaches adults

to draw (so symbols can be created at the time they are needed.) The system has a way to handle grammar. Used with all ages; not appropriate for people with low vision and adults who object to child-like nature of symbols. Vocabulary of 800 symbols from a range of categories. **Materials:** *Instruction book and dictionary* (\$25).

Distributed by Don Johnston Developmental Equipment and Baggeboda Press, 107 N. Pine Street, Little Rock, AR 72205

### Blissymbols

*Shirley McNaughton* has been involved in bringing this pictographic, ideographic system composed of meaning-based units and some arbitrary shapes to many countries. It has a grammar, and is used by children and adults. Not appropriate for individuals who show no interest in classifying or in communication. Simplicity of shape and line allows for writing. Vocabulary of 3,000 symbols updated regularly by Blissymbolics Communication International. They also provide training. **Materials:** *Blissymbols for Use & Supplements* \$45; *Picture Your Bliss*



\$70. Also, texts, writing and self-study materials. **NOTE:** New programs for the Macintosh written in Hypercard will provide quick access to 2500 Blissymbols [Access Bliss, \$250 Can.] and early independent reading experiences [Story Bliss, \$100 Can.].

Ebsco Curriculum Materials, P.O. Box 1943, Birmingham, AL 35201 in U.S.; Easter Seal Communication Institute, 250 Ferrand Drive, Suite 200, Don Mills, Ontario, Canada M3C 3P2 outside U.S.

## 3. Associations of related concepts

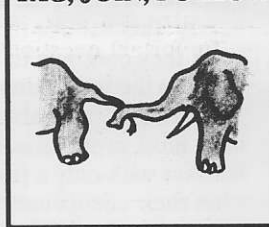
### Minspeak Icons

*Bruce Baker, (J. Bruno/G. Van Tatenhove)*

Developed as examples to show the flexibility of the semantic compaction approach. The purpose is to provide a code so a user can get language out of a computer. Baker emphasizes icons are not meant to function as symbols on communication boards. Icons relate to the individual's ability to associate multiple meanings. Thus, it is immaterial whether listeners "understand" them. Icons are culturally bound and often perceptually complex.

Available with software for TouchTalker and LightTalker from Prentke Romich Co. 1022 Heyl Rd. Wooster, OH 44691

### TAG; JOIN; FOLLOW



## Graphic Technologies in the Making for AAC

1. **Phonic Ear's** VOIS Shapes, created by Howard Shane of Children's Hospital in Boston and Ronnie Wilbur of Purdue University, will be available by early summer. This software for the VOIS 160 draws upon the production characteristics of American Sign Language (ASL), yet users do not need to know ASL to generate thousands of words. Basically, the program encodes messages, using the components of sign: *location, hand shape, and movement*. Words are accessed from a single key pad comprised of sign language components. The user selects words making no more than 3 "hits" to access a word.

For information, contact Bill Forde or Yvonne Ho at Phonic Ear Co. 250 Camino Alto, Mill Valley, CA 94941 (800) 227-0735.

2. **Words +, Inc:** Talking Screen software for IBM compatible computers was just released. (\$1195). Users select symbols from up to 10 levels (using scanning, joystick, or mouse-emulating input). Hundreds of symbols may be accessed on changeable displays reducing cognitive demands for user and increasing access to vocabulary stored on different "levels." Spelling mode with abbreviation expansion also available. Up to 128 cells per level.

For information, contact Walt Woltosz, P.O. Box 1229, Lancaster, CA 93584. (800) 869-8521

3. **Bio-Engineering Department,** Association for Retarded Citizens is developing an integrated communication and environmental control system for individuals with limited cognitive function. The prototype is controlled by voice recognition technology. Users can select a message or control their environment using photographic quality symbols on a customized, dynamic display.

For more information contact Maggie Sauer, 2501 Avenue J, Arlington, TX 76006. (817) 640-0204.

4. **CRTL,** University of Arkansas-Little Rock is developing a graphic-based, multi-purpose communication device using Hypercard. Key features are the dynamic display, digital speech which can be modified by a clinician to improve quality (e.g., provide inflection), the ease with which displays are created, and random access to digitized speech, graphics, text, and environmental controls. Automated record keeping tracks user's responses and may suggest ways to reconstruct displays to improve fluency.

For more information contact Alan Van Bierlet, 2801 South University, Little Rock, AK 72204 (501) 569-3423

## The future role of graphics in AAC

Simulations and animation may reduce the cognitive load of graphic symbols and make transitions from very realistic photographs to more abstract representation easier by systematically removing detail. Perhaps the most exciting possibility is that computer graphics may make it possible for individuals to do what they need to do, i.e., generate their own symbols (Verburg, 1989).



## Clinical News

"It is not on my board"

Symbols represent vocabulary<sup>4</sup>, which in turn, represents the concepts/messages/knowledge individuals may convey. Despite our most valiant efforts the reality of "it's not on my board" resounds! It can mean many things: 1) the desired vocabulary/symbol truly is not there 2) the user can't find the appropriate symbol 3) the user does not know what the symbol means 4) the communication partner doesn't understand the symbol/message, and so on.

Multiple clinical decisions about graphic symbols are made: 1) Whether or not to use graphic symbols? 2) Which ones to use? 3) How to configure a symbol display for a communication board or overlay for an electronic communication device or computer, 4) How to develop concept/symbol pairings 5) How to facilitate the use of symbols to accomplish various communication tasks, and 6) How to evaluate what's happening?

### 1. Graphic symbols: Yes or no?

**Note:** The word "symbol" implies "The comprehension or use, inside or outside communication situations, of a relationship between a sign and its referent, such that the sign is treated as belonging to and/or substituting for its referent in a variety of contexts; at the same time the user is aware that the sign is separable from its referent, that it is not the same thing. (Bates, p. 43 in Savage-Rumbaugh & Rumbaugh, 1980)

Graphic symbols are vital to many nonspeaking people. If an individual can perceive features of two dimensional stimuli, graphic symbols can be considered for use in interactive communication and as a powerful learning tool.

### 2. Which symbol set or system?

**Note:** "In order to handle the world with maximum competence, it is necessary to consider the structure of things. It is necessary to become skilled in manipulating systems and abstract forms and patterns." (Donaldson, 1985, p. 82)

Professionals should be cautious and question their assumptions. For example, symbol hierarchies may purport to define a developmental progression of symbol acquisition

<sup>4</sup> Vocabulary selection issues were discussed in Vol. 1, #5 of ACN.

(e.g., objects; color photos, black & white photos, pictures, line drawings, Blissymbolics, traditional orthography). However, no strong evidence exists; and individuals who use AAC do not necessarily conform. Deciding what type of symbols to use with an individual requires consideration of:

- The highest level of graphic symbols the individual can use
- The impact of today's decisions on an individual's future
- The amount of instruction required for the individual to attach meaning to the symbols, and
- Materials available to the clinician.

Important questions to consider are:

**PERCEPTION:** Given an individual's visual acuity and cognitive ability, what types of symbols are perceived? What perceptual features are important to the individual: size, color, line, figure/ground, shape, redundancy, realism, closure, spacing? Can the individual transfer meaning from 3-dimensional to 2-dimensional symbols? Is there a figure ground problem? Does cutting out the figure in a photo help? Does taping a background to a 3 dimensional referent help?

**COMPREHENSION:** The presence or degree of language skills should be known before making major decisions. Does individual attach meaning to symbols? which ones? under what circumstances? Consider time and effort required for learning. Consider potential short and long term benefits.

**USE:** Can individual use symbols to access synthetic speech, computer programs, and written text? Does the individual know how to use pictures/symbols to direct actions of others? Does individual use graphic symbols in conjunction with other forms of expression (gesture, facial expression)? Or, do they "stop communicating" and "start pointing" when a communication display is introduced.

Those interviewed had additional comments:

- Symbols can be drawn from more than 1 set/system to meet an individual's needs. This should be done carefully.
- Whether clinicians should use the same symbol set across individuals (e.g., in a classroom) is controversial. Some feel it is advantageous because it provides a common "language." Others disagree indicating symbols should be selected on the basis of each individual's current and future needs. They suggest using a gloss (*a written word or a picture above/below the user's symbol*) to

insure communication partners understand symbols.

- Transitions from one type of symbol set/system to another require careful planning. Most caution that teaching up or down a "hierarchy" is ill advised (*i.e., don't start with objects, then go to photographs, then pictographs, etc.*). NEVER take away what exists when introducing something new. Allow for a gradual transition after a period of instruction.

### 3. What about symbol displays?

After specific symbols representing needed vocabulary are selected, they can be displayed on an overlay or board so the individual can select them, as needed. The purpose of communication displays will change over time. See Table III for examples of changing goals.

**Table III. Communication displays**

(adapted with permission from McNaughton (1989). *A Beginning Look at Graphics.*)

#### INITIAL DISPLAYS

- teaches and reinforces the value of communication
- introduces the individual's beginning vocabulary
- presents the individual's beginning vocabulary
- allows for rapid vocabulary growth
- offers initial structure to the vocabulary
- prioritizes needs

#### TRANSITIONAL DISPLAYS

- provides opportunities to evaluate appropriateness of initial representation system and display organization
- accommodates growing vocabulary
- allows restructuring vocabulary based on experience
- provides AAC user with opportunities to assume more decision-making with regard to vocabulary and its organization

#### ADVANCED DISPLAYS

- should be planned and directed by AAC user as much as his/her capabilities allow
- should always grow and change
- should be integrated into the individual's total communication system, i.e., serve as a complement to synthetic speech, signing, vocalizations, etc.

Excellent descriptions are available to help clinicians design communication boards or overlays (e.g., Musselwhite & St. Louis(1988); Brandenburg & Vanderheiden (1989); McNaughton (1989). Considerations include:

- Size, shape of display, spacing between symbols, boldness of symbols
- Color of symbols. Color of background. Background color may assist an individual to locate the symbol, as well as facilitate the development of categorization and syntax.
- Other figure/ground considerations
- Relative size of symbols and words.
- Rate and accuracy of user's ability to make selections

(continued on page 6)



- Number of symbols user and partners can interpret on a display; Number of symbols that can be displayed on an electronic device/keyboard.
- Availability of instructions for partners
- Vocabulary arrangement/organization of symbols (categorical/linguistic, e.g., Fitzgerald key)
- Mechanism for adding vocabulary
- Location of core symbols on multiple displays/overlays.
- Whether to use a gloss (e.g., printed word or a picture) to insure partners can interpret symbols.
- Type of permanent displays (single display, multiple displays, combination) and use of more temporary or situational topic/mini-boards

**4. & 5. Developing comprehension and use of symbols**

*Note:* What is remembered in any situation depends on the physical and psychological context in which the event was experienced, the knowledge and skills the subject brings to the context, the situation in which the (person) was asked for evidence of remembering and the relation of what the (person) remembers to what the (situation requires). (Jenkins, 1974, p. 793)

The key to symbol learning is the instructional process. How symbols are taught influences how they are used and how listeners regard the communication acts of graphic symbol users. Asking an individual to "show me" "point to" "tell me" is not teaching, it is testing. Table IV is a partial list of responses I received to the question "what mistakes are we making in our clinical work?"

Instructional strategies for teaching the comprehension and use of symbols are based on good instruc-

**Table IV. Clinical Practices We Need to Change**

- Testing before symbols are introduced.
- Giving individuals a communication board and "hoping" people use it. Not training listeners.
- Partners not using board.
- Not teaching in actual situations.
- Starting with too many symbols.
- Selecting symbols that do not have functional importance to individual.
- Failing to realize the importance of the cosmetic value of a display.
- Not knowing how to set up a display for fluency. Not organizing displays.

tional techniques and principles, including:

- modeling the use of graphic symbols (aided language stimulation)
- providing repeated examples of the symbol paired with its referent
- highlighting salient features (e.g., using intonation or a flashlight to call attention to the symbol/referent pairing)
- providing the symbol as person's attention focuses on its referent
- providing instruction during meaningful activities, which might include the use of play, scripts, role playing, etc.

- providing multiple opportunities for individuals to use symbols, etc.

No matter what approaches are used, partner training is always necessary. In addition, we need to help individuals learn to "solve" their own communication problems by fostering their use of multi-modalities and encouraging their creativity.

**6. Evaluation**

Complete mastery of visual symbols can not be assumed without demonstration of their functional use. However, along the way, we need to be looking at comprehension and perception and the processes involved in learning. Individuals who may appear to be nonlearners may, in fact, be learners when we examine their comprehension. Although aspects of graphic symbol learning can be examined separately, they are interdependent. Whether or not an individual "masters" graphic symbols may ultimately depend on our ability, as professionals, to stop talking, deciding, and doing unto the people with whom we work long enough to "listen to them learn", i.e., watch what they do, listen to what they "say", and find out who they are and how they learn.



**Governmental  
Grants and Contracts  
Soon to be announced in U.S.**

*New awards to U.S. states for Title 1 monies will be announced at the end of March. Congratulations, in advance, to the second round of winners!*

**More good news.** Title 2 of the **Technology Assistance Act of 1989** (P.L. 100-407) has been funded for 1990. Watch the Federal Register in March and April for a Notice of Proposed Rule Making (NPRM). Just about anyone is eligible to apply for Title 2 funds and awards will be made in the range of \$125,000 per year. Funded projects may be for research and development of equipment, model service delivery programs, demonstration projects. Also, a contract will be announced soon in Commerce Business Daily for an agency/institution, etc. to conduct a feasibility study for a National Information and Referral Network for Technology.

**Note:** *It is probably a good time to reread Title 2 of P.L. 100-407.*

For additional information, Contact Carol Cohen, NIDRR, 400 Maryland Avenue, S.W., Washington, D.C. 20202-2645, (202) 732-5066.

**Hints**

**Thanks to all for sharing ideas and information!!!!**

**CAROLINE MUSSELWHITE:** Switch Power Pad. Leketek of Georgia is adapting Power Pads to accept 9 switch inputs. Caroline reports it is "super" for programs such as UCLA's Wheels on the Bus. They've modified the Talking Power Pad with 17 nursery rhymes on 1 side and 10 games on the other. The switch power pad is available from Reach, Inc. 890 Hearthstone Drive, Stone Mountain, GA 30083.

**KAREN CASEY:** Sheet velcro (e.g., velfoam). 36" x 54" sheets (in a variety of colors blue, pink, yellow, and lavender) are available at approximately \$16 per yard. She says it works much better than strips of velcro sometimes. Karen gets it from DMC Sales, Inc. 2015 West C street, Kannapolic, NC 28081. Ask your local folk!

**INA KIRSTEIN:** In constructing communication boards/displays, try using **transparent, self adhesive, colored "film."** It's like contact paper. Brand names include Chart Pak, Form-X-Film, and Zip-A-Tone. Use it to provide background colors for Fitzgerald key or color-code miniboards, etc. You can put it on top of display or use it as a background with white/black symbols on top.

**CAROL GOOSSENS:** To take **uncluttered photos**, put object on a table in front of window. Put a piece of poster board behind the object. Make sure the figure/ground (object/poster board) offers good contrast. Try bright yellow poster board.



## University & Research Institute for Rehabilitation Research, The Netherlands

Major research is underway at the Institute for Rehabilitation (IRV) in Hoensbroek. IRV was founded in 1981 through the efforts of *The Netherlands Organization for Applied Scientific Research (TNO)* in The Hague, the *University of Limburg* in Maastricht, and the *Lucas Foundation for Rehabilitation* in Hoensbroek. IRV's mission is to conduct multidisciplinary, rehabilitation research in 4 major areas:

1) **Communication** (Coordinator, Hans van Balkom). Investigation of variables related to interaction and the use of technical aids and nontechnical AAC components (e.g., graphic symbols, manual signs).

2) **Mobility and transportation** (Coordinator, Hok Kwee). Wheelchair design and car adaptations, e.g., transfer from wheelchair to car.

3) **Patient-related research** (Coordinator, Joop Schuerman). Methodologies for measuring the outcome and/or processes of treatment.

4) **Independent living and working** (Coordinator, Frank Vlaskamp) Methods for defining needs and effectiveness of clinical treatment on home and work situations. Development of technologies that promote independence at home and work using robotics and electronics.

The IRV, directed by M. Soede, employs approximately 50 professionals and maintains financial and collaborative partnerships with its founding agencies and several government agencies: *Departments of Health Care, Education and Research, Social Affairs, and Provincial*. Private companies/groups also support special projects.

IRV collaborations in augmentative communication (AC) extend internationally:

**Belgium:** Catholic University,  
**Canada:** Hugh MacMillan Medical Centre\*,  
**France:** The Technical University  
**United Kingdom:** Microcomputer Center,  
University of Dundee\*  
**United States:** A.I. Dupont Institute\*;  
Purdue University\*

### AAC Research Program

Under the direction of Hans van Balkom, researchers from multiple

\* Programs featured in past issues of ACN

disciplines (linguistics, phonetics, rehabilitation engineering, ergonomics, psycholinguistics, artificial intelligence, speech therapy and occupational therapy) are contributing to 7 major focus areas:

1. **Communication interaction** (Project director, Hans van Balkom) The goal is to develop a clinically applicable linguistic method for assessment of communication skills in children with a) specific language development problems, b) their caregivers. Twelve toddlers with specific language disorders and 6 with normal development were followed for eighteen months. Videotaped free-play sessions with caregivers were transcribed and analyzed using the Interaction Analysis of Communicative Abilities (IACV). Computer assisted interaction analyses programs and a Handbook for IACV will be available in Fall, 1990. Note: The IACV is being adjusted for use with other clinical groups.

2. **Rate enhancement using efficient input devices** (Project directors, Harry Kamphuis & Jan Duimel) Two techniques to enhance the communication rates of individuals generating text are being evaluated. The systems employ different rate enhancement strategies, based on word and word part frequency counts (COMBI) or quadgram tables (KATDAS). Frequency counts are based on written and spoken Dutch, linguistic rules, ergonomic knowledge about keyboard construction, feedback, and information processing. Major issues are 1) using effective feedback to control/correct devices and 2) reducing mental load and typing errors. Prototypes of KATDAS and COMBI will be available in late 1990.

3. **Clinical assessment for AC** (Project director, Eelke Oostinjen) This project has established AC assessment teams in rehabilitation centers and stimulated the foundation of the Dutch Information and Counselling Center for AC (CIAC), a national information dissemination resource centre in Huizen.

4. **Graphic symbol communication** (Project director, Marguerite Welle Donker-Gimbrere) This project is conducting surveys to identify graphic system use and will describe characteristics of symbols in use. An empirical study of symbol characteristics to determine their useability in relation to user abilities is planned. Goals are to assist clinicians and teachers to improve how they select and train the use of graphic symbols.

Purdue University and Indiana State University are cooperating in this project.

5. **Motor assessment for selection of input devices** (Project director, Jan Goezinne). Movement amplitude, visual feedback, and movement direction are used in tasks to assess motor capabilities for accessing AC devices. Products include: several input devices for children with motor impairment and 2 computer-assisted motor assessment techniques.

6. **Speech output and AC devices** (Project director, Eelke Oostinjen). This project investigates features to consider when developing and constructing speech output communication devices and will result in the development and evaluation of a flexible speech-output device for Dutch speakers.

7. **Telecommunication adaptations for AC users** (Project directors Jos van Well & Thijs Soede) This European Community (EC) project is developing a list of technical requirements to allow AC users access to a telecommunications network.

In addition to research activities, the IRV-AC program initiates and supports other endeavors in the Netherlands and Flanders:

- Initiation of ISAAC-NF in 1989 (190 members)
- *Communicatie Drieluik*, a quarterly journal, supported by ISAAC-NF, CIAC, and the Centre for Blissymbolics-NF
- 1990-91 Conferences in NF & Europe: Developmental Disabilities in Children (ISAAC-NF) in Belgium; ECART Conference in Maastricht; and Psycholinguistic & AC

Fellowships are available. For additional information & a list of related publications, contact Hans van Balkom.

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