AMERICAN INDIAN SIGN (AMERIND) AS A FACILITATOR OF VERBALIZATION FOR THE ORAL VERBAL APRAXIC

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Six oral and verbal apraxic patients with no speech on admission to the project achieved varying degrees of verbalization with American Indian Sign as a synchronous facilitator. Gains were measured by comparing patients' verbal scores on the Porch Index of Communicative Ability (PICA) on entering and leaving the project. Family and hospital observers noted improvement in the patient's daily spontaneous speech.

Historically, the modality-bound impairment of the motor expression of language has been included under or known by many names, including motor aphasia, Broca's aphasia, expressive aphasia, subcortical motor aphasia, aphemia, Marie's anarthria, verbal aphasia, cortical dysarthria, and apraxic dysarthria. Currently, apraxia is distinguished from aphasia and dysarthria. Brown (1968) describes the central language process as consisting of four components: a vocabulary of symbols, a grammar of linguistic rules for assembling them, a memory storage system adequate for processing them, and an ability to use the linguistic rules for decoding and encoding them. Aphasia is defined as an impairment of any combination of these components. It follows, then, that when the central processes are intact and the impairment is restricted to motoric execution, apraxia is not aphasia.

Brain (1964) defines apraxia as "inability to carry out purposive movement, the nature of which the patient understands, in the absence of severe motor paralysis, sensory loss and ataxia" (p. 104). Goodglass and Kaplan (1972) write, "apraxia refers to the loss of the capacity to carry out purposeful movement, when motor strength and coordination are adequate" (pp. 51-52). Wechsler (1958) expands with an additional exclusion: apraxia is the "inability to carry out purposive movements in the absence of paralysis or other motor impairment, sensory impairment or mental defect" (p. 323).

Profitable discussion of diagnosis and treatment also requires differentiation of dysarthria from apraxia. Perkins (1971) provides a concise summary:

"Speech effects of disability of the output transmission system take two major forms: apraxia, difficulty in motor formulation of articulated languages, and dysarthria, inco-ordination in execution of the speech act" (p. 134). He expands the latter description as "characterized by weakness and inco-ordination of the speech apparatus itself" (p. 135). Wechsler (1958) writes, "Apraxia is used to designate that loss or impairment of skilled movement in which only the conceptual motion formula is lost, while the motor apparatus for performing the act is intact" (p. 13). He adds that when the peripheral speech musculature or its innervation are impaired, the defect is known as dysarthria. Nielson (1962) describes the apraxic patient as "unable to connect his ideation and motion, although both are intact" (p. 29). DeReuck and O'Connor (1964) classify dysarthria as "a motor disorder independent of language" (p. 329).

When apraxia affects the voluntary initiation and sequencing of the movements necessary to phonation and articulation, it is frequently labeled apraxia of speech. It is also referred to in the literature of several disciplines as verbal apraxia. Some authors include graphic language output under verbal. In some presented papers and publications, the term *speech* apparently is used as synonymous with expressive language. It is important to include the concept of "purposive" in the definition of apraxia. Differential diagnosis centers on this voluntary control. The apraxic exhibits many motor sequences at the involuntary level that he is unable to replicate voluntarily. Adequate jaw and tongue action for chewing is an example. Since he cannot repeat this sequence on demand or for speech production, his behavior may be characterized as inconsistent. The dysarthric patient, however, is consistent, having the identical movement problems in eating that he experiences in speaking. In this report, the term *oral apraxia* refers to problems in any voluntary sequencing of movement of the oral structures. The term *oral verbal apraxia* is used to indicate such problems with production of spoken language. Although apraxia, dysarthria, and aphasia are thus distinguished as discrete syndromes, the diagnostic problem may be compounded; a patient may exhibit symptoms of more than one or even of all three.

During the past decade, we evaluated approximately 400 veterans diagnosed as oral or oral verbal apraxics or both. Sixty-five percent were classified as severely apraxic. The oral verbal output of these patients, even after extensive treatment, has frequently been minimal with consequent discouragement to the patients, their families, and their clinicians. Since 75% of these severely impaired patients were also agraphic, they were able to achieve only limited and highly unsatisfactory communication.

To find some way to improve communication for such dually impaired apraxics, a clinical pilot study explored the expanded use of American Indian Sign. This system had already demonstrated usefulness in serving the communication needs of speechless patients with problems of varying etiologies (Skelly et al., 1972).

A project devoted to development of a one-hand dialect for hemiplegics (Skelly et al., 1973) revealed varying types and degrees of oral movement ac-

companying the manual gestures of some of the patients. Occasionally these gestures were associated with unintelligible spontaneous vocalization. We hypothesized that these spontaneous articulatory movements and vocalizations might be employed clinically to facilitate speech production. Since successful use of American Indian Sign necessitates adequate voluntary control of hand movement, we assumed that patients whose gestural scores exceeded their verbal scores on the Porch Index of Communicative Ability (PICA) (1971) would be most likely to benefit from the project. The six patients whose gestural and verbal scores showed the widest differences were chosen from the current register. In each case there was more than a four-point gap between gestural and verbal scores on the PICA (Table 1). These patients had all been diagnosed previously as having severe oral and oral verbal apraxia on the

TABLE 1. Summary of data on the patients.

Data	*Patient A*	*Patient B*	*Patient C*	*Patient D*	*Patient E*	*Patient F*
Rank on verbal scores on admission	1	2	3	4	5	6
Age	36	41	52	48	52	48
Prior trauma	—	—	—	3 CVA	CVA	
Time lapse				3 yrs	5 yrs	
Admission trauma	Ruptured cerebral aneurism, surgery	CVA	CVA	CVA	CVA	Car accident, 4-mo coma
Time lapse	2 yrs	3 yrs	3 yrs	3 yrs	1 mo	3 yrs
Diagnosis	Oral and oral verbal apraxia	Dysarthric oral and oral verbal apraxia	Oral and oral verbal apraxia and aphasia	Oral and oral verbal apraxia	Oral and oral verbal apraxia	Oral and oral verbal apraxia and aphasia
Presenting speech	Speech one-word imitation; writing one word, all distorted.	No speech; low-level graphic	No speech; signature only—illegible.	No speech; low-level graphic.	No speech, no writing.	No speech, no writing.
Prior therapy	6 mo	19 mo	20 mo	12 mo	none	6 mo
Gestural-verbal differential	4.50	6.55	6.29	8.36	10.80	9.53
PICA scores on admission:						
Gestural	13.20	11.93	12.52	12.01	14.22	12.78
Verbal	8.70	5.38	5.23	3.65	3.42	3.25
Graphic	9.55	6.90	3.25	4.26	10.31	7.63

TABLE 1, Continued

Data	Patient A	Patient B	Patient C	Patient D	Patient E	Patient F
On termination:						
Gestural	13.52	13.09	12.75	13.63	14.25	14.15
Verbal	11.85	12.15	11.52	10.72	8.30	4.85
Graphic	9.55	9.63	9.81	10.23	11.15	9.35
Admission—Termination Verbal Differential	3.15	6.77	6.29	7.07	4.98	1.60
Speech on project termination	3-word sentences. Over 200 words.	3-word phrases. Over 200 words.	3-word sentences. Over 200 words.	2-word phrases. Approx. 175 words.	Single word use. Approx. 50 words.	No use. Occasional word, not always intelligible.
Contributing data	—	—	Hearing notch at 4000 Hz. R 40 dB, L 50 dB.	—	—	Hearing notch at 4000 Hz. R 45 dB, L 75 dB. Left visual-field defect. Impaired auditory memory span.

Goodglass and Kaplan test, the Assessment of Aphasia and Related Disorders (1972), which contains a segment on apraxia.

Patient A was a 36-year-old male veteran who had suffered a ruptured cerebral aneurysm, treated with surgical intervention, within two years prior to the project. Evaluation of his communication on admission to the clinic (not the project) showed intact auditory and visual comprehension but severe oral and oral verbal apraxia. His oral and graphic functions were much inferior to his performance on the tests. In six months of individual and group treatment, he made a slight gain in oral and a limited but slightly better gain in graphic scores. These were not sufficient, however, to serve his daily communication needs. On his admission to the project his scores on the PICA were gestural 13.20, verbal 8.70, and graphic 9.55. His gestures with objects were accurate but delayed. He was able to speak some words in imitation but not able to replicate them reliably. The stimulus for imitation was effective only after three repetitions of the pattern. His writing was distorted and produced only after repetition of the pattern.

Patient B was a 41-year-old male right hemiplegic who three years previously had suffered a thrombotic cerebrovascular accident, with consequent severe dysarthria as well as oral and oral verbal apraxia. He had received 19 months of speech treatment elsewhere with no oral speech ensuing. His attempts at

writing were highly inaccurate, though recognizably related in simple tasks (such as copying one-syllable words). In the test on his admission to the project, his attempts at speech produced sounds that were comprehensible but not related to the task. Control of oral movement was highly unreliable and frustrating to the patient. His gestures on testing were accurate but incomplete. These were elicited only with objects. He essayed a few social gestures, without such stimulation, but did not succeed in transmitting meaning; nor did he replicate any of these attempts so far as the clinicians' observation could determine. His PICA scores on his admission to the project were gestural 11.93, verbal 5.38, and graphic 6.90.

Patient C was a 52-year-old air force officer who three years before had experienced a sudden cerebrovascular accident, with consequent right hemiplegia. He had been diagnosed as having severe aphasia, with moderate-to-severe oral and oral verbal apraxia. For over two years he was a wheelchair patient, and for the past eight months he had been on braced ambulation with a cane. Despite almost two years of speech treatment elsewhere, he had no usable speech on admission to the clinic. Suitable behavioral responses indicated adequate auditory reception, but testing revealed limitations of auditory memory span. The patient used his glasses to examine the newspaper, with apparent enjoyment. He was unable to write anything but an illegible version of his name. On testing, his attempts at speech were partially comprehensible but not related to the task. His PICA scores on his admission to the project were gestural 12.52, verbal 5.23, and graphic 3.25.

Patient D was a 48-year-old veteran who had had three cerebrovascular accidents, one hemorrhagic and two thrombotic. Three years previous to the project, he had suffered another thrombotic attack resulting in right hemiplegia with oral and oral verbal apraxia. After that, he received 12 months of individual and group treatment in the speech clinic. On his admission to the project his attempts at speech were minimal. His gestures on testing were accurate and responsive but not organized; they were elicited only by presentation of a concrete object as stimulus. His writing was incomprehensible but differentiated although not at a useful level. His scores on admission to the project were gestural 12.01, verbal 3.65, and graphic 4.26.

Patient E was a 52-year-old veteran. Five years before, he had had a cerebrovascular accident, after which he had completely recovered his speech and language. One month after his second attack he was admitted to the project. Evaluation showed complete loss of spoken language, including phonation. He was able to copy one-word graphic tasks, but these showed spelling confusions such as letter substitutions, omissions, and order inversions. His gestural responses when concrete objects were presented as stimuli were accurate although limited and delayed. To simple auditory commands, he responded with appropriate but limited manual behavior. His PICA scores at the time of his admission to the project were gestural 14.22, verbal 3.42, and graphic 10.31.

Patient F was a 48-year-old air force officer who had had an automobile accident three years prior to the project. He was comatose for seven months.

After his recovery from the coma, he was diagnosed as severely aphasic. At that time he was transferred to a second hospital, where the diagnostic report recorded "no clots, no neurological evidence of lesion producing aphasia." He received six months of speech treatment, after which he was transferred to the reporting clinic. Until 10 months ago, he had right hemiplegia and was wheelchair bound, but he has since moved to energetic braced ambulation with a cane. On his admission to our clinic 16 months ago, evaluation revealed moderate impairment of auditory comprehension and limited auditory memory span. His visual recognition appeared impaired, and a right visual-field defect was present. Severe impairment of oral expression included lack of ability to imitate the simplest orofacial movements. The patient was totally agraphic. He received 10 months of speech treatment, including individual and group sessions. During the first half of this period he appeared to be unmotivated and uncooperative. Both behaviors slowly changed to a high level of motivation and cooperation. On admission to the project, he made the following PICA scores: gestural 12.78, verbal 3.25, and graphic 7.63.

All six patients were ambulatory at the time of their admission to the experimental sign project. All tested as hearing within useful normal limits, but both air force men reveal a 4000-Hz drop, Patient F at 40 dB on the right and 50 dB on the left, and Patient C showing a 45-dB level on the right and 75 dB on the left. All six patients were cooperative and enthusiastic about the project.

All six patients had some preliminary exposure in the use of American Indian Sign prior to this project. The history and rationale of American Indian Sign with samples of its use were presented in a previous paper (Skelly et al., 1972). That report demonstrated that interested and motivated viewers could interpret the Sign at an 88% level of comprehension without any instruction and that speechless patients were able to acquire a useful vocabulary within approximately 20 sessions.

Instruction of patients in Sign began with a description and demonstration of signs in daily use by many people, such as a head shake ("yes," "no"), a shoulder shrug ("maybe," "perhaps"), finger pointing ("that person," "that thing"), an extended hand, palm up ("give me"), an extended hand, palm out, wrist flexed ("stop"), finger crooking ("Come here"), and a finger over the lips ("quiet," "hush"). Imitation and use of these gestures by the group were explored. Members were encouraged to suggest additional gestures. By demonstration, the need to develop precision and consistency was explained and emphasized.

The beginning signer must realize several characteristics of gestural communication. Sign is not a language; signs do not represent discrete words, although even in explaining Sign we speak and act as if this were true. Signs are interpreted by the viewer in whatever language he uses. Sign has some cultural and individual limitations, although the principal investigator has used it in successful communication with aboriginal citizens of Australia and Spanish-speaking populations of Argentina. Since Sign is not a language, it

has no grammatical structure but uses a logical associative order to the same purpose. Consequently, it has a telegraphic style. There is no one correct sign for an idea. Any sign or group of signs that conveys an idea adequately to a number of viewers reliably on different occasions is acceptable. In a prior project, each patient able to write had kept a daily notebook log of the communicative writing he used daily for analysis of vocabulary needs. The most useful signs list that evolved was used with the apraxic patients.

The initial goal was to have the patients use as frequently as appropriate, with precision and consistency, all the natural signs already mentioned. The procedure was to integrate them in every patient-clinician contact, to stimulate them in all patient-patient contacts, and on ward visits to introduce them in patient-personnel contact. The patients' families were also apprised of the program. The next goal was to develop a group of topic-related signs. This was achieved in three steps: use of these signs in a question/answer drill, practice in a structured conversation, then eliciting the signs in a spontaneous conversation. Frequent conferences of the clinician with family members and hospital personnel yielded information about the patients' use of the signs.

The clinician introduced a topic and demonstrated the appropriate gesture. The patients imitated the gesture in concert, then individually. A series of gestures was so presented. This was followed by a recall drill, where each patient was asked to recall and demonstrate one of the gestures. The clinician asked appropriate questions to elicit use of the gestures in the patient's response. Patients then were asked to volunteer to use the gestures to ask questions. The clinician finally led the session into a conversational pattern about the topic. Similar progressions were used to lead the patients to combine signs to increase the vocabulary. Videotape of each session was reviewed at the close of the session, with constructive comment. At the beginning of the next session, parts of the prior tape were reviewed as a base for a corrective drill preceding the presentation of new material.

Interpretation by the viewer will be improved if the signer indicates the general topic he wishes to discuss. It may frequently improve transmission considerably if a place and time reference are included. If a viewer has difficulty interpreting, the sign should be repeated with greater precision and perhaps a slightly slower pace. Additional gestures may help to clarify. Occasionally it is necessary to approach the presentation from another point of view, using an entirely different gesture.

For a viewer attempting to interpret Sign for the first time, the signer will find it helpful to indicate the number of signs he will use, plus the sign for "plus" (or "add") for compound or agglutinative use. For example, the sign for "shelter" (or "house") added to "book" means "library." The patient extends the index fingers, the other fingers curled (palms down), crosses index fingers to form the plus sign, and demonstrates the sign for "shelter" and the sign for "book." The hemiplegic patient indicates agglutination by first indicating with his fingers the number of signs to be joined, then bringing fingers together and demonstrating the sign to be so joined for the new concept.

In the clinical project, the following approaches appeared to facilitate development and use of Amerind Sign:

Videotape recording is excellent for the patient's criticism of his execution of the signs. This technique facilitates self-monitored drill better than a mirror, since the video image may be repeated. This allows the patient to concentrate on production while executing the drill and on criticism when reviewing it on the tape.

Group work when possible provides motivation, greater willingness to experiment, as well as practice in performing the signs in a consistent and precise manner. More suggestions for modifying gestures to meet the motor limitations and problems of individual patients accrue in the group setting. The group approach provides its own social setting for spontaneous communication.

Structuring treatment sessions around a particular topic enables the clinician to introduce signs related to the chosen topic, to elicit associations tending to reinforce memory storage and retrieval, and to stimulate participation in conversation structured for use of these signs. The structure provides a meaningful context for the patient, and signs gain intelligibility as they are related to a pattern. This procedure is more effective than gestures presented at random with little or no way to provide reinforcement and carry-over.

Daily practice assignments should relate closely to that day's treatment session as well as to the patient's needs. Assignments should also give the patient an opportunity to test new gestures on people outside the clinic and challenge him to attempt difficult transmission. The patient needs to test newly developed signs on willing observers and to note any problems arising from his manner of execution or difficulties in interpretation. The patient will profit from practice in transmitting a specific idea to someone outside the clinic using the methods for increasing clarity discussed in the treatment sessions.

At the beginning of this project to use the Indian Sign as a possible facilitator of oral verbalization, previously acquired sign vocabularies were swiftly reviewed. Then the purpose of the project was explained. The following methods were applied to a limited number of signs at each session. Appropriate drills, reviews, and integration into daily use were included.

The clinician demonstrated a sign; then the patients replicated it. The clinician presented the sign, speaking a one-word meaning. This was repeated, with the patients performing the sign simultaneously with the clinician but focusing their attention on the clinician's articulatory movements. The patients then repeated the manual sign in unison, each making his best effort to replicate the clinician's oral movements. Next, the patients were encouraged to attempt vocal synchronization with the manual sign and the oral movement. Within the first month, with two group sessions of two hours a week, some speech was elicited from all six patients.

Immediate repetition of any success was requested. Self-observation by mirror was explored as a facilitator, with negative results. Self-observation by videotape appeared to assist progress. Self- and peer judgment of success contributed positive reinforcement. Recitation in unison accelerated progress. When the group speech efforts were followed at once by individual trials seriatim, the successful patients were usually able to retain and later to reproduce the successful effort. Clinician and peer approval were given generously for any spontaneous oral attempts accompanying presentation of a sign.

All six patients mastered 50 signs within the first two months. Additional useful modernized signs have been added, ranging from 70 to 100 in the group. All six group members easily interpret over 200 signs used by a surgical patient with highly developed gestural skill. All six apraxic patients developed some spontaneous oral verbal production synchronous with their signing. At the end of a six-month period, the gestural and verbal achievement was again assessed by the PICA.

All six patients made progress in using speech accompanying signs. Two of them (Patients A and C) are currently attempting three-word sentences of propositional speech related to daily needs and activities without signs. Patients B and D are now using approximately 200 individual words and placing some of them in phrases; Patient E uses approximately 50 words. They revert to Amerind Sign when words fail but persist in attempts to substitute the oral verbal for the gestural. Patient F currently approximates production of 10 words. While he has made this limited progress in oral production, his communication has profited from the use of Amerind Sign and the accompanying reduction of frustration. PICA scores at the initiation of the pilot project are compared with scores at the termination of the project in Table 2. All six patients are continuing on the clinical schedule.

TABLE 2. Differences in patients' scores on admission to the project and on termination. A = admission score, T = termination score, and D = differential. The termination scores of 4, 5, and 6 were all very close.

	Gestural Rank			*Verbal Rank*			*Graphic Rank*		
Patient	*A*	*T*	*D*	*A*	*T*	*D*	*A*	*T*	*D*
A	2	4	0.32	1	2	3.15	2	5 (3b)	0
B	6	5	1.16	2	1	6.77	4	4 (3a)	—0.27
C	4	6	0.23	3	3	6.29	6	3	6.56
D	5	3	1.62	4	4	7.07	5	2	5.95
E	1	1	0.03	5	5	4.98	1	1	0.84
F	3	2	1.37	6	6	1.60	3	6 (3c)	1.72

DISCUSSION

We expected that the project would increase the gestural scores. While the group's verbal scores increased by a range of low 1.60 to high 7.07, the increase in gestural scores ranged from only 0.03 to 1.62. Although it may be valid, then, to use the gestural verbal gap on the PICA as a criterion for choosing an apraxic patient for a Sign group, this group's mastery of ideational signs appears to have had little effect on their scores in manually demonstrating the use of objects in the test.

If the patients' progress is compared by their relative ranks on admission

and termination, there is consistency in the verbal score application. Only Patients A and B exchanged ranks. The special deficits of Patient F in vision and audition, plus possible residual effects of his car accident injury, may account for his slower rate of progress. The group's graphic scores increased by a range from zero to 6.56. No pattern of relationship was observed. Except for Patient C, the graphic scores on admission exceeded the verbal scores. On termination, the verbal scores exceeded the graphic scores except for Patients E and F. Patients A and B remained static in graphic score; all the others improved.

The results of this study warrant further exploration of Amerind Sign as a facilitator of oral verbalization for apraxic patients. Five of the six patients made progress, as measured by the verbal scores on the PICA. Comparable improvement in practical daily use was also noted by hospital personnel, family members, and friends. Much, however, remains to be investigated.

ACKNOWLEDGMENT

Madge Skelly is chief of the Audiology and Speech Pathology Service at the Veterans Administration Hospital in St. Louis, as well as professor of communication disorders at St. Louis University and professor of community medicine, St. Louis University School of Medicine. Lorraine Schinsky and Rita Solovist Fust are speech pathologists and Randall W. Smith is a speech pathologist/audiologist at the VA Hospital in St. Louis. Requests for reprints should be addressed to Madge Skelly, Chief, Audiology and Speech Pathology Service, Veterans Administration Hospital, St. Louis, Missouri 63125.

REFERENCES

BRAIN, W. R., *Clinical Neurology*. London: Oxford (1964).

BROWN, J. W., A model for control and peripheral behavior in aphasia. Paper presented to the Academy of Aphasia, Rochester, Minn. (1968).

DEREUCK, A. V. S., and O'CONNOR, M. (Ed.), *Disorders of Language*. Boston: Little, Brown (1964).

GOODGLASS, H., and KAPLAN, E., *The Assessment of Aphasia and Related Disorders*. Philadelphia: Lea and Febiger, 50-53 (1972).

NIELSON, J. M., *Agnosia, Apraxia, Aphasia*. New York: Hafner (1962).

PERKINS, W. H., *Speech Pathology*. St. Louis: Mosby (1971).

PORCH, B., *Porch Index of Communicative Ability*. Palo Alto: Consulting Psychologists (1971).

SKELLY, M., SCHINSKY, L., DONALDSON, R., and SMITH, R. W., Amerind sign: Gestural communication for the speechless. Paper and videotape exhibit presented at the Annual Convention of the American Speech and Hearing Association, San Francisco (1972).

SKELLY, M., SCHINSKY, L., DONALDSON, R., and SMITH, R. W., *Handbook of Amerind Sign*. St. Louis, Mo.: Veterans Administration Workshop (1973).

WECHSLER, I., *Clinical Neurology*. Philadelphia: Saunders (1958).

APPENDIX

VOCABULARY

Actions

Cut with a scissors
Cut with a knife
Drink from a glass
Drink from a cup
Drink from a bottle
eat
peel
pour
shake
spread

stir
taste

cry
hear (listen)
laugh
look at (watch)
say (talk)
see
sing
think

drive
fly

open
close (shut)
read
write
run
walk

add
arrest (hold, grab)
break
buy (shop)
chop
come
cover
deal
dig
dive
exchange (trade)
fight
finish
hope
like
lock
paint
push
shove
sleep
smoke
stop
wash

Body Parts

indicated by pointing

Descriptive Words

bad (naughty)
good (O.K., all right)

happy
sad (unhappy)

smart
crazy (stupid)

deaf
noisy (loud)
quiet (silent)

big
little

hot
warm
cold
cool

easy
hard

all
hungry
same (alike)
sick
strong

Direction

inside (in)
outside (out)

front
back

top
bottom

above
below (beneath, under)

close (near)
far away

left
right

up
down

north
south
east
west

across (over)
here

Money

money

denominations of money

check

Numbers

Indicate numbers by showing fingers for amount

Objects

camera
key
radio
record
telephone
TV

breakfast
lunch
dinner (supper)
food
water
tea
napkin
pitcher
knife
fork
spoon
glass
cup
bottle
bowl

book
pen
pencil

bird
cat
dog

rain
snow
sun

headache
stomach ache

airplane

boat (ship)
car
truck
bus
blanket
brush
comb
dentures
glasses
hearing aid
medicine
mirror
nail file
ring
toothbrush
soap
towel
wallet

cards
idea
lake
money
muscle
music (song)
oath
scissors

People

man
woman
boy
girl
baby

doctor
nurse

husband
wife

brother
sister

friend

Place

house (home, shelter)
city (town)

bank
church
hospital
library
school
store

Sports

archery
baseball
basketball
diving
football
hockey
horseback riding
swimming

Time

time
clock

morning
afternoon
evening

day
week

before
after

present (now)
past
future
summer
spring
winter
fall

Miscellaneous Vocabulary

hello
goodbye
yes
no
question sign (who, what, where, when, why—used to seek information)

Received October 10, 1973.
Accepted April 11, 1974.