REPORT

Semantic knowledge and the acquisition of proper names

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Abstract

This article explores the proposal that children learn proper names by exploiting implicit universal semantic knowledge. This knowledge directs children to interpret object-directed words used under particular conditions as proper names referring to specific objects. Provided that caregivers use proper names as object-directed labels under the same conditions, the knowledge can explain children’s mastery of these expressions.

Young children add five to nine new words per day to their vocabularies between the age of 18 months and the time they begin school (Carey, 1978). This fact is remarkable, because acquiring any new word is a complex task, requiring learners to assign it both a meaning (e.g., ‘dog’ refers to the kind, DOG) and a grammatical category (e.g., ‘dog’ is a count noun). The fact is noteworthy also because the conditions under which children learn any new word typically underdetermine its meaning and grammatical category. For example, hearing the word ‘dog’ accompanied by a gesture towards a dog provides children with little information about whether the word refers to the dog’s kind (and that the word is a count noun), one of its properties (and that the word is an adjective), or the specific animal (and that the word is a proper name). To account for children’s adeptness at acquiring words under such conditions, some researchers have proposed that learners possess semantic knowledge that leads them, upon hearing a new word used in particular circumstances, to entertain specific hypotheses about its meaning and grammatical category. For example, hearing the word ‘dog’ accompanied by a gesture towards a dog provides children with little information about whether the word refers to the dog’s kind (and that the word is a count noun), one of its properties (and that the word is an adjective), or the specific animal (and that the word is a proper name). To account for children’s adeptness at acquiring words under such conditions, some researchers have proposed that learners possess semantic knowledge that leads them, upon hearing a new word used in particular circumstances, to entertain specific hypotheses about its meaning and grammatical category (e.g., Bloom, 1994; Hall, 1994-a; see also Markman, 1994; Pinker, 1984).

One piece of semantic knowledge proposed to play a fundamental role in guiding early word learning is that a label used to pick out a physical object (e.g., a dog) should be interpreted as referring to a kind of object (e.g., DOG) and grammatically as a count noun (e.g., ‘dog’). (Count nouns are, in fact, expressions that refer to kinds of objects.) Evidence suggesting that children possess this knowledge has come from a number of studies exploring how they interpret object-directed words. The results have shown that children tend to extend such words from a target object (e.g., a dog) to other objects of the same object kind (e.g., to other dogs) (e.g., Markman, 1994) and that they tend to treat the words grammatically as count nouns (e.g., they inflect them with the plural morpheme or produce them following the indefinite article; see Hall, 1991).

The proposed semantic knowledge offers a partial explanation for children’s proficiency at word learning, because it indicates how children might initially restrict their guesses about the grammatical category and meaning of new words they hear for objects. The explanation is only partial because it also requires that caregivers use count nouns when they label new objects for children, a requirement that caregivers appear to satisfy (e.g., Hall, 1994-b). By using count nouns as object labels, caregivers enable children both to map their guesses onto the appropriate words and also to discover how count nouns are instantiated grammatically in their language (provided that children pay attention to the sentence contexts in which these words appear in caregivers’ speech). Note that children must learn the grammatical properties of count nouns in their particular language (e.g., that in English a count noun, ‘X’, can appear in the sentence, ‘This is an X’), because these properties vary from language to language.

In addition to offering a partial explanation for children’s skill in the arena of lexical development, however, the proposed semantic knowledge presents a puzzle: If children interpret all words for objects as
count nouns naming kinds of objects, then how do they ever learn object-directed words that belong to other grammatical categories and that have other types of meanings? For example, how do they discover that a word applied to a dog could be a proper name referring to the specific object (e.g., ‘Fido’)? It is a striking fact that, before their second birthdays, children appear to know that only some object-directed words refer to object kinds; they seem to realize that others may refer to specific objects. For example, 2-year-olds will extend a novel word modeled syntactically as a count noun (e.g., ‘This is a ZAV’) from one doll to another doll, consistent with the proposed semantic knowledge; however, they will restrict the same novel word, modeled syntactically as a proper name (e.g., ‘This is ZAV’), to the named doll only (Gelman & Taylor, 1984; Katz, Baker, & Macnamara, 1974). Somehow, children appear to know at a very young age that it is sometimes permissible to interpret object-directed words not as naming kinds of object (as count nouns) but rather as naming specific objects (as proper names).

But where does this knowledge come from? Even if children initially approach the task of lexical acquisition knowing that proper names (unlike count nouns) are expressions that refer to specific individuals, they still must discover where these expressions appear in caregivers’ speech; in their particular language. Children also must learn how proper names are marked grammatically in their language, because the grammatical properties of proper names, like those of count nouns, vary cross-linguistically. For example, children cannot innately know that in English a proper name (‘X’) can appear in the sentence, ‘This is X’. Of course, grammatical knowledge, once acquired, can greatly aid children in identifying proper names (and count nouns) in their language (Bloom, 1994). But children require some prior knowledge, independent of grammar, to help them both to recognize proper names in the first place and also to master their language-specific grammatical properties. One possibility is that children possess additional semantic knowledge, distinct from their semantic knowledge about count nouns, that leads them to treat object-directed words used under certain conditions as proper names referring to specific objects. If children possessed such knowledge at the outset of word learning, they would have a way to identify potential proper names in caregivers’ speech and a way, thereby, to determine how these expressions behave grammatically in their language (provided that caregivers supply proper names as object-directed words under these particular conditions).

What semantic knowledge could lead children to interpret an object-directed word as a proper name rather than as a count noun? If children know that proper names are expressions that refer to specific objects (Macnamara, 1986), then children might also know to interpret a novel label as a proper name if it is used under conditions that indicate it could refer to a specific object. Recent research suggests that there are several such conditions that lead children to favour interpreting novel object-directed labels as proper names.

**Familiar object kinds.** One condition of using an object-directed word that might lead children to interpret it as a proper name rather than a count noun is that the object be familiar—in other words, that children already know a count noun for it. A number of researchers have documented that children’s willingness to interpret a word for an object as something other than a label for the object kind is greater if the object is familiar than if it is unfamiliar (e.g., Hall, Waxman, & Hurwitz, 1993; Markman, 1994). One interpretation of this phenomenon is that children possess semantic knowledge in the form of mutual exclusivity: An assumption that an object can receive only one object kind label (one count noun). The result of adhering to mutual exclusivity is that children are willing to override the knowledge that directs them to interpret an object-directed word as a name for an object kind, if that object has already been assigned a label naming an object kind (Markman, 1994).

Hall (1991) documented that 2-year-olds appear, in fact, more likely to interpret a novel object-directed word modeled syntactically as a proper name (‘This is ZAV’) as being a proper name if the object is familiar (a stuffed dog, for which children know the count noun, ‘dog’) than if it is unfamiliar (a stuffed monster, for which children know no count noun). If the object was familiar, children tended to restrict the word to the labeled object only, consistent with their having interpreted it as naming the specific object. However, if the object was unfamiliar, they typically extended the word from the labeled object to another object of the same kind, suggesting that they had interpreted it as naming a kind of object. Children who learned the word for the unfamiliar object often misconstrued the intended proper name as a count noun, pluralizing it (e.g., ‘Look, two ZAVs!’) or using it with count noun-specific quantifiers (e.g., ‘Another ZAV!’); they did not do this with the word if it was applied to a familiar object.

**Privileged object kinds.** Another condition of using an object-directed word that might lead children to take it as a proper name rather than a count noun is that the object belong to a privileged object kind. Because proper names are words that refer to specific objects, children might possess the semantic knowledge that these words

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should be used to label objects, such as people, that are seen as important in their own right (Macnamara, 1982).

The results of several experiments suggest that preschool children are more likely to interpret a novel object-directed word as a proper name if the labeled object belongs to a privileged object kind (like PERSON) than if it does not. Children tended to restrict a novel word, presented syntactically as a proper name (e.g., ‘This is ZAV’), to only the labeled object, if that object was a doll, a human-like novel animal, or a pet (e.g., a dog). In contrast, if the labeled object was an artifact (e.g., a shoe), children were less likely to restrict the same word to only the labeled object and often extended it to other objects of the same object kind (Gelman & Taylor, 1984; Hall, 1994-c; Katz et al., 1974).

To recap thus far: Preschoolers appear to possess semantic knowledge that leads them to avoid treating an object-directed word as a count noun, and to entertain the possibility that it is a proper name, if the word is used to label (1) a familiar object and (2) an object of a privileged kind. However, words from many categories could be directed towards people or pets for which children already know a count noun. For example, a word for a dog (assuming a child knows the word ‘dog’) could be a proper name referring to the specific object (like ‘Fido’), but among other possibilities, it could also be an adjective referring to one of the object’s properties (like ‘furry’). How do children know when to interpret a word, directed at a familiar privileged object, specifically as a proper name?

One object per proper name. One condition of using an object-directed word that might lead children to interpret it specifically as a proper name is that it be used in conjunction with only one object. Because proper names refer to unique objects, children might possess the semantic knowledge that any potential proper name should be used to pick out only one object. For example, children might expect there should be only one dog in the world named ‘Fido’. This expectation could help children decide which words they heard for familiar pets and people were proper names rather than, say, adjectives. Adjectives, unlike proper names, can readily be extended to any object that bears a particular property. For example, the adjective ‘furry’ applies to all the furry things in the world.

Hall (1996) demonstrated that preschoolers appear more likely to interpret a novel object-directed word as a proper name if it is used in conjunction with only one object than if it is used in association with more than one. One group of 4-year-olds heard a novel word directed to a familiar pet: ‘This dog is ZAVY’. A second group heard the same word for two distinct pets of the same kind: ‘This dog is ZAVY’ and ‘This dog is ZAVY’. If the word was applied to one object, children restricted it to the named object, treating it as if it were a proper name referring to that specific object. If the same word was directed to two different objects, however, children generalized its extension to both named objects as well as to other objects that shared a common salient property with the named objects. In other words, children appeared to interpret the word as an adjective naming the salient property.

One proper name per object. Another condition of using an object-directed word that might lead children to interpret the word specifically as a proper name is that the labeled object lack a proper name. Because a proper name refers to a unique individual in all the situations in which it appears (see Macnamara, 1986), two proper names for the same individual would have the same interpretation, violating children’s expectation that language should contain no synonyms (e.g., Clark, 1987). As a result, children might possess the knowledge that proper names are object-directed words used to pick out objects that do not already have proper names. For example, learners might expect that a dog named ‘Rover’ could not also be named ‘Fido’. This expectation could help children further to distinguish proper names from adjectives. Adjectives, unlike proper names, can apply in any number to a particular object. For example, one dog could be labeled both ‘furry’ and ‘spotted’.

Hall and Graham (in press) recently provided evidence consistent with the claim that children are more likely to interpret an object-directed word as a proper name if it is used in conjunction with an object that lacks a proper name than if it used in association with an object that already has one. Three- and 4-year-olds were asked to choose the referent of a novel proper name from between two objects. For example, they were shown two identical familiar pets of a particular kind and asked, ‘Show me a dog that is named ZAV’. One group of children had previously heard one of the dogs labeled with a different proper name, ‘This dog is named DAXY’. The other group had heard the same dog previously labeled in exactly the same way, but with a word from a different grammatical category, an adjective: ‘This dog is very DAXY’. Children who had previously heard the proper name for one of the dogs strongly avoided that dog as the referent of the second proper name (‘ZAV’). However, children who had heard the adjective for that dog did not. Other conditions of the study revealed that children’s avoidance of two proper names for one object was specific to proper names; it did not extend to words from other lexical categories, such as adjectives (i.e., children were more
willing to accept two adjectives than two proper names for one object).

In sum, preschool children appear to possess semantic knowledge that enables them to interpret object-directed words not as count nouns referring to object kinds but rather as proper names referring to specific objects. This knowledge consists of the expectation that a novel object-directed word could be a proper name referring to an individual object if the word is used to pick out an object that (1) has already been labeled with a count noun, (2) comes from a privileged kind, (3) is the sole bearer of the word, and (4) has not already been labeled with a proper name. The studies reviewed in this article have documented evidence of this knowledge in children between the ages of roughly two and four years. However, the important task of demonstrating the knowledge in children near the outset of word learning (e.g., at 18 months) falls to future research.

Caregiver input. In order for the preceding proposal to be a viable account of how children learn proper names, caregivers must provide these words under the same conditions that children expect them to be provided. At first glance, however, adults’ naming practices suggest that caregivers may violate all these conditions. First, adults label more than people and pets with proper names. They also name cars, boats, buildings, companies, cities, rivers, hurricanes, and stars. Second, it is not obvious that adults would avoid using a proper name for an unfamiliar object simply because they had not already supplied a word for its kind (e.g., in talking about an animal of a strange kind). Third, in the adult language, there are many bearers of the same proper names. For example, there are thousands of men named ‘John Smith’. Finally, in the adult language, one person is often picked out by more than one name. For example, the same person might be referred to by different components of one name (e.g., first name, surname) or by a nickname.

Nonetheless, in order to facilitate word learning, caregivers might make an effort, in child-directed speech, to introduce proper names under conditions that are sensitive to children’s initial expectations. For example, caregivers might avoid using simple ostensive definitions (e.g., merely saying, ‘This is X’) and might instead offer more detailed explanations if they provide proper names for objects that are (1) unfamiliar, (2) not people or pets, (3) not the sole bearers of the proper names, or (4) already labeled with proper names. In current work, we are testing this hypothesis about the structure of caregiver input (Hall & Burns, in preparation).

To conclude: The finding that young children interpret certain object-directed words as proper names referring to specific objects presented a puzzle, because of claims that children possess the universal semantic knowledge that all object-directed words should be taken to be count nouns referring to object kinds. One part of the solution proposed in this article is that young children learn proper names by exploiting additional universal semantic knowledge that directs them to interpret object-directed words used under particular conditions as proper names referring to specific objects. Equipped with such knowledge at the very outset of word learning, children could target certain object-directed words as likely being proper names. The other part of the proposed solution is that caregivers use proper names as object-directed labels under the same conditions that children expect them to be used, helping children both to make correct mappings between their guesses and the appropriate words and also to master the language-specific grammatical properties of these expressions. If both parts of the solution are true, they offer an explanation for one of the most intriguing discoveries about children’s dazzling word-learning abilities – their precocious mastery of the syntax and semantics of proper names.

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References


