Selection-Based Imitation

A Tool Skill in the Development of Receptive Language in Children With Autism

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Receptive language is a basic behavioral repertoire that many children with autism have difficulties acquiring. This difficulty may be caused by several factors suggesting the need for case-by-case analysis and the development of multiple intervention strategies. This paper outlines a strategy that has been effective in establishing receptive labeling in some children for whom conventional methods proved ineffective. The present strategy emphasizes the development of tool skills that are conjectured to subserve receptive labeling. These tools skills are developed by teaching a form of imitation that may be termed "selection-based imitation" (SBI). The present strategy should be recognized as clinically based and may be subjected to more rigorous investigation and further refinements.
Keywords: receptive labeling; "selection-based imitation;" case-by-case analysis

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Receptive language may be defined as a basic behavioral repertoire that consists of responding non-verbally to spoken words in accordance with conventions in a verbal community. Impairment of receptive language or more generally, language comprehension, is prevalent in children with autism (Rutter & Schopler, 1987; Waterhouse & Fein, 1989). A considerable proportion of these children have difficulty acquiring even the basic forms of receptive language such as simple correspondence between words and objects (i.e., receptive object labeling). This difficulty may be caused by several different factors suggesting the need for case-by-case analysis and the development of multiple intervention strategies. Thus, a continuous challenge for clinicians is to apply the concepts and principles of behavior analysis in creative, yet systematic and coherent ways.

This paper outlines a strategy that has proven effective clinically in teaching receptive labeling to some children where common methods were unsuccessful (for a description of common methods see for instance Leaf and McEachin, 1999; Lovaas, 1981). The present strategy emphasizes the development of a form of imitation in which the instructor points to a stimulus (e.g., picture) displayed in one array and where the child imitates by pointing to the corresponding stimulus in a separate array. In this interaction the response topography remains the same across trials whereas the stimulus pointed to changes each time. Since this form of imitation does not involve distinct response topographies, it may be termed "selection-based imitation" (SBI).[1] SBI involves several tool skills conjectured to subserve receptive labeling including sustained attention to task, observation of other people's interaction with stimuli (i.e., pointing), scanning (including shifting of attention between stimulus sets) and inhibition of "impulsive" (prepotent but incorrect) responding.[2] By establishing SBI these skills are strengthened prior to an attempt of teaching word-object relations.

Behavioral engineering and levels of analysis

When attempting to construct a basic behavioral repertoire such as receptive labeling, it may be useful to distinguish between two levels of analysis. One level focuses on the target repertoire as an integrated routine in context, that is, a composite act defined in terms of its functional relation to environmental variables. This may be termed the *phenomenological level*. The other level is concerned with lower-level strata or sub-components of the repertoire in question (as defined at the phenomenological level). In other words, this level is concerned with the internal structure of the repertoire including the processes and operations sufficient in engendering the relevant properties of the phenomenological level. This may be termed the *implementation level*. Phenomenological level and implementation level are not proposed as technical terms but as helpful, heuristic concepts with respect to behavioral engineering.[3]

Behavior may not have a necessary structure other than trivial (Baer, 1982) and one often finds that a repertoire may be established through different program sequences, different constellations of components and different instructional strategies. In other words, the implementation level of a behavioral repertoire may differ across individuals. The focus of the implementation level is therefore to provide pragmatic or sufficient solutions rather than the uncovering of essential, immutable structures. Consequently, the implementation level may include components that are "unnatural" or highly contrived. However, construction of functional behavior does not require that each component, step or subroutine must be immediately functional or congruent with natural contingencies. In "behavioral engineering," any strategy or design that will accomplish the goal may be employed.[4]

Receptive labeling deconstructed

Receptive language may be defined as responding non-verbally to spoken words in accordance with conventions in a verbal community. *Receptive labeling* of objects may be described as: *Hear name X – select object Y.* This relation can be established when the speaker names an object while indicating its location (e.g., looking or pointing) and providing reinforcement when the child orients toward it (e.g., *hears the name "apple"- points to apple*). Conversely, if the child orients toward a different object, orients toward the apple when another word is presented, or does not respond, reinforcement is not provided. This idealized contingency is illustrated in Table 1.

Table 1.

Contingencies Involved in Receptive Labeling

Verbal stimulus (Spoken word)	**Response**	**Non verbal stimulus** (Object)	**Consequence**
"Apple"	Orients	Apple	Reinforcement
"Apple"	Orients	Orange	No reinforcement
"Orange"	Orients	Apple	No reinforcement
"Apple"	None	None	Additional cues/assistance

Since a word-object relation is arbitrary (i.e., the word and the object share no common perceptual elements) each label must be learned individually. However, through several interactions the child may acquire new relations more rapidly. Bateson (1972) coined the term "deutro-learning" to refer to a progressive increase in learning within a domain. Along with dimensions such as retention, proficiency and generality, "deutro-learning" is an important consideration at the phenomenological level.

Although receptive labeling is a relatively simple behavioral process, it is not necessarily simple from the point of view of a naïve language learner. During acquisition the learner is faced with several problems that may be referred to collectively as "the problem of induction" (Markman, 1989). Markman described three related issues. First,

> When a child hears a word used to label an object, for example, an indefinite number of interpretations are possible for that word. The child could think that the speaker is labeling the object as a whole, or one of its parts, or its substance, or its color, texture, size, shape, position in space, and on and on. (Markman, 1989, p. 8)

However, the typically developing child does not have a well-developed ability to analyze (i.e., dissect) objects into components or properties but is inclined to regard the whole object as a referent for the word. This bias has been termed the *whole object assumption* (Markman, 1989).

Secondly, the child must extend a word to objects similar to those present during the initial interaction. For instance, if the child has learned to identify a cat when hearing the word "cat," he must extend the word to objects with perceived overall similarity such as different cat, a dog or a raccoon rather than to objects that tend to co-occur with cats such as a bowl of milk or a litter box. Typically developing children commonly generalize the word to objects with perceived overall similarity as opposed to objects that are related thematically. This bias has been termed *the taxonomic assumption* (Markman, 1989).

Lastly, in order to constrain word-object relations and sustain stability of acquired relations, the child must initially refrain from attributing two different labels to the same object. Thus, if a novel word is uttered in the presence of an object of which the child already has learned a name, he tends to reject the new word as an object label. For instance, if the child has learned that an object is called "apple," he is likely to attribute any new word (e.g., "red") directed towards an apple to another feature of the object such as its shape, some part, or its color. This bias has been termed the *mutual exclusive assumption* (Markman, 1989).[5]

Applying the two levels of analysis to receptive labeling, the phenomenological level includes the act of identifying an object given a spoken word in accordance with the aforementioned contingency (see Table 1), whereas the implementation level includes the various learning constraints (whole object assumption, taxonomic assumption and mutual exclusive assumption) and lower level strata including scanning, responding to multiple cues and auditory discrimination (Table 2).

Table 2 Phenomenological and Implementation Levels of Receptive Labeling

Phenomenological level	Implementation level
Responding conventionally to spoken words	Whole object assumption
(Word-object relation; Hear X orient to Y)	Taxonomic assumption
	Mutual exclusive assumption
	Responding to multiple cues
	Scanning
	Auditory discrimination

Children with autism and the implementation level

Apparently, many children with autism demonstrate significant deficits in pertinent tool skills (i.e., implementation level skills) and may therefore fail to acquire receptive labeling in a normative or even highly modified instructional context (e.g., discrete trial instruction). Moreover, many children may not develop these tool skills under such conditions despite abundant practice opportunities. Thus, when these skills are not present they must be targeted explicitly.

Children with autism often attend only to a restricted aspect of a stimulus rather than its overall feature. This "stimulus overselectivity" may account for many learning problems in this population (Lovaas, et. al., 1971) and it is a crucial concern when teaching receptive labeling. For instance, stimulus overselectivity may block the child from attributing the word to the whole object. In such cases the child would not appreciate the abstract property of "sameness" as an overall feature of stimuli and hence have difficulty extending the word taxonomically as manifested in limited and/or idiosyncratic stimulus generalization. Additionally, if the child has difficulty responding to multiple cues, difficulty scanning and shifting attention between stimuli, the conventional contingency of receptive labeling may be ineffective and could even be counterproductive.

Stimulus overselectivity within the visual domain may be ameliorated through a systematic sequence of matching-to-sample (MTS) in which stimulus features change gradually. Subtle changes from identical to non-identical stimuli, including cross-dimension (i.e., picture to object) may improve the child's ability to focus on overall structure as the basis for perceptual categorization. Thus, matching-to-sample may be a critical component in developing receptive labeling. For instance, Barnard and Eisenhart (2001) presented a case study in which the re-introduction of a systematic matching-to-sample sequence after a period of receptive language training enhanced acquisition and retention of receptive labeling in a child with autism.

During acquisition, it is imperative that the child looks at the object to which the speaker points. However, many children with autism do not attend to the speaker's gestures or orientation. When the instructor utters a word while pointing to an object, there is no guarantee that the gesture orients the child to the relevant object. In an effort to ameliorate this deficit one may teach the child to respond reliably to visual directives and to shift attention flexibly from one stimulus to another.

Selection-Based Imitation

Selection-based imitation (SBI) encompasses several of the aforementioned tool skills as it integrates matching-to-sample and imitation. Proficient SBI may therefore aid in the acquisition of receptive labeling for children who struggle to acquire this repertoire.

In SBI the instructor points to a stimulus displayed in one array and the child imitates by pointing to the corresponding stimulus in a separate array. The child is neither required to discriminate between, nor perform distinct response topographies (i.e., clapping, waving and standing up). In SBI the response topography remains the same in every trial whereas the stimulus pointed to changes each time. As opposed to imitation of behavioral topographies, SBI is a joint product of two stimuli: The stimulus to which the model points establishes the evocative effect of another stimulus (i.e., the corresponding stimulus in a separate set), which functions as a discriminative stimulus (SD) for the child's response.

In SBI the instructor "nominates" the target stimulus by pointing to it. Thus, the child must attend to the part of the environment of which another person interacts. This differs from imitation of response topographies where attention is directed to the other person's movement per se. Moreover, the child must shift attention flexibly from the instructor's stimulus field to his own field.

A sequence of implementation

There may be several different sequences that can establish SBI (i.e., the implementation level may vary across children). The present sequence is based on considerable clinical experience with many children. It is organized into several incremental phases where the last phase consists of transferring stimulus control from a visual to an auditory stimulus (Table 3).

Table 3.

Sequence of Implementation

1. Linear configuration
2. Field expansion
3. Linear configuration/different positions
4. Non-linear configuration
5. Two steps
6. Transfer to receptive labeling

Linear configuration. The instructor and the child each have an array of three pictures depicting three different objects. The arrays are arranged so the pictures correspond both horizontally and vertically in sequential order as illustrated in Figure 1. The arrays may be arranged so the pictures face right side up for both the child and the instructor or both arrays may be facing right side up relative to the child. The instructor and the child sit directly across each other at a table.

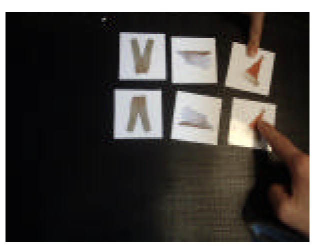

Figure 1. Linear configurations.

The instructor delivers the instruction "do this," points to one of the pictures in her array and manually guides the child to point to the corresponding picture in his array. By using the generic instruction "do this" as opposed to the object name, one ensures that every trial is identical except for the selection of the picture, which changes each trial. This arrangement may increase the likelihood that the child's behavior comes under control of the relevant feature of the task.

It may be helpful to arrange for an additional instructor to administer the manual prompting from behind the child. Prompting should be faded as soon as the child starts to respond to the target instruction. The fields should be reconfigured frequently between trials. Moreover, it is important to maintain short instructional intervals, a high pace of instruction and to afford the child a break based on peak performance. For instance, when the child performs the first independent response, the instructional interval may be terminated. Criteria should be increased systematically contingent on the child's progress and eventually, the child should be able to perform four to six consecutive imitations before earning a break.

The objective in this phase is to ensure that the child attends reliably to the instructor's response and shifts attention flexibly between the two stimulus arrays.

A common problem during this phase is that the child may point to the instructor's array as opposed to his own. Another problem is that the child may fail to attend to the instructor's pointing.

Two strategies may be effective in shaping the child's response to the appropriate array. One strategy consists of increasing the distance between the two arrays in order to make the instructor's field inaccessible to the child. This proximity prompt may induce the child to "settle" for the closer of the two fields. The distance between the two arrays can be decreased gradually. A second strategy consists of blocking access to the instructor's array by gently guiding the child's hand toward his own. A third viable strategy consists of holding the target picture above the table while prompting the child manually to point to the corresponding picture in his array. The picture should be brought closer to the table over successive trials and eventually placed among the other pictures. The efficacy of this strategy derives from initially isolating the target stimulus and shaping discrimination in a nearly errorless fashion.

Field expansion. In this phase the stimulus array should initially be increased to four pictures while maintaining a horizontal and vertical configuration as described in the first phase. The field size (i.e., number of pictures in the array) should be increased gradually to eventually include at least six pictures as illustrated in Figure 2. The procedure described in the previous phase may be employed. The present phase should continue until the child imitates proficiently (i.e., four to six consecutive correct responses).

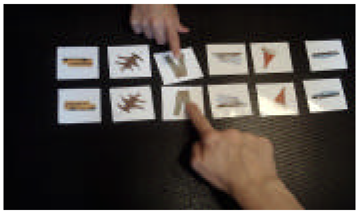

Figure 2. Field expansion

The objective in this phase is to further strengthen scanning by gradually increasing the field size. The response requirements are the same as in the previous phase and the field size is increased incrementally. Therefore, there are typically no problems in this phase. However, due to increased scanning requirement, the response latency may be slightly longer. If the child struggles with larger fields, the instructor may decrease the field size and the instructional pace. These dimensions should be altered systematically as the child becomes more proficient.

Linear configuration/different positions. In this phase the fields should be arranged so the pictures no longer correspond with respect to their positions in the arrays as illustrated in Figure 3. When introducing this phase, it may be necessary to scale back to a field of three pictures and gradually increase to a field of six (Figure 4).

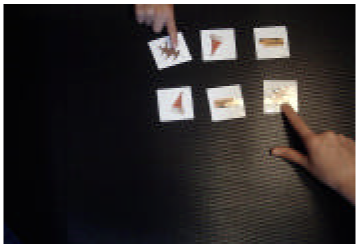

Figure 3. Linear configuration/different positions.

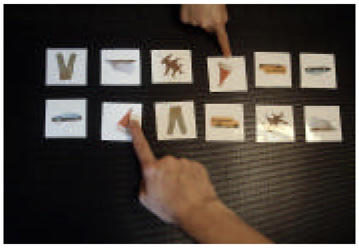

Figure 4. Field expansion.

This phase is designed to solidify scanning (e.g., shifting of attention) and prevent development of "position pointing" in which the child responds to the position of the instructor's finger as opposed to the target picture.

As indicated, a common problem in this phase is that the child may respond to the position of the instructor's finger as opposed to the target picture. Alternatively, the child may first point to the picture corresponding to the position of the instructor's finger and then switch to the correct picture. Clinical experience indicates that even a couple of reinforced trials could establish this pattern of "self-correction."

To ameliorate these patterns, three strategies may be utilized. One strategy consists of scaling back to two pictures and increasing the field size when the child performs proficiently. Another strategy consists of blocking the child's response to permit sufficient scanning time. For instance, the child's response may be prevented physically until he observes the instructor's response and shifts attention (i.e., gaze) to his own array. A third strategy consists of interrupting "position pointing" and initiating a new trial after a very brief delay (two to three seconds).

Non-linear configuration. In this phase the two arrays should be arranged in an incrementally more randomized fashion as illustrated in Figure 5. In the previous phases the child was required to scan horizontally only, whereas in this phase he must scan both horizontally and vertically. The field configuration should be changed incrementally to minimize errors.

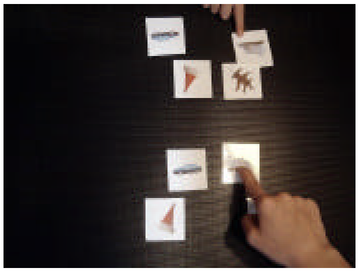

Figure 5. Non-linear configuration.

There are typically no problems in this phase. However, the response latency may be slightly longer. If response latency is considerably longer than in the previous phase, one could return to a linear configuration and build proficiency through more incremental randomization of the arrays. Alternatively, this phase may be introduced by randomizing one of the arrays while maintaining linear configuration of the other.

Two steps. When the child is proficient with single-step imitation, two-step imitation may be introduced. The objective in this phase is to increase flexible scanning and promote attention to more durable and complex antecedent conditions. Although this step may not always be necessary, it is designed to promote flexible scanning and increase attending.

It is critical to ensure that the child does not respond before the instructor completes both steps. Initially, the instructor may insert a short delay between the responses. For instance, the instructor points to one picture and delays the second response until the child performs his first response. This delay must be faded as soon as possible. The field size should increase gradually until the child can perform proficiently in a field of four to six pictures.

A common problem in this phase is that the child responds only to the first or the last picture. Alternatively, the child may point to the pictures in reverse order (i.e., pointing to the last picture first and the first picture last). As discussed, to prevent this pattern, a delay may be used in which the instructor points to one picture and delays the second response until the child performs his first response. Another strategy consists of preventing the child from responding until the instructor completes both steps (e.g., holding the child's hand). A third possible strategy consists of holding the finger on the second picture until the child completes the chain.

Transfer to receptive labeling. In this phase the verbal instruction should be changed from "do this" to the label name (e.g., "car") while continually pointing to the picture. However, in this phase pointing must be recognized as a prompt that must be faded successively as stimulus control transfer to the spoken word. Prompting may be faded by gradually increasing the distance between the instructor's finger and the picture (e.g., from touching the picture to a distance of 10-12 inches).

Initially, the instructor may select two labels to be taught in discrimination. When the child responds correctly to the first label without prompting, the second label should be introduced. The same fading strategy should be used for the second label. However, when teaching the second label the instructor may intersperse the trials by presenting randomly the first and the second label. For example, the instructor names the second picture while pointing, and intersperse the trails by occasionally naming the first label. This procedure should be maintained until the child responds correctly to a random presentation of the two labels without prompting. If the child responds inconsistently during random rotation, pointing may be inserted shortly after the verbal instruction to function as delayed prompting (c.f., Touchette & Howard, 1984). Alternatively, the second label may be practiced in isolation, thus postponing random rotation until prompting is faded. When the child has acquired three to four receptive labels, the instructor's array may be removed and new labels may be taught through more conventional methods (e.g., Leaf & McEachin, 1999).

Discussion

SBI involves several tool skills that are subservient of receptive labeling and it can therefore be used as a basis for developing this repertoire. The sequence of implementation outlined in this paper is based on common behavioral principles such as shaping of antecedent stimulus conditions (i.e., stimulus topography shaping) and transfer of stimulus control through delayed prompting. Moreover, the present description includes vague and relative terms such as "proficient," "as soon as possible," "gradual," "considerably longer," and "sufficient scanning time." However, it is difficult to express the many nuances and dimensions in an unambiguous or absolute manner. Despite this vagueness, the present outline may be of practical value to clinicians.

Although the strategy outlined in this paper has proven effective for several children it is not always sufficient. For many children other strategies must be employed in order to ameliorate deficiencies in receptive labeling. Nevertheless, the theoretical analysis offered in this paper illuminates some pertinent consideration when teaching receptive labeling, such as deficiencies of learning constraints, scanning (flexible shifting of attention between stimuli), and responsiveness to visual directives (i.e., pointing). Thus, the present analysis may serve as a basis for systematic problem solving and development of alternative instructional strategies.

References

Abrahamsen, E.P., & Mitchell, J.R. (1990). Communication and sensorimotor functioning in children with autism. *Journal of Autism and Developmental Disorder, 20,* 75-86.

Baer, D. M. (1982). The imposition of structure on behavior and the demolition of behavioral structure. In D. J. Bernstein (Ed.) *Response structure and organization. Nebraska Symposium on Motivation.* Lincoln, NE: University of Nebraska Press.

Barnard, J. C., & Eisenhart, D. (2001, May). Building a foundation: An analysis of an early match-to-sample program sequence. Paper presented at the *27th Annual Convention of the Association for Behavior Analysis.* New Orleans, Louisiana.

Bateson, G. (1972). *Steps to an ecology of mind.* Ballantine Books, New York

Bondy, A., & Frost, L. (2001). *A picture's worth: PECS and other visual communication strategies in autism*. Woodbine House, Bethesda , MD.

Catania, A., C., Sveinsdottir, I., DeLeon, I., G., Christensen, A., & Hineline, P. N. (2002). The paradoxical vocabularies of topography-based and selection-based verbal behavior. *European Journal of Behavior Analysis, 3,* 81-85.

Leaf, R., & McEachin, J. (1999). *A work in progress: Behavior management strategies and a curriculum for intensive behavioral treatment of autism.* Autism Partnership. DRL Books, L.L.C. New York, NY.

Lovaas, O. I. (1981). *Teaching developmentally disabled children: The me book*. Pro-Ed. Austin, TX.

Lovaas, O. I. (2003). *Teaching individuals with developmental delays: Basic intervention techniques.* Pro-Ed, Austin, TX.

Lovaas, O. I., Schreibman, L., Koegel, R. I., & Rhem, R. (1971). Selective responding by autistic children to multiple sensory input. *Journal of Abnormal Psychology, 77*, 211-222.

Lund, S. K. (2002, May). Establishing elementary rule-governed behavior in children with autism: A proposed sequence of implementation. Paper presented at the *28th Annual Convention of the Association for Behavior Analysis*, Toronto, Canada.

Lund, S. K., & Eisenhart, D. (2002, May). Establishing icon-based communication in children with autism and severe cognitive delay. Poster presented at the *28th Annual Convention of the Association for Behavior Analysis*, Toronto, Canada.

Markman, E. M. (1989). *Categorization and naming in children: Problems of induction*. The MIT Press, Cambridge Massachusetts.

McEachin, J. (2001, May). What to teach and how much is enough? Paper presented at the *27th Annual Convention for the Association for Behavior Analysis*, New Orleans, Louisiana.

Michael, J. (1985). Two kinds of verbal behavior plus a possible third. *Analysis of Verbal Behavior, 3,* 1-4.

Pelios, L. V., & Sucharzewski, A. (2003, May). A literature review on teaching strategies for establishing receptive language. Paper presented at the *29th Annual Convention of the Association for Behavior Analysis,* San Francisco, CA.

Powers, M. D., & Handleman, S. J. (1984). *Behavioral assessment of severe developmental disabilities*. Aspen System Corporation, Rockville Maryland.

Rutter, M., & Schopler, E. (1987). Autism and pervasive developmental disorders: Concepts and diagnostic issues. *Journal of Autism and Developmental Disorder, 17,* 159-183.

Sigman, M., & Ungerer, J. (1984). Cognitive and language skills in autistic, mentally retarded, and normal children. *Developmental Psychology, 20,* 293-302.

The Barnhart Concise Dictionary of Etymology: The Origins of American English Words (1995). Harper Collins Publisher. New York, NY.

Touchette, P. E., & Howard, J. S. (1984). Errorless learning: Reinforcement contingencies and stimulus control transfer in delayed prompting. *Journal of Applied Behavior Analysis*,*17*, 175-188.

Waterhouse, L., & Fein, D. (1989). Language skills in developmentally disabled children. *Brain and Language*, *15*, 307-333.

Author's note

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Footnotes

Footnote 1: The term "selection-based" is adopted from Michael (1985). It is not an extension of the technical term "selection" as used within a technical discourse, but derived from its colloquial usage (see Catania, et. al., 2002 for a discussion).

Footnote 2: Several clinicians have identified imitation, matching-to-sample, auditory discrimination, scanning and pointing as prerequisite to receptive language (Leaf & McEachin, 1999, Lovaas, 2003; Pelios & Sucharzewski, 2003). Research from traditions outside the field of behavior analysis suggests that language comprehension is correlated with the ability to imitate familiar gestures (Abrahamsen & Mitchell, 1990; Sigman & Ungerer, 1984).

Footnote 3: This distinction is akin to the distinction between molar and molecular behavior (e.g., Powers & Handleman, 1984) or macro and micro behavior (e.g., McEachin, 2001). Molar or macro behavior refers to broader, more global skills such as "eating," whereas molecular or micro skills refer to the sub-skills that constitute the molar skill (e.g., holding a spoon, drinking from a glass, sitting appropriately). The present distinction is somewhat different. It pertains to integrated behavioral units such as "receptive labeling," "imitation," "tacting" and abstract concepts (e.g., nominal and genitive pronouns) that cannot be divided into a chain of independent responses the same way as macro-level skills (e.g., "eating"). The term "phenomenological" as used here, is derived from the original meaning of "phenomenon" (fact, occurrence, manifestation) and should not be confused with the later meaning of "extraordinary occurrence" (The Barnhart Concise Dictionary of Etymology, 1995) or its specific meanings within philosophy (cf., Husserl, Heidegger and Sartre).

Footnote 4: Lund (2002) deconstructed behavior under control of function-altering contingency specifying stimuli and described a sequence in which elementary rule-governed behavior (i.e., "pliance") can be established in children who fail to acquire this repertoire through natural environment teaching. In a similar manner, Lund and Eisenhart (2002) deconstructed behavior involved in picture exchange and described how this repertoire can be established in children who do not acquire it in a normative socio-communicative context such as PECS (Bondy & Frost, 2001). In both cases the repertoires were deconstructed, subcomponents (i.e., implementation level skills) were established in isolation and eventually combined into the target repertoire (i.e., phenomenological level). Several steps were highly contrived.

Footnote 5: Terms, such as "attribute," "extend," "referent" and "regard" are vernacular terms with organism-based implications. These are not viewed as theoretical primitives but used for the purpose of ease of communication. A pragmatic reformulation can be provided when a situation demands it.

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