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It's Time

We Had A Talk --About Talk

Intervention and the Law of Unintended Consequences

Few topics in autism spectrum disorders (ASD) rival the attention devoted to language. For good reason, vast amounts of time, effort and money are directed at getting children to talk. This leads programs to be judged, and to judge themselves, by their success in reaching this goal. You see the process at work in statements such as the following, "Research now shows that between 75-95% of children who receive intensive behavioral intervention will speak by the age of five." (Dawson, 2008, p. 775).

There is no question about the desirability of getting children to talk. However, when this is the cornerstone of intervention, unintended—and unexamined—consequences often ensue. The following two vignettes reflect the types of problems that can occur from a tunnel vision focus on "talk."

- *A parent of a six-year old child with autism related this experience:* "I took Damien to a new place the other day. He immediately left my side, walked into a bathroom, glanced at the toilet seat and with no one in sight, said, 'That is O.' He was labeling the shape with one of the letter names that he loves. It's so weird. I thought that all I wanted was for him to talk. Now he's doing that, **but it's all wrong**."

- *A teacher of children with ASD was talking to a colleague:* "While I was talking with his mother, somehow Sam got into her car and turned on the engine. I was frightened out of my mind. I banged on the window and pointed to the door lock near the window. I kept telling him to pull it up and I kept gesturing to show him how to do it. Nothing worked. Fortunately the police came quickly and got the door open. After it was all over, I kept thinking. We've been teaching him language for years. **And he can't even understand simple, basic language that could save his life**."

Both vignettes show "breakdowns" in language--breakdowns that are so familiar that they are accepted as an unquestioned "given" of the children's deficiencies. Certainly, their deficiencies play a role. But when they are seen as the only source, we risk overlooking other possible causes.

One such cause is the effect of intervention itself. For example,

- the first child had, for years, been taught to look at objects and speak about their size, shape, color and so on. In commenting about the toilet seat, he was simply applying what he had been taught.

- the second child had a similar curriculum. But that curriculum rarely, if ever, included any "real world" situations remotely comparable to one he was in. In his case, he was simply not applying what he had not been taught.

While it is disturbing to consider the idea that well-intentioned efforts may go awry, such outcomes are far from unique (Dubner & Levitt, 2008). The field of medicine has even coined the term *iatrogenic disease* to identify the unintentional illnesses caused by physician intervention. No comparable term exists in education. However, it is vital to determine whether a similar process may be at work.

Tackling the Behemoth of Language

Given the history of intervention efforts in ASD, "unintended consequences" ought not be surprising. The rapid rise in the numbers of affected children led to a sense of urgency that worked against careful planning. The imperative was to create, as rapidly as possible, programs to turn things around. Since a significant percentage of the children were non-verbal or minimally verbal, the goal of getting them to "speak" rose to the fore as an unquestioned objective.

At the same time, there was little systematic discussion as to what the children should be speaking about. Instead, the profound nature of the children's limitations seemed to dominate the agenda, leading to the mindset of "What can we get children to say when they have little or no speech?"

In answering that question, an (unstated) rule took hold: make requests that can be met with single word responses. Operationally, this meant having the children produce high numbers of nouns (such as *apple, cookie, dog, house, car*) and, to a lesser degree, adjectives (such as *red, round, big*). There seemed to be little else one could reasonably ask them to say. So curricula were developed geared to labeling of objects, colors, sizes, shapes, letters and the like (Lovaas, 1987; Schopler, Reichler, & Lansing, 1980).

When speech was totally absent, essentially the same curriculum was used, albeit restricted to receptive language. Instead of asking the children to name objects, they were asked to select objects based on the noun or adjective that was supplied (e.g., "point to car"). The augmentation with Picture Exchange Communication System (PECS) (Bondy & Frost, 1994) fits with this approach.

To gain a sense of the problems intervention can cause, it's instructive to review an actual teaching unit. Examples could be drawn from any of the available programs. However, because Skinnerian-based behaviorist programs (Skinner, 1957) dominate the field and are often cited as THE state-of-the art treatment for ASD, we will use an illustration from this approach.

To this end, let's consider the common goal of getting a child to offer his or her name when asked. In aiming for this behavior, a teacher may, over months, devote innumerable trials to this skill (i.e., having a child respond consistently and accurately when asked "What is your name?") Taken at face value, this activity can easily be justified as representing a useful language/social skill.

When the behavior is placed in context (i.e., the setting where it might be called upon), a different picture emerges. For a start, in "real life," this request is rarely made. Typically it happens only when there is a stranger who lacks the information. Further, when the request is made, it happens only once! After receiving an answer, any repetition of the request would be viewed as "peculiar." On all counts, the training the child receives is almost the diametric opposite. Not only is there extensive repetition, but the repeated request is made by the same person and that person is far from being a stranger.

Under these circumstances, the instruction is likely to result in two possible outcomes. In one, the lack of similarity between the two settings leads the child to not provide the expected response on the rare occasions when it actually is requested. Should this occur, it is easy to attribute the "failure" to the child's limited powers of generalization (even though generalization should not be expected).

In the other outcome, the high rate of repetition leads the child to conclude that a name is what adults want (as occurred in the toilet seat example). So instead of withholding the response, the child offers it freely, even when no one has requested the information. Ironically, in the school setting, this "inappropriate behavior" might be hailed as a success since it shows that the child is spontaneously applying a skill without being prodded to do so.

Intervention programs are replete with these sorts of difficulties. If we liken the situation to a piano, it's as if the instrument is being played as a set of individual, discordant notes with the end result being cacophony. In no way does this mean that well-structured music is impossible. However, it can occur only when the keys are played in carefully orchestrated patterns.

Unfortunately, the individual notes technique is essentially how language has been taught to the children. Because of the wide diversity among children with ASD, some can benefit from the input (Cohen, Amerine-Dickens & Smith, 2006). When their language skill is great enough

(i.e., those "higher on the spectrum") they can "go beyond the information given." Their inherent skills allow them to take the disconnected elements and generate an impressive language system—using processes like those employed by typical children (Sherer & Schreibman, 2005). But they are in the minority. Most are confined to the dissected, distorted elements they have been given, resulting in language that is "all wrong."

Taking a New Path

For better outcomes to be achieved, it's vital that we consider, in far greater depth than has been the case till now, the language that we teach children with ASD. As an entrée into this topic, we are going to focus on four areas. They are the:

1. cognitive precursors of language
2. key structural components of language
3. distinction between language and communication
4. bridge between language of school and home

Because these categories are rarely discussed, the reaction might well be "Why these?" As we hope to show, despite their having been relegated to the background, the four areas are central to intervention. So, knowing that some of the territory may be unfamiliar, let's begin our journey.

Cognitive Precursors of Language

Although our sights are on language, we start with events that take place prior to the development of language. This shift in perspective mirrors a major shift that has taken place in cognitive psychology.

For much of the twentieth century, the dominant view was that language significantly affects our ability to form concepts. In other words, having words enables us to think at a "higher level" (Sapir, 1958 [1929]; Vygotsky, 1986 [1932]). As indicated by the oft-stated command, "Use your words," this view pervades intervention efforts.

In the 1970's, however, this idea was turned on its head when the work of a Swiss developmental theorist, Jean Piaget, began to receive increasing attention (Piaget, 1936; 1954). Piaget made the obvious, albeit neglected, point that children would not know the words to apply to objects or

...language does not simply emerge at a particular time in development; it emerges only when there is an established base of other skills upon which language can build.

experiences—if they did not already have a clear notion of what those objects or experiences were. Put simply, children did not realize that a toy car was a car because they learned the word 'car'. Instead, through what Piaget termed their "sensori-motor operations," infants knew what a car was. The word "car" was simply a label for naming what had already been learned. The label could be helpful in allowing them to communicate about a car when they wanted to discuss it with others. But the language label did nothing for their conceptual level.

This "chicken-egg" debate about language and concepts led to young children being perceived very differently. Now, prior to language, they were seen as active, thinking individuals who had a far richer mental life than had previously been envisaged. Further, the pre-verbal skills they engaged in were viewed as critical to their acquiring language. In other words, language does not simply emerge at a particular time in development; it emerges only when there is an established base of other skills upon which language can build. Not unexpectedly, the study of the precursors to language has become a major enterprise (Pinker, 2005).

This perspective, however, has had a minimal effect in the field of ASD. Work such as that associated with Relationship Development Intervention (RDI) (Gutstein, 2001) and Developmental, Individual-Difference, Relationship-Based (DIR) – Floortime (Greenspan & Wieder, 2006) does highlight the emotional base of language (i.e., creating the emotional bonds that lead a child to communicate). But these efforts do not involve the pre-verbal cognitive skills that a child needs in order to benefit from language instruction. What might these skills be?

The abilities involved: Temporal Sequencing

In any list of the pre-verbal skills underlying language, "temporal sequencing" has to be central (Boucher, 2003). While the term may be unfamiliar, the behaviors it encompasses are not. They occur every time we either register or produce a behavior involving two or more elements that follow each other in time (from walking down steps, to opening a box, to driving a car).

In the realm of language, one set of skills is particularly critical. It is the ability to register independent, sequenced elements and perceive them as representing continuous, integrated input. (Back about 100 years ago, some people took advantage of this capacity when they showed audiences individual images in rapid succession. Although each frame was a still image, when shown at the right speed, there was the illusion of motion. And so the motion picture industry was born.)

From the outset, temporal sequencing pervades language. It starts from day one when the infant begins to attend to the flow of sounds that make up speech (Ervin-Tripp, 1966). For example, it has been shown that phonemes (i.e., the sounds that make up words) are differentiated from one another by extraordinarily short transition periods within the set of sounds that are heard. So a sound like "ga" is different from a sound like "ba" only because of millisecond differences in intervals within the sounds themselves. It has also been shown that for some children, the inability to register these differences is the source of their language problems (Tallal, Miller & Fitch, 1993). This phenomenon (which is only one of the many sequencing properties in language) has served as the basis for the development of the Fast Forward program (Tallal et al, 1997).

A delightful example of sequencing in typical development appears in what has been termed "language in the crib" (Weir, 1962). It refers to countless numbers of hours infants and toddlers spend in long stretches of sustained babbling—when totally on their own—with no one in sight.

While the typical infant is wired to endlessly practice and process the sounds of words, the child with ASD is doing anything but that. Hence, the absence of babbling. It is not clear the extent to which this is a disinclination and/or a disability (i.e., whether the child will not attend vs. whether he cannot attend). Regardless of the source, the limited behavior has major consequences for the children's language functioning. It means that the children miss out on the countless hours of sound production that are central to the development of speech. This component likely plays a key role in the finding that, of the children with ASD who speak, many are restricted to one and two word utterances. They have not developed the sequencing abilities required for producing actual sentences.

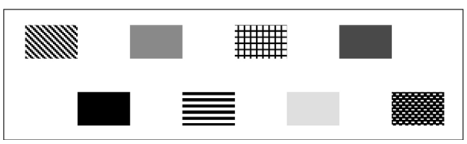
The effects of limited sequencing extend beyond the children's own speech production. It is likely that they are also not processing more than one or two words that others say to them (i.e., the sounds they hear)—regardless of the actual length of the utterances in which those one or two words may be embedded. Often, the extent of the children's difficulties is hidden by the familiarity of the contexts of everyday life. For example, when given commands such as "Go upstairs and get your shoes," the only word the child may be processing is "shoes." All the rest may be part of a routine that the child has become accustomed to. Yet the overall impression is that the child is processing complex chunks of language. At this point, the precise details of what is taking place are not critical. What is critical is the need to recognize the powerful role temporal factors play in processing and producing language.

Structuring the teaching: Mirroring Characteristics of the Auditory Modality

How might pre-linguistic temporal processing be fostered? In typical development, the auditory modality is the major vehicle for promoting the requisite skills. So it might seem that auditory activities should be offered to stir the skills into being. However, this option is not likely to be productive. Regardless of the source, (whether disinclination and/or disability), the children are not likely to process the information. A failure in processing is precisely why they are not learning language to begin with. So the offering of auditory information will not be useful.

In the future, this situation will hopefully change as we expand our views on what can and should be taught. For example, music, an area that the children typically love, is grounded in auditory sequencing. It would be important to study whether activities in this sphere could be crafted to foster the requisite temporal processing skills (Trevarthen, 2000).

Even without these possibilities, there are tools for structuring visual information so that it involves temporal processing. A sample activity might be the following: the child sees a board with a set of variously shaded boxes. The adult then taps, in sequence, on any set of two to four boxes. The child's task is to reproduce the tapping sequence.



This disarmingly simple task contains a range of properties that give it power. Specifically, just as in language,

- the input is composed of several elements.
- the particular elements that are selected follow a set order.
- the order in which the elements are presented is the order that the child must process and reproduce.
- memory demands are critical since the information that the child is to reproduce is no longer present

A wide range of activities can be created along these lines. The tasks are relatively intricate and may not be of interest to all readers. For those who would like to delve further into this area, details are provided in an appendix at the end of the article.

Structural Components of Language

With mastery of core pre-linguistic skills, the work can then move on to language itself. As noted earlier, much language work is directed towards single word labeling (e.g., concepts such *as colors, numbers, shapes, weather, parts of the body, holidays, greetings*).

While the concepts are part of language, the use of single words fails to capture the properties of actual language (i.e., where words are assembled together to form sentences). Sentences are not simply chains of words that are attached one to the other. In order to be meaningful, the words must combine according to set patterns (Pinker, 1994). That's why, even though they contain the same words, *The boy is sitting* is a sentence whereas *Boy is the sitting* is not.

The abilities involved: The "little" words

In creating the patterns of sentences, a select, albeit relatively ignored group of words plays a critical role. Some samples from this select group are "the," "is," "were," "these," etc. They go by a variety of names, including the "little" words (because they rarely go beyond a single syllable and many have only two letters as in "is," "of," "he," "to," "if," etc.). In contrast to the concepts such as color and size that come from a domain in linguistics known as semantics, these little words come from the domain of syntax.

At first glance, the lack of attention to these words seems reasonable since they appear to do little in the way of conveying meaning. Indeed, among the variety of terms used to characterize them is the phrase "non-content words," clearly suggesting that they are devoid of meaning. Nevertheless, these seemingly minor words are critical. For example, consider what the word "to" does in the following set of sentences.

The girl walked the dog.
The girl walked to the dog.

Amazingly, young children are very aware of the existence of these words and they devote large swaths of time to their mastery. Their skill was shown in a landmark study at Harvard University in the 1970s that was aimed at documenting the stages toddlers go through in learning to speak (Brown, 1973).

After spending the first stage expressing simple relationships such as "*big dog*" and

"Mommy fix," they move into the next stage, where they do something quite extraordinary. While still tiny tots, they spend months figuring out how to insert, into their two- and three-word utterances, the "little" words and part words such as *the, a, -ing* (as in *sitting*), *-ed* (as in *looked*), *in, on, -s* (as in *cookies*), *my* and *that*.

Though no one has, or could have, told them, the toddlers sense the power of the "little" words in the use of language. What gives them this power? The answer is to be found in the central role that nouns and verbs play in language. Edward Sapir, a noted linguist in the early twentieth century, described the situation in the following terms:

> *What, then, are the absolutely essential concepts in speech…? … We must have objects,..(and) actions… No language wholly fails to distinguish noun and verb… It is different with the other parts of speech. Not one of them is imperatively required for the life of language.*
>
> Sapir, 1921, pp 93, 119

The "little" words play a key role in achieving the noun-verb distinction because they attach themselves differently to the two groups of words. Nouns attract words like *the, that, those, these* (as in *the girl, that car, those balls, these flowers*). By contrast, verbs attract words like *is, -ing, are, did, have, were, will* (as in *is going, are sitting, did run, were playing, will eat*). Essentially when a child hears "the" or "these," he or she senses that the word that follows is likely to be a noun; similarly "did" or "were" signals the likelihood of a verb. This selective attachment of the "little" words helps children make the vital differentiation between nouns and verbs.

When these words are not mastered, children lack the tools to distinguish among such varied forms as "What is the boy doing?" "Where is the boy?" "What does the boy want?" "What was the boy doing?" "Who is with the boy?" All the questions merge into the single word "boy" –since that is THE word that the child understands. The end result is that the children cannot make sense out of the language they hear and the language they are expected to respond to.

The "little" words also serve a major role in the representation of time (e.g., reflecting

the present through is, *are, have,* etc., the past through *was, were, did, had,* etc. and the future through is *going to, will,* etc.). When these "time related" terms are absent, children cannot perceive the distinctions between sentences such as "the boy is eating," "the boy was eating," "the boy is going to eat." (Uccelli et al, 2006).

The "little" words have awesome power. Unfortunately, intervention programs do not recognize this basic fact of language life. Typically, those words are seen as not only insignificant, but as sources of confusion for the child. So in the belief that it "simplifies" the language, they are specifically excluded. That's why you hear phrases such as "*touch same,*" or "*show me sitting*" rather than "*touch the one that is the same,*" or "*show me the kid who is sitting.*" Despite the well-intentioned efforts, in omitting these words for the avowed purpose of "simplifying" language, the programs are actually consigning the children to a world where meaningful language is essentially unattainable.

Structuring the teaching: Teaching sentences via imitation

The noun-verb issue clearly has significant implications for the content of intervention. If the distinction between the two groups of words is to be mastered, nouns and verbs must be taught—and the teaching must not present them as individual, disconnected elements. Wherever possible, they should be meaningfully linked in ways that reveal their properties.

To achieve this linkage, the nouns must be capable of performing the actions represented by the verbs to which they are attached (as in *birds fly, kids run, bugs crawl, fish swim*, etc.). This, in turn, means that the nouns have to represent animate beings—since they are the ones that perform actions. By contrast, with a few exceptions (such as *planes fly* and *balloons pop*), inanimate beings do not meet this criterion.

Significantly, the familiar concepts in intervention efforts (i.e., shape, size, color, etc.) typically refer to inanimate beings or features that lack animate properties. Concepts that "do nothing" have minimal value for helping the children unlock the language puzzle. Consequently, their emphasis in instruction needs to be challenged. (These familiar concepts, however, do have a role to play in math—but the language of math is a discussion for another day.)

Further, the relevant noun-verb concepts must be embedded in sentences and the sentences must contain the relevant non-content words. In order to enable children to develop a reasonable mastery of this area, the instruction should lead them to produce sentences that (a) are eight to ten words in length and (b) reflect a wide range of sentence types. Given the limited speech of so many of the children, this goal may seem wildly unrealistic. Fortunately, this is not the case.

A notable characteristic of many children with ASD is echolalia. While the production of this behavior is often inappropriate, the presence of this behavior is quite another matter. It is a sign that the children are (a) processing and producing verbal information and (b) capable of verbal imitation. Through these skills, it is possible to extend their sentence span (by having the adult produce well-formed sentences that the child imitates) (Speidel & Nelson, 1989).

Because of the children's language limitations, the linguistic demands must be carefully arranged. At any point, the number of words should be just above the level that the children can comfortably produce. Then, with sufficient repetition, they can systematically be led to longer utterances (e.g., a child who can produce three word combinations can be moved to handling four words). Over time, with repeated experience, the children's span can steadily increase, until it is up to sentences of eight to ten words.

Accurate imitation does not imply that the children fully comprehend the meaning of what they are saying. But, considerable processing is required to incorporate, retain

and reproduce well-formed utterances. That processing, even in the absence of complete comprehension, serves the child well in expanding his or her language base. As in the previous section, illustrative material is offered in the appendix for readers interested in more details of teaching sentence structure.

The Distinction between Language and Communication

The skills considered thus far (i.e., temporal sequencing, sentence structure) are aimed at getting the children to recognize and deal with some of the key building blocks of language. We have not yet touched upon the way the skills, once acquired, are used (i.e., the way they function in the child's life).

A, if not, THE chief function of language is communication where (a) messages are produced for others and (b) messages from others are taken in and understood. Oftentimes, language and communication are used as if they are synonymous. That's why "speaking" (i.e., the production of language) has so readily been accepted as a criterion of a program's success. But as the toilet seat example shows, a child can speak and it can be "all wrong."

The problem in these cases is not language; the child's speech represented a reasonable sentence. What is awry is the communication. The child spoke to no one nor was there any intention of sending the comment to another. Further, the topic was inappropriate. What the child's comment shows us is the disturbing and anomalous world of "language without communication" (Blank, 1980).

The abilities involved: The roles of initiator and responder

A central difference between language and communication is the fact that language is a system within an individual, while verbal communication is a system that operates between individuals. Communication has all the complexity of language and, in addition, it has all the complexity of interpersonal interaction. So, in verbal communication, in addition to using language, the participants have the responsibility of tailoring the language so they stay "in sync" with one another.

This responsibility can be accomplished in two ways. A person can (i) put a topic forward (i.e., initiate) and/or (ii) respond to a topic that has been put forward (i.e., respond). Over the course of any interaction, each individual can take on both roles; that of **initiator** (i.e., the one who introduces an idea) and that of **responder** (i.e., the one who responds to the idea). (Blank & Franklin, 1980)

Although not typically described in these terms, the goals of many programs are to develop the children's initiating abilities. This objective is also at the heart of deeply felt wishes parents express for their children "to be able to say what is on their minds."

The steady pressure to have children verbalize their requests (e.g., "you have to tell me what you want") is deemed to be a step towards this end (Koegel & Koegel, 2006). And, the children do often begin to verbalize requests without being asked to do so. Despite its widespread use, in our experience, there is little evidence to suggest that the expression of verbal requests transfers to any other forms of initiation.

Further, from what is known about communication, this transfer is not to be expected. Effective initiation is extraordinarily complex. In raising a topic, one has to be aware of the social role of the partner, know the topics that are suitable for discussion with that person, and figure out how to phrase the topic in ways that are socially acceptable. These are the factors that lead one to speak in a totally different manner to a boss as opposed to a friend. The relevant skills are not based in language —but in social understanding. The social domain is even more problematic for the children than is language (Goldstein & Brooks, 2007) and so, apart from request language, effective initiation is often beyond the reach of children with ASD.

The ease with which typical children, from early in life, handle this area misleads us as to the complexity of the skills involved. Their skill is evidenced in the following initiation produced by a two-year-old for his mother. The child had just "endured" yet one more application of an unpleasant ointment to treat a skin condition. When the treatment ended, he carefully walked behind the chair where his mother was seated and whispered, "Me hate you." Then he scurried away.

In this incident, which took less than five seconds, the toddler showed an array of skills that included: (a) being able to hold back crying, despite intensely negative feelings; (b) knowing how to frame his intense feelings into a well-organized set of words; (c) recognizing that his message was potentially "dangerous" and therefore it was wise to whisper it; and (d) reckoning that the whispering may not have been enough, so that leaving the scene was a wise backup move.

The language/social skills amalgam of effective initiation is subtle and immeasurable. While social skills programs have been developed, none begins to approximate the complexities for effective initiation. There is, understandably, little evidence that the programs achieve substantial gains (Bellini et al, 2007).

In contrast to the many complexities underlying initiation, the responder role is far easier. With the topic selected, most of the work has been done. The path of the discussion is clear, leaving the responder only with the task of coming up with an acceptable response. The constraints imposed by the initiation mean that the range of acceptable responses is quite narrow. For example, if someone asks, "Would you like to have a sandwich for lunch?" reasonable responses vary from "No" to "Yes" to "What kind?" Not much else is possible.

Essentially, the responder has only to listen to the idea that has been put forth and, guided by the limitations that have been set, come up with an acceptable response. This, by the way, represents the basic design of all classrooms. The adult (i.e., the teacher) initiates the topic and the child's role is to respond to whatever idea has been put forth (Blank & Klig, 1982). Significantly, when children can effectively carry out the responder role, their chances for inclusion in a regular classroom are greatly enhanced.

Structuring the teaching: Developing Effective Responding

Efforts to foster communication are more feasible when geared to helping children master the responder role. There is no difficulty in placing them in that role since that is the role they are assigned in most intervention (i.e., questions are steadily asked and they are expected to respond). Where the difficulty rests is in leading

them to become effective responders. To respond effectively, the child must be able to understand precisely what information is being demanded by a question that has been posed. Experience shows that this is a major challenge for children with ASD. They often do not understand what the question means.

When faced with lack of comprehension, the children adopt a range of strategies. A common one is: "Answer any question with a label (noun)." From the child's vantage point, that strategy is reasonable. It "works" for a range of questions such as, "What is that?" and "Which one do you want?" It also fits with the emphasis placed on labeling.

The strategy, however, fails them when they face questions such as "What is the boy doing?" For example, imagine that in response to that question, a child responds, "Boy." The therapist then is likely to repeat the question, often with an emphasis on the word that he or she feels the child "missed." "NO! What is the boy DOING?" The child senses that something is awry but hasn't a clue as to what it is. So the child tries a different response. S/he may recall that color has been an important feature of teaching, and so then offers the next response of "blue."

The therapist, again lacking a specific effective means for re-directing the child, repeats the original question – often with changes in emphasis. This may work – or at least, seem to work, when the child finally comes up with an action that represents the "correct" response. However, the end result of interactions like this is a strengthening of the child's feelings that verbal mastery is forever beyond reach.

One source of the children's difficulties is a failure to realize how questions and answers relate. Their confusion is understandable. In most cases, although questions and answers link, those links rarely see the light of day. For example, imagine the question "What time is it?" In response, the answer is likely to be a specific time such as "Four o'clock."

In the absence of a question, the words "four o'clock" by themselves would be meaningless. The reason they are not is that the "real" answer is "The time is four o'clock." The responder has elected not to say all those words; instead they have been omitted because they are taken as a "given" (that is, their presence is implicit and there is no reason to make it explicit). Many question-answer combinations have this structure.

When restructured, this feature of language can be key in helping children with ASD connect questions and answers. Essentially, the communication is set up so that the "implicit" is made "explicit" (i.e., in place of omitting the words that are taken for granted, the responses include those words). By doing this, the children are given a tool for "seeing" the connections between speakers that have, for so long, eluded them.

For example, imagine a boy eating and the question "What is the boy doing?" In the normal course of events, the answer would be the single word "eating." In the expanded mode, the answer would be "The boy is eating." In other words, (as indicated by the underlined words) the question and answer have been shaped so that they explicitly share as many words as possible.

This method can be applied to a relatively wide range of questions as indicated in the following examples. (In all cases, relevant play materials such as dolls and toy animals are provided so that the questions have not only structure but clear referents.)

Question: Who are these?
Answer: These are boys.

Question: Where is the cat?
Answer: Here is the cat

Question: What are they doing?
Answer: They are running.

Question: What were the birds doing?
Answer: The birds were resting.

Question: Which one can fly?
Answer: This one can fly.

As in the teaching of sentence structure discussed above, the combinations are also designed to foster noun-verb connections. Indeed, the answers to the questions use the same forms that the child has learned to use in imitation. In this way, the various components of the teaching offer the children the consistency that is so necessary for effective learning.

The Bridge between Language at School and at Home

While intervention programs vary, on one issue, there is common ground. All share the belief that the children cannot master language as it appears in "everyday life." They agree that the language has to be carefully structured so as to make it accessible to the children. Fortunately, programs have the power to achieve this goal since they can steadily control the content that the children experience. As a result, the children are presented with a simpler, clearer world.

The abilities involved: The complexities of the "natural" world

Where does this leave the children when they face other settings, in particular, the home? Along with the school, this is the most powerful social context in the children's lives. However, except for the rare instances where a parent totally adopts the language of intervention (e.g., Maurice, 1993) the home fails to offer the simplified language characteristic of intervention.

This situation is only to be expected. A typical household automatically uses "everyday language" and it is extraordinarily difficult to re-package that language so that it mirrors the simplified language of intervention. But this does not mean that the children must live with an unbridgeable chasm between the language of the two major settings in their lives. While it is unrealistic to get parents to match their language to that of the school, options exist for reasonable patterns of co-existence.

Structuring interaction in the home: Reducing questions

In bridging the chasm, it is important to see the world through the child's eyes. For anyone with language difficulties, verbal interaction can be a source of considerable stress. For example, when question are asked, even when the precise words are not understood, the children still know that a response is expected. To lessen the pressure, they try to avoid the interaction by "tuning out." In other words, well-intentioned interaction actually compounds their problems because it leads to an active avoidance.

Just think of the times when you were in a classroom where questions were being

In bridging the chasm, it is important to see the world through the child's eyes. For anyone with language difficulties, verbal interaction can be a source of considerable stress.

asked and you were not prepared to answer. Probably the major mental activity you were engaged in were prayers containing the message, "Please don't let her call on me." Those feelings are a fraction of the intensity that children with severe language processing problems face in the exchanges they encounter.

Ways must be found to minimize the children's avoidance and discomfort. Questions, of course, represent one of the most challenging aspects of verbal interaction. Certainly, not every question elicits a negative reaction. For example, if you ask children—even those with severe language problems—"Would you like some ice cream?" the reaction is likely to be pleasure, not pain. But those "nice" questions are few and far between.

For children with language difficulties, the much more common experience is to be flooded with questions that demand answers--answers that are hard to come by. "What is in that picture?" "What color is the ball?" "Why don't you get a puzzle?" "What did you do in school today?" "Where did you put your school bag?" and on and on. Even many "non-question" interchanges are configured so that they are questions in disguise. While they lack the "wh" words such as "who," "what," and "where," they nevertheless require a verbal response (e.g., as when children are told, "Use your words.")

Interestingly, children who are competent in language do not get asked nearly this many questions. They are able to hold their own in conversations and readily offer comments without being asked. The end result, ironically, is that the more limited a child's language skills, the more likely he or she is to be flooded with questions.

Parents are even encouraged in this practice –by being told that questions "get the children to think." If one actually plots the percent of questions that are answered appropriately, the typical picture yields a number that is quite low. The more usual response is a wrong response or no response. In other words, questions are breeding grounds for experiences in repeating failure and a sense of incompetence.

The simplest solution is to reduce questions to the lowest possible number. This recommendation is diametrically opposed to the common advice to ask as many questions as possible. Hence, it is not surprising for parents to be shocked when they first hear this suggestion. But, they are equally surprised after a few weeks when they see their children's language blossom. It is not all unusual to get an increase in the children's verbal productions when the pressure of unnecessary questions is removed.

The lessening of questions does not mean the lessening of language. It is important for the parent to sustain the interaction with the child by switching from a questioning mode to a commenting mode. The most effective comments are those elaborating information that is immediately at hand. For example, if a child is having dinner, the parent can offer comments such as, "We have something that you really like tonight. I know you like chicken, but we are not having chicken. We have something else that you like. It is meatballs. I am going to give you one of these to start and then we will see if you want more…." In other words, the comments are far more extensive than they need be, but they are still tied to the reality that is clear to the child.

After a few weeks, the child begins to feel secure about the lessening of questions. They also begin to realize that they can be surrounded by language without experiencing failure. This can be a powerful force in reframing the parent-child interaction. On its own, it will not advance the child's language. But it makes the child more available for attending to and processing language. It thereby helps create a more positive attitude towards language that can advance the work the child does in the intervention. As such, it is one of the most effective methods for bridging the home-school divide.

A Concluding Comment

This article, as with so much of our work, arose as a result of discussions with parents. A major part of our work is aimed at teaching literacy to children with ASD—even those who cannot speak (Blank, 2006; Maidman, 2006). (As with the topics covered here, this is another skill that has been overlooked because of the restricted views of language/communication that have held sway in intervention.)

Before asking the parents to put forth the considerable effort that the program requires, we regularly ask, "Why do you want your child to learn to read and write?" Surprisingly, (or at least, it used to be surprising until we got so used to the response) the parents can rarely offer an answer. In one way, their "non-response" made sense. Like all parents, they deemed literacy to be a wonderful skill (which it is)

and, as with any wonderful skill, they felt no need to have thought about what it can do in the lives of their children. It was a "given" to be sought without question.

As we pursued matters with the parents, it became clear that similar processes were at work in their views of spoken language. All the children were in intense language intervention programs—often supported by outside therapies that placed heavy burdens on the families' time and finances. Yet, the parents were unable to specify the precise skills that all the time and effort were designed to teach.

Upon reflection, it became clear that the parents could be in no situation other than the one they displayed. Why? Because the field itself had never defined what language was all about. Much like the parents, the field has assumed language is a "good" and any and all efforts to teach that "good" are worthwhile and need little justification. It is difficult to believe that nationwide efforts in language intervention costing millions of dollars have been put into place without thinking through exactly what was being taught and the value of that teaching.

Our goal in writing this article has been to start a discussion that has for too long been a "non-topic." As these issues are addressed, professionals can begin both to define the precise skills they are addressing and their success in enabling the children to attain these skills. In this process, parents can become much more knowledgeable about the factors that make a program effective. They are already amazingly powerful advocates for their children. Armed with greater knowledge, their advocacy can be strengthened to become more meaningful and effective.

Given the heated issues that surround ASD, it is easy for the ideas we have put forth to be viewed as yet more fuel for the many fires already burning in this highly contentious field. That is, in no way, our intention. Rather, we believe that we are now at a point where it is possible and fruitful to combine the experiences that have been gained from programs to date with advances in the behavioral sciences to address the long neglected question "What are the skills that we should be teaching to best advance the children's development of language and communication?"

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Appendix

A Pre-Verbal Activity Designed to Foster Temporal Sequencing

Because the children are typically attracted to the visual world, they are likely to be responsive to activities in this realm. The visual world, however, focuses on space more than on time. To make that modality useful, we need to reconfigure the material so that it (a) incorporates key features of the auditory-temporal world, while (b) still retaining the features of visual input that the children find attractive. To meet that goal, the activities should contain the following properties.

First, the input must be composed of several elements. Single units, whether of pictures or objects, are not sufficient. At the same time, the "several elements" must not exceed the perceptual limits that allow it to be perceived as an entity. For example, it is relatively easy to perceive the organization where the pattern involves sequences of two elements as in the following:

It is far more difficult in a problem where the sequence has many more elements such as the following:

Work in early mathematics suggests that children—without applying language—can deal effectively with units up to four—that is, they can perceive four as different from two or three. However, in the absence of language, they cannot perceive four as different from five or six (Dehaene, 1997). So, in terms of number of elements, the goal in mirroring pre-linguistic processing should be to build up a child's skill to work up to four units.

Second, the elements must appear in a set order and the material must be set up so that order must be processed. Though reading will not be the vehicle used in the initial work with children, an example from that area is useful to illustrate the significance of order.

Consider, for example, the words **evil-live, stop-pots, time-item.** They are perceived as totally different entities even though the words in each pair contain identical elements. We have become so accustomed to the significance of sequencing that we are not, for a moment, drawn to the fact that the individual letters are identical.

Similarly, in line with the examples above, via instruction, the children could be helped to recognize that the following two sets are not equivalent even though they contain identical symbols.

Third, memory demands are a pervasive feature of spoken language. For example, in a sentence such as *The boy is sitting*, the word *The* has come and gone before the word boy makes its appearance. The same process occurs with each of the words in the sentence. At the same time, when a sentence has been completed, the experience of the listener with appropriate memory skills is one of hearing a single, coherent idea. Conversely, for the listener who lacks the appropriate memory skills, the experience is of disconnected, unrelated elements—with the element that is most salient or familiar being the only item that "comes across." So if the material is to mirror auditory perception, the activity must be set up so that each element is retained in memory as the next one appears.

The sample activity offered in the section on temporal sequencing offers these features. Comparable activities can be developed using a variety of other input. For example, the adult could create and the child could reproduce

- a series of actions on objects rather than symbols (e.g., turning over one object, putting another in a container, tapping another object, etc.);
- a sequence of actions on one's body (e.g., touching the nose, a shoulder and a knee), and
- sets of visual objects (e.g., sets of colored blocks that are shown and then hidden from view).

A Verbal Activity Designed to Foster Sentence Production

The key to effective sentence production is noun-verb combinations. Further, those combinations must be paired with the appropriate "little" words (e.g., as in Kids can jump. The kid is jumping. Etc.). These pairings mean that the children, at the outset, must deal with sentences of three to five words in length (the two word noun-verb combinations plus whatever additional little words attach to them.) The training the children have received in temporal processing will have created the base they need to deal with sequences of this length.

Some relatively simple sentence types that fit the criteria of sentences that teach "noun-verb" connections are:

here (there) is (are) a (an) X(s), (as in Here is a cat. There are dogs. Etc.)
the X(s) (he, she, it, they) can Y; (as in The cats can jump. They can sleep. Etc.)
the X (he, she, it, they) is/are Ying. (as in The girl is eating. They are running. Etc.)

As the children master these forms, new forms can be added—so that their repertoires steadily build in length and complexity. The new forms enable a child to become familiar with additional concepts that are integral to meaningful messages such as negation (e.g., The car is not going), past tense (e.g., The boy was running), and future tense (e.g., The girl is going to walk).

With the forms selected, the next step is to determine how to lead the children to process the information. Despite its widespread use, it is important to avoid question asking. As discussed above, the children have great difficulties in differentiating among various questions. So questions will simply generate high rates of error. Further, they are almost certain to answer any question (whether correctly or not) with one or two word responses, thereby omitting the very words they need to learn. The sentence imitation techniques outlined above in the section on the Structural Components of Language offer a more productive approach to developing this vital area of language.