

INFANTS' USE OF INTONATION TO INTERPRET AMBIGUOUS REFERENCE

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Abstract

We investigated infants' ability to use intonation to interpret ambiguous requests for objects. In Experiment 1, two experimenters took turns playing with infants each with her own ball. When both balls were present, one of the experimenters made an ambiguous request "Do you see it? Can you give it to me?" in either an excited or a neutral way. Twenty-month-olds were more likely to select the new than the familiar ball for the experimenter in response to the excited request. In the neutral condition, however, they did not show a significant preference for any balls. Sixteen-month-olds selected new and familiar balls at chance in both conditions. In Experiment 2, the experimenter played with 20-month-olds with an object and displayed high excitement toward it. At test, she saw a similar object and a new object, and asked infants in an excited way "Can you give it to me?" In this case excitement could be interpreted as directed toward the object similar to the one the experimenter played with before. Nevertheless, infants selected the new object at above chance levels. These findings suggest that at 20 months, infants consistently interpret excitement as indicating new things.

Keywords: language development; reference resolution; intonation; common ground.

Language provides us with an important means of communicating information to each other. However, linguistic expressions often do not directly indicate what a speaker has in mind, and in everyday life we sometimes have to resolve ambiguous verbal messages. For example, one can assert "Give me the cup!" when several different cups are present. Despite this ambiguity, people manage to understand each other by relying on nonverbal information including the linguistic context or their knowledge of the speaker to interpret others' requests (Clark & Haviland, 1977).

Previous research has shown that infants can interpret ambiguous references in their second year of life. Infants rely on various types of information to infer which of several items a speaker is referring to. At 12 months, infants can infer which of the two possible referents a speaker behind a barrier is attending to from the direction of her voice (Rossano, Carpenter, & Tomasello, 2012). Between 15 and 18 months, infants use shared linguistic context to infer the referent of an ambiguous pronoun "it" (Ganea & Saylor, 2007): when infants were asked "Can you get it for me?" when presented

with two alternatives they picked the object that an experimenter had previously been searching for. At 17 months, infants also track the requester's epistemic state and use this to infer the referent of an ambiguous request (Southgate, Chevallier, & Csibra, 2010). In this study, infants mapped an unknown word to a hidden object based on their understanding of the experimenter's belief of the desired object's location.

Several studies have shown that infants in their second year track other people's experiences with objects and use this information to interpret ambiguous verbal references (Liebal, Carpenter, & Tomasello, 2010; Moll, Carpenter, & Tomasello, 2007; Saylor & Ganea, 2007; Tomasello & Haberl, 2003). However, in some studies infants consistently selected an object that was new to the experimenter, while in other studies they inferred that the experimenter wanted an old, familiar object. For example, in Saylor and Ganea (2007), 14- to 20-month-old infants saw two experimenters play separately each with their own ball. The balls were then put in opaque containers matching the colors of the balls. When one of the experimenters requested her ball ("Where is the ball?") most infants approached the ball that she had previously played with. Younger, 12-month-old infants also select the old object for the experimenter if she uses possessive pronoun "my" instead of the definite article "the" when talking about her ball (Saylor, Ganea, & Vázquez, 2011). In another study 18-month-olds played with two experimenters (E1 and E2) sequentially using distinct objects (Liebal et al., 2010). Later they saw pictures of the objects in the company

of either E1 or E2. They pointed toward the pictures of those objects they used in a shared game with the corresponding experimenter.

In contrast, in several other studies infants inferred that the experimenter was asking about a new object (e.g., Tomasello & Haberl, 2003; Moll et al., 2007). For example, in Tomasello and Haberl (2003) 12- and 18-month-old infants played with two experimenters with two toys. A third toy was introduced to them while one of the experimenters was absent. At test, while all three toys were on the tray, the experimenter who did not see the third toy showed great excitement ("Oh, wow! Look at that! Look at that!") and asked the infants ambiguously "Give it to me, please!" Infants assumed she wanted the new object and selected the toy that she had not seen before.

Why did infants select an old object in some studies and a new object in other studies? One feature of the study design that seems to differ across these two groups of studies is the intonation in which the ambiguous request was made. When infants selected the old object a positive, but neutral intonation was used, but when infants selected new objects, the requests were highly excited.

In the current study, we investigated the possibility that infants rely on intonation during requests to infer whether an old or a new object is intended. In Experiment 1, we adapted the ambiguous reference task used in Saylor and Ganea (2007) so that for one group of infants the request was made in a neutral way, and for another group it was made in a highly excited manner. As suggested by previous research, infants are able to keep track

of others' experiences with objects and to understand excitement as directed at something new at about 14 months (Moll, Koring, Carpenter, & Tomasello, 2006; Saylor & Ganea, 2007). Therefore, we predicted that infants would pick the new ball in the *excited request* condition and pick the old ball in the *neutral request* condition. We predicted that 20-month-olds to do it more robustly than 16-month-olds because their working memory, language and intonation understanding is likely more robust.

Experiment 1

Method

Participants

Participants were 56 healthy full-term infants with normal hearing and from English-speaking families. Twenty-four were 16 months old (*Excited request* condition, $N = 12$, range 14 months 19 days – 17 months, mean 16 months 4 days, 7 girls; *Neutral request* condition, $N = 12$, range 15 months 19 days – 17 months 20 days, mean 16 months 2 days, 7 girls) and 32 were 20 months old (*Excited request* condition, $N = 16$, range 19 months 16 days – 21 months 9 days; mean 20 months 14 days; 5 girls; *Neutral request* condition, $N = 16$, range 19 months 1 day – 21 months 18 days, mean 19 months 25 days, 7 girls). Ten additional 20-month-old infants participated, but were omitted: 2 for being unresponsive (did not approach or look at either ball), 5 for selecting both tests objects, 3 for approaching the objects before the request was made. One 16-month-old infant participated but was omitted

due to experimenter error. Participants were primarily Caucasian and from middle class families. They were recruited from the Greater Nashville area (Southeastern United States) by phone from a database of interested families.

Materials

During experimental sessions infants played with a red and a blue ball. Two sandbox buckets of matching colors were used to store the balls. Two cameras were used to videotape the sessions: one camera recorded infants from the front to code their behavior and the other camera positioned at the corner of the room recorded the experimenter from the front and infants from the back side.

Design

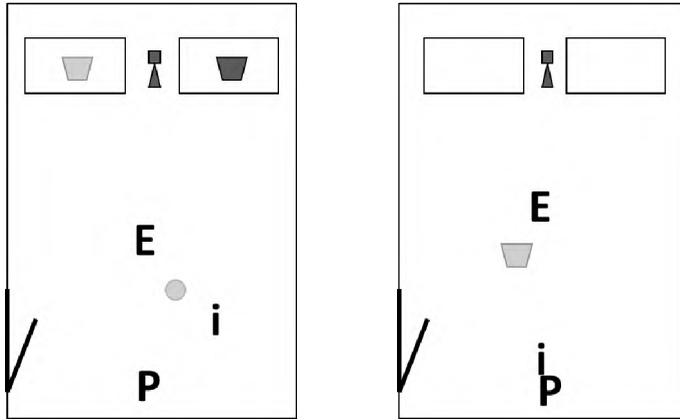
Infants in each of the age groups were randomly assigned to one of two experimental conditions. In the *excited request* condition the request for the ball was made in a highly excited manner. In the *neutral request* condition the request was made in an infant-directed, but neutral way.

Procedure

Infants were tested in a rectangular room with two 1 m. high cabinets positioned along the short wall to the left of the entrance (Figure 1). During the experimental sessions infants played with two experimenters that were physically distinct from each other. The requester role was randomly assigned to one of the two experimenters.

Figure 1

Room setup (ball introduction and test). E = experimenter, P = parent, i = infants



The experimental sessions consisted of two parts – ball introduction and test. The purpose of the ball introduction phase was to give infants experience with each of the two experimenters and their balls. The purpose of the test phase was to assess whether infants reverse their interpretation of the ambiguous reference based on the intonation with which the request is delivered.

Ball introduction

At the beginning of the ball introduction phase, the buckets were placed on file cabinets, one on the right cabinet and one on the left. Infants saw each of the experimenters play with one of the balls and label the ball nine times. The first experimenter entered the room, took her ball out of its bucket (e.g., the blue ball from the blue bucket) and said: “Look! Here is the ball!” She played with the infant for one minute. During the play she could bounce the ball, roll it, throw it, hid it under the bucket or perform other actions according to infants’ interests. She mentioned the ball 9 times (e.g.,

“We are playing with the ball!”, “Can you give me the ball?”). She also made general comments on the situation or infants’ actions (e.g., “Are you having fun?”, “Are you going back to mommy?”). At the end of the ball introduction phase the experimenter put her ball in the bucket saying “The ball goes here.” and put the bucket with the ball inside on the cabinet. She then walked out of the door in an adjacent room while the second experimenter came in. They met at the door to ensure infants understood that there were two different people. The other experimenter repeated the entire sequence with the other ball and at the end of this phase put the ball with the bucket in their initial position on the cabinet, and then left.

Test phase

At the beginning of the test phase, the experimenters came in one at a time, each one took the bucket with her ball and put it on the floor in front of the infant in the same spatial position as they had been on the cabinets, and

then left the room. For example, if the blue bucket was on the left cabinet and the red bucket on the right one they remained on the floor in the same configuration – the blue bucket to the left of the red one. The buckets were initially put 1.22 m. apart. The parents were instructed to hold on to their infants to prevent them getting the balls at this time.

Following this, one of the experimenters came back, sat between the buckets, took them both at the same time and brought them close together without looking inside. Then she looked inside both buckets at the same time, raised her eyes on the infant again and said: “Look at that! Do you see it? I see it! Can you give it to me?” In the *excited request* condition the experimenter said these phrases in a very excited manner, stressing the words “look” and “that”, using high pitch, loud voice, and making sharp pitch changes. She also brought her palms together at the beginning of the request to make sure infants notice her excitement. In the *neutral request* condition the experimenter used a neutral *falling* intonation saying “Look at that” and “I see it”, and neutral interrogative intonation saying phrases “Do you see it?” and “Can you give it to me?”

In both conditions, while saying “Can you give it to me?” the experimenter moved the buckets forward to the baby and slightly apart to make it easier to tell which bucket infants attend to. At this time the experimenter asked parents to release the infant and continued looking straight ahead until the infant made his/her choice. Once infants made their selection, the experimenter clapped and said “thank you.” If a baby did not make the

selection in 10 seconds after the request the experimenter repeated the request: “Do you see it? I see it! Can you give it to me?” – using the same intonation as before. The reason we used the pronouns “that” and “it” in the request instead of the word “ball” was to avoid using the definite article which could bias infants to select the old ball. Which ball served as the target, the side it appeared on and whether E1 or E2 is the requester were counterbalanced across participants.

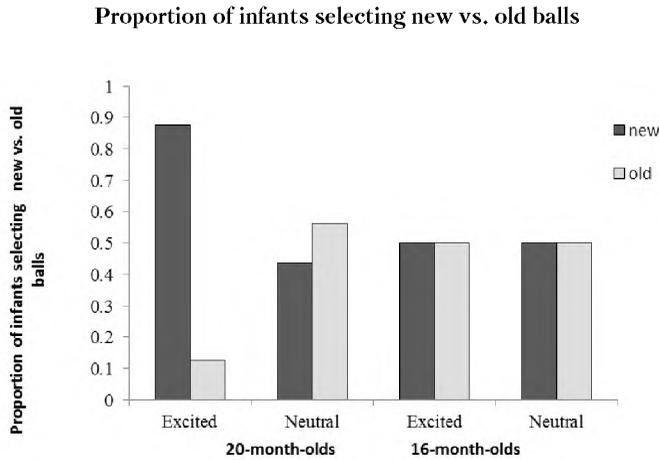
Coding

Infants’ responses were coded depending on whether they select the ball that the requester previously played with (old) or the other ball (new). If infants did not approach and take the ball out of the bucket their first look or point at one of the buckets were considered. Two infants first approached one ball, but did not pick, and then went and selected the other one. The ball that they ultimately picked was considered their choice. Initial judgments were made during the session by the requesting experimenter. Videotapes (78.6%) were then coded by a naive coder. Overall agreement between the experimenter and the coder was 95.5%. Disagreement occurred in two cases in the *neutral request* condition when 20-month-old infants did not approach any ball, and thus their looking was coded. Disagreements were resolved via discussion.

Results and discussion

The analysis of infants’ selection of the old vs. the new balls (Figure 2) in the *excited* and the *neutral request* conditions indicated that for older infants the choice of the ball was influenced by the intonation of the request. More

Figure 2



infants selected the new ball in the excited than the neutral condition ($\chi^2(1) = 4.99, p < .05$). Fourteen out of 16 infants selected the ball that was new to the experimenter (one infant only looked and all others selected a ball) and 2 picked the old ball (Binomial test, $p < .01$). In contrast, in the in the *neutral request* condition infants did not select the old ball at above chance levels: 9 out of 16 infants selected the old ball (Binomial test, $p = .8$). Sixteen-month-olds did not reliably use intonation to determine which ball to choose: in the *excited* and the *neutral request* conditions 6 infants selected the new ball and 6 selected the old ball, which is not different from chance (Binomial tests, p 's = 1).

To ensure that 20-month-old infants' selections were not biased by the experimenters' behaviors we conducted several additional analyses. First, to check that the requesting and the non-requesting experimenter were playing with infants in a similar way an independent coder analyzed 68.8% of the rear camera recordings of the play phase and guessed which of the 2

experimenters was going to perform the request. She could correctly guess on 50% of the trials, which is not different from chance (Binomial test, $p = 1$). This suggests that there were no systematic differences in the experimenters' behavior. To test if cuing during the test phase occurred, the same coder analyzed 81% of rear camera recordings of the test phase and guessed which ball was the target. She could correctly identify the right ball on only 42% of the trials which is not different from chance (Binomial test, $p = .6$). Thus, the requesting experimenter did not cue infants at the test phase.

Altogether, our results suggest that infants at 20 months, but not at 16 months, rely on the intonation of the request to interpret ambiguous reference. Older infants consistently selected the new ball for the requester in the *excited request* condition, however, they did not show this clear pattern in the *neutral* condition.

One potential reason we did not replicate the Saylor and Ganea (2007) results in the *neutral* condition where infants were expected to pick the old

ball is that we changed the wording of the request. Possibly, the use of the definite article and the “where” question in “Where is the ball?” in Saylor and Ganea (2007) was easier for infants to interpret such that the old ball was intended than the phrasing used in the current study, “Look at that! Do you see it? Can you give it to me?” At the same time, in the current study the combination of somewhat flat request intonation infants do not often hear and the use of a pronoun “it” to request a ball could have been confusing for the youngest group of infants.

An important question frequently asked about infants’ reference resolution is at what level they pass the experimental task. According to one view, young infants understand others as intentional agents and interpret others’ behavior in terms of mental states and desires (Tomasello, 2009; Tomasello & Farrar, 1986). Another possibility is that low-level attentional and associationistic processes can allow infants to succeed (see Samuelson & Smith, 1998). For example, in Saylor and Ganea (2007) infants could have chosen the ball that the experimenter previously played with because the experimenter’s presence activated the representation of one of the balls, and this representation was stronger at the time of the request than the representation of the other ball. In this Experiment, 20-month-old infants’ performance in the *excited request* condition excludes the possibility that at this age infants could have responded based on low-level memory association. If this were the case, they would have selected the old ball in both conditions. Almost all infants selected the new ball in the *excited* condition which suggests

that they must have considered both potential referents and took into account the speaker’s desire to play with a particular one – the one that she had not yet explored.

In Experiment 1, both researchers introduced their balls to infants in the play phase in an infant-friendly, but neutral way. When infants saw one of the experimenters excited about something in the test phase they interpreted the request as about the new ball. In the next experiment we ask if infants can interpret excitement as about something *familiar* if a person had shown great excitement about such object before. The experimenter played with infants with a toy and showed that she really liked it. After she was gone, an assistant introduced a very similar and a different object to infants. The experimenter returned, looked at these objects, and asked infants in a very excited way “Look at that! Do you see it? Can you give it to me?” If infants use the nature of a person’s prior interaction with an object they should pick the object that is similar to the one that the experimenter had been previously excited about. We included only 20-month-old infants in this experiment because in Experiment 1 they demonstrated the ability to rely on intonation of the request to interpret ambiguous reference.

Experiment 2

Method

Participants

Twenty full-term, healthy 20-month-old infants with normal hearing and from

English-speaking families participated (M = 20 months 8 days, range 19 months 8 days – 21 months 9 days, 12 girls).

Materials

The objects used were two toy cars identical in shape, but one yellow, one red, and two similar sets of toy keys that were of slightly different colors (Figure 3). The objects were selected such that they were equally interesting for infants and were familiar to them. Label knowledge for these objects was not required as the objects were never mentioned by names during the experiment.

A 28×45 cm tray was used to play with the objects during the *object introduction* phase and during the *test phase* to present the objects in front of the infant. The experiment was videotaped from the front and the back to enable coding the experimenter's behavior and the infant's behavior.

Procedure

During the experiment, infants sat on the parent's lap across the table from

the experimenter and the assistant. The experimenter and the assistant sat next to each other. The table was oriented such that the door was behind the experimenter. Parents were instructed not to name any objects and not to encourage infants in any way.

Object introduction phase

Experimenter's play

During the *object introduction* phase, once every one was seated the experimenter looked at the infant and said: "Let's see what <assistant's name> has for us! Then the assistant took an object from under the table where neither the experimenter, nor the infant could have seen it and gave it to the experimenter. The object could be either one of the two cars or one of the two sets of keys. The experimenter took the object and exclaimed: "Wow! Look at that! What a great toy! I like it a lot!" Objects were not labeled at this time to prevent infants from relying on this information to interpret the ambiguous request "Can you give it to me?" The experimenter first played

Figure 3

Stimuli used in Experiment 2



with the object herself showing to the infant that she was excited about it. She performed a variety of actions like rolling or hiding the car under the tray, spinning the keys around the ring, sliding them down the tray or hiding them under it. The experimenter mentioned the actions she was performing: “We can roll it/hide it/spin it”, etc., and said general phrases like: “Is this fun?” A minute later she gave it to the infant to play.

At the end of the *object introduction* phase (total duration 2.5–3 minutes) the assistant took the object and put it under the table. The experimenter then said “OK, <the assistant’s name> took it away! I need to go now! I will be back to play with you soon!” She went into the adjacent room and closed the door. She was able to watch what was going on in the experimental room through a one-way mirror (the experimenter was not visible to the infant, but the experimenter saw the infant). Whether a car or keys, and which of the two in each pair was used in this phase was counterbalanced across participants.

Assistant’s play

The purpose of the *assistant’s play* was to introduce the two test objects to the infants to keep them from selecting the new object for the experimenter because of their own novelty preference. Once the experimenter was gone, the assistant took two objects out and played with the infant with these objects for about two minutes in a neutral way. One of the objects was from a different category than the object used during the *experimenter’s play*. The other object was similar to the one that the experimenter played with. For example, if the experimenter played

with a toy car in the *experimenter’s play*, in the *assistant’s play* the assistant used the other car and a set of keys. This was done to make sure that infants did not select the familiar object for the experimenter based on a memory association only. At the end of the *assistant’s play* phase she took the objects from the infant and put them under the table on her lap. The tray stayed on the table.

Test phase

Once the objects were put away, the experimenter entered the room again and faced the infant. At this time the assistant put the two objects used in the *assistant’s play* on the opposite sides of the tray. She kept the tray close to herself out of the infant’s reach. The experimenter looked at the table in between the 2 objects (to avoid cueing infants) and exclaimed in an excited way: “<Infant’ name>! Look at that! Do you see it? Can you give it to me?” While saying the last phrase she reached out with her hand for the infant to give her one object. If the infant did not pick any objects, she repeated the request. If the infant gave her both objects she asked: “Can you give me one?” The right/left position of the new and familiar objects on the tray was counterbalanced.

Coding

We coded if infants picked the new object for the experimenter or the one that resembled the object she liked (below we call it “familiar” for brevity). If they first looked at one and then picked the other, the object they picked was coded. If they just touched one object or looked at it, but did not pick

any of the objects, we coded their first touch or look. Most of the infants picked one of the objects. Three infants looked at one of the objects, but did not pick any, and two touched an object, but did not pick. Infants' responses were first recorded after the study by the experimenter. A coder naive to the study hypothesis analyzed the test phase of the experiment and recorded which of the objects the infant picked. The coder and the experimenter agreed on the chosen object for 100% of the participants.

Results and discussion

The purpose of this experiment was to test if infants consider the speaker's previous interactions with the object to interpret excitement as directed at something familiar. We predicted that if infants watch the experimenter being excited about one object (a set of keys), when the experimenter sees a similar object (a different set of keys) and a new object (a car), infants would be likely to pick an object similar to the one that she had previously liked, rather than the new object. The results

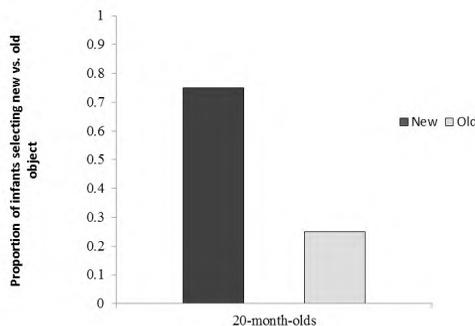
did not confirm our predictions: 75% of the infants picked the object that was new, which is higher than chance (Binomial test, $p < .05$, see Figure 4). The rest selected the familiar object. There were no gender, object side or object type effects.

One possibility why infants did not consistently pick up the familiar object is that the experimenter did not clearly show excitement to her object in the play phase. To guard against this possibility an independent coder rated how excited the experimenter was during the experimenter play phase on a 4-point scale. The experimenter's excitement received the highest rating 100% of the time.

Infants' selection of the new object for the experimenter cannot be explained by the possibility that they simply went for an object brought out by being introduced in special circumstances – while the experimenter had been away (see Samuelson & Smith, 1998). Both test objects were introduced in the same context. Therefore, infants' behavior can be explained by their understanding of excitement as a reaction to seeing new things.

Figure 4

Proportion of infants selecting new vs. old object



In this experiment the use of a similar object to the one that the experimenter liked as the «familiar» object was dictated by our desire to avoid alternative explanations this decision makes it difficult to explain why infants did not reliably pick the «familiar» object at test. On one hand, infants must have recognized that the «familiar» object was from the same category as the one the experimenter liked. Otherwise they would have been responding at chance because both objects would have been considered as «new» to the experimenter. On the other hand, infants did not select the familiar object in this experiment because they had to generalize experimenter's excitement for one object to another token of the same category. This additional step might have been difficult for them. One way to address this possibility is by having the experimenter play with several objects from the same category and show excitement about all of the demonstrated tokens. This will show that the experimenter likes the whole category of things and might help infants generalize the experimenter's attitude to a new token of such category at test.

Overall, the findings from Experiment 2 suggest that at 20 months, infants do not easily take into account the speaker's previous excitement about an object to interpret excited request as referring to a familiar object. They understand excited intonation as used to mean new things and might need substantial evidence to apply it to a familiar object.

General discussion

The purpose of these experiments was to investigate infants' ability to use

intonation to interpret ambiguous reference. In Experiment 1, 20-month-old infants' selection of familiar vs. new objects was influenced by the intonation of the request. When asked in an excited way "Look at that! Can you give it to me?" infants were more likely to choose the object that was new to the experimenter than when the request was offered in a neutral way. Younger, 16-month-old infants did not reliably use the speaker's intonation to identify the intended referent.

In Experiment 2, 20-month-old infants interpreted the speaker's excited request as about a new object and disregarded the fact that she previously used to be very excited about the familiar object. Thus, at 20 months, there is a strong tendency in infants to interpret excitement as directed at something new. This tendency does not appear to change as a function of a person's previous interactions with a familiar object. Another possibility though is that exposure to only one object during the *experimenter's play* was not sufficient for infants to infer that the experimenter might like the whole category of such things and can be excited to play with another token of it.

A similar question about infants' ability to rely on previously shared exciting experiences to communicate about "old" stuff has been investigated in Liebal et al. (2010). In their study, rather than pointing at a picture of an object new to the experimenter, 18-month-olds pointed at a picture of an object similar to the objects previously used in an exciting game shared with that experimenter. The mismatch between Experiment II findings and the Liebal et al. (2010) study can be explained by two important differences in the procedure. First, in Liebal et

al. (2010), there was no direct request during the test phase. Infants either pointed spontaneously or after the experimenter directed their attention to the pictures by saying in an excited, recognizing tone "Look, there!" and "Look! The pictures!" Second, there were pictures of objects at test, not another object of the same kind previously used in the game with the experimenter. These differences might suggest that infants specifically attend to new stuff when they hear an excited request and when potential referents are real graspable objects affordable for action. Future studies may address these questions.

The finding that infants over-interpret excited requests as directed at new objects is consistent with the previous literature on discourse novelty. It has been proposed that infants are biased to expect people to talk about and attend to things that are new to the discourse context (Tomasello & Akhtar, 1995; Moll et al., 2006). For example, in Moll et al. (2006), when infants of 14, 18 and 24 months saw the experimenter being excited about an old, familiar object they interpreted this excitement as directed to either a part of that object or to something else in the lab, but not to the object itself. At the same time, excitement directed to a new object was interpreted as about the object per se. Tomasello and Akhtar (1995) showed that attending to novelty of the discourse context allowed infants to map a new word to an action when the target object was already familiar, while the action performed on this object was novel.

Across both experiments, 20-month-old infants' responses suggest that they may already possess the ability to rely on the speaker's communicative intention to interpret ambiguous reference. Their selection of the object new to the experimenter cannot be explained by associationistic or attentional biases: the new object was not associated with the speaker (Experiment 1) and was not introduced under special circumstances (Experiment 2). Infants appear to rely on the intonation to interpret ambiguous reference. However, it is also possible that the nature of infants' understanding of excitement could be itself associationistic. Over time infants could have matched excited intonation with the presence of new or unusual objects in the speaker's visual field, and yet may not have acquired a deep understanding of excitement as an emotional and intentional state. This question could be addressed in future research.

Overall, this research shows that by 20 months there is a significant improvement in infants' ability to interpret ambiguous reference. At 20 months, infants are able to consider multiple objects as potential referents and to rely on the intonation of the request to infer which one the speaker has in mind. By doing so, infants display their sensitivity to the social component of linguistic interaction, their ability to take the perspective of the speaker and to infer her intention behind the words.

References

- Clark, H. H., & Haviland, S. E. (1977). Comprehension and the given-new contract. In R. O. Freedle (Ed.), *Discourse production and comprehension* (pp. 1–40). Norwood, NJ: Ablex Publ. Corp.

- Ganea, P. A., & Saylor, M. M. (2007). Infants' use of shared linguistic information to clarify ambiguous requests. *Child Development, 78*(2), 493–502.
- Liebal, K., Carpenter, M., & Tomasello, M. (2010). Infants' use of shared experience in declarative pointing. *Infancy, 15*(5), 545–556.
- Moll, H., Koring, C., Carpenter, M., & Tomasello, M. (2006). Infants determine others' focus of attention by pragmatics and exclusion. *Journal of Cognition and Development, 7*(3), 411–430.
- Moll, H., Carpenter, M., & Tomasello, M. (2007). Fourteen month olds know what others experience only in joint engagement. *Developmental Science, 10*(6), 826–835.
- Rossano, F., Carpenter, M., & Tomasello, M. (2012). One-year-old infants follow others' voice direction. *Psychological Science, 23*(11), 1298–1302.
- Samuelson, L. K., & Smith, L. B. (1998). Memory and attention make smart word learning: An alternative account of Akhtar, Carpenter, and Tomasello. *Child Development, 69*(1), 94–104.
- Saylor, M. M., & Ganea, P. (2007). Infants interpret ambiguous requests for absent objects. *Developmental Psychology, 43*(3), 696–704.
- Saylor, M. M., Ganea, P. A., & Vázquez, M. D. (2011). What's mine is mine: Twelve month olds use possessive pronouns to identify referents. *Developmental Science, 14*(4), 859–864.
- Southgate, V., Chevallier, C., & Csibra, G. (2010). Seventeen month olds appeal to false beliefs to interpret others' referential communication. *Developmental Science, 13*(6), 907–912.
- Tomasello, M. (2009). *The cultural origins of human cognition*. Cambridge, MA: Harvard University Press.
- Tomasello, M., & Akhtar, N. (1995). Two-year-olds use pragmatic cues to differentiate reference to objects and actions. *Cognitive Development, 10*(2), 201–224.
- Tomasello, M., & Farrar, M. J. (1986). Joint attention and early language. *Child Development, 57*(6), 1454–1463.
- Tomasello, M., & Haberl, K. (2003). Understanding attention: 12- and 18-month-olds know what is new for other persons. *Developmental Psychology, 39*(5), 906–912.



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Использование детьми интонаций для интерпретации неоднозначных указаний

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Резюме

В данном исследовании рассматривается способность детей полагаться на интонацию просьбы для определения ее референтного объекта. В первом эксперименте два экспериментатора по очереди играли с детьми каждый со своим мячиком. Когда оба мяча находились перед ребенком, один из экспериментаторов обращался к ребенку с неопределенной просьбой, либо с нейтральной интонацией, либо с воодушевлением: «Видишь это? Можешь мне, пожалуйста, это дать?» Когда дети 20 месяцев слышали воодушевленную интонацию, они с большей вероятностью выбирали мяч, являвшийся для экспериментатора новым, чем тот, с которым он уже играл (знакомый мяч). Когда интонация была нейтральная, дети давали экспериментатору новый и знакомый мячи примерно с одинаковой частотой. 16-месячные дети выбирали новый и знакомый мячи одинаково часто в обоих условиях. Во втором эксперименте экспериментатор играл с предметом с детьми 20 месяцев подчеркнуто воодушевленным образом. В фазе тестирования экспериментатор видел два предмета — один похожий на тот, с которым играл ранее, и новый предмет — и просил детей с воодушевленной интонацией: «Можешь мне это дать?» В этом случае воодушевление может быть отнесено к предмету, похожему на тот, с которым экспериментатор играл ранее. Несмотря на это, дети выбирали новый для экспериментатора предмет значительно чаще, чем знакомый. Таким образом, результаты исследования показывают, что в 20 месяцев дети склонны интерпретировать воодушевленную интонацию как относящуюся к чему-то новому.

Ключевые слова: развитие языка, понимание предметной отнесенности слова, интонация, общее знание.

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