Prosodic stress on a word directs 24-month-olds' attention to a contextually new referent

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A R T I C L E I N F O

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A B S T R A C T

From the very beginning of language acquisition, young children are sensitive to what is given versus what is new in their discourse with others. Here we ask whether 24-month-olds use this skill to interpret prosodic highlighting as an invitation to focus their attention on what is new in the situation. Using an eye-tracking methodology, we compared children's visual fixation of referents that were given versus those that were new in the situation when the prosodic highlighting of their corresponding word varied. Results showed that 24-month-old children looked longer to the referents of prosodically stressed words when those referents were new to the context. Neither stress of the word alone nor newness of the referent alone was sufficient to induce children to focus their attention on the target referent. These results suggest that from an early age children understand at least one important communicative function of prosodic stress.

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1. Introduction

From an early age children are sensitive to the distinction between new and given information and tailor their communicative acts accordingly (e.g., Greenfield, 1979; O'Neill and Happé, 2000). Children furthermore use the distinction between given and new information when interpreting other peoples' attention (e.g., Moll and Tomasello, 2007; Moll et al., 2006) and when learning novel words (e.g., Akhtar et al., 1996; Tomasello and Akhtar, 1995). In Tomasello and Akhtar's (1995) study, young 2-year-olds heard an adult say a novel word when they jointly looked at a nameless object that was engaged in a nameless action. In one condition, the discourse situation preceding the naming event was manipulated so that the nameless action was the new element when the novel word was said. In another condition it was the nameless object that was the new element. Tomasello and Akhtar found that children learned the novel word for whatever the new element was in the situation when the prosodic highlighting of their corresponding word varied. Results showed that 24-month-old children looked longer to the referents of prosodically stressed words when those referents were new to the context. Neither stress of the word alone nor newness of the referent alone was sufficient to induce children to focus their attention on the target referent. These results suggest that from an early age children understand at least one important communicative function of prosodic stress.

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The terms “stress” and “accentuation” are used synonymously throughout this text for acoustic saliency on the utterance level.

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results revealed that children learned the novel noun (Feks) for the novel object only when the noun was accentuated and the novel object was new in the situation but not when the noun was accentuated and the novel object given. Grassmann and Tomasello (2007) suggest that this indicates that children interpret sentence accent in language as being iconic of the speaker’s intention to refer to a salient aspect of the situation.

It is an important communicative function of language to direct others’ attention and establish continuously changing joint attentional foci. For example, when a speaker wants to establish shared attention towards a dog in his vicinity, he could just say the word dog. However, usually verbal communication consists of more than one word per utterance. That is, rather than saying just one word, the speaker might say a whole sentence such as The dog is playing with the ball. With such a sentence the speaker could express the intention to jointly focus on the situation as a whole, or alternatively he/she might want to focus particularly on one of the participants (e.g., the dog) or even the action. To highlight the piece of information that is intended as the focus of the listener’s attention, speakers of intonational languages, such as German and English, use prosodic stress (e.g., Bolinger, 1961; Chafe, 1972, 1994; Lambrecht, 1994).

Since an individual’s visual attention follows the speech they hear (Cooper, 1974; Golinkoff et al., 1987; Swingley et al., 1999; for a review see Tanenhaus and Trueswell, 2005) one possibility for investigating the attentional effects of prosodic stress would be to use a looking-time method. To date, there is just one study that we are aware of (Arnold, 2008) that has used such a method to examine children’s comprehension of stress. But, although Arnold (2008) demonstrated that 4–5-year-olds assume that unstressed words refer to previously established referents, no evidence was found in this study to suggest that children interpret stressed words as referring to new information. Other studies of 3–14-year-olds’ comprehension of sentence stress have used alternative methods and produced mixed results. The youngest age for which one of these studies demonstrated children’s knowledge of the newness-stressed and givenness-unstressed relation was 6 years of age (Cutler and Winney, 1987; Hornby, 1971). However, MacWhinney and Price (1980) used the same method as Hornby (1971) but found comprehension only in 14-year-olds. These findings are surprising given that there is evidence of children’s early mastery of the stress-newness relation from production studies starting as young as 2–3 years of age (e.g., Baltaxe, 1984; Hornby and Hass, 1970; MacWhinney and Bates, 1978; Pechmann, 1981; Wieman, 1975), and given that Grassmann and Tomasello (2007) found that even 25-month-olds use the stress–newness relation in word learning.

The question is thus, what is children’s early understanding of the function of stress? The comprehension studies from the 1970s and 1980s only investigated the role of stress in children’s interpretation of the information structure of sentences, that is “what is the sentence about” or “what contrasts the sentence with from a logical perspective?” However, although young children do not fully understand such abstract concepts that are related to prosodic stress, it might be – as suggested by Grassmann and Tomasello (2007) – that young children do understand the discourse function of stress as a means to direct a listener’s attention to a new discourse referent. In order to support this view, it must be shown that children orient and focus their visual attention to a new discourse referent when a speaker is stressing a corresponding word in his or her utterance. Furthermore, if the hypothesis is correct, children should not focus their attention to the new discourse referent when the speaker is not intending to direct their attention to it (and thus does not stress a corresponding word). In this case children might interpret the speaker’s intention to refer to a situation as a whole with no specific individual element in focus and it would then be up to the next conversational turn to establish which discourse referent will be in the joined focus of attention.

In the current study we investigated 24-month-olds comprehension of prosodic stress using a looking-time measurement. We asked whether children focus their visual attention on new referents when the corresponding word is stressed in an utterance. First, we showed the children pictures of highly familiar objects (e.g., a ball). Then we showed them a second picture with two highly familiar objects, one of which was given from the first picture and the other, which was new. Before the second picture was revealed, the children heard a sentence such as The dog has a ball – where the stress fell either on dog or on ball. We expected that the children would focus their attention on the new referents of the stressed words. The effect of newness and stress on children’s visual attention in isolation was tested in two control conditions.

2. Method

2.1. Participants

Thirty-six monolingual German-speaking children aged ±2 weeks around their second birthdays participated in the study (range 1;11,16 to 2;0,13, mean = 1;11,29). Their parents had previously volunteered to participate in child development studies. Six additional children participated but were dropped from the study because of the experimenter’s error (2), technical failure (1), disinterest in the pictures (2), or the non-visibility of their eyes in the video (1). Children were randomly assigned to one of the conditions, so that there was a total of 12 children in each condition. The number of boys and girls in each condition was approximately 50%.

2.2. Materials and design

We showed the children colored line drawings (approx. 5 cm × 5 cm) of highly familiar objects. Four pairs of pictures were chosen so that their corresponding words had a similar syllabic structure but maximally distinct phonological forms: dog – ball (hund, ball), cat – car (katze, auto), teddy bear – flower (teddy, blume) and duck – apple (ente, apfel).
These pictures were presented to children on a 19 in. computer monitor. Verbal descriptions of the pictures were spoken live. The children first saw a context picture and then a target picture (see Fig. 1). Children were randomly assigned to one of three between-subjects conditions. In all conditions, the target picture showed both pictures belonging to the pair. The context picture showed only one element of the pair in the Newness & Stress Condition and Newness Only Condition. Therefore, in these conditions one element in the target picture was new information and in the other it was old. In the Stress Only Condition both elements in the target picture had already been presented in the context picture; thus old information was presented in the target picture. In all conditions the target picture was described verbally (e.g., The dog has the ball). The three conditions differed with respect to the locus of stress in this sentence. In the Newness & Stress Condition the word corresponding to the new element in the target picture was stressed. The Stress Only Condition used the same stress pattern as that used in the Newness & Stress Condition. In the Newness Only Condition the sentence was produced without a saliently stressed element. Stress was realized as LH* accent. Furthermore, the intensity and duration of a stressed word was increased compared to the same word when it was unstressed (see Fig. 2).

Since we were interested in children’s knowledge of the function of stress in communication, we assessed children’s looking behavior in a quasi-realistic setting with the experimenter talking live to the child. In order to ensure that all utterances had the appropriate prosodic characteristics, we analyzed recordings of all target utterance. A coder judged for each utterance whether or not it contained a stressed element and if yes, which element was the stressed one. In the Newness Only Condition the experimenter misspoke in six cases and stressed the new element. The corresponding trials were excluded from analyses.

Each picture-pair was presented as a target screen in one trial; thus children participated in a total of four trials. In the target picture the pair of pictures was vertically centered and each element was 2 cm from the horizontal edge (thus, a 20–24 cm

**Fig. 1.** Procedures in the three experimental conditions. Newness & Stress Condition (top), Stress Only Condition (middle), and Newness Only Condition (bottom).
2.3. Procedure

The children visited the lab for approximately 15 min. During the study they sat on the parent’s lap at a table (70 cm × 70 cm), with the experimenter (E) on their left hand side. The computer monitor was positioned on the table approximately 50 cm in front of the child. All sessions were videotaped with a camera centered behind the screen in order to record the child’s eye movements. Parents had their eyes closed during the experimental trials. Before the experimental session, parents confirmed that their child knew the words for the pictures that were used in the study.

2.3.1. Familiarization

The rationale behind this phase was to familiarize the children with the computer monitor and the study’s procedure. The first three pictures displayed on the monitor were colored line drawings of 12 familiar objects. The children were encouraged to name them or point to them. All 8 pictures that would be used in the experimental trials were among the 36 pictures children saw in this phase. The rationale behind this was to ensure that the children had no problems identifying these pictures. The child then saw three further pictures that were structurally similar to the pictures that would be shown in the study. First the child saw a picture of a frog for 4 s and E said, Look a frog. Look the Frog. Then the child saw a picture with a moon and a pen for 4 s and E said, Look, the moon has the pen. The moon has the pen. Each picture started with a 100 ms sound to attract the child’s attention towards the monitor.
2.3.2. Experimental trials

The procedure of the experimental trials in all three conditions is depicted in Fig. 1.

**Newness & Stress Condition.** The children first saw a context picture with one element centered on the monitor. E labeled the context picture twice, *Guck mal, da ist ein Hund. Guck mal, der Hund.* (*Look, there is a dog, look, the dog.*) After 3 s, the context picture disappeared and left a blank screen. Then E said for example, *Der Hund hat den BALL* (*The dog has the BALL*) – wherein the new element was stressed (see Fig. 2 for the prosodic details) – and then the target picture was presented for 6 s. When the screen went blank again, E told the child that she wanted to show him/her another picture and the next trial started.

**Newness Only Condition.** The procedure of the Newness Only condition differed to the Newness & Stress Condition only in respect to stress. In this condition, both nouns were similarly stressed in the verbal description of the target screen (see Fig. 2 for prosodic details).

**Stress Only Condition.** The difference between the Stress Only Condition and the Newness & Stress Condition was that in the Stress Only Condition both elements in the target picture were old information: the target picture showed the same pair of pictures that were visible in the context picture – in a different orientation. E named both pictures in the context picture. Top–bottom position and order of labeling were counterbalanced within and across children. In the Stress Only Condition the prosodic characteristics of the target picture’s description were identical to the Newness & Stress Condition.

2.4. Coding and reliability

Children’s looking was coded frame by frame from Videotape as “left”, “right”, or “undetermined”. Ten children each had one trial excluded either because they did not know the label of an object used in that particular trial or because E misspoke (4 children in the Newness & Stress Condition, 6 children in the Newness Only Condition, and 3 children in the Stress Only Condition). A second independent coder scored fixations of nine randomly selected children (three in each condition). As estimated by Cohen’s Kappa frame-wise, inter-observer reliability was 0.93.

During the running of the experiment we noticed that children frequently pointed to either of the two elements in the target screen. We coded whether these pointing gestures were directed to the left or the right picture (which according to the counterbalancing corresponded to the target or non-target picture). When children pointed to both pictures successively, only the first pointing gesture was counted. A second independent coder scored a random selection of nine children (three in each condition). The two coders agreed 100%.

3. Results

3.1. Looking

Preliminary analyses revealed no effect of target position (left/right) and also no effect of sentence position (first/second argument). First, we compared the mean proportions\(^2\) of the children’s looking behavior to chance (50%) to test how often the children’s attention was focused towards the target in each condition. Table 1 shows the mean proportions of children’s looks towards the target during the first 2 s as well as the whole 6 s that the target screen was presented. Only in the Newness & Stress Condition did the children look more at the target picture (the new element in the screen whose name was stressed in the verbal description of the screen) than was expected by chance (first 2 s: \(t(11) = 2.905, p = 0.014\), whole 6 s: \(t(11) = 3.326, p = 0.004\), one-sample \(t\)-tests). In the other two conditions the children looked towards the target at chance level. That is, in the Newness Only Condition they looked towards the new element at chance level – thus they spent an equal amount of time looking towards the given and the new element – whose labels were equal in prosodic salience. In the Stress Only Condition children looked equally towards the referents of the stressed and the unstressed word – which were equally given from the preceding context.

Analyses of the individual children’s looking behavior revealed the same pattern. Each child in the Newness & Stress Condition looked on average more to the target picture than to the non-target picture. In contrast, in the other two conditions only 7 out of 12 children looked on average more to the target picture and 5 children looked on average more to the non-target picture (\(\chi^2 = 6.92, df = 2, p = 0.016\), one-sided Fisher exact test). However, the individual children’s analysis also indicates that although the children in the Newness & Stress Condition focused their attention towards one of the two pictures in nearly all of their trials, it was not always the target picture – but more than would have been expected by chance (\(M = 68.75, SD = 17.81, t(11) = 3.647, p = 0.0038\)). In the Newness Only Condition and in the Stress Only Condition children looked at the target picture in on average half of the trials (2.08 trials both conditions, mean proportions of trials looking to target: Newness Only Condition, \(M = 54.17, SD = 27.18\); Stress Only Condition, \(M = 56.25, SD = 17.81\)). Thus, in these two conditions, children’s looking behavior was presumably only driven by their individual preferences for one of the pictures in each trial.

Thus, the analyses of the average proportions children looked at the target picture revealed that when a stressed word referred to a contextually new picture, the children focused their attention towards it. But neither newness nor prosodic

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\(^2\) Denominator = time-frame duration minus time coded as “undetermined”.


salience were sufficient in order to focus the children’s attention on the corresponding referent in the situation and to override individual preferences.

In a further analysis we compared the children’s total looking times in the three conditions. The rationale behind doing this was that the children’s overall interest in the target screen as a whole, and in each of the two elements, might be different for the three conditions independently of how frequently they looked proportionally towards the target element (see above). Table 2 shows the mean duration of time that the children looked towards the target screen and each of the depicted elements. The results show that the children had more overall interest in the target screen and looked longer at it in the two conditions in which a new element was depicted (Newness & Stress Condition: 4522 ms, Newness Only Condition: 4823 ms) than in the Stress Only Condition (4169 ms) in which no new element was presented ($F(2,33) = 3.664, p = 0.037, \eta^2 = 0.182$ one-sided LSD posthoc comparisons: Newness & Stress Condition vs. Stress Only Condition, $p = 0.011$, Newness Only Condition vs. Stress Only Condition, $p = 0.011$).

To summarize, we found that although scenes that contain a new element elicit more interest than scenes that only contain given elements, only prosodic highlighting of the corresponding verbal expression focuses a child’s attention towards the new element.

3.2. Pointing

Table 3 shows the mean proportion of trials in which the children pointed to any of the two elements in the target screen in each condition, as well as the mean proportion of points directed to the target element. Overall, when the children pointed, they were more likely to point to the target than to the non-target element – that is, to the new element in the Newness Only Condition, to the stressed element in the Stress Only Condition and to the new and stressed element in the Newness & Stress Condition ($M = 67\%, SD = 27$). A one-way ANOVA revealed no difference between conditions.

The three conditions differed however with respect to how frequent pointing was in each condition. Pointing was most frequent in the Newness Only Condition ($M = 73\%, SD = 27$). In the other two conditions children pointed significantly less: Newness & Stress Condition, 49\%, Stress Only Condition, 34\%, $F(2,33) = 3.843, p = 0.032, \eta^2 = 0.189$, one-sided LSD posthoc comparisons: Newness Only vs. Newness & Stress: $p = 0.047$, Newness only vs. Stress Only: $p = 0.005$. An analysis of the number of children who pointed in at least one trial revealed the same results: all children in the Newness Condition, in which no element was stressed, pointed at least once ($N = 12$). In contrast, in both conditions with a stressed word (Newness & Stress

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Mean proportions (and standard deviations) of the children’s looks towards the target picture in each condition in the first 2 s as well as during the whole 6 s the target screen was visible.</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>2 s</td>
</tr>
<tr>
<td>Newness &amp; Stress Condition</td>
<td>0.60 ($SD = 0.08$)</td>
</tr>
<tr>
<td>Newness Only Condition</td>
<td>0.48 ($SD = 0.10$)</td>
</tr>
<tr>
<td>Stress Only Condition</td>
<td>0.52 ($SD = 0.09$)</td>
</tr>
</tbody>
</table>

* $p < 0.05$ (one-sample t-test).

<table>
<thead>
<tr>
<th>Table 2</th>
<th>Mean duration in milliseconds (and standard deviations) of the children’s looks towards the target and non-target picture in each condition.</th>
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<tbody>
<tr>
<td></td>
<td>Total looking times in ms</td>
</tr>
<tr>
<td></td>
<td>Target</td>
</tr>
<tr>
<td>Newness &amp; Stress Condition</td>
<td>2656 ($SD = 555$)</td>
</tr>
<tr>
<td>Newness Only Condition</td>
<td>2578 ($SD = 523$)</td>
</tr>
<tr>
<td>Stress Only Condition</td>
<td>2201 ($SD = 543$)</td>
</tr>
</tbody>
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<tr>
<th>Table 3</th>
<th>Mean proportions of trials in which the children pointed (left) and mean proportions from those trials with pointing in which children pointed to the target picture in each condition (right).</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Trials with pointing</td>
</tr>
<tr>
<td>Newness &amp; Stress Condition</td>
<td>0.49 ($SD = 0.43$)</td>
</tr>
<tr>
<td>Newness Only Condition</td>
<td>0.73 ($SD = 0.27$)</td>
</tr>
<tr>
<td>Stress Only Condition</td>
<td>0.34 ($SD = 0.32$)</td>
</tr>
</tbody>
</table>

* Denominator = number of trials with pointing per child (chance level = 0.5).
Condition and Stress Only Condition) fewer children pointed ($N = 8$ in both conditions, $\chi^2 = 5.143, df = 2, p = 0.032$, one-sided Fisher exact test).

To summarize, children pointed most often in the Newness Only Condition, which was the only condition in which stress was not applied. In other words: children were less likely to point to an element in a scene when one element had been prosodically highlighted in the verbal description of that scene.

4. Discussion

In the current study we examined whether a combination of sentence accent on a word and contextual newness of the corresponding referent led 24-month-olds to focus their visual attention on that referent. Results show that children did indeed focus their visual attention on the referent of a familiar word when the word was accentuated and the referent was new to the situation. Importantly, neither accentuation on a word nor newness of a referent alone led the children to visually focus on the corresponding element (i.e., the referent of the acoustically salient word or the new element in the situation). This suggests that children assume that the acoustic saliency of words is iconic of the contextual saliency of the referents – perhaps because this has been conventionalized by the language they are learning as expressing the speaker’s intention of establishing a new joint focus of attention with the listener on something that is new in a situation.

Although linguists have speculated that the function of prosodic stress is to establish a new focus of attention (e.g., Bolinger, 1961; Chafe, 1994; Lambrecht, 1994), the current study is the first show that empirically and with young children. That is, the current study shows that by the time children start producing multi-word utterances and use stress to highlight new information therein (Wieman, 1975), they also understand the communicative function of stress in language comprehension. This is an important finding since previous research has often proposed asymmetries between children’s comprehension and production of prosodic stress, such that production seems to precede comprehension (e.g., Cutler and Swinney, 1987; Gualmini et al., 2003). On the one hand, production studies have shown that children consistently stress new and contrastive information from 2 to 3 years onwards (Baltaxe, 1984; Hornby and Hass, 1970; MacWhinney and Bates, 1978; Pechmann, 1981; Wieman, 1975). Comprehension studies, on the other hand, have found that only by the age of 6 years (or even later) children interpret stress correctly and know about the relation between stress and new information (Cutler and Swinney, 1987; Gualmini et al., 2003; Hornby, 1971; MacWhinney and Price, 1980). However, these earlier production and comprehension studies employ methods of differing complexity. Specifically, the production studies used simple tasks such as requesting objects one after another (Pechmann, 1981) or describing pictures successively (Baltaxe, 1984; Hornby and Hass, 1970; MacWhinney and Bates, 1978) while earlier comprehension studies used more complex methodologies, such as asking children about the meaning of a sentence (Hornby, 1971; MacWhinney and Price, 1980), truth-value-judgments (Gualmini et al., 2003), or phoneme detection (Cutler and Swinney, 1987). Thus, given that earlier comprehension studies used more complex methods than earlier production studies, findings of a delayed comprehension must be taken with caution. The method of the current study provides a much fairer comparison with the earlier production studies. Importantly, our findings do not support a delayed comprehension of children’s understanding of the function of stress as marking new information.

The finding that children do not look longer at the target in the Stress Only condition may indirectly indicate that young children interpret emphatic stress differently from stress that highlights new information. It is not clear what exactly the discourse function of emphatic stress is from a theoretical perspective. Since children did not focus their attention towards the referent of a stressed word in the Stress Only Condition it seems likely that children only interpret stress as expressing the speaker’s intention to jointly focus the referent of the stressed element when the speaker plausibly could have intended this (but not in the absence of any obvious reason for making a discourse referent more salient). This does however not mean that children do ignore the prosodic characteristics of the speaker’s utterance in the Stress Only Condition. Children’s pointing behavior in the current study is of interest in this respect. We found that children were less likely to point to the Newness & Stress Condition and in the Stress Only condition than in the Newness Only Condition. This pattern suggests that pointing and stress have similar functions: namely, to establish a central element in the discourse. In the Newness Only Condition the verbal description only focused very broadly on the whole scene because no particular element was stressed. One could interpret the children’s frequent pointing in this condition as indicative of their having missed a clear focus in the verbal description of the target picture and of their then having-established one in their next conversational turn.

The absence of pointing in the two conditions in which the speaker stressed one element thus may indicate that children interpreted stress as establishing the stressed element as central to the subsequent discourse.

The findings of the current study are also relevant in order to explain the results of Grassmann and Tomasello’s (2007) word learning study. In this study, children learned a novel noun that was presented together with a novel verb in an intransitive sentence (The feks is meeking., but only when a novel object was new in the corresponding situation and the noun was stressed in the utterance. As in the current study, neither newness nor stress had an effect in isolation. However, newness of one element was confounded with stress on the other element and stress on one word was confounded with newness of the other element. Thus, there was no “newness only” and no “stress only” condition. The current study disentangled these two factors. The current results are that children focus their attention to new discourse referents when the corresponding word in the utterance is stressed. This suggest the following explanation for children’s word learning in Grassmann and Tomasello (2007): it might be that when children hear a stressed word they assume that it refers to
something that is new in the situation. Since in Grassmann and Tomasello's study there was always something new in the situation, children might have learned the stressed word for whatever was new in the situation. That is, children's not-learning of an unstressed novel noun for a discourse-new novel-object-referent might actually be due to learning the stressed novel word (in this condition the novel verb) for the discourse-new object. And vice versa, children's not-learning of a stressed novel noun for a discourse-given object might be due to learning the stressed novel noun for the discourse-new referent (in this case a novel action). The way in which children's learning was assessed in Grassmann and Tomasello (2007) made it impossible to test for such cross-category learning since for testing noun learning only novel objects were available and for testing verb learning only novel actions were available. Therefore, only when newness and stress occurred together were children able to find the correct referent of the novel noun.

In the current study accentuation was realized by several acoustic parameters: accent type, F0, intensity, duration. Although pitch variation and this is generally considered to be the primary cue to focus (Dahan and Bernard, 1996), accentuation generally also involves changes in duration, intensity and vowel quality (Turk and White, 1999; Xu and Xu, 2005). The current study leaves open how much each of the prosodic parameters influences children's response. Future research needs to investigate the effect of each parameter in isolation.

To summarize, the current study demonstrates that when 2-year-old children hear a stressed word in a verbal description of a situation they search for a new referent in the situation and focus their visual attention on it. Our findings suggest that children's comprehension of prosodic stress develops around the same time as their early use of prosodic stress to highlight new information.

References


S. Grassmann is a postdoctoral faculty at the Department of Developmental and Comparative Psychology at the Max Planck Institute for Evolutionary Anthropology in Leipzig, Germany. Her research interests are the development of children's understanding of prosodic information structure marking and the pragmatic nature of the processes underlying children's word learning. Publications include Two-year-olds exclude novel objects as potential referents of novel words based on pragmatics (Cognition, 2009). Young children follow pointing over words in interpreting acts of reference (Developmental Science, 2006). Two-year-olds use primary sentence accent to learn new words (Journal of Child Language, 2007).