Chapter 2:

Naturalistic AAC Communication Intervention

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"...model, model, model..." —Patty Cassidy, CCC-SLP

It was a crisp autumn day when I departed my graduate class in augmentative and alternative communication alongside my course instructor Patty Cassidy. It was one of those sublime moments after an inspiring class when you find yourself thinking deeply about the subject matter. I remember innocently enough asking her what she thought was most important about language learning for children who could not use their voice to meet their full daily communication needs. At that point we stopped on the steps of the College's building and she shared that she thought modeling the communication systems we were using with the children was the most important principle. She tapped me on the shoulder as we were walking away and said, "model, model, model... remember that, Sam." Walking away inspired from the class session and conversation, I had little idea exactly how important those words and the concept they represent are for the language acquisition process of children who have difficulty speaking. Five years later I found myself defending a Ph.D. dissertation on the subject of teaching adults to model using Augmentative and Alternative Communication (AAC) to help children learn how to use those AAC systems.

I remember finding classic texts on language input and motherese such as Snow and Ferguson (1978) and realizing how long people have been interested in the importance of modeling language interactively to children. The following quote exemplifies the spirit of naturalistic communication interventions.

When asked how a parent might best support a child's learning of language, Roger Brown (in the introduction to the seminal Snow and Ferguson, [1978, p. 26]) provided the following response: "How can a concerned mother facilitate her child's learning of language?" His answer was, "Believe that your child can understand more than he or she can say, and seek, above all to communicate. To understand and be understood. . . . If you concentrate on communicating, everything else will follow." The research on communication interventions for children with disabilities impacting their ability to communicate provides evidence that these same high expectations and the use of AAC modeling based interventions can produce benefits for individuals with CCN. The challenge is how to better provide a rich communication environment full of models of language, engagement, high expectations, and opportunities for participation. When these conditions are provided, there is good reason to think that the learning of language ". . . will follow."

This chapter introduces AAC, shares select intervention resources, and then introduces a naturalistic AAC intervention strategy, MODELER.

What Is AAC?

Child language development is impacted by the interaction of the child's abilities in all domains such as motor, vision, hearing, and language (Siegel & Cress, 2002). For individuals with disabilities that impact their ability to meet their daily communication needs using speech, language acquisition can be empowered through providing access to Augmentative and Alternative Communication (AAC) (Beukelman & Mirenda, 2013).

AAC Definition

"AAC includes all forms of communication (other than oral speech) that are used to express thoughts, needs, wants, and ideas. We all use AAC when we make facial expressions or gestures, use symbols or pictures, or write. People with severe speech or language problems rely on AAC to supplement existing speech or replace speech that is not functional. Special augmentative aids, such as picture and symbol communication boards and electronic devices, are available to help people express themselves. This may increase social interaction, school performance, and feelings of self-worth. AAC users should not stop using speech if they are able to do so. The AAC aids and devices are used to enhance their communication." American Speech-Hearing Association, retrieved from: asha.org/public/speech/disorders/AAC/.

There are many first-hand accounts of individuals who have found alternate ways to communicate (Brown, 1964; Creech, 1992; Koppenhaver, Yoder, & Erickson, 2002). As a whole, their writings, combined with research documenting

efficacy express the message that despite not being able to speak, it is possible to become a competent communicator by utilizing AAC (Beukelman & Mirenda, 2013, Romski & Sevcick, 1996).

The goal of AAC, described by Porter (2007), is to give people the ability to meet socially valued daily language needs efficiently, specifically, intelligibly, and independently. This is accomplished both through using AAC tools and by providing AAC intervention and training to support the individual using AAC.
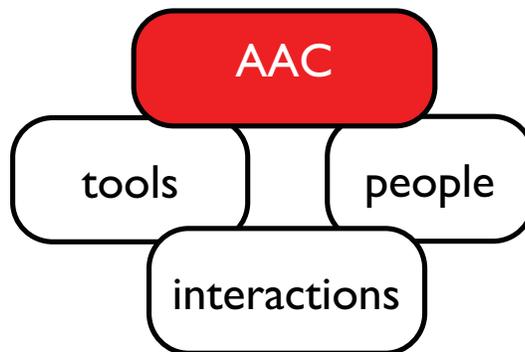

Figure 1. AAC is a set of tools people use for interactions and learn to use through interactions.

One fear many parents and professionals have is that by using AAC system components to assist in communication, the child's speech development will be impeded. Fortunately, this is not the case. Evidence suggests that AAC not only does not impede development, but may even support speech development (Millar, Light, & Schlosser, 2006). Parents, teachers, and therapists also may be concerned about prerequisites for commencing AAC interventions, but as Cress (2002) points out, there are no prerequisites for AAC.

Communication and Language

Communication is sending messages. Language is the coded system of symbols

with agreed-upon patterns and rules that enables a community of people to interact

and communicate with each other and to efficiently send messages (Beukelman &

Mirenda, 2013). There are important social purposes of communication such as (a)

expressing needs and wants, (b) feeling social closeness, (c) sharing information, (d)

fulfilling established conventions of social etiquette (Light, 1988) and (e) engaging

with oneself in an internal dialogue (Beukelman & Mirenda, 2013). Communicative

competence is not necessarily an inherent trait, but something that must be learned

and scaffolded. Communicative competence can be organized into linguistic,

operational, social, and strategic domains (Light, 1989).

AAC Intervention Resources

Table 1 highlights a selection of important Internet resources for AAC.

Resource	Description	Link
AAC Kids	The website provides step by step guidelines for early intervention specifically designed for children with complex communication needs.	aackids.psu.edu
PrAActical AAC	Top blog in AAC provides practical resources for intervention.	praacticalaac.org

Resource	Description	Link
Teaching Learners with Multiple Special Needs	Resources and ideas for teachers of learners with severe, profound, intensive, significant, complex or multiple special needs.	teachinglearnerswithmultipleneeds.blogspot.com

Table 1. AAC intervention web resources

Communication Practices from the Autism Internet Modules

The Autism Internet Modules have some terrific overviews of popular approaches to communication intervention for individuals with complex communication needs.

1. Picture Exchange Communication System (PECS)

2. Pivotal Response Training

3. Naturalistic Intervention

4. Functional Communication Training

5. Speech Generating Devices

These concise modules overview the essentials of a practice or concept along with reviewing key research findings and provide checklists for implementation.

The National Joint Committee, A Communication Bill of Rights (NJC, 1992) is an important document outlining the human and civil rights of people with complex communication needs. This document draws connections to the concepts of inclusion, self-determination, universal design for learning, the least dangerous assumption, and valuing the human dignity of all people. Some of these rights are more straightforward, such as "8. The right to have access at all times to any

needed augmentative and alternative communication devices and other assistive devices, and to have those devices in good working order." Yet others are much more nuanced, "7. The right to have communication acts acknowledged and responded to, even when the intent of these acts cannot be fulfilled by the responder." Taken together, they serve as an important message for pre-service teachers.

National Joint Committee, A Communication Bill of Rights (NJC, 1992)

All persons, regardless of the extent or severity of their disabilities, have a basic right to affect, through communication, the conditions of their own existence. Beyond this general right, a number of specific communication rights should be ensured in all daily interactions and interventions involving persons who have severe disabilities. These basic communication rights are as follows:

1. The right to request desired objects, actions, events, and persons, and to express personal preferences, or feelings.

2. The right to be offered choices end alternatives.

3. The right to reject or refuse undesired objects, events, or actions, including the right to decline or reject all proffered choices.

4. The right to request, and be given, attention from and interaction with another person.

5. The right to request feedback or information about state, an object, a person, or an event of interest.

6. The right to active treatment and intervention efforts to enable people with severe disabilities to communicate messages in whatever modes and as effectively and efficiently as their specific abilities will allow.

7. The right to have communication acts acknowledged and responded to, even when the intent of these acts cannot be fulfilled by the responder.

8. The right to have access at all times to any needed augmentative and alternative communication devices and other assistive devices, and to have those devices in good working order.

9. The right to environmental contexts, interactions, and opportunities that expect and encourage persons with disabilities to participate as full communication partners with other people, including peers.

10. The right to be informed about the people, things, and events in one's immediate environment.

11. The right to be communicated with in a manner that recognizes and acknowledges the inherent dignity of the person being addressed, including the right to be part of communication exchanges about individuals that are conducted in his or her presence.

12. The right to be communicated with in ways that are meaningful, understandable, and culturally and linguistically appropriate.

Table 2. National Joint Committee, A Communication Bill of Rights

AAC modeling Rationale

Language input is an important factor in child language acquisition (Gallway &

Richards, 1994; Snow & Ferguson, 1978; Tomasello, 2003). During early childhood,

children using speech are exposed to large levels of language input and interaction

(Hart & Risley, 1995; Tomasello, 2003). The amount of words speaking children

typically hear in their first four years ranges from approximately eight to 50 million

words (Hart & Risley, 1995). Similarly to children who learn to communicate using

speech, language input is important to children who use other expressive

communication modalities as well, such as individuals with complex

communication needs (CCN) who require augmentative and alternative

communication (AAC). These individuals may communicate expressively using

various modalities such as *unaided* AAC modalities such as sign languages,

gestures, vocalizations, and speech, or *aided* AAC modalities such as with paper

and computer based communication displays (e.g., iPad). The overall AAC

language acquisition literature emphasizes the role of language input for individuals

with CCN who require AAC (Beukelman & Mirenda, 2013). For example, research in

sign language acquisition stresses the importance of language input, demonstrating

that given appropriate sign language input, children can develop complex language

abilities using sign language (Bavelier, Newport, & Supalla, 2003; Newport &

Supalla, 2000).

Individuals with CCN who use aided AAC systems, such as those with

picture or word systems that may be paper or computer based, also require

appropriate language input (Beukelman & Mirenda, 2013; Romski & Sevcik, 1996).

However, these individuals rarely observe models of AAC use, creating what Smith

& Grove (2003) called an asynchrony of language input to output. That is, these

individuals experience spoken language as input, but are expected to communicate

expressively using AAC. Consequently, a number of AAC interventions have been

developed in an attempt to provide this missing language input to individuals with

CCN as a way to stimulate language gains (see single-subject meta-analysis;

Sennott, Light, & McNaughton, 2014). For clarity and conciseness, Sennott et al.

(2014) used the term *AAC modeling* to consolidate and describe the various types

of language input provided through AAC modalities. Various AAC modeling

intervention packages have positively impacted four different language areas: (a)

pragmatics in the form of turn taking (e.g. Kent-Walsh, Binger, & Hasham, 2010); (b)

semantics in the form of receptive and expressive vocabulary (e.g. Drager et al.,

2006); (c) syntax in the form of increasing multi-symbol utterances (e.g. Binger,

Kent-Walsh, Berens, Del Campo, & Rivera, 2008); and (d) morphology in the form of

increased use of target structures (Binger, Maguire-Marshall, & Kent-Walsh, 2011).

analysis results also indicated that because of the packaged nature of the

interventions, parsing out modeling as the sole independent variable impacting

student performance was difficult. In addition to the AAC modeling variable, time

delay, and responding or recasting, were included in the majority of the reviewed

packaged interventions. Those three intervention variables have been included in a

newly designed intervention package called ModelER (Model, Encourage, Respond)

for Read and Talk.

MODELER Strategy

The ModelER intervention package is built on theory supporting the

importance of language input (Gallway & Richards, 1994; Hart & Risley, 1995,

Tomasello, 2003) and effective instructional components as highlighted in AAC

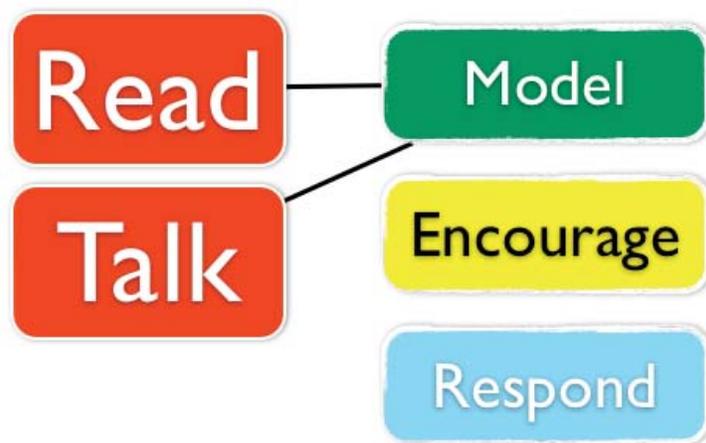modeling research (Sennott et al., 2014).

Figure 1. MODELER for Read and Talk

ModelER. The Improving Partner AAC Training (ImpAACt) series of studies

(e.g. Binger et al., 2008) effectively used variants of a specific strategy instructional

package (Read, Ask, and Answer [RAA] and related variants) to teach partners to

better engage in shared storybook reading with beginning communicators who use

AAC. These studies demonstrated positive results in the form of increased

communication turns (Kent-Walsh et al, 2010; Rosa-Lugo & Kent-Walsh, 2008),

increased multi-symbol communication turns (Binger et al., 2008, Binger, Kent-

Walsh, Ewing, & Taylor, 2010), and increased use of morphological forms (Binger,

Maguire-Marshall, & Kent-Walsh, 2011). ModelER has been designed to build on

the findings of the ImpAACt research, but to optimize for generalization beyond the

context of shared storybook reading, because of the importance of promoting

interventions that can be used across multiple contexts (e.g. play, academics,

snack/ meal times) for children learning to use AAC.

Figure 2. Video example of MODELER found at http://youtu.be/d4tI-xqVoDE

The major components of ModelER are (a) model - modeling AAC use

(Sennott et al., 2014); (b) encourage - encouraging communication through time

delay/ expectant delay (e.g. Halle, Baer, & Spradlin, 1981); and (c) respond -

responding to child communication attempts through AAC recasting (Camarata &

Nelson, 2006; Nelson et al., 1996; Harwood, Warren, & Yoder, 2003). AAC modeling

is the foundation of the intervention and is designed to provide a model of language

use (pragmatics), content (semantics), and form (syntax and morphology) for the

individual with CCN learning to use AAC. Encouragement to communicate, in the

form of a time delay, is designed to provide opportunities for the child to initiate a

communication turn, showing them that the adult communication partner is waiting

and interested. As a support to the child's communication attempts, the respond

component focuses on recasting the child's utterance by repeating their utterance,

and expanding it in a meaningful way. The respond component is designed as an

adaptation of the recasting intervention described in Nelson et al. (1996), which

described that the recast maintains the basic meaning of what they child says,

focuses on expanding the length of utterance, and keeps the conversation turns

flowing. The hope is that the child can better attend to the more advanced

structures being modeled because the utterance is based on what they just

previously communicated. Put together, the sequence of modeling, encouraging by

waiting for the child to take a turn, and then responding through AAC recasting is

designed to create individualized, language-rich multi-turn communication

sequences.

Figure 3. Video example 2 of MODELER found at

http://youtu.be/htsAWLYfBXQ

  Read and Talk. The Read and Talk component of the package refers to reading a book and talking about it through making comments or asking questions. The Read and Talk components create a learning environment that would be typical of an early childhood shared reading context. Variants of shared storybook reading, such as dialogic reading, that includes engaging in conversation with the child, has extensive empirical support in general education (Dale et al., 1996; Whitehurst et al., 1988), special education (Ezell & Justice, 2005), and AAC specific literatures (Bedroisian, 1999; Sennott et al., 2014; Stephenson, 2009).

Dialogic reading interventions (e.g. Dale et al., 1996) are comprised of reading with children and asking targeted questions, which matches the approach the RAA strategy ImpAACt studies took (e.g. Kent-Walsh et al., 2010), which primarily focused on reading and question asking. By including commenting in addition to question asking, the approach taken in the Read and Talk components of the intervention expands on the scope of adapting dialogic reading for children using AAC. The decision to include both commenting and question asking was made because question asking has the potential to place the child into a passive or question prompt–dependent role, which could be detrimental to individuals who require AAC (Light & Kelford Smith, 1993). Instead, this approach is designed to teach the communication partners to model multiple pragmatic functions, comments, and questions, with the objective of promoting the children taking increasingly independent turns such as making comments or asking questions themselves.

Strategy Step	Description
Model	EA models one or more AAC symbols during a communication turn using the iPad based AAC system.
Encourage	EA provides a time delay, or wait time, until child takes a communication turn or five seconds.
Respond	EA responds to a child communication turn with an AAC recast by repeating some portion of the child's utterance and attempts to expand the utterance and models one or more AAC symbols during a communication turn using the iPad-based AAC system
Read	EA reads a page or page spread in the book and uses ModelER
Talk	EA makes a comment or asks a question using ModelER

Table 3. MODELER Implementation checklist

Conclusion

For children who are minimally verbal and use AAC it is important to develop an

expressive language system and to have an appropriate language learning

environment. The iPad combined with a communication app has become a very

popular AAC system, creating more opportunities for these children to have access

to expressive language. A number of useful resources have been introduced in this

chapter from various web sources. Specifically, the naturalistic communication

intervention MODELER has been introduced.

In considering the language learning environment of children, we know about

the importance of language input described across general language acquisition

(Gallway & Richards, 1994; Gerken, 2008; Hart & Risley, 1995, Tomasello, 2003),

sign language (Bavelier et al., 2003; Newport & Supalla, 2000), and AAC (Goosens,

Crain, & Elder, 1992; Romski & Sevcik, 1996; Sennott et al., 2013; Smith & Grove,

2003). AAC researchers have developed interventions that target providing models

of AAC use. Sennott and colleagues have developed a package intervention called

MODELER (Model, Encourage, Respond) that is designed to help the child's

communication partners provide AAC models in an easy, interactive format

throughout the day.

References

Bavelier, D., Newport, E. L., & Supalla, T. (2003). Children need natural languages, signed or spoken. *Cerebrum, 6(4),* 19–32.

Beukelman, D., & Mirenda, P. (2013). *Augmentative and alternative communication: Supporting children and adults with complex communication needs* (4th ed.). Baltimore, MD: Brookes Publishing.

Binger, C., Kent-Walsh, J., Berens, J., Del Campo, S., & Rivera, D. (2008). Teaching Latino parents to support the multi-symbol message productions of their children who require AAC. *Augmentative and Alternative Communication. 24(*4), 323–338.

Binger, C., Kent-Walsh, J., Ewing, C., & Taylor, S. (2010). Teaching educational assistants to facilitate the multi-symbol message productions of young students who require augmentative and alternative communication. *American Journal of Speech Language Pathology*, *19*(2), 108–120.

Binger, C., Maguire-Marshall, M., & Kent-Walsh, J. (2011). Using aided AAC models, recasts, and contrastive targets to teach grammatical morphemes to children who use AAC. *Journal of Speech Language Hearing Research*, *54*(1), 160-176.

Brown, C. (1954). *My left foot.* London: Secker & Warburg.

Camarata, S. M., & Nelson, K. E. (2006). Conversational recast intervention with preschool and older children. In R. J. McCauley & M. E. Fey (Eds.), *Treatment of language disorders in children* (pp. 237–264). Baltimore, MD: Brookes.

Creech, R. (1992). *Reflections from a Unicorn*. Greenville, NC: RC Publishing Co.

Dale, P. S., Crain-Thoreson, C., Notari-Syverson, A., & Cole, K. (1996). Parent-child book reading as an intervention technique for young children with language delays. *Topics in Early Childhood Special Education*, *16(*2), 213–235.

Drager, K. D. R., Postal, V. J., Carrolus, L., Castellano, M., Gagliano, C., & Glynn, J. (2006). The effect of aided language modeling on symbol comprehension and production in 2 preschoolers with autism. *American Journal of Speech-Language Pathology, 5*(2), 112–125.

Ezell, H. K. & Justice, L. M. (2005). *Shared storybook reading: Building young children's language and emergent literacy skills*. Baltimore, MD: Brookes Publishing.

Gallway, C., & Richards, B. J. (1994). *Input and interaction in language acquisition*. Cambridge, UK: Cambridge University Press.

Gerken, L. A. (2008). *Language development*. San Diego, CA: Plural Publishing.

Goossens', C., Crain, S., & Elder, P. (1992). *Engineering the classroom environment for interactive symbolic communication: An emphasis on the developmental period 18 months to five years.* Birmingham, AL: Southeast Augmentative Communication Conference Publications.

Halle, J. W., Baer, D. M., & Spradlin, J. E. (1981). Teachers' generalized use of delay as a stimulus control procedure to increase language use in handicapped children. *Journal of Applied Behavior Analysis*, *14*(4), 389–409.

Harris, K. R., Graham, S., & Mason, L. H. (2003). Self-regulated strategy development in the classroom: Part of a balanced approach to writing instruction for students with disabilities. *Focus on Exceptional Children, 35*(7)*,* 1–16.

Hart, B., & Risley, T. R. (1995). *Meaningful differences in the everyday experience of young American children*. Baltimore, MD: Brookes Publishing.

Harwood, K., Warren, S., & Yoder, P. (2002). The importance of responsivity in developing contingent exchanges with beginning communicators. In J. Reichle, D. Beukelman & J. Light (Eds.), *Exemplary practices for beginning communicators* (pp. 59-95). Baltimore: Brookes Publishing.

Kent-Walsh, J., & Mcnaughton, D. (2005). Communication partner instruction in AAC: Present practices and future directions. *Augmentative and Alternative Communication*, *21*(3), 195–204.

Kent-Walsh, J., Binger, C., & Hasham, Z. (2010). Effects of parent instruction on the symbolic communication of children using augmentative and alternative communication during storybook reading. *American Journal of Speech Language Pathology*, *19*(2), 97–107.

Koppenhaver, D., Yoder, D. E., Erickson, K. A., (2002) *Waves of words*. ISAAC Press.

Light, J. (1988). Interaction involving individuals using augmentative and alternative communication systems: State of the art and future directions. *Augmentative and Alternative Communication*, *4*(2), 66-82.

Light, J. (1989). Toward a definition of communicative competence for individuals using augmentative and alternative communication systems. *Augmentative and Alternative Communication, 5*(2)*,* 137-144.

Light, J., Binger, C., & Smith, A. K. (1994). Story reading interactions between preschoolers who use AAC and their mothers. *Augmentative and Alternative Communication*, *10*(4), 255–268.

Light, J., & Kelford Smith, A. (1993). Home Literacy Experiences of Preschoolers Who Use AAC Systems and of Their Nondisabled Peers. *Augmentative and Alternative Communication*, *9*(1), 10–25.

Millar, D. C., Light, J. C., & Schlosser, R. W. (2006). The impact of augmentative and alternative communication intervention on the speech production of individuals with developmental disabilities: A research review. *Journal of Speech Language Hearing Research*, *49*(2), 248-264.

Newport, E. L., & Supalla, T. (2000). Sign language research at the millennium. In K. Emmorey and H. Lane (Eds.), *The Signs of Language Revisited: An Anthology in Honor of Ursula Bellugi and Edward Klima.* Mahwah, NJ: Lawrence Erlbaum Associates.

Nelson, K. E., Camarata, S. M., Welsh, J., Butkovsky, L., & Camarata, M. (1996). Effects of imitative and conversational recasting treatment on the acquisition of grammar in children with specific language impairment and younger

language-normal children. *Journal of Speech Hearing Research*, *39*(4), 850-859.

Porter, G. (2007). Pragmatic Organization Dynamic Display (PODD) communication books: Direct access templates (US letter paper version). Melbourne: Cerebral Palsy Education Centre.

Romski, M. A., & Sevcik, R. A. (1996). *Breaking the speech barrier: Language development through augmented means*. Baltimore, MD: Brookes Publishing.

Rosa-Lugo, L. I., & Kent-Walsh, J. (2008). Effects of parent instruction on communicative turns of Latino children using augmentative and alternative communication during storybook reading. *Communication Disorders Quarterly*, *30*(1), 49–61.

Scheeler, M. C., McAfee, J. K., Ruhl, K. L. & Lee, D. L. (2006). Effects of corrective feedback delivered via wireless technology on preservice teacher performance and student behavior. *Teacher Education and Special Education, 29*(1), *12–25.*

Sennott, S., & Niemeijer, D. (2008). Proloquo2Go (computer software). Amsterdam, NL: Assistiveware.

Sennott, S., Light, J., & McNaughton, D. (2014). *A meta-analysis of the effect of aided AAC modeling on the communication and language development of individuals with complex communication needs.* Manuscript in preparation.

Siegel, E., & Cress, C. (2002). Overview of the emergence of early AAC behaviors: Progression from communicative to symbolic skills. In J. Reichle, D. Beukelman, & J. Light (Eds.), *Exemplary practices for beginning communicators: Implications for AAC* (pp. 25-57). Baltimore: Brookes Publishing.

Smith, M., & Grove, N. (2003). Asymmetry in input and output for individuals who use augmentative and alternative communication. In J. Light, D. Beukelman, & J. Reichle (Eds.), *Communicative competence of individuals who use augmentative and alternative communication.* Baltimore, MD: Brookes Publishing.

Snow, C. E., & Ferguson, C. A. (1978). *Talking to children: Language input and acquisition*. Cambridge, UK: Cambridge University Press.

Stephenson, J. (2010). Book reading as an intervention context for children beginning to use graphic symbols for communication. *Journal of Developmental and Physical Disabilities, 22*(3) 257–271.

Tomasello, M. (2003). *Constructing a language*. Cambridge, MA: Harvard University Press.

Whitehurst, G. J., Falco, F. L., Lonigan, C. J., Fischel, J. E., DeBaryshe, B. D., Valdez-Menchaca, M. C., & Caulfield, M. (1988). Accelerating language development through picture book reading. *Developmental Psychology*, *24*(4), 552–59.