THOUGHT WITHOUT NAMING

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Horne and Lowe provide a hypothetical account of how the behavior of naming develops from early infancy onwards, and how once acquired by the child, naming brings about functional transfer of behavior across members of stimulus classes. Their work draws heavily upon a great deal of empirical developmental research and firsthand naturalistic observation. The naming approach shows promise for furthering our theoretical understanding of language acquisition, and has practical implications as well. The authors are to be commended for their efficiency in identifying an important body of literature on language development and for applying known concepts and principles from the behavior-analytic literature to explain the acquisition, development, and function of naming. This insightful and challenging approach, however, presents several problems.

Given Horne and Lowe's ambitious claims and conclusions, several important issues need to be addressed. Horne and Lowe claim that several functional classes of verbal behavior, including tacts, mands, and intraverbals, are all variants of naming. Moreover, they propose that naming accounts for many phenomena including symbolic behavior, categorization, meaning, referencing, and rule-governed behavior, and that naming is a prerequisite for passing stimulus equivalence tests. But just like rule-governed behavior, the naming hypothesis raises at least two intriguing questions. First, according to Horne and Lowe, naming appears to involve a higher order behavioral relation that is both evoked by, and itself evokes, classes of events. However, the questions of whether verbal behavior that is evoked by classes of events depends on the young child's ability to evoke classes of events or vice versa ("*speaker-listener* within the same skin," p. 189), and of whether these two functions actually interact, both are still unknown and await empirical investigation. Furthermore, whether these two functions (or abilities) need to be established in the child's repertoire for the "derivation" of "novel" stimulus-response relations (classes) and for functional transfer of behavior across stimulus classes is questionable.

Infants can understand some symbolic word meaning (listener behavior) as early as 6 to 8 months after birth, and their receptive recognition vocabulary often rises to over 100 words by the first birthday (Bzoch & League, 1991). Expressive syntactic development (speaker behavior), however, does not usually occur until after 18 months. With an infant having only a large receptive recognition vocabulary, it is conceivable that functional transfer of behavior across members of stimulus classes can occur even long before expressive naming develops. There is evidence that infants first learn to form stimulus classes, learn to categorize objects, and understand the meaning of actions or events before they learn to name them (e.g., Cohen & Carey, 1982; Gelman & Taylor, 1984; Gopnik & Meltzoff, 1992; Katz, Baker, & MacNamara, 1974; Lifter & Bloom, 1989; MacNamara, 1972; Merriman, Schuster, & Hager, 1991; Mervis, 1987). In what follows I offer some research examples that support this view.

Processes Preceding Naming

Several studies by cognitive as well as behavioral developmental researchers support the argument that concept formation, meaning, referencing, categorization, and equivalence precede naming. Although these findings have been characterized mostly in terms from other interpretive traditions, which are

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retained here for expedience, their implications for a functional or behavior-analytic interpretation are unclear. Thus, for instance, Cohen and Carey (1982) found that a complex disjunctive concept of "front-back" orientation preceded any knowledge of the names front and back. Furthermore, they found that children at an intermediate state of lexical knowledge interpret "front" as if it means "back." In another study with 80 small children (17 to 24 months), Katz et al. (1974) found that within certain classes of objects (e.g., people), children first discriminate individuals and then learn their names, whereas among other classes of objects (e.g., spoons) they do not discriminate individuals, and learn names only for the class. They argue that two distinct processes enable the children to learn the syntactic distinction between common and proper names (see also Gelman & Taylor, 1984). MacNamara's (1972) thesis is that infants learn their language by first determining, independent of language, the *meaning* that a speaker intends to convey to them. He provides evidence in support of the thesis that the infant uses meaning as a clue to name, rather than naming as a clue to meaning. In a similar way, Gopnik and Meltzoff (1992) think of naming as closely related to *categorization* behavior: "A name places some of the objects in the world into a particular group. From this perspective, changes in naming may not be purely linguistic phenomena. Instead, they may also be related to nonlinguistic cognitive developments" (p. 1093). Gopnik and Meltzoff's findings support the notion that there are close relations between early semantic abilities and early conceptual abilities. The children in their studies developed a naming spurt at the same time or shortly *after* they first displayed exhaustive grouping and were able to categorize objects (see also Lifter & Bloom, 1989). As a consequence, those children who used more names were more likely to group objects exhaustively in a nonlinguistic task. The authors suggest that it is possible that the abilities involved in categorizing objects (forming stimulus classes) are the ones that provided support for the learning of naming (p. 1102). There is also strong evidence that young children map new common names onto attribute cluster categories. That is, the relevant categories need to be abstracted (discriminated) *before* naming is shown (Merriman et al., 1991; Mervis, 1987). Also, using operant conditioning procedures, it has been demonstrated experimentally that in circumstances of ambiguity or uncertainty, infants can learn to reference their mothers' facial expressions or cues as early as 4 months of age, before their expressive language has developed (Peláez-Nogueras, 1992).

Together, the results of all these studies suggest that, contrary to what Horne and Lowe propose, naming results from categorizing, referencing, concept formation, and meaning, and that naming is not an essential determinant of stimulus class formation and transfer of function. On the other hand, it is true that, once established, naming may give rise to many new behavioral relations and may be responsible for transfer of discriminative and consequential functions, perhaps for an infinite range of new linguistic behavior. My point, then, is that naming behavior may not always be necessary for the development of these other kinds of behavior and skills.

Naming As a Higher Order Performance

Naming, as classifying response, like the phenomena of generalized imitation (e.g., Gewirtz & Stingle, 1968), grammatical frames (Skinner, 1957), relational responding (Hayes, 1991), and generalized equivalence (Boelens, 1994), may be a case of higher order performance or generalized learning. That is, the novel or emergent behavior is an instance of generalized performance produced by reinforcement histories. Perhaps, it would be more parsimonious to speak of *learned* relations instead of emergent or derived relations attributed to either naming or stimulus equivalence. From my perspective, these "novel" performances arise directly from experiences with contingencies. Also, consider generalized naming as a class of responses that is differentially reinforced. In this case, for children with established naming repertoires, (a) relatively novel naming relations can be developed without direct shaping, and (b) some naming responses can be maintained without reinforcement as long as other naming responses are reinforced.

Many new stimulus-behavior relations and functional transfers of behavior across stimulus classes have been observed when genera-

tive repertoires are acquired. A child's behavior, established originally with a single stimulus, can generalize to stimuli that may be physically very different; thus, often only in particular contexts, the child learns to respond to sets of different stimuli as interchangeable. In these cases, a detailed examination of the reinforcement histories for explaining the establishment and the subsequent maintenance of these new stimulus-behavior relations in context is essential.

In the learning of generalized imitation, for instance, the child's imitating of a parent's or caregiver's behavior is first reinforced repeatedly. Eventually, though, the child begins to imitate many things the parent does, without direct training or repeated reinforcement. Thus, the child learns overarching behavior classes containing virtually unlimited numbers of members (Gewirtz & Stingle, 1968; Hayes, 1991). In the same manner, with repeated and multiple instances of training, a child might make an extension (generalization) of the naming relation and learn to relate different names to different persons, and very rapidly may begin to associate words with objects, words with animals, and words with events, and eventually words with objects or events that are not physically similar but that are functionally similar (or have a shared function).

When the child begins to name rapidly (the name spurt) in the apparent absence of contingencies or training, psychologists tend to speak of "emergent" language skills. For instance, in the infancy literature, Lenneberg (1967) has argued that regardless of the culture into which children are born, normally developing language emerges in basically the same fashion. This notion of emergence somehow makes me uncomfortable. Before adopting an emergentist view, I would rather consider first the possibility of a learning process. To some extent naming, like other linguistic behavior, should be predicted from a direct contingency formulation and, like any other behavior (linguistic and nonlinguistic), is historically and contextually determined. Yet, studying naming behavior (its learning history and its context) poses a major problem and challenge to investigators because, as defined by Horne and Lowe, naming also exists when the only audience that could enter into the control of the behavior is the speaker as his or her own listener (i.e., the inner speech or speech for self), and the child's own speaker and listener behavior interact. But all these problems should not discourage us from studying cognitive and linguistic phenomena. All forms of covert behavior pose a major methodological challenge for behavior analysts interested in studying complex human behavior like thinking, remembering, problem solving, meaning, categorization, and symbolic representation.

Horne and Lowe's work is of great merit because it offers a research model and a basis for beginning to conduct experimental analyses of other more complex forms of verbal behavior. The naming approach provides one more avenue for the empirical investigation of linguistic phenomena within a behavior-analytic framework. Furthermore, the use of the procedures examined by Horne and Lowe to assess linguistic relations will permit further examination of important issues in natural language. If an experimental analysis of naming could reveal conditioning histories that produce naming behavior and systematic observation could reveal similarities in natural settings, then we would have, at the very least, a semblance of understanding of the language phenomenon.