

Nineteen-Month-Olds' Understanding of the Conventionality of Object Labels Versus Desires

Susan A. Graham and Hayli Stock

*Department of Psychology
University of Calgary, Canada*

Annette M. E. Henderson

*Department of Psychology
Queen's University, Canada*

We assessed 19-month-olds' appreciation of the conventional nature of object labels versus desires. Infants played a finding game with an experimenter who stated her intention to find the referent of a novel word (word group), to find an object she wanted (desire group), or simply to look in a box (control group). A 2nd experimenter then administered a comprehension task to assess infants' tendency to extend information to a 2nd person who was not present at the time of learning. Results indicate that infants chose the target object when the 2nd experimenter asked for the referent of the novel label but not when she requested the referent of her desire. These findings demonstrate that 19-month-olds understand that words are conventional, but desires are not.

Although much is known about how children establish word–referent mappings (see Akhtar & Tomasello, 2000; Bloom, 2000; Hall & Waxman, 2004; Hollich, Hirsh-Pasek, & Golinkoff, 2000; Woodward & Markman, 1998, for reviews), relatively little empirical research has examined young children's understanding that words are a set of social conventions. Clearly, however, successful communication involves the underlying assumption that there are conventional linguistic forms that are used to express particular meanings (Clark, 1993). In this article, we report the results of an experiment that examined 19-month-olds' understanding

of the conventionality of novel object word meanings versus another type of referential information, namely, object desires.

The notion that young word learners must develop the appreciation that language is a conventional communicative system was first proposed by Clark (1983, 1993). Clark argued that word learning is guided by a number of pragmatic principles, including a principle of conventionality that states that, "For certain meanings, there is a form that speakers expect to be used in the language community" (Clark, 1993, p. 67). As evidence for this principle, Clark (1983, 1992, 1993) indicated that young word learners' tendency to ask adults for the names of objects and their spontaneous self-repairs to incorrect word choices demonstrates an early awareness of conventionality and a desire to learn the conventional forms of language.

Recent studies have begun to document empirically children's understanding of conventionality. Several studies have demonstrated that there is a developmental progression in the types of symbols that infants believe convey meaning in a conventional manner during the second year. Whereas younger infants will accept gestures and nonlinguistic sounds (e.g., a whistle) as names for objects, older infants tend to accept only words (e.g., Namy, 2001; Namy & Waxman, 1998, 2000; Woodward & Hoyne, 1999). In contrast, few studies have examined young children's appreciation that novel words have conventional meanings and these studies have focused on children 2 years and older. For example, Diesendruck and Markson (2001) demonstrated that 3-year-olds presumed that individuals would share knowledge of the meaning of a novel label, even if they had not been provided with explicit evidence that this was the case. In contrast, 3-year-olds assumed that individuals would share knowledge of novel factual information about an object only when this had been clearly demonstrated. Recently, Diesendruck (2005) found 3-year-olds who were told that a speaker was monolingual adhered to the principle of conventionality and presumed that a second novel label referred to a different unlabeled object. In contrast, children who were told that a second speaker was bilingual did not consistently map the second label onto the second object. Finally, Henderson and Graham (2005) demonstrated that 2-year-olds appreciated that the meanings of novel words were conventional and shared across individuals but that another type of referential information, an object preference, is specific to an individual. Together, these studies demonstrate that by 2 to 3 years of age, children possess a sophisticated understanding of the types of information (labels vs. facts) and circumstances (monolingual vs. bilingual) that can lead to assumptions of conventionality.

In this study, we pursued the question of whether young word learners presuppose that word meanings are shared by other speakers within a linguistic community. Specifically, we examined Clark's (1993) proposal that conventionality emerges early in the word learning process by assessing whether 19-month-olds assume that the meanings of newly learned words are shared across individuals.

As noted earlier, previous studies have focused on children who were well beyond the period of early lexical development. The specific goals of this study were first, to examine whether 19-month-olds appreciated that the meaning of a new word taught indirectly by one speaker would be shared by a second speaker who was not present when the new word was learned. Second, we examined whether infants understand that although the meanings of words are conventional, other types of referential information, such as an individual's desires, may not be. Contrasting infants' understanding of the conventionality of words versus desires allowed us to examine whether infants will differentiate between the shared meaning of object names versus other types of referential information and will not simply generalize any type of information across individuals. Finally, we examined whether the understanding of conventionality of word meanings varied as a function of vocabulary size. If the understanding of conventionality develops with experience with word learning, then infants with more words in their vocabularies should be more likely to assume that word meanings are shared across individuals.

In this study, 19-month-olds played a finding game in one of three groups. In the word group, one speaker provided a language model before finding a target object (e.g., Where's the *mido*?). In the desire group, one speaker stated her desire for the target object (e.g., Where's the one I *want*?). In the control group, no language model or desire was stated (e.g., What's in here?). The control group was included to ensure that object salience or object preference could not account for the performance of participants in the word or desire groups. In all three groups, the first speaker then left the room following the finding game. A second speaker entered and then either requested the referent of the novel word (word group and control group) or the referent of her desire (desire group).

If 19-month-old infants appreciate the conventional nature of object labels, infants in the word group should choose the target object when a second speaker asks for it using the novel label. In contrast, infants in the desire group should respond randomly if they understand that desires may not be commonly shared among individuals. That is, they should appreciate that simply because one experimenter wanted a particular object, a second experimenter will not necessarily want the same object.

METHOD

Participants

Sixty infants participated in this study. Four additional infants were tested but removed from the final sample due to experimenter error ($n = 3$) and excessive fussiness ($n = 1$). Infants were randomly assigned to one of three groups: control group ($n = 20$; 10 boys; $M = 19.20$ months, $SD = 0.47$, range = 18.26–19.98

months), word group ($n = 20$; 10 boys; $M = 18.89$ months, $SD = 0.65$, range = 17.55–19.88 months), and desire group ($n = 20$; 10 boys; $M = 18.91$ months, $SD = 0.42$, range = 18.36–19.65 months). A between groups analysis of variance indicated that the difference in mean age between groups was not significant, $F(2, 57) = 2.19, p > .05$.

Stimuli

Familiar objects were used for the warm-up trials and as distracters (a shoe, a cup, a dog, a small brush, an elephant, a slinky, two cars, two horses, and two dinosaurs). Four novel objects were used during the finding game and comprehension task including a castanet, a hand drum, a noise maker, and an unusual looking rattle (see Figure 1). The use of a replacement object was required for 1 infant, as the infant's parent indicated he was familiar with one object.

The finding game apparatus consisted of four white boxes (5.5 in. \times 4 in. \times 2.5 in.) arranged in a single horizontal row and glued on plexiglass (8 in. \times 40.5 in.) 6 in. apart. When the boxes were closed, infants could not see the toy inside. A video camera was mounted behind the testing table facing the infant.

Procedure

Infants in all groups participated in a warm-up task, script training, finding game, and a comprehension task. The finding game used in this experiment was adapted from that used in word learning studies conducted by Tomasello and colleagues (e.g., Tomasello & Barton, 1994; Tomasello, Strosberg, & Akhtar, 1996).

Warm-up task. Two familiar objects (e.g., a shoe and a cup) were placed on an empty tray. The researcher then made a request for one of the objects (e.g., "Show me the *shoe*."). Infants were praised when they chose the correct object or given corrective feedback, if necessary. This procedure was repeated two more times with different pairs of familiar objects.

Script training. The purpose of script training was to familiarize infants with the process of the finding game. A novel object was placed in each box of the finding apparatus, while out of the infant's view. The apparatus was then placed on the table in front of the infant. Before opening the first box, the experimenter stated: "Let's see what's in here!" She opened the box furthest to her right, removed the object, and exhibited excitement ("Oh wow!") while performing an interesting action with the object (e.g., shaking the rattle). The infant was then allowed to play with the toy for 10 sec. The object was returned to the box, and this finding procedure was repeated for the remaining three boxes. After all four objects were found, the experimenter produced one of the familiar distracter

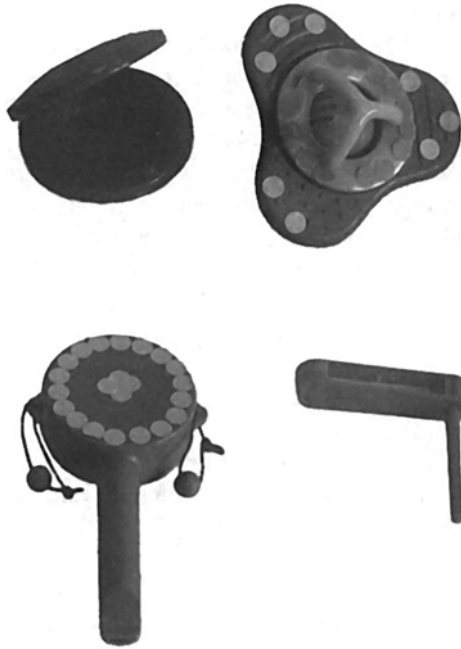


FIGURE 1 Novel objects.

objects for the infant to play with while she prepared for the first round of the finding game.

Finding game. The finding game consisted of four rounds during which each of the four novel objects was found by the experimenter in each box. The procedure was similar for all groups with the exception of the statement that was uttered before finding the target object. In the control group, a general statement was made (What's in here?). In the word group, a language model was provided (Where's the *mido*?), and in the desire group, a desire was stated for the target (Where's the one I *want*?). The three nontarget objects were always found with a preceding general statement (What's in here?).

In the first round, the experimenter placed the target object in the first box. The object designated as the target was counterbalanced across infants. The three nontarget objects were randomly placed in the remaining three boxes. The experimenter uttered the statement appropriate for the infants' group and removed the object from the box. The experimenter displayed excitement as she demonstrated an interesting action with the object (e.g., twirled the noise maker) and then allowed the infant to play with the object for 5 sec. For infants in all three groups,

the experimenter then proceeded to “find” the three nontarget objects by first uttering the statement “What’s in here?” and then retrieving the object. Again, she would display excitement as she demonstrated an interesting action with the object and would allow the infant to play with the object. Thus, each time the experimenter found an object, her affective and verbal response remained exactly the same, regardless of whether or not it was a target or nontarget object.

This procedure was repeated for three remaining rounds of the finding game. After each round, objects were shifted such that each object was ultimately found at each location. On completion of the fourth round, the infant was allowed to play with all four novel objects for a period of 15 sec. The experimenter removed the objects and left the room, telling the infant she was going to go find her friend, who would then come and play with the infant.

Comprehension task. After a 30-sec period, the second experimenter entered the room, and sat across the table from the child. The finding game procedure was not repeated. The experimenter randomly arranged the four novel objects on a flat tray as in the warm-up task. With the tray out of reach of the infant, the experimenter made a request for the target object (while maintaining eye contact with the infant). In the control and word groups, the experimenter asked for the referent of the novel word (e.g., “Show me the *mido*.”). In the desire group, the experimenter asked for the referent of her desire (e.g., “Show me the one I want.”). After making the appropriate request, the tray was slid within the infant’s reach and the experimenter extended her hand to receive an object.

At the end of the task, parents were given The MacArthur–Bates Communicative Development Inventory: Words and Sentences (CDI; Fenson et al., 1993) to complete at home as a measure of infants’ productive vocabularies. Six checklists were not returned (control group = 3, desire group = 2, and word group = 1).

Scoring

The object infants first touched, following the second experimenter’s request, was coded from the videotapes. Infants were given a score of 1 if they touched the target object and 0 if they touched any of the other three objects.

To obtain a measure of interrater reliability, 20% of the data ($n = 12$) were coded a second time by a coder unaware of the hypotheses. The two raters were found to be in perfect agreement ($\kappa = 1$).

RESULTS

We first examined whether infants’ choices of the target object varied across groups. Recall that there were four novel objects presented during the finding

game and the comprehension task. The number of infants who chose the target object in the comprehension task is presented in Table 1. As expected, the number of infants who chose the target object differed significantly across groups, $\chi^2(2, N = 60) = 9.6, p < .01$. More infants in the word group ($n = 12$) chose the target object than in the desire or control groups ($n = 4$ for both groups). Binomial probabilities ($p = 0.25, q = 0.75$) were used to investigate whether the number of infants selecting the target object within each group differed significantly from chance alone. In the word group, significantly more infants correctly chose the target object than would be expected by chance ($p = .00075$). In contrast, in the desire and control groups, the number of infants choosing the target object did not differ from chance levels ($p = .189$ for both groups). Together, these findings indicate that infants in the word group assumed that a second speaker would share the meaning of a newly learned label, whereas infants in the desire group did not assume desires would be shared by two individuals.

We next analyzed whether infants' tendency to choose the target object varied according to vocabulary size as measured by the CDI. See Table 1 for mean vocabulary sizes and standard deviations as a function of group. Correlations between vocabulary size and target object choice performed separately for each group revealed no significant relations: word group, $r(19) = .36, p = .13$; desire group, $r(17) = -.10, p = .70$; and control group, $r(17) = -.23, p = .37$.

Although the preceding results indicated that infants treated words and desires differently, these findings do not clearly demonstrate that infants understood the desire statement. That is, it is unclear whether 19-month-old infants mapped the first experimenter's desire to a particular object. To assess whether infants understood the term *want* and associated the speaker's desire with the target object, we tested 20 new infants ($M = 19.08$ months, $SD = 0.49$, range = 18.17–19.91 months) in a follow-up group. In this group, the same speaker who expressed the desire for the target object during the finding game subsequently asked the infant for the referent of her desire during the comprehension task. The procedure used

TABLE 1
Number of Infants Choosing the Target and Nontarget Objects
and Vocabulary Size as a Function of Group

	<i>Word</i>	<i>Desire</i>	<i>Control</i>
Comprehension task			
Target	12	4	4
Nontarget	8	16	16
Productive vocabulary*	85.36	94.72	95.94
SD	86.87	89.84	135.75

*Difference in productive vocabulary between groups was not statistically significant, $F(2, 51) = 0.055, p > .05$.

was identical to that used in the other groups except that there was no switch in experimenter between the finding game and the comprehension task. A chi-square analysis comparing the number of children who chose the target in the comprehension task differed significantly across the different-speaker desire group and the same-speaker desire group, $\chi^2(1, N = 40) = 9.6, p < .01$. More infants in the same-speaker desire group ($n = 10$) gave the speaker the target than in the different speaker desire group ($n = 4$). Moreover, a binomial probability analysis indicated that significantly more infants in the same-speaker desire group correctly chose the target object than would be expected by chance ($p = .009$). A final chi-square analysis indicated that the number of children who chose the target in the comprehension task did not vary significantly across the word group and the same-speaker desire group, $\chi^2(1, N = 40) = 0.40, p = .38$. Taken together, these results indicate that infants did use the referential cues to encode an experimenter's desire for a specific unfamiliar object. Moreover, their ability to learn that a particular experimenter desires a particular object was similar to their ability to learn a novel word for a novel object.

DISCUSSION

The results of this study yielded two insights into 19-month-olds' word learning abilities and social reasoning. First, these findings indicate that 19-month-olds can rely on referential cues provided in a nonostensive context to learn the referent of a new word or to map an individual's desire to a particular object. These findings are consistent with a large body of research indicating that infants are adept at using intentional cues to make correct word-referent mappings (e.g., Akhtar, Carpenter, & Tomasello, 1996; Akhtar & Tomasello, 1996; Baldwin, 1993a, 1993b; Tomasello & Barton, 1994; Tomasello et al., 1996).

Second, our findings indicate that 19-month-olds understand that the knowledge of the referent of an object label learned in a nonostensive situation is shared between two individuals. This understanding of the conventionality of word meanings does not appear to vary according to productive vocabulary size, as indicated by our correlational analyses. Furthermore, infants also appreciate that desires are specific and not necessarily shared between two individuals, consistent with other research on infants' understanding of desires (e.g., Poulin-Dubois, 1999; Repacholi & Gopnik, 1997). Thus, in support of Clark's (1993) proposal that the understanding of conventionality emerges early in word learning, 19-month-olds understood that words are a conventional type of referential information whereas desires are not.

In summary, these findings contribute to the word learning literature by indicating that by 19 months, infants possess an appreciation of one of the basic rules governing language use. That is, they understand that words are conventional

tools used to express particular meanings and they expect that members of a linguistic community are familiar with these forms. However, infants of this age also understand that desires are not conventional but apply to specific individuals. Of course, it remains to be established whether younger infants who are at the very beginnings of productive language also appreciate the conventional nature of newly learned object words versus other types of information.

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