Context effects on young children’s language use: The influence of conversational setting and partner

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Abstract
This article reports on two studies investigating the effect of contextual variables on young children’s language use in conversation. In Study 1, 20 children between age 1;5 and 2;2 were recorded in conversation with their mothers in three settings: mealtime, toy play, and book reading. In Study 2, 16 children between age 1;9 and 3;0 were recorded in dyadic toy play interaction with three different conversational partners: a 5-year-old older sibling, an 8-year-old older sibling, and their mother. Both studies found effects of the contextual variable on children’s vocabulary use and discourse cohesion. The children used a richer vocabulary and produced more topic-continuing contributions in book reading than in other contexts, and they used a richer vocabulary and produced more responses to questions in conversation with their mothers than in conversation with their older siblings. Despite mean effects of context, there was cross-context stability in the individual differences among children.

Keywords
context, conversation, stability

It has long been recognized that the speech children produce is affected by the conversational context in which it occurs. The evidence of context effects comes from several different research traditions, however, and the literature does not provide a unified picture of the nature of context effects or of their underlying processes. Although some effects and processes have been described in detail, our understanding of the scope and the basis of context effects is uneven and incomplete. When children speak, we do not know to what extent the properties of their speech reflect their language knowledge or the context in which they are producing speech.

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Some research on context effects has focused on children’s language use as a reflection of their sociolinguistic competence. Children reveal this competence by shifting registers to suit the social situation in which conversation occurs. For example, 4-year-olds speak differently to listeners of different ages, using syntactically more complex speech when talking to an adult than when talking to a 2-year-old (Shatz & Gelman, 1973). Describing this as a register shift rather than as on-line adjustments to listener behavior is supported by evidence that children similarly alter their speech when talking to a doll (Sachs & Devin, 1976). Samoan children as young as 2 years have some control over the phonological differences associated with ‘good’ (i.e., formal) and ‘bad’ (i.e., informal) speech (Ochs, 1988). Bilingually developing children as young as 2 years can, with a significant although imperfect degree of reliability, speak in the language that their interlocutor understands (Genesee & Nicoladis, 2007) and even speak in the language that their bilingual parent typically requires (Lanza, 1992). In these findings, the relevant aspect of context is socially defined and the affected properties of the children’s speech depend on features of the different registers evoked.

Other lines of research describe context effects that are not wholesale influences of the social context on register choice but are more specific influences of one conversational partner’s speech on the phonological, lexical, or structural features of another’s. Work in sociolinguistics, using adult subjects, has described the phenomenon of convergence in which individuals shift their speech styles to become more similar to the speech styles of those with whom they are interacting (Giles, Mulac, Bradac, & Jonson, 1987). Convergence applies to a wide range of linguistic features, including phonological, lexical, and grammatical properties of speech. It may be conscious but often is not. In the psycholinguistic literature, the terms priming and entrainment have been used to describe the phenomenon whereby a structure or word uttered by one speaker increases the probability of that structure or word being used by the other speaker (Bock, 1986; Brennan & Clark, 1996). Consistent with these mechanisms, Hoff (2003) found that in speaking to their mothers, 4-year-old children of college-educated mothers used richer vocabularies than did 4-year-olds with high school-educated mothers. In contrast, these same children showed no group differences in the richness of the vocabularies they used when producing narratives for the researcher. The findings were interpreted as reflecting the effect of differences in the mothers’ vocabulary use on their children’s speech. Similarly, 4-year-old children have been found to more frequently produce targeted syntactic structures just modeled by an experimenter than they do without models, suggesting that syntactic features of children’s speech can also be primed (Huttenlocher, Vasilyeva, & Shimpi, 2004).

A third process by which context can affect children’s language use is via scaffolding, as described by Vygotsky (1978). In this account the influence is more specific or targeted than in register shifts, but more general than in lexical entrainment or syntactic priming. The conversational partner or another aspect of the context influences children’s speech by providing support that allows children to evidence a more advanced level of language use than they could alone. The findings that 3-year-old children whose mothers ask elaborative questions produce better narratives than 3-year-olds whose mothers ask repetitive questions (which do not move the narrative forward) illustrate this mechanism of influence (Reese & Fivush, 1993). The finding that 2-year-olds produce more speech and use a more varied vocabulary in talking to their mother than in talking to a
researcher has also been interpreted as reflecting mothers’ role as critical collaborators in their children’s language production (Bornstein, Haynes, Painter, & Genevro, 2000). Children’s sensitivity to the support their mothers provide may underlie the finding that 2-year-olds produce more requests for clarification in conversation with their mothers than in conversation with their older siblings (Mannle, Barton, & Tomasello, 1992).

A final sort of influence described in the literature is one in which the conversational context inhibits children’s expression of their linguistic competence – if the context is one in which the children are made uncomfortable or one in which talk is culturally proscribed. This point was famously made by Labov (1972), who found that African American preadolescent boys were far more impressive language users when sitting on the floor, eating potato chips, and discussing bathroom functions than they were when being more formally interviewed. The same point has been made by Genesee, Paradis, and Crago (2004) who found that the Inuit children of northern Canada produce far more language in talking to peers than they do in talking to adults, consistent with Inuit cultural norms.

The foregoing literature review suggests that a variety of contextual factors support, limit, and shape the language children produce in conversation and that a variety of processes mediate those effects. Nonetheless, the available data do not provide an answer to some very basic questions about the influence of conversational contexts on children’s language use. Do some contexts consistently elicit more advanced language use than other contexts? Are some aspects of language use more susceptible to contextual influences than others? Are individual differences among children stable across contexts? Answers to these questions are relevant both as clues to the processes that underlie context effects and as indicators of the reliability and validity of measures of children’s level of language development based on samples of speech produced in conversation.

Two studies were designed to address these questions. The first study compared the speech produced by 20 children between age 1;5 and 2;2 in dyadic mother–child conversation across three settings: mealtime, toy play, and book reading. The second compared the speech produced by 16 children between the ages of 1;9 and 3;0 in dyadic conversation with three different conversational partners: a sibling between the ages of 4 and 5 years, another sibling between the ages of 7 and 8 years, and their mother. Each study included a test of the effect of the contextual variable on the average verbal output, lexical richness, grammatical complexity, and discourse coherence of the young children’s speech; and, to assess the stability of individual differences in language performance despite contextual influences, each study included a test of the cross-context consistency among the children in these properties of their speech.

Study 1

Method

Participants and procedure. The sample consisted of 20 children (12 boys and 8 girls) between ages 1;5 and 2;2 (mean age = 1;9.21, SD = 2.5 months) who were selected from a larger sample of 63 children using the criterion that each child produced at least 75 utterances in each of three settings in which mother–child conversation was recorded. All the families were European-American; all homes were monolingual English-speaking
homes. Family socioeconomic status ranged from working class to upper middle class. Participants were recruited through advertisement and word-of-mouth. They received a copy of the videotape made as token compensation for their participation. The children were all selected to be at the point in language development where they were just beginning to combine words. They were all predominantly single-word speakers, but at a prescreening visit each child was heard to produce at least three different word combinations that were judged to have the temporal and prosodic characteristics of single utterances and not to be rote formulas.

Each child was videotaped at home in dyadic interaction with his or her mother during a mealtime (breakfast or lunch), toy play, and book reading (Hoff-Ginsberg, 1991). In that larger study, dressing was also recorded, but those interactions were brief and are not analyzed here. For these young children and their mothers, spending the morning at home together in dyadic interaction was the natural course of events. Fathers and older siblings were already out for the day. Occasionally there was a young, infant sibling at home, in which case an extra research assistant watched the baby during recording times. The duration of mealtime conversation was allowed to vary naturally (mean duration = 19.7 minutes, SD = 7.0). The researcher provided toys and books for the toy play and book reading contexts, and those were taped for no more than 25 minutes each (mean duration of toy play = 17.3 minutes, SD = 4.4; mean duration of book reading = 17.0 minutes, SD = 4.6). None of the pairwise differences between settings in duration was significant; all ps > .20 (two-tailed). All conversations were transcribed in their entirety following the conventions for the Systematic Analysis of Language Transcripts (SALT) (Miller & Chapman, 1984). The larger sample from which these participants were selected and the procedure employed are more fully described in Hoff-Ginsberg (1991).

Measures. The measures applied to the children’s speech indexed verbal output, vocabulary use, grammatical complexity, and discourse cohesion. The measure of verbal output was the number of utterances produced, with an utterance defined as no more than a grammatical sentence but frequently less, judged on the basis of pausing and intonation contour. The measure of vocabulary use was the total number of word types (or different words) produced, where different forms of the same root (e.g., run and running, book and books) were counted as a single type. Discourse cohesion was indexed by the percentage of the child’s utterances that were topic-continuing replies to prior maternal speech. Grammatical complexity was indexed using mean length of utterance in morphemes (MLU). The measures of word types and MLU were produced by SALT. Topic-continuing replies were coded by research assistants who achieved over 85% agreement; Cohen’s kappa for the application of this code was .80, based on 220 utterances coded.

Results

The means and standard deviations for the measures of the amount of speech produced, and of vocabulary use, grammatical complexity, and discourse continuity in the participants’ speech in each setting are presented in Table 1, along with the results of paired samples t-tests, using the Bonferroni correction for multiple comparisons (which yielded a minimum significance level of .017). These comparisons revealed the following: the number of
utterances the children produced did not differ significantly across setting. Vocabulary use did differ: children used more word types in their conversations during book reading than in either mealtime or toy play. Children’s MLUs did not differ as a function of setting. There were differences in discourse continuity among settings which paralleled those found for word types: a greater percentage of the children’s utterances continued the topic of prior maternal speech during the book reading conversations than during the mealtime or toy play conversations, and mealtime and toy play were not different.

Table 2 presents the correlations of these measures of child speech across settings. The children were not consistent across settings in the amount of speech they produced, but they were consistent in the properties of their speech. All three pairwise correlations (mealtime with toy play, mealtime with book reading, and toy play with book reading) were positive and significant for number of word types and percentage of topic-continuing replies. MLUs were significantly related in two correlations; the third correlation was positive, though not significant.

### Table 1. Means, standard deviations, and statistical comparisons of measures of children’s speech in dyadic mother–child conversation in the contexts of mealtime, toy play, and book reading

<table>
<thead>
<tr>
<th>Speech measure</th>
<th>Means and (standard deviations)</th>
<th>Value of t (d.f. = 19)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1) Mealtime</td>
<td>(2) Toy play</td>
</tr>
<tr>
<td>Number of utterances</td>
<td>192.7 (82.45)</td>
<td>151.7 (51.17)</td>
</tr>
<tr>
<td>Number of word types</td>
<td>29.50 (8.03)</td>
<td>31.15 (6.56)</td>
</tr>
<tr>
<td>Mean length of utterance</td>
<td>1.15 (0.17)</td>
<td>1.14 (0.18)</td>
</tr>
<tr>
<td>Topic-continuing utterances*</td>
<td>35.4 (0.13)</td>
<td>33.2 (0.12)</td>
</tr>
</tbody>
</table>

* The percentage of the child’s utterances that were topic-continuing replies to maternal questions.

* p < .03, ** p < .01, *** p < .001.

### Table 2. Correlations between properties of children’s speech in different settings (N = 20)

<table>
<thead>
<tr>
<th>Speech measure</th>
<th>Mealtime with toy play</th>
<th>Mealtime with book reading</th>
<th>Toy play with book reading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of utterances</td>
<td>-.01</td>
<td>.01</td>
<td>.23</td>
</tr>
<tr>
<td>Number of word types</td>
<td>.51*</td>
<td>.46*</td>
<td>.51*</td>
</tr>
<tr>
<td>Mean length of utterance</td>
<td>.30</td>
<td>.60**</td>
<td>.45*</td>
</tr>
<tr>
<td>Topic-continuing replies*</td>
<td>.82***</td>
<td>.72***</td>
<td>.68***</td>
</tr>
</tbody>
</table>

* The percentage of the child’s utterances that were topic-continuing replies to maternal questions.

* p < .05, ** p < .01, *** p < .001 (one-tailed).
Discussion

Three findings emerged from these analyses:

1. The richness of the vocabulary that the children used and the relatedness of their speech to the speech of their conversational partner differed depending on the context of conversation. When the mothers and children were looking at books together, the children used more different words and their speech was more contingent on prior discourse than when they were eating a meal or playing with toys with their mothers.

2. The number of utterances produced and the grammatical complexity of the children’s speech (as indexed by MLU) did not differ as a function of setting.

3. Significant cross-setting correlations indicated that the children substantially retained their relative positions with respect to all these measures, even where there were significant effects of setting on means (i.e., of vocabulary richness and discourse cohesion).

These findings demonstrate that children as young as 2 years use language differently depending on the circumstance. Before considering the underlying mechanisms and broader implications of this observation, we present an analysis of a different contextual factor, age of the conversational partner, and we study children who were more variable in their level of language development and, on average, were more advanced speakers, than the children in Study 1. The greater range of the language levels among the participants in Study 2 allowed asking whether the non-effect of setting on MLU observed in Study 1 might be a function of the limited variability in the sample and the limited morphosyntactic range of the children.

Study 2

Method

Participants and procedure. The participants were 16 children (8 boys and 8 girls) between the ages of 1;9 and 3;0 (mean age = 2;3.9, SD = 5.2 months) who were video recorded in their homes in dyadic toy play interaction with three different family members: a sibling between 4 and 5 years old (mean age = 4;11, SD = 0.56 years), a sibling between 7 and 8 years old (mean age = 7;10, SD = 0.56 years), and their mothers. The 4- to 5-year-old siblings included nine boys and seven girls; the 7- to 8-year-old siblings included eleven boys and five girls. The data were originally collected for a study of the older participants’ child-directed speech (Hoff-Ginsberg & Krueger, 1991). Two additional families participated in that earlier study, but their transcripts were no longer available for analysis. All the participants were European-American, monolingual speakers of English. All families had at least three children. The 16 target children were all the youngest in their family. Mothers were recruited through a brief article about the research in the local newspaper and by word-of-mouth. They received a copy of the videotape as token compensation for their participation.
All interactions were recorded in the participants’ homes. The researcher provided a set of toys and instructed the mother or older sibling to play with the young child. The youngest child played successively with the older family members for 10 minutes each. This procedure was repeated on another day within the same week, with a new toy and changed order in which the participants interacted, yielding a total of 20 minutes of interaction for each dyad. Two researchers were present for each taping. The mother was frequently present for the sibling interactions, but she was instructed not to participate or respond and all mothers complied with this request. The interactions were transcribed by one of two trained research assistants following the conventions for the use of the SALT program (Miller & Chapman, 1984). Transcripts were checked for accuracy against the videotapes twice, as other measures were being coded.

**Measures.** The same measures of vocabulary use and grammatical complexity employed in Study 1 were applied to the youngest child’s speech in this study. Discourse cohesion was indexed by the percentage of the youngest child’s utterances that were responses to questions posed by the other speaker. This is an appropriately lower standard of discourse cohesion than was used in Study 1 given the young ages of both participants in the sibling interactions, but it nonetheless allows comparison to the children’s conversations with their mothers. All measures were generated by SALT.

**Results**

The means and standard deviations for the measures of the amount of speech produced, and of vocabulary use, grammatical complexity, and discourse continuity in the participants’ speech with each conversational partner are presented in Table 3, along with the results of paired samples *t*-tests, using the Bonferroni correction for multiple comparisons (which yielded a minimum significance level of .017). There were significant effects of conversational partner on every measure. The youngest children produced more utterances in conversation with their mother than with either sibling; the number of utterances produced in conversation with the two siblings did not differ. Children used more word types in conversation with their mother than in conversation with either sibling; the number of word types produced in conversation with the two siblings did not differ. MLU was significantly lower in speech to the mother than in speech to the 4- to 5-year-old sibling. Discourse cohesion differed in every contrast: children produced the most replies to questions in conversation with their mother, next with their 7- to 8-year-old sibling, and least with their 4- to 5-year-old older sibling.

The correlations obtained between these properties of the children’s speech across the different conversational partners are presented in Table 4. Individual differences in the number of word types used and in MLU were highly consistent across conversational partners. Differences in the number of utterances produced were consistent only in conversations with the two siblings, not with the mother. Individual differences in the percentage of utterances that were responses to questions were consistent across the two conversations with siblings and between the conversations with the 4- to 5-year-old sibling and the conversations with the mothers.
Discussion

The findings of Study 2 reveal effects of the conversational partner on characteristics of the speech young children produce. These 21-month to 3-year-old children used a richer vocabulary and were more likely to reply to questions when talking to their mother, compared to talking to their older siblings. They were also more likely to reply to questions when talking to their 7- or 8-year-old sibling than when talking to their 4- or 5-year-old sibling. One finding that is somewhat inconsistent with the pattern of more advanced language use with more mature conversational partners is the finding that the young

Table 3. Means, standard deviations, and statistical comparisons of measures of children’s speech in 20 minutes of conversation with older siblings and mothers

<table>
<thead>
<tr>
<th>Speech measure</th>
<th>Means and (standard deviations)</th>
<th>Value of t (d.f. =15)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1) 4- to 5-year-old sibling</td>
<td>(2) 7- to 8-year-old sibling</td>
</tr>
<tr>
<td>Number of utterances</td>
<td>155.50 (57.77)</td>
<td>175.13 (60.19)</td>
</tr>
<tr>
<td>Number of word types</td>
<td>53.56 (23.07)</td>
<td>60.19 (23.32)</td>
</tr>
<tr>
<td>Mean length of utterance</td>
<td>1.83 (0.52)</td>
<td>1.76 (0.47)</td>
</tr>
<tr>
<td>Responses to questions*</td>
<td>5.10 (4.70)</td>
<td>11.81 (9.41)</td>
</tr>
</tbody>
</table>

* The percentage of the child’s utterances that were responses to questions produced by the other speaker. * p < .03, ** p < .01, *** p < .001.

Table 4. Correlations between properties of children’s speech with different conversational partners (N = 16)

<table>
<thead>
<tr>
<th>Speech measure</th>
<th>Conversational partners</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4- to 5-year-old sibling and 7- to 8-year-old sibling</td>
</tr>
<tr>
<td>Number of utterances</td>
<td>.53*</td>
</tr>
<tr>
<td>Number of word types</td>
<td>.72**</td>
</tr>
<tr>
<td>Mean length of utterance</td>
<td>.95***</td>
</tr>
<tr>
<td>Responses to questions*</td>
<td>.55*</td>
</tr>
</tbody>
</table>

* The percentage of the child’s utterances that were responses to questions produced by the other speaker. * p < .05, ** p < .01, *** p < .001.
children’s MLU was lower in conversation with their mothers than with their siblings. It is possible that this reflects the higher frequency of single-word responses to questions. In their overall pattern, however, these findings replicate the essence of the findings of Study 1: very young children use language differently depending on the context, effects are more apparent in vocabulary and discourse coherence than in grammatical complexity, and, even where there are average effects of context, individual differences are consistent across at least some contexts.

**General discussion and conclusions**

The results of these studies provide evidence regarding the relative susceptibility to context effects of several different aspects of children’s language use and the stability of individual differences in language use across contexts. The findings indicate that the richness of the vocabulary children use in conversation and the cohesiveness of their contributions to ongoing discourse are both reliably affected by the contextual variables studied here – the conversational setting and the developmental level of the conversational partner. Study 1 indicated that in conversation with their mothers during book reading, 2-year-old children use a richer vocabulary and more frequently produce contingent replies to their mothers’ speech than they do in mealtimes or toy play conversation. Study 2 indicated that in toy play conversations, 21-month to 3-year-old children use a richer vocabulary and more frequently produce contingent replies in talking to their mothers than they do in talking to their older siblings. In contrast, the grammatical complexity of the children’s speech and the number of utterances they produced were less consistently affected by the context in which conversation occurred (where the durations of the conversations did not differ).

These context effects are interpretable as effects of scaffolding provided by the both the setting and the conversational partner. The context effects observed in Study 1 suggest a scaffolding effect of the book itself, which may support the children’s speech both directly and indirectly, via their mothers’ speech. The book introduces into conversation a range of things to talk about that do not present themselves in conversation over breakfast or toys, thus directly prompting the use of a larger vocabulary by the child. The book may also have the same effect on the mothers’ speech, which might, in turn, affect the child. Mothers have been found to use a richer vocabulary in talk about books than in other conversational contexts in both this and other samples (Hoff-Ginsberg, 1991; Snow et al., 1976). The book may also support the child’s production of more complex grammatical structures. That is, with the book a constant presence, the topic of conversation does not have to be held in mind while a related utterance is composed, thereby reducing the cognitive demands of producing a related utterance. Other empirical support for such a process comes from findings that within a conversation there are tradeoffs between discourse cohesion and other aspects of language use, suggesting effects of resource limitations (Bloom, Rocissano, & Hood, 1976; Shatz, 1983).

The context effects observed in Study 2 suggest scaffolding effects with their source in the speech of the conversational partner. Previously reported analyses of the mothers’ and siblings’ speech (Hoff-Ginsberg & Krueger, 1991) found that compared to both sibling groups, the mothers asked more questions and used richer vocabularies. In their
question-asking, the mothers provided more occasions for the children’s replies than did the siblings. It is also likely that mothers’ questions were easier to follow and reply to than the questions posed by the siblings. Thus, the greater discourse coherence on the part of the children was afforded by the mothers’ questions. Although the response measure in this case – percentage of child utterances that were responses to questions – is not independent of the measure of the scaffolding provided, it is non-trivial to find that children as young as 21 months to 3 years were able to make use of that scaffolding. This response-eliciting effect of maternal questions may also explain the sole and somewhat surprising effect of context on children’s MLU. Children’s MLU was shorter in talking to their mothers than to their siblings, perhaps because in eliciting contingent replies maternal questions often also elicit minimal replies. The larger vocabularies children used in conversation with mothers compared to siblings might also be described as an effect of scaffolding. In this case, the scaffolding is scaffolding of lexical retrieval – or a lexical priming effect caused by the larger vocabularies used by the mothers compared to the older siblings (Hoff-Ginsberg & Krueger, 1991).

There are limitations to the effects observed here and to the conclusions that can be drawn from these findings. First, the effect of scaffolding itself appears to be limited. Follow-up correlations were calculated between the frequency of question-asking by the conversational partner and the target child’s discourse coherence and between the vocabulary size used by the partner and the vocabulary size used by the target child in both studies. None of these correlations was significant. That is, although on average the young children studied here produced more coherent (i.e., related) contributions to conversation in settings in which the adults asked more questions or with partners who on average asked more questions, individual differences among the children within setting or partner age group were not associated with individual differences in the nature of their conversational partner’s speech. Similarly, although on average the children used a bigger vocabulary when their conversational partner used a bigger vocabulary, individual differences in the size of the vocabularies children used within a setting or conversational partner age group were not significantly related to the individual differences in the vocabularies used by their conversational partner. This may indicate limits to the degree that one partner’s speech affects the other’s.

The potential for context effects is also limited by the low upper bound of these young children’s language competence. This range limitation may have prevented specific correlations between conversational partner’s speech and child speech from being obtained and may also explain the general lack of context effects on MLU. Whereas Bornstein et al. (2000) similarly found that the MLU of 2-year-olds’ speech was stable across contexts that did affect the amount and lexical richness of speech, previous studies of 4-year-olds have found that the children adjusted the syntactic complexity of their speech depending on their listener (Sachs & Devin, 1976; Shatz & Gelman, 1973).

The findings of the present studies have both practical and theoretical implications. One practical implication is a caution for research and clinical procedures that estimate children’s level of language development based on samples of spontaneous speech: the results are susceptible to the influence of contextual variables. The speech children produce reflects what they are doing and with whom they are interacting. Despite mean effects of context, however, individual differences among children in the level of language use they
demonstrate are relatively stable. This latter finding indicates that the mean effects of context are systematic, exerting similar effects across children who differ in their average level of language use and who are all supported to a similar degree by supportive contexts.

The evidence that the level of development children reveal in their language use reflects contextual influences suggests that language production is not a direct reflection of a static underlying linguistic competence. The contextual influences found in the present data are consistent with the Vygotskyan notion that language competence is best understood as a range of possible performances, with the actual performance level depending on the support provided by the setting and conversational partner.

Acknowledgments

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Note

1 Although this measure is not independent of the number of utterances produced, in these data there were no significant differences in the number of utterances produced in each setting.

References


