Normal Language Development, Generative Language & AAC

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Normal language development information is the foundation for building generative language with a child using AAC strategies. Starting with the simplest Speech Generating Device (SGD) or with a manual communication board, a child can be learning about reasons to communicate (pragmatics), the communication dance (discourse), word meanings (semantics), word building (morphology) and sentence building (syntax).

The family, teacher, or therapist working with the child needs to have a vision of where they are going in terms of AAC and language development. Without this vision, development of an AAC system is too often drive by "immediate needs," and the support team ends up continually scrambling to make yet another board or to program yet more vocabulary for yet another activity or event in the child's life.   What you often end up with is (1) an AAC system full of nouns, but deficit of language and/or (2) an AAC system that lacks a systematic organization of words. Plus, this cycle of board making and vocabulary programming is never ending and these boards and new now vocabulary are usually only used for a day, or week, or month. It does not build long-term, life-long language skills.

However, when the focus is on providing a **planned** set of **high frequency, re-usable** vocabulary, then you can concentrate on teaching language that provides the child with real communicative power. These kinds of words are called **core vocabulary** are they are the words that are useful across a broad number of events or activities and are needed throughout your entire life.

One goal of AAC intervention is to provide the child with normal language learning experiences, while gradually building up his/her vocabulary. Normal language learning benchmarks are the best tools we currently have to determining how to direct the language learning experiences of children learning and expressing language through AAC strategies. The long-range plan is to end up with a useful vocabulary of approximately 300+ core words on the child's communication device. From this solid basis of vocabulary, additional words can be added based on the child's continued language development, and the child and family's interests, needs, and activities. These words will serve the child and well throughout his/her school years and remaining life. They are a worthwhile investment of time and learning experiences.

This handout is provided to:
   1. review normal early language development;
   2. apply principles of normal language development to the field of AAC.
   3. guide selection of the "first words" to put on the AAC device/board; and
   4. introduce strategies for scripting use of early language functions.

The handout starts out reviewing "why" and "what" kids says when they are talking with mostly 1 words. Then it goes on to the same thing when they start talking with 2 words,

and then 3-4 words and word endings. All of this happens in typically developing kids before the age of three, so it is not asking too much for kids using AAC to be given the same **opportunity** for language learning.   While all children using AAC are not going to reach the same levels of language proficiency, all children using AAC should be given the **opportunity** to reach for their highest personal level of language proficiency.

The information regarding the various language learning levels come from a wide variety of language development resources. The vocabulary lists given are **starting points** based on AAC vocabulary research and clinical practice. One reference is given (Banajee, 2003) as a starting point for selecting vocabulary. Grammatical information is based on "Brown's Stages" as identified by Roger Brown and described in his classic book entitled The First Language (Brown, R.; 1973. *A first language: The early stages*. London: George Allen & Unwin Ltd.). The stages provide a framework within which to understand and predict the path of normal expressive language development, in terms of morphology and syntax. Speech-language pathologists use these Stages extensively when they conduct a structured analysis of a sample of a child's spoken language. These Stages can be used to evaluate Language Activity Monitor (LAM) samples of expressive language produced through an AAC device.

A Review of Brown's Stages of Development and Grammar Development

Morphology
In linguistics, morphology is the branch of grammar devoted to the study of the structure or forms of words, primarily through the use of the morpheme construct.

Syntax
In linguistics, syntax is a traditional term used for the study of rules governing the combination of words to form sentences.

Morpheme
A morpheme is a unit of meaning. It does not necessarily relate to the "word count" or "syllable count" of an utterance. Here is an example of the way morphemes are counted in the words happy, unhappy, unhappily, and unhappiest, and the sentence 'He meets the unhappiest boys."

> **happy** 'Happy' is ONE WORD, it has TWO SYLLABLES (hap-py), and because it contains only one unit of meaning it counts as ONE MORPHEME.
>
> **Unhappy** If you add another unit of meaning, such as 'un', to make 'happy' into 'unhappy' you still have ONE WORD, but THREE SYLLABLES ('un-hap-py') and TWO MORPHEMES ('un' and 'happy')
>
> **unhappily** 'Unhappily' is ONE WORD, FOUR SYLLABLES (un-happ-i-ly), and THREE MORPHEMES ('un', 'happy' and 'ly').
>
> **unhappiest** 'Unhappiest' is also ONE WORD, FOUR SYLLABLES, and THREE MORPHEMES.

Brown's Stage I to IV

Between 15 and 30 months, children are expected to have MLU-M (mean length of utterance measured in morphemes) of about 1.75 morphemes. Their MLU-Ms gradually increase as they acquire more language. In Stage I, just after they have built up a 50 to 60 word vocabulary, children acquire the ability to combine words together. As children's MLU-M increases, their capacity to learn to use grammatical structures of greater complexity also increases. They move from Stage I into Stage II, where they learn to use "-ing" endings on verbs, "in", "on", and "-s" plurals. They then proceed to Stages III and IV and V.

Stage 1 –V Grammatical Structures

Brown's Stage	Age in months	MLU-M	MLU-M range	Morphological Structure	Examples
Stage 1	15-30	1.75	1.5 – 2.0	combine basic words	that car more juice give it
Stage II	28 – 36	2.25	2.0 – 2.5	Present progressive (-ing endings on verbs)	it go**ing** fall**ing** off
				in	**in** box
				on	**on** tree
				-s plurals (regular plurals)	my car**s**
Stage III	36-42	2.75	2.5 – 3.0	irregular past tense	me **fell** down you **sa**t on
				-s possessives	doggie**'s** bone
				uncontractible copula (the full form of the verb "to be" when it is the only verb in a sentence)	Are they there? Is she coming?
Stage IV	40 – 46	3.5	3.0 – 3.7	articles	a book the book
				regular past tense (-ed endings on verbs)	she jumped he laughed
				third person regular present tense	he swims she goes
Stage V	42-52+	4.0	3.7 – 4.5	third person irregular	she has he does
				uncontractible auxiliary (the full form of the verb "to be" when it is an auxiliary verb in a sentence)	**Are** they swimming. **Is** she going?
				contractible copula (the shortened form of the verb "to be" when it is the only verb in a sentence	She**'s** ready. They**'re** here. I**'m** here.
				contractible auxiliary (the shortened form of the verb "to be" when it is an auxiliary verb in a sentence)	They**'re** coming. He**'s** going. I**'m** done.

A Review of Semantic and Pragmatic Functions with Vocabulary Examples

Single Word Utterance Level

Relational Functions	Context	Form (vocabulary examples)
Greet	people noticed	hi, hello, mama, dada
Part	people leave	bye bye, goodbye
Request Assistance	used to request assistance with an event	help, do
Recurrence	used to both request & comment	more, another
Naming/Labeling	used to name or label objects and people, giving information	doggie, milk, shoe
Existence	objects or people pointed out, noticed, or found events – used to gain attention	uh oh, this, that, there, look, see
Nonexistence	used to comment on non-existence when existence is expected	no, away, gone
Disappearance	comment on the disappearance of person or object in the immediately preceding context	away, all gone, gone
Rejection	used to reject on ongoing object or action	no, stop
Cessation	comment on an ongoing event that has ceased in the immediately preceding context	stop, different
Comments	used to comment on an attribute in immediate context	like, dirty, big, naughty
Vocatives	to call for someone (less frequent than comments or greetings)	mama, dada, baby
Directive	used to direct action and/or make requests in the immediate context	go, help, stop, diffferent
Associative	idea is associated with an event, object, or person	big, hot, pretty, up

Semantic Functions	Context	Form (vocabulary examples)
Agent	agent of an intended or immediate action	mama, dada, baby, I, me, you
Object	object of an action (infrequent occurrence)	mama, dada, baby
Action	making of action or event	want, go, turn, catch, up, eat, drink, stop, get, give
Possession	associated with or belonging to a person	mine, dada, mama

Two Word Utterance Level

Relational Functions	Context	Form (vocabulary examples)
Greet	people noticed	hi + person, hello + person
Part	people leave	bye bye + person
Request Object or Action	used to request object or action	(want, get, find) + substantive word, want that, get more
Request Information	used to request information	why, what's that, where go, what doing
Request Assistance	used to request assistance with an event	(help) + another word
Recurrence	used to request or comment on an event	(more, another) + substantive word, do again
Existence	objects or people pointed out, noticed, or found events – used to gain attention	(this, a, the, that, it, there) + substantive word
Nonexistence	used to comment on non-existence when existence is expected	(no, away, all gone) + substantive word
Disappearance	comment on the disappearance of person or object in the immediately preceding context	(no, away, all gone) + substantive word
Rejection	ongoing event/object rejected	no + substantive word
Cessation	comment on an ongoing event that has ceased in the immediately preceding context	no + substantive word different + thing
Comment	used to comment on an attribute in the immediate or preceding context	like that, that mine, you funny
Directive	used to direct action and/or make requests in the immediate context	get that, help me, stop it, do different
Associative	idea is associated with an event, object, or person	(big, hot, pretty) + substantive word

Semantic Relations	Linguistic Structure	Form (vocabulary examples)
Agent-Action	noun + verb	daddy hit, me read
Action-Object	verb + noun	get that, read it, get some, want one,
Agent-Object	noun + noun	mommy book, me that
Possessive	noun + noun pronoun + noun	mommy book my book, that mine
Locative	noun + noun verb + noun prep + noun verb + prep	that thing go store on chair get up
Attributive	adj + noun	big one, red thing
Experiencer-State	pronoun + verb	me read, me love, me want

Three and Four+ Morpheme and Word Level

Noun Phrase
1. Using demonstratives (this, that, these those), articles (a, the), adjectives, and modifiers including other, more, one.
2. Prepositions used include in, on, with, of, for, to
3. Indeterminates appear: some, something
4. Noun plural reaches 90%, but plural rule over generalized (cow, cows, sheeps)
5. Noun possessive (mine, my+object) used with 90% consistency

Verb Phrase
1. Irregular past achieves 90% consistency (I went, he came)
2. Uncontracted copula used with 90% consistency (He <u>is</u> good.)
3. Auxiliary verb occurs before main verb in declarative sentences (He is going).
4. Modals start to appear: can, will

Auxiliaries
1. "Do" and "be" occur appropriately
2. "Can't" and "don't" occur as part of verb phrase only.
3. Auxiliary is NOT inverted in interrogative questions (why you are not going?).

Yes/No Questions
1. Mostly marked by intonation in speaking child.
2. Inconsistent subject/verb inversion

Wh Questions
1. "Why" and "why not" occur as a whole sentence
2. Produce "what" and "where" plus verb phrase.
3. May omit "do" in auxiliary (What you want?).

Negation
1. Negation in proper place in sentence but not included in the noun phrase or verb phrase (I no play).
2. Negative morphemes used as single morphemes (can't, don't, won't)

Personal Pronouns
1. I and me used appropriately.
2. Producing full range of pronouns, except for reflexives.

SUGGESTIONS FOR APPLYING THIS INFORMATION WITH INDIVIDUALS USING AAC

1. When you are starting with a device with a limited number of keys (either because that's all the device has or all the kid can handle), put words for broad language functions on the device and extended vocabulary (names of people, places, & things) on a manual communication board. In order to have words with MAXIMUM value across the most number of activities and communication settings, start by focusing on words that are used to MEDIATE or REGULATE activities (e.g., more, again, help, all gone, all done, different). Then add words that are used to COMMENT and RELATE (e.g., fun, good, bad, like)..

2. If a child has a reliable way to say "yes" and "no," (or "hello" and "goodbye"), don't select these words as the first words on the AAC device.

3. While little kids use "the" and "a" with high frequency, these are not high content or function words and don't need to be on an AAC device or board that has **limited keys**. This principle may apply to many other low content words, like "of," "to," etc.

4. Begin to build a manual communication board, keeping motor planning and automaticity in mind. Always try to have a board with keys for at least 50 core words. For nouns, use a section that can be flipped or changed so that no matter what the activity, the same 50 core words are always available.

5. After the first 50 words, the AAC system should grow in keeping with normal language development principles.

   ❑ Make sure you have words from a variety of word classes.
      o Do you have key pronouns (I, me, you, it, mine, he, she); verbs (do, put, is, make, let, get, want); negation (not, no, don't); prepositions (with, for, to, in, on); key question words (what, where); modifiers (gone, more, some, all); generic locations (here, there, away).

   ❑ Add words for PERSONAL core
      o Do you have words that are "core" to the child's personal needs, like names of key people, places, and things. These words may not be generic to all other people, but they are important to the person using the AAC device.

   ❑ Verb Phrase development depends on having access to main verbs, "little" verbs, and verb endings. You need main verbs with the widest range of function (e.g., do, put, get, give, make, let, try, like, want) and more specific function (e.g., eat, read, drink, read, color).
      o Some verbs cannot stand alone (e.g., "put'). They are combined with another word (e.g., preposition = put on, adjective = put more, adverb = put away, pronoun = you put it, determiner = put that). You have to have a variety of words available to combine with these verbs.

   ❑ Noun Phrase development needs more than names of things. Many times, the more generic nouns have more usefulness in the context of the situation. Consider how you can use these words: this, that, these, those, other, more, one, thing, any, etc.

   ❑ Make a plan for expanding the language available to the child on the AAC board or device.
      o How are you going to add more pronouns?
      o How will you give the child access to verb forms to practice?

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- o How important is it for the child to practice using "little verbs" like "am," "is," "are," "be" and modals like "can," "will," or "should?"
- o How are you going to let them practice using plurals?
- o How are you going to help the child use modifiers (both adverbs and adjectives) when building noun and verb phrases (e.g., I go <u>now</u>, that <u>big</u> one.)
- o How will you expand prepositions?

6. Develop intervention plans that encourage communication for a full range of functional and semantic relations. The useful way to do this is to write simple "scripts." A script helps communication partners focus on the important bits of language learning, not the names of things. Once the partners develop their own skills for encouraging normal language production, fewer and fewer scripts are needed.
   - ❏ Write the script based on a language function plan, using the core vocabulary you have selected. See the sample below.
   - ❏ When you write "scripts," don't make yourself crazy trying to figure out each functional or semantic relation in your scripts. Just be (1) well-rounded in the script, (2) practice a range of noun phrases and verb phrases and (3) take periodic language samples to confirm that you are encouraging more than "naming" and "object requesting."
7. Make a Natural Language Board for yourself and use it to model and encourage two, three, and four word utterances. Practice the language modeling before you try the activity with the child. When the child gives you a 1 or 2 word utterance, expand that utterance to include 1 or 2 more words or word endings. Model short simple sentences and don't try to model everything you are saying.

SCRIPTING WORKSHEET

1. Review available core words from the communication device/board used by the child.
2. Brainstorm your general plan for the activity.
3. Create a simple script to be used as a blueprint in the activity.
   a. Briefly note what you are going to say and do.
   b. List the aided language you are going to model using the student's device, your language board, or other strategy.
   c. Note the general language function you are trying to elicit.
   d. List the target language you are hoping to elicit from the student, based on the context of the activity (what you did and said) and what you modeled for the child.

Do and Say this:	Model this:	Language Function:	1 or 2 word	3 – 4+ words

SAMPLE 160 LOCATION BOARD with PIXONS

I-___	it	who	what	do	want	need	have	when	again	morning	how	more	all done	all gone	stuff
me-myself	my-mine	name	am-is-are	can	like	feel	know	before	after	afternoon	different	busy	bored	all	thing
you-your	person	friend	ask	help	stop	go	come	now	later	night	sick	hurt	tired	some	this
boy-man	brother	he-him-his	turn	try	make	work	put	yesterday	today	tomorrow	good	bad	silly	dumb	that
girl-woman	sister	she-her(s)	take	get	give	change	hold	where	away	why	big	medium	little	nice	fun
family	mom	dad	eat	drink	sleep	dress	wash	here	there	because	hungry	thirsty	hot	cold	question
baby	grandmother	grandfather	say-tell	talk-call	hear-listen	look-see watch	find	in	out	and	fast	slow	hard	soft	idea
teacher	class	children	live	sit	walk	ride	buy	on	off	home	favorite	full	right	easy	place
aide	SLP	bus driver	read	write	count	color	think	up	down	school	mean	stinky	scary	afraid	time
pet	body	not	love	play	share	sing	wait	over	under	town	happy	sad	confused	mad	problem 2+2=4

VOCABULARY LISTS

Top Words Used by Toddlers

In Banajee, M., DiCarlo, C., & Buras-Stricklin, S. (2003). Core Vocabulary Determination for Toddlers, *Augmentative and Alternative Communication*, 2, 67 – 73

1. all done/finished
2. go
3. help
4. here
5. I
6. in
7. is
8. it
9. mine
10. more
11. my
12. *no*
13. off
14. on
15. out
16. some
17. that
18. *the*
19. want
20. what
21. *yes/yeah*
22. you

CLINICAL APPLICATION

First 10 Words:
1. all done
2. different
3. help
4. mine
5. more
6. not/don't
7. stop
8. that
9. want
10. what

First 20 Words:
1. again
2. all done
3. all gone
4. away
5. different
6. go
7. help
8. here
9. I
10. it
11. like
12. mine
13. more
14. not/don't
15. stop
16. that
17. want
18. what
19. you

First 30+ Words:
1. again
2. all done
3. all gone
4. away
5. big
6. different
7. do
8. down
9. get
10. go
11. help
12. here
13. I
14. in
15. it
16. like
17. little
18. mine
19. more
20. my
21. not/don't
22. off
23. on
24. out
25. put

26. some
27. stop
28. that
29. there
30. up
31. want
32. what
33. you

First 50+ Words
1. again
2. all
3. all done
4. all gone
5. away
6. bad
7. big
8. busy
9. come
10. different
11. do
12. don't
13. down
14. drink
15. eat
16. feel
17. get
18. go
19. good
20. happy
21. he
22. help
23. here
24. I
25. in
26. it
27. like
28. little
29. make
30. me
31. mine
32. more
33. my
34. not
35. now
36. off
37. on
38. out
39. play
40. put
41. question
42. read
43. sad
44. she
45. some
46. stop
47. tell
48. that
49. there

50. thing
51. this
52. turn
53. up
54. want
55. what
56. where
57. who
58. why
59. you

Adding More Words
1. after
2. almost
3. am/is/are/be
4. and
5. another
6. any
7. ask
8. because
9. before
10. body
11. bring
12. buy
13. call
14. can
15. change
16. cold
17. color
18. day
19. did
20. dress
21. every
22. fall
23. fast
24. favorite
25. find
26. for
27. full
28. fun
29. give
30. goodbye
31. guess
32. have
33. hear
34. hi
35. hot
36. how
37. hungry
38. idea
39. is
40. job
41. know
42. later
43. leave
44. let/let's
45. listen
46. live
47. lose

48. love
49. maybe
50. much
51. myself
52. name
53. need
54. nice
55. of
56. one
57. other
58. over
59. place
60. please
61. pretty
62. problem
63. ready
64. ride
65. same
66. say
67. sick
68. silly
69. sing
70. sit
71. sleep
72. slow
73. sorry
74. start
75. surprise
76. swim
77. take
78. talk
79. thank you
80. these
81. they
82. think
83. thirsty
84. those
85. time
86. tired
87. together
88. try
89. under
90. use
91. very
92. walk
93. way
94. we
95. when
96. win
97. with
98. work
99. write
100. wrong
101. your

ADD MORE:
- ADJECTIVES
- ADVERBS
- PRONOUNS
- VERBS

Vocabulary Reference List for Selecting Core Vocabulary

- Adamson, L., Romski, M., Deffebach, K., & Sevcik, R. (1992a). Symbol vocabulary and the focus of conversations: Augmenting language development for youth with mental retardation. *Journal of Speech and Hearing Research, 35,* 1333-1343.

- Banajee, M., DiCarlo, C., & Buras-Stricklin, S. (2003). Core Vocabulary Determination for Toddlers, *Augmentative and Alternative Communication*, 2, 67 – 73.

- Beukelman, D., McGinnis, J., & Morrow, D. (1991). Vocabulary selection in augmentative and alternative communication. *Augmentative and Alternative Communication, 7,* 1-15.

- Beukelman, D. R., Yorkston, K. M., Naranjo, C., & Poblete, M. (1984). Analysis of communication samples produced by adult communication aid users. *Journal of Speech and Hearing Disorders, 49,* 360-367.

- Fried-Oken, M. M., L. (1992). An initial vocabulary for nonspeaking preschool children based on developmental and environmental language sources. *Augmentative and Alternative Communication, 8*(March), 41-56.

- Fristoe, M., & Lloyd, L. L. (1980). Planning an initial expressive sign lexicon for persons with severe communication impairment. *Journal of Speech and Hearing Disorders, 45,* 170-180.

- Fullmer, D., & Kolson, C. (1961). A beginning reading vocabulary. *Journal of Educational Research, 54*(7), 270-272.

- Hopkins, C. (1979). The spontaneous oral vocabulary of children in grade 1. *The Elementary School Journal, 79*(4), 240-249.

- Irwin, O. (1966). A comparison of the vocabulary of use and of understanding of cerebral palsied children. *The Cerebral Palsy Journal, 27*(3), 7-11.

- King, J., Spoeneman, T., Stuart, S., & Beukelman, D. (1995). Small talk in adult conversations: Implications for AAC vocabulary selection. *Augmentative and Alternative Communication, 11*(4), 260-264.

- Light, J., Fallon, K., & Paige, T.K. (1999). Vocabulary selection tool for preschoolers who require AAC. American Speech-Language-Hearing (ASHA) Convention. San Francisco, CA.

- Marvin, C. A., Beukelman, D. R., & Bilyeu, D. (1994). Vocabulary-use patterns in preschool children: Effects of context and time sampling. *Augmentative and Alternative Communication, 10*(4), 224-236.

- McGinnis, J. B., D. (1989). Vocabulary requirements for writing activities for the academically mainstreamed student with disabilities. *AAC, 5(3)*(September), 183-191.

- Morrow, D., Mirenda, P., Beukelman, D., & Yorkston, K. (1993). Vocabulary selection for augmentative communication systems: A comparison of three techniques. *ASHA, 2(2),* 19-30.

- Murphy, H., et al. (1957). The spontaneous speaking vocabulary of children in primary grades. *Journal of Education, 140(2),* 1-105.

- Stuart, S. (1991). *Topic and vocabulary use patterns of elderly men and women in two age cohorts.* Unpublished doctoral dissertation, University of Nebraska-Lincoln.

- Stuart, S., Vanderhoof, D., & Beukelman, D. (1993). Topic and vocabulary use patterns of elderly women. *AAC, 9*(June), 95-110.

- Van Tatenhove, G. (1986). Vocabulary versatility for the person who is nonspeaking. *Communicating Together, 4,* 19-20.

- Van Tatenhove, G. M. Considering vocabulary versatility as a measure of effective use of a symbol set. In *Augmentative Communication: Implementation Strategies* (pp. 3-113-133).

- Van Tatenhove, G. M. Training caregivers and facilitators to select vocabulary. In *Augmentative Communication: Implementation Strategies* (pp. 6-30-42).

- Yorkston, K. M., Dowden, P. A., Honsinger, M. J., Marriner, N., & Smith, K. (1988a). A comparison of standard and user vocabulary lists. *Augmentative and Alternative Communication, 4,* 189-210.

- Yorkston, K. M., Smith, K., & Beukelman, D. (1990). Extended communication samples of augmented communicators I: A comparison of individualized versus standard single-word vocabularies. *Journal of Speech and Hearing Disorders, 55,* 217-224.

- Yorkston, K. M., Beukelman, D. R., Smith, K., & Tice, R. (1990). Extended communication samples of augmented communicators II: Analysis of Multi-Word Sequences. *Journal of Speech and Hearing Disorders, 55*(2), 225-230.