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14 The ability to tell a narrative

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14.1 Introduction

In the previous chapters, we analysed PI-children's semantic/pragmatic conversational abilities. We showed how contributions that were part of extended discourse with a narrative character can form a mini-narrative on their own (see 11.5). These results indicated that the PI-children produced as many narrative episodes compared to N-children, but in Chapters 12 and 13 it became clear that PI-children have difficulties in connecting contributions into coherent and cohesive mini-narratives within the conversation. For example, one of the PI-children's major problems proved to be giving non-ambiguous information (see 12.7). In the narrative genre, this problem should be minimized, since the PI-children are supposed to have more external control over the events they have to describe (see 3.2) since they follow the Frog story pictures (see Appendix 3a).

Narrative abilities are among the most important linguistic abilities for children to learn, since narratives are among the most widely used forms of organising human experience (Bruner, 1990). Through narratives, children learn to see experiences from a particular point of view, to sequence them in time and to connect them causally into a certain order (Labov and Waletsky, 1968; Bruner, 1990; Berman and Slobin, 1994) (see 9.1). We may expect some problems in this area, since they proved to have morphological/syntactic difficulties in telling the Frog story narrative. They not only frequently omit obligatory elements (see 9.2), but also have difficulties in expressing temporality (see 9.3) and in ordering linguistic information by means of morphological/syntactic packaging (see 9.5). Many PI-children do not produce the morphological, lexical and syntactic forms that are acquired quite early on by N-children and are prerequisites for describing individual events. The control of these forms is the first step in telling a narrative in the conversational (see 11.5) and narrative genre (see 9.7) (e.g. Berman, 1988). On the basis of these morphological/syntactic difficulties in the narrative genre we expect also to find problems in the semantic/pragmatic area.

Here, we want to know whether the PI-children are as good as the N-children in the ability to tell a narrative, giving the listener enough correct narrative information in order to enable the listener to imagine and visualize the plotline of the Frog story on the basis of what is narrated. This involves not only the embedding of the narrative in time (see 14.2), but also the coherent and cohesive linking of narrative contributions. We will explore this by considering what plot elements are coherently explicited (see 14.3) and what animate referents are cohesively and clearly referred to (see 14.4 to 14.8).

In general, N-children learn to use linguistic means to connect events into coherent structures related to three different levels. First, they begin at the level of the scene, when children give descriptions of only one picture that is they describe one or more characters in a certain situation or experiencing a certain event. Second, at the level of the episode, children give a description of one to three pictures: certain situations
and events experienced by the characters are connected to each other. The situations and events might not only be related to each other in a linear chain of successive events located in space and time, but also be hierarchically ordered into causal relations. Third, at the highest level of the plot, not reached until seven/eight years of age, children narrate how all the depicted events are coherently, hierarchically and causally related to each other in the overall plotline intended by the author of the picture book (e.g. Piaget, 1959; Berman and Slobin, 1994; Peterson and McCabe, 1993; Roelofs, 1998).

From the developmental literature, we know that by age five N-children can describe events, whereas younger N-children describe frequently only objects or situations (Tolchinsky-Landsmann and Sandbank, 1995). Between age four and six, in general N-children stress the events themselves rather than the relations of time (order) and/or cause which unites them. The natural order is wrongly assumed to be known to the addressee. From age six on, the N-children are able to tell a more complete story, expressing not only the setting, search attempts and complication (see for a detailed explication 14.3), but also the Frog story outcome (Roelofs 1998). The events are related in time and sometimes even causally related, especially the search attempts. However, the idea of chance seems absent in eight-year-old N-children’s narratives: every event is somehow connected, but nothing happens by chance (e.g. Piaget, 1959). These findings are in large comparable to earlier results of the narrative development of English-, German, Spanish, Hebrew and Turkish-speaking N-children (Berman and Slobin, 1994).

Generally, English-speaking LI-children are found to have difficulties in producing narratives (Crystal, 1987; Paul and Smith, 1993): they leave important facts unexpressed and incorporate non-related events like young four- and five-year-old N-children tend to do (McCabe and Rollins, 1994). Even older LI-children at the age of nine to eleven years are observed to be less effective in establishing coherent causal and cohesive referential relations between narrative events. Their stories are found to be structurally less complex (Merritt and Liles, 1989; McFadden and Gillam, 1996). In a pilot study on the narrative abilities of Dutch-speaking LI-children (Verkoeijen, 1999) the existence of such problems were confirmed.

However, little is known about the relative speed of the development of the ability to tell a narrative and the kind of semantic/pragmatic deficiencies shown in PI-children with different types of PI, although some findings point towards the existence of narrative difficulties in PI-children. For instance, English-speaking PI-children with ADHD (n=30; 7;0 to 11;0 years) were observed to have difficulties in retelling fictional narratives; they produced fewer plot elements than same-aged N-children (n=30; 7;0 to 11;0 years) (Tannock, Purvis and Schachar, 1993), although both groups did not differ in story comprehension. Cole (1997) confirmed these results: 19 English-speaking PI-children (all boys), with externalizing PI, rated as aggressive by their teachers, all produced less sophisticated Frog stories, for instance, fewer setting components (see 14.3.2) than same-aged N-children. Tager-Flusberg (1995) found that autistic PI-children (excluded in this study) introduced characters in an ambiguous way, and had difficulties with producing the complete set of causally linked search attempts and the Frog story outcome. Tager-Flusberg and Sullivan (1995) also observed that autistic PI-children were less
The ability to tell a narrative

accurate in labelling internal responses that is the emotional response of a character to a situation (explained further below). Capps, Losh and Thurber (2000) observed that PI-children on the autistic spectrum were less likely to identify the causes of the main character's internal states than language matched N-children. These PI-children rather tended to simply label emotions and explain actions, being more restricted in the range of different linguistic devices used. In pilot studies on the narrative abilities of Dutch-speaking PI-children (Dijkhuis, 1994; Burger, 1995), and in a study of PI-children with ADHD (Velgersdijk, 2001) semantic/pragmatic difficulties in establishing clear coherence and (co-referential) cohesion were observed in most children.

Narrative task

The narrative topic of the Frog story is the search for a lost possession. This topic is supposed to be unproblematic in the assumption that most children will be familiar with a similar event in real life, (Berman and Slobin, 1994:40). The narrative task probably is, however, a relatively more complex task than the production of conversational mini-narratives for two reasons (e.g. Karmiloff-Smith, 1986; Ninio and Snow, 1996; see 11.5). First, as a narrator the child must adopt the main character's perspective (Trabasso and Rodkin, 1994). This language ability is based on the social-cognitive ability to take someone else's point-of-view, being part of children's Theory-of-Mind (Perner, 1991; Sanders, 1994; Wellman, 1992; see 2.3.3). To take and express one owns perspective, as is mostly the case in the conversational interview genre (see 11.5), is supposed to be easier and therefore probably learned earlier. Second, picture sequences impose a particular kind of cognitive demand by requiring children to translate static visual input into verbal output. To make cognitive non-static representations on the basis of static material is a social-cognitive ability also part of the Theory-of-Mind (Perner, 1991) (see Appendix 3a).

What is narrated depends on children's language capacities and their understanding of the story. There can be a discrepancy when they understand more than they can actually express. Despite this possible discrepancy, many researchers trace underlying social-cognitive developmental patterns on the basis of linguistic output (Trabasso and Nickels, 1992; Trabasso, Stein, Rodkin, Munger and Baughn, 1992; Trabasso and Rodkin, 1994). Specific parts of children's Theory-of-Mind can be inferred from how they communicate (Bretherton, 1991). Assuming that narrative skills provide insight into linguistic and social-cognitive skills, researchers have recently begun to analyse narratives as a means of investigating atypical social-cognitive development in PI-children (Capps, Losh and Thurber, 2000:193).

A good Frog story narrative is characterized by one long turn of the child, and all communicative contributions are related to the narrative, the so-called narrative contributions. As we already mentioned, N-children are still developing this ability between four and eight years (Roelofs, 1998). In populations of LI-children, especially in LI-children with pragmatic disorders, it has been frequently observed that they have problems with the production of longer turns (McTear, 1985). In a
pilot study on the narrative abilities of Dutch-speaking LI-children (Verkoeijen, 1999), it was confirmed that LI-children needed more feedback from the investigator. These children seem to have problems with constructing an autonomous narrative without the interlocutor's queries and prompts.

We might therefore also expect difficulties in the PI-children in focussing on the narrative task. This is indeed what we found. We counted all narrative contributions calculated over all communicative contributions (see 10.2) elicited with the picture book. The percentage narrative communicative contributions was significantly lower in the PI-children than in the N-children. Even older PI-children show more task digression than younger N-children, expressing irrelevant personal associations. The PI-children thus seem to have some attention problems in focussing on the narrative task.

Although the PI-children produce more narrative contributions with age (86% to 98%), no linear increase was observed in the PI-children as opposed to the N-children (90% to 99%) (Roelofs, 1998: 140). However, the actual number of codable narrative contributions expressed per Frog story in Dutch was on average 48 in both N- and PI-children (range 40 to 55) (see 9.2.1 and 9.2.1 for the story length measured in clauses). These were mostly simple T-units and a few complex T-units with one subordinate clause. The number of narrative contributions proved to be stable over time, as no significant main effects were observed, although with age the number of clauses did increase in the PI-children (see 9.2.2). The 120 Dutch-speaking PI-children did not tell significantly shorter stories than the N-children, in contrast to what has been observed in English-speaking autistic PI-children (Tager-Flusberg, 1995).

Here we are interested in qualitative differences in performance between the N- and PI-children (see Table 14.1). Therefore, we explored the ability to embed a narrative in time, and compare the PI-children with the N-children (see 14.2). Next, we will look in more detail at the ability to narrate the most important plot components, following the analysis of Trabasso, Van den Broek and Suh (1989) and Trabasso and Rodkin (1994) (see 14.3). A plot line narrated in full contributes positively to the coherence of the narrative. As in the analysis of the conversational interview, we looked at the ability to use co-referential cohesive devices (14.4), for referent introductions (14.5), referent maintenances (14.6) and referent shifts (14.7). Finally, we will make some concluding remarks with respect to the ability to establish co-

1 ANCOVA with the number of communicative contributions as covariate: group effect F(1,164)=4.07, p<0.045; age effect F(4,164)=34.53, p<0.001; age*group interaction effect F(4,164)=6.06, p<0.0001 (nine-year-old PI-children excluded).
2 One way ANCOVA with the number of communicative contributions as covariate; significant linear increase of narrative contributions observed (p<0.0001).
3 The number of codable narrative contributions of Dutch-speaking N- and PI-children proved to be most comparable to the number of narrative contributions (clauses) of German-speaking children, being slightly higher than the number of narrative contributions of Spanish, Hebrew and Turkish-speaking children (Berman and Slobin, 1994:31). However, Dijkhuis (1994) found more variation in 13 Dutch-speaking PI-children (range 23-66 narrative contributions) and a lower mean of 39 narrative contributions.
The ability to tell a narrative referential cohesion in a narrative as compared to the conversation (14.9) and the ability to tell a coherent narrative (14.10).

Table 14.1 The complete set of semantic/pragmatic narrative variables

<table>
<thead>
<tr>
<th>Structure</th>
<th>Form - Function - Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Embedding narrative in time</td>
<td>Narrating the Plot</td>
</tr>
<tr>
<td>story begin</td>
<td>Setting</td>
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<tr>
<td>story end</td>
<td>Initiating Events</td>
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<tr>
<td></td>
<td>Search Attempts</td>
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<td></td>
<td>GOA-units</td>
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<td>Internal Responses</td>
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<td></td>
<td>Outcome</td>
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<td></td>
<td>Co-referential cohesion</td>
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<tr>
<td></td>
<td>referent introduction</td>
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<td></td>
<td>referent maintenance</td>
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<td></td>
<td>referent shift</td>
</tr>
</tbody>
</table>

In the next sections each of these variables will be defined and motivated in detail.

14.2 Embedding a narrative in time

14.2.1 Research questions, definitions and operationalisations

As pointed out before (see 9.3) temporality is an important factor in the organisation of narrative structure with respect to anchoring tense. Pinpointing the narrative on an abstract time-line is related to the social-cognitive ability to (pre)plan the narrative text as a whole and to the ability to take into account the listener's need by providing a clear start and endpoint to the story (Berman, 1988; Berman and Slobin, 1994). As explained earlier (see 9.3), we therefore adopt two basic notions following Reichenbach (1947). He distinguished the speech time (S): the time the child speaks in the actual here-and-now and the reference time (R): the abstract time-line to which is referred narrating the Frog story. Fulfilling the task of telling the Frog story, children must cognitively go from the actual time of being and speaking to the abstract time-line of the story and back again (Aksu-Koç and Von Stutterheim, 1994).

Among the first who analysed this type of narrative time embedding were Applebee (1978), Sutton-Smith (1979), Hudson, Gebelt, Haviland, and Bentivegna (1992). More recently, it is reported that the development of this ability starts at age three/four in Hebrew and English-speaking N-children and is not finished before the age of nine (Berman and Slobin, 1994; Berman, 1996). Here, we want to answer whether the embedding of narratives in time by means of a clear start and endpoint by the PI-children is comparable to the embedding by the N-children. And, is there comparable development with age?

Following Berman (1996), a narrative discourse analytic model was developed (Roelofs, 1996; Roelofs, 1998:137) in order to explore the ability to embed a
narrative in time that is content sensitive for Dutch. Only correct instances of a
subset of variables were counted, as defined in the following.

The start of the Frog story can be marked in four different ways in Dutch by the use
of

(1) **stereotype expression**, such as 'er was eens....' (once upon a time...) or 'dit is een
verhaal over....' (this is a story about ...)
(2) **adverbs of place**, such as 'er is...'/ 'd'r zijn...' (there is/are ....) or **adverbs of time**, such as 'eens...' (once....) or 'het is avond...' (it is evening)
(3) a **tense shift from present to simple past/ perfective**.
The morphological tense marking on verbs used for the actual speech time (S) is
the present as opposed to the tense marking on the first verb used in the reference
time (R) of the Frog story. This is the simple past and perfective (e.g. Moerman-
Coetsier en Van Besien, 1987) (Example 1).

**Example 1**

Start expressed by means of a stereotype expression and a tense shift (PI-child; age
8;0)

Interviewer: je mag nu beginnen met vertellen.
(you can now start the narrative)
Jordi: → er was eens een jongetje.
(once upon a time there was a boy)

In Example 1, the actual speech time (S) before the PI-child starts the story is
present 'mag' (can). The PI-child correctly uses the simple past 'was' (was) on the
first verb in the Frog story reference time (R).

The end of the Frog story can be marked in three different ways in Dutch by the use
of:

(1) **stereotype expression**, such as 'en ze leefden nog lang en gelukkig' (and they
lived happily ever after)
(2) **done expressions** such as 'uit' of 'klaar' (done/ I have finished)
(3) **tense shift from simple past/ perfective to present**. The morphological tense
marking on the last verb used in the reference time (R) of the Frog story then is
the simple past/perfective and the tense marking on the verb used to close the
story is the present (Example 2).

**Example 2**

End expressed by expressions such as 'done' and a tense shift (PI-child; age 8;0)

Natascha: het jongetje nam hem mee naar huis.
(the boy took him home)
Natascha: en toen is het verhaal uit.
(and then (past) the story is ended)

In Example 2, the PI-child used 'nam' (took) that is the simple past form of the verb
'nemen' (to take) to refer to the reference time (R) and 'is' (is) that is the present
tense marking for the verb 'zijn' (to be) to refer to the actual speech time (S). This
The ability to tell a narrative also shows an erroneous agreement between the adverb of time and the morphological tense marking on the verb (see 7.2 and 9.3). Failure to mark the beginning and end of the Frog story means that the child just starts talking and the story finishes with the last narrative contribution or the child just closes the picture book.

14.2.2 Results: Embedding a narrative in time
From Figure 14.1, it is obvious that there are significantly fewer PI-children (mean 32%) than N-children (mean 57%) that mark the *start* but there are a comparable amount of PI-children (mean 64%) and N-children (mean 70%) that mark the Frog story end. As could be expected on the basis of the developmental literature (e.g. Hudson et al., 1992; Sutton-Smith, 1979; Berman, 1996), the ability to mark the *story beginning* starts to develop at age four in the N-children but at age six/seven in the PI-children. Significantly more older PI-children than younger PI-children express the story beginning (see also Roelofs, 1998:143).

The development to mark the *story end* starts at age four in both N- and PI-children. With respect to this ability no significant main effects were observed. Although it was not coded or analysed, the PI-interviewers' style to wait and look at the PI-child for a story end marking to come, might have influenced the behaviour of the PI-children positively.

Figure 14.1 Percentages of N-children (Roelofs, 1998) and PI-children per age group that express the *start* at the *end* of the Frog story

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4 As opposed to the analysis of Roelofs (1998) the expression of the *outcome* of the Frog story is not coded as 'marking the story end'.
5 Chi square (1df; after continuity correction) = 7.80, p<0.0001.
6 No age effect was observed using the Mantel-Haenszel Chi square test for linear association.
7 Mantel-Haenszel Chi square test for linear association; 1 df = 22.61, p < 0.001.
From Table 14.2 we see that N-children more often mark the start of the Frog story with a tense shift (T) (total mean 36%) than with a stereotype expression (S) (total mean 21%). This difference is not found in the PI-children. The numbers of PI-children that use tense (T) and stereotype expressions (S) to mark the story beginning are both low. Significantly more older than younger PI-children start the story by means of stereotype expression (S). No age effect was observed in the N-children, because relatively many five-year-old N-children expressed stereotype expressions (S) compared to the other age groups within the N-population.

From Table 14.2 we also see that the end of the Frog story is marked by more N- and PI-children with a tense shift or an expression such as 'done' (T/D) (total mean N-children: 67%; PI-children: 64%) than with a stereotype expression (S) (total mean N-children: 3%; PI-children: 0%). No significant group effect was observed. There is a significant age effect in the use of tense shift and/or expression such as 'done' (T/D) to mark the end of the Frog story.

Roelofs (1998:143) reported that a relatively high number of seven-year-old N-children expressed no end, but expressed the story outcome instead (Roelofs, 1998:143). Only two eight-year-old N-children used the stereotype expression equivalent to the English 'and they lived happily ever after...'; but none of the PI-children did.

### Table 14.2

<table>
<thead>
<tr>
<th></th>
<th>N-children n=75</th>
<th>PI-children n=120</th>
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<tbody>
<tr>
<td></td>
<td>opening Tot</td>
<td>S</td>
</tr>
<tr>
<td>4 yrs</td>
<td></td>
<td>.27</td>
</tr>
<tr>
<td>5 yrs</td>
<td></td>
<td>.67</td>
</tr>
<tr>
<td>6 yrs</td>
<td></td>
<td>.46</td>
</tr>
<tr>
<td>7 yrs</td>
<td></td>
<td>.66</td>
</tr>
<tr>
<td>8 yrs</td>
<td></td>
<td>.80</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>.57</td>
</tr>
<tr>
<td>9 yrs</td>
<td></td>
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</tbody>
</table>

Roelofs (1998:143) reported that a relatively high number of seven-year-old N-children expressed no end, but expressed the story outcome instead (Roelofs, 1998:143). Only two eight-year-old N-children used the stereotype expression equivalent to the English 'and they lived happily ever after...'; but none of the PI-children did.

14.2.3 Conclusion: Embedding a narrative in time

We conclude that significantly fewer PI-children, mainly the four- and five-year-olds, mark the story beginning compared to the N-children. An equal amount of N-children
and PI-children mark the story end, mostly with a tense shift and relatively infrequently with a stereotype expression. Especially the young PI-children show some difficulties in marking the story beginning in order to pinpoint the narrative on an abstract time-line. Older PI-children seem to have acquired the same social-cognitive or meta-linguistic skills as the N-children to (pre)plan the narrative text as a whole. Older PI-children thus take into account the listener's need by providing a clear start and endpoint to the story.

14.3 The ability to narrate the plot

14.3.1 Research questions, definitions and operationalisations
The plot is an abstract schema for the organising of a story. Labov and Waletsky (1967) showed that the plot has a structure that contains an onset, unfolding and a resolution. Mandler and Johnson (1977) and Stein and Glen (1979) use the terms setting and episodes. The setting specifies the characters and the space and time in which the story events take place. An episode is structured around a goal-directed action and outcomes, and these actions and outcome within one episode together can form a mini-plot. Stein and Glen (1979) also described how events in a narrative can be related by temporal, logical and causal relations. These ideas about the plot are incorporated in the causal network model of Trabasso and colleagues (1989), Trabasso and Nickels (1992) and Trabasso and Rodkin (1994). They all focus on the causal relations between narrative events, called planning components. In order to evaluate the content of all N- and PI-narratives, we developed a narrative discourse analytic model that is sensitive for Dutch, largely based on the causal network model of Trabasso and Rodkin (1994). Using this model we can explore coherence in the narratives of both N- and PI-children.

It can be assumed that coherence is achieved by the causal linking of narrative contributions that contribute to the plot. There can be a discrepancy between what can be causally and thus coherently linked by children and what children understand about causality. This understanding is part of the development of their Theory-of-Mind (see 2.3.3), which concerns a theory about psychological and physical causation (Kemper, 1984). It is especially the knowledge about goal plans of action (Trabasso and Nickels, 1992) that underpins the ability to narrate the planning components that are part of the overall plot (see Table 14.2).

In sum, the analysis of N- and PI-children's expression of the amount of planning components is globally indicative for their ability to narrate a causally related plot-line. N-children become better in doing so with age. They also become better in explicitly marking the causal relations between narrative contributions, as, for instance, the results from Spanish-speaking N-children (4;0 tot 8;11 years) show (Guttierrez-Clellen and Iglesias, 1992). In Table 14.3 we present the planning components and their coding. When these are causally and coherently linked, this contributes greatly to the quality of the Frog story narrative.
We will now explain the causal relations between the different planning components. Following Trabasso and Rodkin (1994) we adopt the view that the plotline that has to be narrated by the children reflects a hierarchical network of goals that the main character has in mind. This underlying internal (pre)plan of the main character then is the basis of and is causally related to the actions the main character undertakes.

First, the children have to give some general information about the main characters (setting; see Table 14.3) and give some background information about time and place, and the initiating circumstances (initiating events; see Table 14.3).

Second, when the frog disappears and the boy feels sad about this (internal response; see Table 14.3), this emotion of sadness is turned into an emotion of desire. This emotion underlies not only the highest goal (1), i.e. that the boy wants to retrieve the frog, but since causally motivates a goal plan of actions (2), i.e. the boy plans to find his frog back. Good narrators will incorporate the two internal feelings (9 and 19; Table 14.3). This ability reflects the ability to take a different perspective then your own, being part of the Theory-of-Mind (see 2.3.3). Children younger than nine years of age mostly are not explicit about this part of the story, since it is too

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11 The two initiating events boy finds jar and jar is empty are only one initiating event in the model of Trabasso and colleagues (1992).
12 The overall outcome of the plot is worked out in detail contrary to the model of Trabasso and colleagues (1992).
difficult for them to talk about the inner motives of main characters (e.g., Piaget, 1955; Berman and Slobin, 1994).

Third, children then have to narrate how the boy works out his internal plan. Children have to narrate the search attempts on different locations the boy undertakes to find his frog (see Table 14.3). From age four on, N-children can narrate these events in a rather global manner. With age, they learn to narrate about the search attempts in more detail, giving more background information (Roelofs, 1998; Berman and Slobin, 1994).

Fourth, children have to learn to express explicitly that many of the main-character attempts (search attempts; Table 14.3) fail. The boy thereafter internally reinstates the search goal (1) and the motivation (2) to attempt once more to find the frog. The narrated search attempts and their failure can form a mini-narrative within the overall narrative. When the Action of a search attempt, its Location, the Goal of the search attempt (the frog) and its Outcome (successful or not) are all explicitly narrated, this forms a narrative Goal-Action-Outcome unit (see 14.3.4 for more details). Only half of the eight-year-old Dutch-speaking N-children are capable of expressing this (Roelofs, 1998). This finding confirmed earlier results (Trabasso and Rodkin, 1994).

Finally, the lost object is found by the boy and goal 2 is reached (Outcome 17; Table 14.3). Then the lost object is taken home and goal 1 is reached (Outcome 18; Table 14.3). The main-character's internal goals 1 and 2 which are established in the beginning of the story are strongly hierarchically and causally connected to outcome 18 and 17 at the end of the story. When the goals are reached, the boy therefore looks and is happy (internal response; Table 14.3).

Unfortunately, the picture book leaves room for speculation; that the boy gets his lost frog back is not that clear. The boy also finds, sitting next to his own frog, another frog and little frogs; it is not clearly depicted which one the boy takes home. Children thus can narrate this part of the Frog story in many different ways. Some options are coherent with the pictures and the overall plot, whereas others are not. These incorrect outcomes are marked with an asterix * (see Outcome 17 and 18; see Table 14.3). From the developmental literature, we know that two thirds of the four-year old and most five-year-old N-children can express one of the two Frog story outcomes (Roelofs, 1998). This finding confirmed earlier reports (Trabasso and Rodkin, 1994).

Narrative contributions were coded as planning components only if they fulfilled certain conditions. Firstly, the state of affairs (Dik, 1989) had to be explicitly expressed by the narrator. It had to contain the subject/thematic agent and the verb that expressed a situation or action. This was defined for Dutch by Blankenstijn (1996), based on Trabasso and Rodkin (1994). Secondly, the narrative contributions had to be expressed in direct relation to the picture depicting that planning component. In the narrative eliciting method (see 3.3) the child tells the story while leafing through the book. Thirdly, the contributions had to reflect the main character's point-of-view, namely that of the boy (Trabasso and Nickels, 1992; Trabasso and Rodkin, 1994).
Accordingly, we counted how many narrative contributions express a planning component as part of the overall story plot line (see Table 14.3). When children express all 19 planning components, the story is qualitatively a good story. The children then show that they are able to coherently link narrative contributions in a causal-logic hierarchy and the listener is able to understand what the Frog story is about.

On the other hand, when children express too few planning components it is not possible to understand the complete plotline. Too few narrated planning components indicate a disability in expressing causality, and therefore might be very indicative for a language disorder in the area of semantics/pragmatics (e.g. Bishop, 2002). We formulated the following research questions: is the number of planning components expressed by the PI-children comparable to the amount expressed by the N-children? And, is there comparable development with age?

In order to make our results comparable to those of others, we followed Trabasso and Rodkin (1994:100, Table 14.3) by presenting the results in terms of the percentage of narrators in each age group who include (parts of) the search attempts, such as its location, goal (purpose) and outcome, in narrating the Frog story. The planning components will be discussed according to type. We start with the exploration of the ability to express the Frog story setting (14.3.2), followed by the ability to express initiating events (14.3.3), search attempts (14.3.4), internal responses (14.3.5), and the Frog story outcome (14.3.6), ending with some concluding remarks about the ability to narrate the plot in general (14.3.7).

14.3.2 Setting
The setting consists of two parts. The narrator must mention that there is a frog (1) (Example 3), and that the boy possesses the frog (2) (Example 4) (see Figure 14.2).

Example 3 the frog is introduced (PI-child; age 8;11)

Kirsten: het gaat over een jongetje. (it is about a boy)
Kirsten: en <eh> zit op een krukje. (and <eh> sit on a stool)
Kirsten: en er is een hondje. (and there is a dog)
Kirsten: en het hondje kijkt <in een eh> in een glazen ### bak. (and the dog looks <in a eh> in a bowl)
Kirsten: en er zit een kikker in. (there is a frog sitting in it)

Example 4 the boy possesses the frog (PI-child; age 8;11)

Miranda: "wat lief he de kikker die we hebben gevangen bij de sloot? (what sweet, isn't it, the frog that we caught near the ditch?)
Paraphrasis: de boy says to the dog: "isn't he sweet, isn't it, the frog that we caught near the ditch?"
The ability to tell a narrative

We observed that the introduction of the frog is the easiest part of the Frog story for both N- and PI-children. Most N-children (mean 93%) and PI-children (mean 98%) give expression to this part (see Appendix 14; Table 14a). Although we expected some problems in this area, since PI-children with externalizing PI are observed to express significantly fewer setting components than N-children (Cole, 1997), no main effects\(^\text{13}\) were observed, since most N- and PI-children introduce the frog (planning component 1; Table 14.3).

Children not only must remember the content of the end of the story, but also the plot structure when they start narrating. If narrators express that the boy possesses the frog (Figure 14.2), at the beginning of the narrative, they show that they are able to present the narrative as a whole. The fact that the boy wants to get his frog back is then more explicitly motivated.

Figure 14.2 Percentage of N-children (n=15 per age group) and PI-children (n=20 per age group) that express boy possesses frog

From Figure 14.2 we see that the four-year-old N- and PI-children are not able to express the fact that the boy possesses the frog (see also Roelofs, 1998:140). We observed that significantly\(^\text{14}\) more older than younger N-children and PI-children express this plot element (i.e. planning component 2; Table 14.3).

This ability increases from age four but the strong improvement seems to start at age seven in the N-children and later with the PI-children. Both groups still have to develop considerably in this aspect after age eight.

Thus, in general the ability to produce the first planning component (introduction frog) is already developed in most four-year-old N- and PI-children but the second component (possession frog) is not produced by N- and PI-children as a group until after eight/nine years of age.

\(^{13}\) According to the Pearson's Chi-square no group effect was observed. According to the Mantel-Haenszel Chi square test for linear association no age effects are found.

\(^{14}\) Mantel-Haenszel Chi square test for linear association (1 df)= 25.37, \(p < 0.001\).
14.3.3 Initiating events

The initiating events are analysed into six parts: boy asleep (3), frog leaves jar (4), boy awakes (5), boy finds jar (6), jar is empty (7) and frog gone (8) (see Table 14.3) (Example 5).

Example 5  
Expression of initiating events (PI-child; age 8:10)

<table>
<thead>
<tr>
<th>Event</th>
<th>PI-child</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boy asleep</td>
<td>dat jongetje zit te slapen. (that boy is sleeping)</td>
</tr>
<tr>
<td>Frog leaves</td>
<td>en die kikker probeert gluipend (?) uit het potje te lopen. (and that frog tries sneakily[?] to climb out of the jar)</td>
</tr>
<tr>
<td>Paraphrasing</td>
<td>(and that frog tries to sneak out of the jar)</td>
</tr>
<tr>
<td>%cod:</td>
<td>frog leaves</td>
</tr>
<tr>
<td>Christiaan:</td>
<td>en die hond die zit nou bij het jongetje. (and that dog that is sitting now next to the boy)</td>
</tr>
<tr>
<td>Christiaan:</td>
<td>en dat jongetje dat schrikt zich dood (and that boy he is startled)</td>
</tr>
<tr>
<td>Christine:</td>
<td>de kikker is weg. (the frog is gone)</td>
</tr>
<tr>
<td>%cod:</td>
<td>frog gone</td>
</tr>
</tbody>
</table>

We first computed the percentage of N- and PI-children per age group that narrated each initiating event (see Appendix 14; Table 14b). In Figure 14.3, we present the percentage of N- and PI-children that narrated all initiating events.

Figure 14.3 Percentage of N-children (n=15 per age group) and PI-children (n=20 per age group) that express all initiating events

<table>
<thead>
<tr>
<th>Age</th>
<th>N-chi initiating events (%)</th>
<th>P-chi initiating events (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 yrs</td>
<td>53</td>
<td>20</td>
</tr>
<tr>
<td>5 yrs</td>
<td>13</td>
<td>20</td>
</tr>
<tr>
<td>6 yrs</td>
<td>80</td>
<td>55</td>
</tr>
<tr>
<td>7 yrs</td>
<td>73</td>
<td>70</td>
</tr>
<tr>
<td>8 yrs</td>
<td>87</td>
<td>75</td>
</tr>
<tr>
<td>9 yrs</td>
<td>85</td>
<td>85</td>
</tr>
</tbody>
</table>

There is no significant difference between the two groups. This is possibly due to the relatively low performance of the five-year-old N-children of which none expressed that the boy finds the jar (see Appendix 14; Table 14b).

15 According to the Pearson's Chi-square no group effect was observed.
The ability to tell a narrative

The older N- and PI-children produce significantly more initiating events than the younger N-children (see also Roelofs (1998:141) and PI-children. We checked whether the most important initiating events frog leaves and frog gone are expressed by an equal number of PI-children and N-children, since these scenes are the background to all the subsequent search attempts; this proved indeed to be the case; no significant group effect was found.

However, there still may be PI-children who produce not enough initiating events for their age. In Table 14.4, we present how many individual N- and PI-children produce not enough initiating events, largely based on cut-off points that are, in turn, based on age-related z-scores ($z \leq -2$).

Table 14.4

<table>
<thead>
<tr>
<th>Initiating events</th>
<th>Number of N-children</th>
<th>Number of PI-children</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$n=75$</td>
<td>$n=15$</td>
</tr>
<tr>
<td>number expressed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>3</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>max</td>
<td>$n=15$</td>
<td>$n=20$</td>
</tr>
<tr>
<td>9 yrs $\leq 2$</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>5 yrs $\leq 2$</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6 yrs $\leq 3$</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>7 yrs $\leq 3$</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8 yrs $\leq 3$</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>9 yrs $\leq 4$</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>20 (27%)</td>
<td>49 (41%)</td>
</tr>
</tbody>
</table>

There are significantly more PI-children ($n=49$) than N-children ($n=20$) that express not enough initiating events according to their age. There are even more PI-children that express extremely few initiating events: 2 PI-children express no initiating events at all; 5 PI-children express only 1 initiating event; 18 PI-children express only 2 initiating events. Thus, 25 (21%) PI-children in total as opposed to only 14 (18%) mainly younger N-children express only 0 to 2 initiating events.

Especially the four-, five- and nine-year-old PI-children had difficulties in describing what they see on the two pictures that depict the six initiating events. These PI-children sometimes express other less important things, some of which can be seen on the pictures and some not. This is background information (Example 6).

---

16 Mantel-Haenszel Chi square test for linear association (1 df) = 31.39, $p < 0.0001$.
17 According to the Pearson's Chi-square no group effect was observed.
18 This analysis is based on the following cut-off points per age group: when four-and five-year-old children produce less than 3 initiating events, when six- to eight-year-old children produce less than 4 initiating events and when nine-year-old children produce less than 5 initiating events, these children express too little initiating events according to their age.
19 Fisher's Exact, $df=1$ (2-sided) = 4.51, $p<0.04$. 
Example 6: The production elicited by the initiating event pictures (PI-child; age 4;2)

Willem: helemaal donker.
(totally dark)

Willem: der hangt daar T-shirt.
(there hangs T-shirt)

Since six initiating events are elicited by only two pictures, the 41% of all PI-children might wrongly presuppose that one narrative contribution per picture is sufficient and gives the interviewer enough information to come to a correct understanding. The minimal linguistic performance reflects that PI-children follow the wrong semantic/pragmatic rule 'say as little as possible' in the narrative genre. This finding is comparable to the same tendency as observed in the conversational interview genre. There, the PI-children significantly leave more obligatory grammatical elements unexpressed (Chapter 5), express significantly more minimal responses (see 11.3) and significantly more frequently violate the Maxim of Quantity: too little information (see 12.5).

14.3.4 Search attempts

There are seven search attempts: boy searches frog in room (10), boy calls frog out of window (11), boy searches frog outside (12), boy searches frog in hole in ground (13), boy searches frog in hole in tree (14), boy calls frog from rock (15) and boy searches frog behind log (16) (see Table 14.3). These seven attempts form the major part of the Frog story.

In order to give the listener enough coherent and relevant information about the planning components the location, the goal, also called purpose (Trabasso and Rodkin, 1994) and the outcome of the seven search attempts needs to be explicitly narrated, following Grice's principle (1975) of being informative (see 12.5). This information is semantically/ pragmatically obligatory information. When this information is expressed by the children, the intelligibility of the Frog story will improve. However, the search attempts and their location, goal or outcome do not have to be expressed in one single narrative contribution. In general children need more successive narrative contributions to do so (Table 14.5).

Table 14.5 The coding categories with respect to the analysis of search attempts

<table>
<thead>
<tr>
<th>Search attempts</th>
<th>- location*</th>
<th>+location</th>
<th>Figure 14.4</th>
</tr>
</thead>
<tbody>
<tr>
<td>- goal*</td>
<td>+ goal</td>
<td>Figure 14.5</td>
<td></td>
</tr>
<tr>
<td>- result*</td>
<td>+ result</td>
<td>Figure 14.6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- result*</td>
<td>+ result GAO-unit</td>
<td></td>
</tr>
</tbody>
</table>

* incoherently expressed search attempts
As mentioned above (see 14.3.1), each search attempt (and the failure) forms a mini-narrative within the overall narrative. When the Action of a search attempt (verbs for searching, looking, calling and so on), its Location (e.g. room, hole in tree etc.), the Goal of the search attempt (the frog) and its Outcome (successful or not) are all explicitly narrated, this forms a narrative Goal-Action-Outcome unit (see Table 14.5). In the following, we will explain our method of analysis in order to judge the coherency of the expressed search attempts.

First, we only scored search attempts when they were expressed in direct relation to the picture depicting that search attempt. The following examples are all related to plot component 14: the boy looks into a hole in a tree in order to find the frog, but finds an owl instead (see Table 14.3) (picture 14) (see also Appendix 3a). When children only give some background information (Example 7), no search attempt can be scored.

Example 7

Catrien:

No search attempt expressed (PI-child; age 5:3)

en dan komen opeens alle bijen er weer uit.
(and then suddenly all the bees fly out)

In contrast to Trabasso and Rodkin (1994), we counted all search attempts even when their location was not expressed explicitly. This was scored as +search attempt -location [+- goal -outcome] (Example 8).

Example 8

Sas:

+search attempt -location [-goal -outcome] (PI-child; age 7:8)

en toen keek de jongen
(and then the boy looked)

Paraphrasis:
and then the boy looked in the hole in order to find the frog, but found an owl instead

Second, when children express a location (room, window, outside, hole in ground, hole in tree, rock and log), this was scored as +search attempt +location [+- goal +/-outcome] (Example 9).

Example 9

Child:

+search attempt +location [-goal -outcome] (PI-child; age 5:2)

en toen keek de jongen in de holletje
(and then the boy looked in the hole)

Paraphrasis:
and then the boy looked in the hole in order to find the frog, but found an owl instead

From Trabasso and Rodkin (1994:100) we know that adults nearly always express the exact location of each of these 7 search attempts. The locations form the mental space (Hendriks, 1993; Sanders, 1994) of the Frog story, i.e. the mental location in which all the events take place. However, N-children from four to eight/nine years seem to have difficulties in providing the listener with this information (Berman and Slobin, 1994; Trabasso and Rodkin, 1994; Helle, 1998).
Third, when the children express the goal of the search attempt, i.e. the frog or finding the frog, this was scored as +search attempt +/-location +goal [+/-outcome] (Example 10).

Example 10  
+search attempt -location +goal [+outcome] (PI-child; age 5;8)

Jesse:  
<gaan> de jongen gaat kijken of de kikker daar zit  
(<go> the boy is looking if the frog sits there)

In Example 10, the child expresses the goal but does not specify the location. He says only 'daar' (there), a 'light adverb', that contains too little specific information and thus remains semantically vague. This therefore has to be scored as -location. In the conversational interview genre light adverbs were counted as jumps (see 12.3).

When children leave the goal unexpressed and implicit, they give the impression that the boy is looking for something else or not searching at all. To express the theta role (e.g. Dik, 1989) +goal is thus semantically/ pragmatically obligatory information. N-children seem to be able to express goals in relation to search events before age four (Clark and Clark, 1977). Morphologically/syntactically, however, it is optional to express the goal. The goal, 'the frog' / 'for the frog' is usually expressed in the object or indirect object. In Dutch the goal is usually expressed with a direct object, such as in 'hij zoekt de kikker'. But the sentence 'hij zoekt ∅ overal' (He searches ∅ everywhere) with no overt goal/direct object remains grammatical in Dutch. The goal/direct object is therefore said to be optional, when the referent of the search attempt is clear (see also 8.6). In contrast in English, the goal is mostly expressed by means of an indirect object, such as in 'he looks for the frog'. It is not possible to leave the object of the preposition unexpressed. This verb might therefore trigger the explicitation of the goal in English in contrast to Dutch.

Possibly, the morphological/syntactic difficulty to express the (in)direct object, as some PI-children are observed to have in the conversational interview genre (see 5.4), also causes this semantic/pragmatic obligatory information to remain unexpressed in the narrative. In the Frog story, it can also be rather difficult for children to make the goal explicit in words, since the goal remains implicit on the pictures, as the lost frog is not to be seen until the end.

Finally, the narrator explicitly has to mention whether the boy did or did not succeed in finding the frog, called the outcome of a search attempt. When children express the outcome this was scored as +search attempt +/-location +/- goal +outcome (Example 11).

Example 11  
+search attempt -location -goal +outcome (PI-child; age 5;5)

JanWillem:  
de jongen keek daarin.  
(the boy looked in it (?)).

JanWillem:  
maar daar was de kikker ook niet.  
(But the frog was not there either).
In Example 11, it is not clearly expressed where the boy is searching, but in the last narrative contribution the outcome of the search attempt is explicitly expressed with the word 'ook niet' (not either). The narrator makes clear that the boy is continually looking for the frog. The goal is thus implicitly mentioned, but not explicitly, and is coded as -goal.

If a child explicitly expresses the search attempt +location +goal +outcome, this is coded as a *Goal-Action-Outcome unit* (Trabasso and Nickels, 1992) (see 9.4.1). GAO-units are complete expressions of search attempts and can form a mini plot on their own. If children express GAO-units they give the listener sufficient, coherent, causally linked and thus relevant narrative information to understand the story. Thus, the number of GAO-units in one narrative is a measure of complexity, reflecting sophisticated semantic/pragmatic narrative skills.

We know from Roelofs (1998:143) that in the eight-year-old N-children only 15% of all search attempts were complete GAO-units. N-children of this age and younger mostly leave one or two of these semantically/pragmatically obligatory information units implicit (Examples 12 to 14). From age eight on, children more frequently express complete GAO-units (Example 15).

**Example 12**  
**Search attempt +location +goal +outcome (PI-child; age 7;10)**

Patrick: en toen zaten ze overal naar hem te kijken.  
(and then they (= boy and dog) were looking everywhere for him (= frog))

Patrick: maar ze konden hem maar niet vinden  
(but they (= boy and dog) couldn't find him (= frog))

In Example 12, the adverb of place 'everywhere' is judged as a 'light adverb' since it does not explicitly refer to one of the specific search attempt locations. The adverb 'everywhere' is therefore not coded as +location.

Example 12 also illustrates that the analysis of search attempts is partly dependent on the analysis of co-referential cohesion, since all the pronouns used, such as 'ze' (they) and 'him' (hi) in the first contribution and 'ze' (they) in the second contribution have to be judged as clear. When such pronouns do not clearly refer to either the frog, the boy or the 'boy + dog' together, it is not possible for the listener to detect who is searching for what. When, for instance, the pronominal reference to 'the frog' is unclear (which is not the case in Example 12) we then had to score -goal (see 14.4 and further).

**Example 13**  
**Search attempt +location +goal -outcome (PI-child; age 5;9)**

Jesco: en het jongetje die zat op een boom <om> om te kijken  
(and -the- boy- that- sat- in- a- tree- <to>- to- look  
< if- there-> if-in-a- birds nest- sat- a -frog) (direct translation)

the boy sat in a tree to look whether the frog was in a birdnest
Example 14  
**Search attempt +location +goal +outcome (PI-child; age 6:10)**

Adriaan: 

hij keek <in het> in de gat van de boom.  
(he looked <in the> in the hole of the tree)

Adriaan: 

<toen zat> er kwam een uil uit.  
(then sat> there came an owl out of it)

---

Example 15  
**GAO-unit: Search attempt +location +goal +outcome (PI-child; age 8:2)**

Tanja:  

Jan roept: "kikker, kikker, waar ben je?"  
(Jan calls: "frog, frog, where are you?!"

Tanja:  

Jan klimt in een boom om te kijken of tie daar zit.  
(Jan (= boy) climbs in a tree to look if he (=frog) is sitting there)

Tanja:  

maar er komt een uil uit.  
(but an owl comes out).

In Example 15, the PI-child needs more narrative contributions to express a GAO-unit. In Example 16 (fictive) we show how narrators can follow Grice's principles (1975) of being informative and not redundant (Maxim of Quantity) (see 12.2); for instance, a complete GAO-unit is packaged when narrated in a conjunction reduction construction forming one single morphologically/ syntactically and semantically/ pragmatically correct T-unit (see 8.4).

Example 16  
**GAO-unit: Search attempt +location +goal +outcome (fictive)**

Child:  

The boy climbed in a tree to look for the frog in a big hole,  
but encountered an owl instead.

---

Here we want to explore whether the number of PI-children and N-children that narrate GAO-units are comparable. And, is there comparable development with age? Following the assumption that children learn to express language from little to more complex, we want to explore how many PI-children compared to N-children express: (1) all the classical 7 search attempts +location, (2) all the 7 search attempts +location in addition with the obligatory semantic/pragmatic information +goal or +outcome, and (3) the 7 search attempts as complete, complex GAO-units that form a mini-narrative on their own (see Table 14.5). These three levels indicate the normal course of development.

When we look at developmental level (1), we see from Figure 14.4 that both N- and PI-children improve significantly with age in expressing the 7 search attempts +location (see Appendix 14; Table 14c). The location of a search attempt is always expressed by an adverb of place that clearly refers to one of the seven Frog story search locations mentioned above (see Table 14.3). When we compare the Dutch-speaking N-children (Roelofs, 1998) to the English-speaking N-children (Trabasso and Rodkin, 1994:100), the Dutch N-children seem to be relatively slower in their development. However, it may be the case that the explicit criteria for

---

20 Mantel-Haenszel Chi square test for linear association;1 df = 38.09, p < 0.0001.
The ability to tell a narrative

+location (excluding light adverbs) were not that strictly applied by Trabasso and colleagues (1992).

Figure 14.4

<table>
<thead>
<tr>
<th>Age</th>
<th>N-chi: SA + Loc</th>
<th>PI-chi: SA + Loc</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 yrs</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>5 yrs</td>
<td>12</td>
<td>22</td>
</tr>
<tr>
<td>6 yrs</td>
<td>30</td>
<td>26</td>
</tr>
<tr>
<td>7 yrs</td>
<td>50</td>
<td>28</td>
</tr>
<tr>
<td>8 yrs</td>
<td>57</td>
<td>49</td>
</tr>
<tr>
<td>9 yrs</td>
<td>47</td>
<td></td>
</tr>
</tbody>
</table>

As expected, although we see a relatively low performance of the five-year-old N-children, significantly 21 fewer PI-children than N-children produce 7 search attempts +location. We also detected how many N- and PI-children produced too little search attempts +location according to their age, largely based on the age-related cut-off points of $z \leq -2$. There are significantly 22 more (41%; n=49) PI-children than N-children (27%; n=20) that produce not enough search attempts +location for their age. These PI-children do not even reach level (1) and therefore show a clear language delay in their development of narrative skills.

When we look at developmental level (2), we know from the literature that children learn to express the goal (purpose) before the outcome (Trabasso and Nickels, 1992). Therefore we first present the percentage of N- and PI-children that include 7 search attempts +location +goal -result in Figure 14.5 and then the percentage of N- and PI-children that include 7 search attempts +location -goal +result' in Figure 14.6 (see also Appendix 14; Table 14c).

From Figure 14.5 we see two different interfering zigzag patterns. No significant group effect was observed. When we compare the Dutch-speaking N-children (Roelofs, 1998) to the English-speaking N-children (Trabasso and Rodkin, 1994:100), the Dutch N-children show a comparable developmental course. At age seven the children seem to be behaving close to adult level. From research in English it is reported that 47% of all nine-year-old English-speaking N-children and

21 Chi square (1df; after continuity correction; 2-sided) = 3.92, p<0.48.
22 Fisher's Exact, df=1 (2-sided) = 4.05, p<0.047.
55% of the adults (n=12) expressed the search attempts' goal, called 'purpose' by Trabasso and Rodkin (1994). This is the same level in Dutch: 47% of all Dutch-speaking seven-and eight-year-old N-children express the goal. The eight-year-old PI-children thus show a relatively high performance.

The ability to express the goal of a search attempt significantly improves with the N- and PI-children's age. However, instead of the goal of a search attempt (35%) the nine-year-old PI-children prefer to explicate the result of a search attempt (70%) (see Figure 14.6).

From Figure 14.6 we see that there are relatively more N-children and PI-children that express search attempts +location -goal +outcome' than N-children and PI-children that include '+goal -outcome'. No significant group-effect was found (see also Appendix 14; Table 14c). When we look at development with age, we see that the ability to express search attempts +location -goal +outcome' linearly improves with age, and more quickly than the ability to express search attempts +goal.

23 Mantel-Haenszel Chi square test for linear association; 1 df = 12.55, p < 0.0001 (nine-year-old PI-children excluded).
24 Mantel-Haenszel Chi square test for linear association; 1 df = 9.37, p < 0.0001.
The ability to tell a narrative

Most importantly, this result suggests that Dutch-speaking N- and PI-children are able to express search attempts +location +goal +outcome' before they can express search attempts +location +goal -result. Outcomes are more informative than goals (purposes) since they allow one not only to infer whether or not an attempt succeeded, but also to infer its goal (purpose). Like adults (Trabasso and Nickels, 1992; Trabasso and Rodkin, 1994) we observed a few instances of this tendency in some eight-year-old N-children and nine-year-old PI-children. These narrators then are following Grice's principles (1975) of being informative and not redundant, such as in Example 11.

When we look at developmental level (3), we see from Figure 14.7 that the ability to produce GAO-units improves with the N- and PI-children's age, although we see that a relatively very small number of nine-year-old PI-children expresses GAO-units (see Appendix 14; Table 14c). When we look more closely, it becomes clear that none of the four-year-old N- and PI-children are able to produce GAO-units, and this is comparable to earlier results of same-aged English-speaking N-children (Trabasso and Nickels, 1992).

From age six on, more of the N- than PI-children start to express GAO-units. The nine-year-old P-children perform differently from younger PI-children, since most of these oldest PI-children (70%), as we have seen (Figure 14.6) express only search attempt +location +goal +outcome.

Since we know that many PI-children, even in the oldest age groups, give too little morphological/syntactic (Chapter 5) and semantic/pragmatic information (see 12.5) in the conversational interview genre, the chances increase that some of these PI-children do not follow the principle of being informative and not redundant (Grice, 1975) (see 12.5 and 12.6), but leave out verbal elements and then are by chance not redundant.

---

**Figure 14.6** Percentage of N-children (n=15 per age group) and PI-children (n=20 per age group) that express 7 search attempts (SA) + location (Loc) + goal + outcome (Out)

<table>
<thead>
<tr>
<th></th>
<th>4 yrs</th>
<th>5 yrs</th>
<th>6 yrs</th>
<th>7 yrs</th>
<th>8 yrs</th>
<th>9 yrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>N-chi: SA + Loc + Out</td>
<td>20</td>
<td>27</td>
<td>33</td>
<td>60</td>
<td>47</td>
<td></td>
</tr>
<tr>
<td>PI-chi: SA + Loc + Out</td>
<td>15</td>
<td>20</td>
<td>35</td>
<td>40</td>
<td>55</td>
<td>70</td>
</tr>
</tbody>
</table>

---

25 Mantel-Haenszel Chi square test for linear association; 1 df = 21.96, p < 0.0001
In sum, the PI-children have difficulties in expressing the exact location of search attempts, although the location is always depicted on the pictures. Why is this the case? Probably, a subgroup of PI-children may have difficulties with the visual information processing of two-dimensional pictures in which they have to see three-dimensional locations. For example, some PI-children interpret the picture where the boy is climbing on a rock as him walking towards a hole in the snow (see Appendix 3a). Another reason may be that another subgroup of PI-children used 'light adverbs' such as *there or here* to mention the different locations. Then the exact location is not interpretable for a listener who cannot see the pictures, and therefore light adverbs are not counted as explicitly narrated search attempts +location. Yet another subgroup of PI-children may clearly have seen the depicted locations of the search attempts, but could not mention +location, probably due to morphological/syntactic limitations in forming complex T-units that are extended with optional satellites (Dik, 1989), such as with overt adverbs of place in the form of a PP, such as 'in de boom' (in the tree) (see 6.3 and 12.5).

Furthermore, only few N-children and even fewer PI-children produced the most complex search attempts +location +goal/result or complete GAO-units. Since their number was so low, no significant group effects were found. However, significantly more older N- and PI-children than younger N- and PI-children take into account the listener's perspective and mention the extra semantic/pragmatic obligatory information necessary to come to a good understanding of the Frog story search attempts. Despite this improvement with age, we are of the opinion that the major development in this area is expected to take place beyond age eight/nine.
14.3.5 Internal responses

The narrative contributions in which the narrator expresses what the boy feels are classified as *internal responses*. There are two opportunities to do this that count as planning component: (1) the boy feels sad after the frog disappeared, and (2) the boy feels happy when he finds and gets his or another frog back (see Table 14.3). In the literature, these types of references to emotional states are also called *frames of mind* (Bamberg and Damrad-Frye, 1990).

As mentioned above (see 14.1), if a narrator expresses the internal feelings of the main character this is more complex then when a narrator only expresses the physical actions of the main character. The expression of internal responses are therefore considered as appropriate and sophisticated semantic/pragmatic behaviour, signalling that the child as a narrator moved to a higher level: from describing narrative events towards the internal motivations of the narrative's main character (e.g. Sanders, 1994).

This narrative ability is not only related to the ability of taking perspective as part of a Theory-of-Mind, but also to the ability of establishing coherence by the description of emotional evaluation, that develops in normally developing English-speaking children from age four (Hudson et al., 1992).

Normally developing English-speaking pre-school girls proved to be better in expressing these frames of mind in personal narratives than boys (Fivush, Haden and Adam, 1995). Capps, Losh and Thurber (2000) found that PI-children on the autistic spectrum have difficulties in this area. Here we want to know whether the numbers of PI-children and N-children that narrate internal responses are comparable. And, is there comparable development with age?

In Figure 14.8, we present the percentage of N-children and PI-children that formulate at least one internal response. Since we know that the possible observations of this specific language behaviour are low in advance (Trabasso and Rodkin, 1994; Roelofs, 1998) we suggest that when children show this behaviour at least once per narration, this is not an indication that they cannot express *frames of mind*. From Figure 14.8 we see that there are relatively few four-, eight- and nine year-old PI-children that produce at least one *internal response* as compared to N-children.

We expected that PI-children express fewer internal responses compared to the N-children. PI may have a negative influence on the ability to identify oneself as a narrator with the internal feelings of the main character of the narrative. For instance, Capps, Losh and Thurber (2000) observed that PI-children on the autistic spectrum were less likely than language matched N-children to identify the causes of the main character's internal states. Rather, these PI-children tended simply to label emotions and explain actions, being more restricted in the range of different linguistic devices used.

This expectation, however, could not be supported by the results, since the differences between the two populations are too small to be significant. Only at eight years do the N- and PI-children start to diverge.
We see that the ability to express at least one internal response improves with age. However, a closer look at the data shows that only six children (1 eight-year-old N- and 1 PI-child and 4 nine-year-old PI-children) expressed both internal responses. These findings confirm earlier reported results, as all five-year-old and half of the nine-year-old English-speaking N-children never include the internal response that can be inferred from one of the last three pictures (boy happy with retrieved frog) (Bamberg and Damrad-Frye, 1990).

Comparable to the ability to express GAO-units, the major development of the ability to express internal responses may take place beyond age eight/nine years of age, as was suggested earlier (Peterson and McCabe, 1983; Bamberg and Damrad-Frye, 1990; Bamberg, 1993a).

### 14.3.6 Outcome

High attention and task orientation is required in order to complete the Frog story by expressing its outcome: goal 2 (component 17 in Table 14.3): boy finds the frog/ *boy finds a(nother) frog/ boy finds the frog and other frog(s) and goal 1 (component 18 in Table 14.3): boy retrieves the frog/ boy retrieves a(nother) frog/ *boy retrieves the frog and other frog(s). Here, we want to know whether there are as many PI-children as N-children that express the outcome (goal 2 and goal 1). And, is there development with age?

Both actions are a very important part of the story, depicting in terms of Labov and Waletsky (1967) the highpoint of the story. Bamberg and Marchman (1990) were among the first that did this analysis. In order to get insight in task orientation and the influence of attention on the narrative task, we present in Figure 14.9 the
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percentage of N-children and PI-children that express no outcome. Significantly more PI-children than N-children express no outcome, decreasing with age in both populations.

Figure 14.9 Percentage of N-children (n=15) and PI-children (n=20 per age group) that express no outcome.

There are some N- and PI-children that express that the boy found the frog, other frog(s) or both, but do not express that the boy got the frog or another frog back in order to take home (as depicted on the last picture; see Appendix 3a). The story they narrate is thus still incomplete (Figure 14.10).

We clearly see a turning point at age six. Between age four and five more N- than PI-children start to express the success of all search attempts. After age six more PI-children than N-children express only goal 2. The PI-children show a semantic/pragmatic language delay for two reasons. First, the four- and five-year-old PI-children cannot express goal 2 like same-aged N-children do. Second, the six- to nine-year-old PI-children express only goal 2, like four-, five and six-year-old N-children do.

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27 Chi square (df 1; after continuity correction) = 10.92, p<0.001.
28 Mantel-Haenszel Chi square test for linear association (1 df)= 22.61, p < 0.001.
Chapter 14  Semantic/Pragmatic narrative development

In Figure 14.11 we present the percentage of N- and PI-children that express both goal 1 (retrieve/take home/get back lost object) and 2 (find lost object). When both goal 1 and 2 are expressed this forms a complete outcome. Goal 2 and goal 1 have different options that are appropriate/inappropriate following certain conditions (see Table 14.3). The way in which goal 1 successively is expressed is highly dependent on the way in which goal 2 is expressed. Here, high demands are made on children's ability to link the contributions that concern the expression of goal 2 and 1 coherently and cohesively, especially by means of clear co-referential cohesion (see 14.4 and further).

Since there are also N- and PI-children that express goal 1 (take home) and do not express goal 2, the percentage of narrators per age group that include goal 2 (Figure 14.10) and that include both 2 and 1 (Figure 14.11) do not always count up to 100%.

From Figure 14.11 we see that significantly more N-children than PI-children express the narrative's highpoint. And, significantly more older N- and PI-children express the complete outcome than younger N-children (Roelofs, 1998:142) and PI-children. These age effects in the Dutch-speaking N- and PI-children resemble earlier results with respect to English-speaking N-children (Peterson and McCabe, 1983; Trabasso and Rodkin, 1994).

Earlier findings (Trabasso and Rodkin, 1994) indicate that the ability to narrate goal 2 (find) and 1 (get/take home/retrieve) starts at age five in English-speaking N-children. They scored these components when narrators explicitly mentioned only 'the frog'. We used a broader definition (because the picture book is not clear on this

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29 Chi square (1 df; after continuity correction) = 3.94, p<0.047.
30 Mantel-Haenszel Chi square test for linear association; 1 df = 22.22, p < 0.0001.
The ability to tell a narrative

point) and found under our conditions that the development to narrate the story highpoint start at age four in Dutch-speaking N-children.

Figure 14.11 Percentage of N-children (n=15) and PI-children (n=20) per age group that express outcome 1 (goal 2) + 2 (goal 1): the boy has found and takes back home the frog or another little frog

14.3.7 Results: Planning Components

Now that we have counted the inclusion of all particular planning components in narrating the Frog story, we can present the mean total number of planning components expressed (Figure 14.12), as this is only a small selection from all narrative contributions[^31] (i.e. normal range 40 to 55 narrative contributions per Frog story in Dutch; see 14.1).

[^31]: The numbers are higher than in Table 6.1 Roelofs, 1998:140, because we included the search attempts whereby the location of the search attempt is not mentioned by the children which Roelofs excluded.
The PI-children express significantly\textsuperscript{32} fewer planning components than the N-children, except for the five-year-old PI-children. With age both N- and PI-children express significantly\textsuperscript{33} more planning components. The seven- to nine-year-old PI-children produce the same amount of planning components as the one year younger N-children.

To calculate the percentage of narrators of each age group who included a particular planning component (Figures 14.2 to 14.11) and the mean number of planning components is not sufficient to find differences between the two groups, since extremely low and high percentages and numbers might cancel each other out. A finer differentiation is needed to detect possible differences between the PI- and N-children. In Table 14.6 we therefore present the amount of N- and PI-children that produce too few planning components for their age, based on computed age-related cut-off points per age group, largely based on $z \leq -2$. The analysis is based on the following cut-off points per age group: when four-year-olds produce less than 0, five-year-olds produce less than 4, six-year-olds produce less than 7 search attempts, and so on, children express too few relevant narrative plot information for their age (see also Table 14.3). We see that relatively many N-children (15\%) fall within this marked category. This suggests that the individual variation in narrating the Frog story is great, even in N-children. This confirms earlier results found in the cross-linguistic developmental literature. Much divergence in the study of Berman and Slobin (1994) was reported to be related to differences in narrative style.

\textit{Table 14.6 Number of N-children and PI-children that are deviant on computed cut-off points per age group (largely based on $z \leq -2$) with respect to the number of planning components}

<table>
<thead>
<tr>
<th>Planning components</th>
<th>N-children $n=75$</th>
<th>PI-children $n=120$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>cut-off</td>
<td></td>
</tr>
<tr>
<td>4 yrs</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5 yrs</td>
<td>$\leq 4$</td>
<td>0</td>
</tr>
<tr>
<td>6 yrs</td>
<td>$\leq 7$</td>
<td>4</td>
</tr>
<tr>
<td>7 yrs</td>
<td>$\leq 8$</td>
<td>3</td>
</tr>
<tr>
<td>8 yrs</td>
<td>$\leq 11$</td>
<td>4</td>
</tr>
<tr>
<td>9 yrs</td>
<td>$\leq 11$</td>
<td>-</td>
</tr>
</tbody>
</table>
| Total               | 11 (15\%)         | 52 (43\%)           

\textsuperscript{32} ANCOVA with the number of narrative contributions as covariate; group effect $F(1,165)=5.57$, $p<0.019$ (nine-year-old PI-children excluded).

\textsuperscript{33} ANCOVA with the number of narrative contributions as covariate; age effect $F(4,165)=28.4$, $p<0.001$ (nine-year-old PI-children excluded).
We see that significantly\(^{34}\) more PI-children (43%; \(n=52\)) than N-children (15%; \(n=11\)) fall within this marked category and express too few planning components for their age.

14.3.8 Conclusion: the ability to narrate the plot
We have shown that the PI-children as a group embed the beginning of the narrative significantly less often in time and express significantly fewer planning components than the N-children. Significantly more PI-children (43%) than N-children (15%) express too few planning components for their age. With respect to particular planning components, significantly fewer PI-children than N-children express all initiating events and search attempts plus their exact location. Also significantly fewer PI-children than N-children express the complete highpoint (outcome) of the story, i.e. that the frog or another little frog is taken home by the boy. With age both N- and PI-children express significantly more planning components, although this development takes place at a higher rate in the N-children than in the PI-children. The PI-children have greater difficulty in narrating causally related actions the main character undertakes according to an underlying internally made plan. They have semantic/pragmatic narrative problems in expressing causality based on difficulties with linking narrative contributions coherently in a logical, causal way and in an explicit way. Like in conversation, frequently too little narrative information is expressed. The PI-children then violate Grice's (1975) Maxim of Quantity of being informative.

The first of these two language skills (link the narrative causally coherently) requires identification with the internal world of the main character, including some social-cognitive understanding of causal relations that explain human behaviour, especially between previous experiences that cause basic emotions that lead to certain actions. The second of these skills (be explicit) requires simultaneous identification with the listener (who cannot clearly see the pictures) in order to take into account the listener’s needs. Both perspective taking based on the identification with the main character and on a causal understanding of human behaviour on the one hand and taking into account the listener's point-of-view on the other, are part of a Theory-of-Mind (ToM) (see 2.3.3).

As we know from the developmental literature (see 2.3.3) language output can give insight into difficulties with the social-cognitive development of a Theory-of-Mind (e.g. De Villiers and De Villiers, 2001, 2002). Although falling out of the scope of this thesis, the narrative language output of the PI-children suggests that they have difficulties in perspective taking and taking into account the other's point-of-view. In PI-children, problems in this area are frequently reported (e.g. Cohen et al., 1998; Beitchman et al., 2001).

We frequently concluded that even in the highest age groups in both N- and PI-children certain narrative abilities are still in development, for instance, giving expression to the fact that the boy possesses the frog at the begin of the story or expressing GAO-units in the middle of the story and the complete outcome at the

\(^{34}\) Fisher's exact (2-sided) (1 df) = 17.34, \(p<0.0001\).
end. We suppose that a major improvement of narrative skills will take place beyond eight/nine years of age. This would fit in with a cognitive explanation since according to Piaget from age nine on N-children become able to give a synopsis of events. Then they can reclassify and reorganize events into an abstract representation of one hierarchical theme (Piaget, 1959; Applebee, 1978).

14.4 Co-referential Cohesion in narrative: an introduction
The correct use of various referential devices is not only a crucial condition for constructing a cohesive narrative, but also for constructing plot-related narrative contributions coherently. For instance, as we have shown in 14.3.6, clear reference is necessary to relate the same theta roles (Dik, 1989) agent and patient to the same entity over successive narrative contributions.

The analysis of co-referential cohesion, frequently referred to as reference and anaphora use, has been studied by different researchers on the basis of the Frog story in N-children, such as English-speaking N-children (Karmiloff-Smith, 1981; Bamberg, 1987; Wigglesworth, 1990), Spanish-speaking N-children (Gutierrez-Clellen and Heinrichs-Ramos, 1993), Turkish-speaking (Aarssen, 1996) and Dutch-speaking N-children (Zijlemaker, 1993; Aarssen, 1996).

But there are also some studies on LI-children and PI-children, such as in LI-children (Liles, 1985), Dutch-speaking LI-children (Verkoeijen, 1999), and Dutch-speaking PI-children (Dijkhuis, 1994) and PI-children with ADHD (Velgersdijk, 2001).

When children have to tell a narrative elicited with a picture book to an investigator, who claims in advance not to know the story (see 3.3), they are prompted by the pictures to tell what they see but then easily forget to take into account the point of view of the listener (see 14.3.8). She can only partly see the pictures (from a certain distance and upside down). This results in more use of deictic referents that are not connected to previously mentioned entities but are referring to the entities on the pictures in the here-and now (e.g. Aarssen, 1996:24-25; Roelofs, 1998:145).

To mention entities and maintaining reference to them over several narrative contributions is still in development in school-aged children (e.g. Bamberg, 1986; Aarssen, 1996; Hickmann, 1995, 2003). Roelofs (1998:120) showed that the Dutch-speaking 75 N-children in the older age groups make fewer unclear introductions than in the younger age groups, but still have difficulties in maintaining clear reference by means of pronouns in the narrative genre.

As in conversation, with respect to relevancy (see 12.1 and 12.2), a narrative contribution is said to be optimally relevant when it is easy for the interviewer to realize the referential connections between old and new information with a minimum of processing effort. This effort can be minimized by the child by establishing clear and simple co-referential relations. Thus, the amount of correctly used referent introductions and subsequent mentions is globally indicative of the ability to transmit relevant information. Here, we want to know whether the PI-children produce a comparable amount of clear references as the N-children. And, is there a comparable development with age?
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From our analysis of co-referential cohesion in the conversational interview genre (see 13.4 to 13.8) and from a pre-analysis of co-referential cohesion in the narrative genre (Dijkhuis, 1994; Velgersdijk, 2001), we know that PI-children are likely to have difficulties in establishing clear co-referential cohesion in the narrative.

First, we found that the PI-children produce an amount of referents comparable to the N-children. No group-effect was observed. The amount increases significantly linearly in the PI-children similarly to the N-children. Next, we used the same analysis procedures as in the conversation (see 13.4 to 13.7). We counted all first mentions and subsequent mentions of +animate referents, further divided into referent maintenances and referent shifts. Each referent expressed is judged for the child's ability to take into account the interviewer's point of view, it being either clear or unclear (de Villiers, 2001a, 2001b). We also took into account the amount of unclear referents caused by morphological/syntactic and semantic inappropriateness. In the next sections, we will present the results with respect to referent introductions (14.5), referent maintenance (14.6) and referent shifts (14.7), ending with some concluding remarks about the ability to establish co-referential cohesion in a narrative (14.8).

14.5 Referent Introduction in narrative

14.5.1 Research questions, definitions, and operationalisations

In Dutch, when an entity is introduced for the first time and the child correctly assumes on the basis of the information about the task given in advance, that the entities are not known by the interviewer, the child has to use an indefinite NP (Aarssen, 1996; see 13.5) (Example 17).

Example 17  Appropriate first mention by means of an indefinite NP (PI-child; age 9:6)

Wendy: een jongen, een hondje, die hadden een kikker gevangen.
(a boy, a dog they caught a frog)

However, since the investigator tells the child in advance "this is a story about a boy, a dog and a frog" as part of the instruction (see 3.3), the child can presuppose that these entities are known information to the listener and can therefore correctly use a definite NP. Thus, we coded the first mention of the boy, the dog and the frog at the beginning of the story by means of a definite NP as not pragmatically marked. In general, when an entity is known by both listener and narrator or is related to an already mentioned topic a definite NP can be used (Hickmann, 2003).

---

35 ANCOVA with the number of narrative contributions as covariate; age effect $F(4,165)=7.36, p<0.001$. No age*group interaction effect was found (nine-year-old PI-children excluded).
36 ANCOVA (Polynomial contrast) with the same covariate; N-children: $F(4,69)=12.42, p<0.0001$; Linearity: $p=0.0001$; PI-children: $F(5,113)=8.95, p<0.0001$; Linearity: $p<0.0001$ (nine-year-olds included).
37 Unclear reference is also called implicit reference in Dutch research, following STAP (Van den Dungen and Verbeek, 1999).
In Table 14.7 we give an overview of the forms coded as clear and the semantically-pragmatically marked unclear (*first mentions, whereby a certain living entity is for the first time introduced during the narrative.

<table>
<thead>
<tr>
<th>Referent Introduction</th>
<th>New information</th>
<th>Given information</th>
</tr>
</thead>
<tbody>
<tr>
<td>indefinite NP</td>
<td>(unclear)</td>
<td>*indefinite NP</td>
</tr>
<tr>
<td>*definite NP</td>
<td>(unclear)</td>
<td>definite NP</td>
</tr>
<tr>
<td>*proper name</td>
<td>(unclear)</td>
<td>*proper name</td>
</tr>
<tr>
<td>*pronoun</td>
<td>(unclear)</td>
<td>pronoun</td>
</tr>
<tr>
<td>*zero-pronoun</td>
<td>(unclear)</td>
<td>*zero-pronoun</td>
</tr>
</tbody>
</table>

In Dutch, the preferred form for introducing a brand new entity is an indefinite NP in focus-position (Aarssen, 1996:93). Here, we will discuss some marked forms, typical for the narrative genre (Example 18 to 20).

Example 18  First mention by means of a pronoun (PI-child; age 9.6)

Jurrien: er was eens een jongetje, Pim.
(once upon a time there was a boy, Pim.)

Jurrien: en die, ging op een dag vissen met zijn hond, Bas.
(and he went one day fishing with his dog, Bas.)

Jurrien: en toen hadden ze een kikker gevangen.
(and they caught a frog)

In Example 18, the introduction of a group of referents by means of a pronoun can be scored as clear when the single individual entities are specified already. In the Frog story the main characters (the boy and the dog) are frequently mentioned together for the first time with the pronoun they.

Example 19  First mention by means of a definite NP (PI-child; age 6.3)

Robert: *de bijen komen. (*the bees come)

In Example 19, the beehive is not mentioned in advance. The semantic field to which bees belong is not active in advance. Therefore, the topic introduction by means of a definite NP is coded as *unclear.

In Table 14.7 we give an overview of the forms coded as clear and the semantically-pragmatically marked unclear (*first mentions, whereby a certain living entity is for the first time introduced during the narrative.}

Table 14.7  The coding categories co-referential cohesion: referent introduction

<table>
<thead>
<tr>
<th>Referent Introduction</th>
<th>New information</th>
<th>Given information</th>
</tr>
</thead>
<tbody>
<tr>
<td>indefinite NP</td>
<td>(unclear)</td>
<td>*indefinite NP</td>
</tr>
<tr>
<td>*definite NP</td>
<td>(unclear)</td>
<td>definite NP</td>
</tr>
<tr>
<td>*proper name</td>
<td>(unclear)</td>
<td>*proper name</td>
</tr>
<tr>
<td>*pronoun</td>
<td>(unclear)</td>
<td>pronoun</td>
</tr>
<tr>
<td>*zero-pronoun</td>
<td>(unclear)</td>
<td>*zero-pronoun</td>
</tr>
</tbody>
</table>

In Example 18, the introduction of a group of referents by means of a pronoun can be scored as clear when the single individual entities are specified already. In the Frog story the main characters (the boy and the dog) are frequently mentioned together for the first time with the pronoun they.

Example 19  First mention by means of a definite NP (PI-child; age 6.3)

Robert: *de bijen komen. (*the bees come)

In Example 19, the beehive is not mentioned in advance. The semantic field to which bees belong is not active in advance. Therefore, the topic introduction by means of a definite NP is coded as *unclear.

Example 19 is also illustrative for the fact that each genre may trigger its genre-specific semantic/pragmatic referential problems: unclear referent introductions by means of definite NPs frequently occur in narratives (e.g. Aarssen, 1996; Roelofs, 1998). Use of a proper name for an introduction hardly ever occurs in the narrative genre, unlike the conversational interview genre (see 13.2.2).
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Example 20  Unclear first mention by means of a indefinite NP (PI-child; age 5;1)

Louis:  
kijk, *allemaal krokodilletjes komen te voorschijn  
(look, a lot of little crocodiles appeared)

Paraphrasis:  
look, a lot of little frogs appeared

In Example 20, the referent is not clear, because of semantic mismatch. These instances are also scored as unclear referent introduction. Here, we want to know whether the amount of clear referent introductions expressed by the PI-children is comparable to the amount expressed by the N-children. And, is there a comparable development with age? Since autistic PI-children show difficulties in clear referent introductions (Tager-Flusberg, 1995), we expect some relatively milder difficulties in this area in the 120 PI-children (autistic PI-children were excluded).

14.5.2 Results: Referent Introduction in narrative

First, the PI-children produced a comparable amount\(^{38}\) of referent introductions (total mean: 9 to 11) as the N-children (total mean: 9 to 10) out of a total of 9/10 on the pictures\(^{39}\). This means that the PI-children and N-children regularly introduce living entities to talk about in the story that are not depicted. No significant age-effect\(^{40}\) was found. Since the amount of possible referent introductions is fixed in the narrative genre, and is dependent on the number of characters depicted, the opportunity for introducing entities in the narrative is lower than in conversation (PI-children: 10 to 15; N-children: 13 to 17). This explains that also no age-effect was found. These results are comparable to those found in other Dutch-speaking N-children who narrate the Frog story (4;0 tot 10;0 years) (Aarssen, 1996:103).

When we look at the clear referent introductions, the following developmental patterns can be seen: the P- and N-children correctly express first mentions by means of an indefinite NP (in roughly 45% of all cases). No significant group-effect\(^{41}\) is observed. Although the eight- and nine-year-old PI-children express fewer indefinite NPs compared to the eight-year-old N-children, with age the production of indefinite NPs (the target form) increases linearly\(^{42}\) in both populations. Only some of the nine-year-old PI-children as opposed to most eight-year-old N-children introduce the boy, the dog and the frog as depicted on the first picture by means of an indefinite NP. On the basis of a more developed Theory-of-Mind these oldest PI-children can move away from their own perspective and take into account the perspectives of a listener, who claimed in advance to be unfamiliar with the story. Unexpectedly, these few PI-children are doing relatively well.

\(^{38}\) ANCOVA with the mean total number of all references as covariate. Age effect F(1,164)=2.62, p=0.037; No age*group interaction effect was found (nine-year-old PI-children excluded).

\(^{39}\) We counted the boy (1), the dog (2), the frog (3), the (swarm of) bees (4), the mole (5), the owl (6), the deer (7) and the mother frog (8) and the little baby frogs (9) and optionally one little baby frog (10) that is taken back home.

\(^{40}\) Oneway ANCOVA (Polynomial contrast) with the same covariate: not significant.

\(^{41}\) ANCOVA with the number of referent introductions as covariate; age effect F(4,164)=4.92, p<0.001; No age*group interaction effect was found (nine-year-old PI-children excluded).

\(^{42}\) ANCOVA (Polynomial contrast); N-children: F(4,69)=3.44, p=0.013, Linearity: p=0.001; PI-children: F(5,119)=2.80, p=0.020, Linearity: p=0.001.
Next, we explored how many first mentions are pragmatically marked; that is when the interpretation was judged as unclear (Figure 14.13). The PI-children produce significantly more unclear reference introductions than the N-children. We clearly see that the PI-children – except for the five-year-old PI-children – show a semantic/pragmatic language delay with respect to the ability to produce clear referent introductions. Just as in the conversational interview genre (see 13.5), a linear decrease with age of unclear referent introductions is found in the N-children (see Roelofs, 1998:149-150) and in the PI-children.

Figure 14.13  The percentage unclear reference introductions (calculated over the mean total number of reference introductions) per age group expressed by 75 N-children and 120 PI-children in narrative

<table>
<thead>
<tr>
<th>Age Group</th>
<th>N-chi % unclear introduction</th>
<th>P-chi % unclear introduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 yrs</td>
<td>29</td>
<td>48</td>
</tr>
<tr>
<td>5 yrs</td>
<td>35</td>
<td>32</td>
</tr>
<tr>
<td>6 yrs</td>
<td>18</td>
<td>34</td>
</tr>
<tr>
<td>7 yrs</td>
<td>24</td>
<td>28</td>
</tr>
<tr>
<td>8 yrs</td>
<td>13</td>
<td>27</td>
</tr>
<tr>
<td>9 yrs</td>
<td>20</td>
<td>20</td>
</tr>
</tbody>
</table>

In the narrative analysis we explored the different types of clear and unclear referent introductions in more detail. First, the PI-children produce significantly more zero-pronouns than the N-children (e.g. 'Ø looks at the frog'), except for the five-year-old PI-children. Mostly, zero-pronouns are expressed in single clauses. In the older age groups the PI-children frequently use a direct voice construction without explicating who the speaker is (Example 21).

43 ANCOVA with the mean total number of all referent introductions as covariate. Group effect: F(1,164)=17.45, p<0.0001; age effect F(4,164)=9.53, p<0.001; No age*group interaction effect was found (nine-year-old PI-children excluded).

44 Oneway ANCOVA (Polynomial contrast) with the same covariate: N-children F(4,69)= 7.09, p<0.0001, Linearity: p<0.0001; PI-children (nine-year-old PI-children included ) F(5,113)=8.20, p<0.0001, p<0.0001.

45 ANCOVA with the number of unclear referent introductions as covariate; Group effect: F(1,164)=5.28, p=0.023; No age- or age*group interaction effect was found (nine-year-old PI-children excluded).
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Example 21  Unclear first mention because of zero-pronoun in a direct voice construction (PI-child; age 8;8; First picture)

Sebastiaan:  \(\emptyset\) \(\emptyset\): "Klaas, ga je naar bed!"
(‘Klaas, are you going to bed?’)

Paraphrasis:  The mother/father of Klaas says \(\emptyset\): "Klaas, are you going to bed!"

In the conversation we found a comparable problem. In the PI-children a substantial percentage of the unclear referent introductions was caused by subject or object drop, sometimes accompanied by main-verb-drop (see 13.5 and 9.2). Secondly, the PI-children as a group produce significantly more bare nouns than the N-children, especially the four-year-old PI-children (17% of all introductions) (see also 7.4). With age we observed a linear decrease in the production of bare nouns in the PI-children. Most referent introductions by means of a bare noun were scored as clear, although essential pragmatic information is missing, as bare nouns cannot be counted as either indefinite or definite NPs. Their form gives no semantic/pragmatic information about the fact whether the entity referred to is given or new information (see Hickmann, 2003).

Thirdly, just as in the conversational interview genre, the N-children produce significantly more unclear referent introductions by means of definite NPs (proper nouns; definite determiner/demonstrative pronoun + NP; possessive pronoun + NP) than the PI-children. In the N-children the production of definite NPs decreases significantly with age. This result is comparable to the results suggested by Bamberg (1986) for German-speaking N-children (3;6 to 10;0 years) and Aarssen (1996:103) for Dutch-speaking N-children’s (4;0 to 10;0 years). This developmental trend was not found in the PI-children.

Lastly, in the conversational interview genre we found that a substantial part of all unclear referent introductions were caused by semantic mismatch. A few PI-children may have difficulties with the visual interpretation (e.g. depth) of the pictures (e.g. they interpreted the drawing of a deer as being of a cow) but mostly they did not know how to name the animal. In the narrative genre the PI-children make significantly more semantic mismatches (total mean: 24% of all unclear introductions) than the N-children (total mean: 18%), decreasing linearly with age in the PI-children.

46 ANCOVA with the number of referent introductions as covariate; group effect F(1,164)=9.33, p<0.003; age effect F(4,164)=5.15, p<0.001; age*group interaction effect F(4,164)=3.15, p<0.016 (nine-year-old PI-children excluded).

47 ANCOVA (Polynomial contrast) with the same covariate; PI-children: F(5,119)=6.44, p<0.0001; Linearity p<0.0001 (nine-year-old PI-children included).

48 ANCOVA with the number of referent introductions as covariate; group effect: F(1,164)=14.98, p<0.0001; age effect F(4,164)=4.48, p<0.002; No age*group interaction effect was found (nine-year-old PI-children included).

49 ANCOVA (Polynomial contrast) with the same covariate; N-children: F(4,69)=3.73, p<0.008; Linearity p<0.009

50 ANCOVA with the number of bare nouns + definite NP + indefinite NP introductions as covariate; group effect F(1,164)=7.55, p<0.007; age effect F(4,164)=4.54, p<0.002; age*group interaction effect F(4,164)=3.94, p<0.004 (nine-year-old PI-children excluded).

51 ANCOVA (Polynomial contrast) with the same covariate; PI-children F(5,119)=4.85, p<0.0001; Linearity: p<0.0001 (nine-year-old PI-children included).
We looked for individual differences within age groups and populations by computing age-related cut-off points (largely based on the z-scores) (see Table 14.8). Significantly more PI-children (12%; n=14) than N-children (3%; n=2) can be diagnosed as having severe semantic problems with respect to referent introductions, mainly caused by semantic mismatch.

Table 14.8 Mild and severe semantic problems with respect to first mentions per age group in 75 N-children and 120 PI-children in narrative

<table>
<thead>
<tr>
<th>Semantic mismatch first mentions</th>
<th>N-children n=75</th>
<th>PI-children n=120</th>
</tr>
</thead>
<tbody>
<tr>
<td>cut-off mild severe n= n=</td>
<td>cut-off mild severe n= n=</td>
<td></td>
</tr>
<tr>
<td>4 yrs &gt;37% 1 &gt;52% 0</td>
<td>&gt;37% 2 &gt;52% 3</td>
<td></td>
</tr>
<tr>
<td>5 yrs &gt;37% 1 &gt;52% 1</td>
<td>&gt;37% 4 &gt;52% 0</td>
<td></td>
</tr>
<tr>
<td>6 yrs &gt;30% 2 &gt;38% 0</td>
<td>&gt;30% 3 &gt;38% 4</td>
<td></td>
</tr>
<tr>
<td>7 yrs &gt;30% 1 &gt;38% 1</td>
<td>&gt;30% 2 &gt;38% 0</td>
<td></td>
</tr>
<tr>
<td>8 yrs &gt;23% 0 &gt;33% 0</td>
<td>&gt;23% 5 &gt;33% 6</td>
<td></td>
</tr>
<tr>
<td>9 yrs - - - -</td>
<td>&gt;23% 2 &gt;33% 1</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>5 2</td>
<td>18 14</td>
</tr>
</tbody>
</table>

14.5.3 Conclusion: Referent Introduction in narrative
In the narrative genre both populations produce the same amount of first mentions, because the amount of characters is fixed as opposed to the conversational interview genre. In conversation, only the older PI-children produced more unclear first mentions than the N-children, but in the narrative the PI-children as a whole produce significant more unclear first mentions than the N-children. Similarly to the conversational interview genre, we found that in the PI-children significantly more unclarity is caused by morphological/syntactic disabilities, such as using zero-pronouns in case of morphological/syntactic obligatory arguments and the use of more semantically unclear first mentions. In the narrative genre the PI-children show clear difficulties in the ability to establish clear referent introductions, similarly to English-speaking autistic PI-children (Tager-Flusberg, 1995).

14.6 Referent Maintenance in narrative

14.6.1 Research questions, definitions and operationalisations
We counted all the referent maintenances in the narrative genre, using the same analysis procedure as in conversation (see 13.6). Here, we want to know whether the amount of clear referent maintenances expressed by the PI-children is comparable to the amount produced by the N-children. And, do they show a same developmental pattern with age? In Dutch, a pronoun is the unmarked coding for reference maintenance (Aarssen, 1996). We expect that this preference will become more

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52 Pearson’s Chi-square (after continuity correction) = 3.84, df = 1, p< 0.050.
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salient across age groups, although we may detect a lower developmental rate in the PI-children.

14.6.2 Results: Referent Maintenance in narrative

Firstly, we observed that the number of referent maintenances is comparable in the PI-children (total mean: 18) and N-children (total mean: 19) and across the different age groups within populations, as no main-effects were found. This finding is comparable to the conversational interview genre, in which the number of referent maintenances in the N-children (total mean: 20) and PI-children (total mean: 20) was only slightly higher.

In Figure 14.14 we present the percentage of referent maintenance by means of an NP; this form is always coded as *too clear when a pronoun would have been better, following the nominal strategy (e.g. Bamberg, 1987) and redundancy is not reduced. We see that the percentage of referent maintenance by means of an NP proved to be higher in the narrative genre (PI-children: 6% to 12%; N-children: 10% to 17%) than in the conversational interview genre (PI-children 2% to 8%; N-children: 3% to 14% (see 13.6). As in the conversational genre, the percentage of referent maintenances by means of a *too clear NP proved to be significantly\(^5\) lower in the PI-children than in the N-children.

In most cases a pronoun would have better; the NP is *too clear but for the listener in all these instances it was absolutely clear about which entity the child is talking. The N-children therefore clearly avoid being unclear.

With respect to the percentage of NP maintenances we see a peak at age six in the N-children and a peak at age seven in the PI-children. At age six the N-children show the tendency to be more clear than necessary, being aware of the fact that they must be as clear as possible. The same tendency is found in the PI-children one year later (Roelofs, 1998).

From Figure 14.14 we can derive that in the narrative genre a pronoun is the preferred form for maintaining reference, developing from age six in the N-children and age seven in the PI-children. A comparable, but delayed developmental trend was found in the PI-children.

This result is not comparable to the results presented by Bamberg (1986) for German-speaking N-children (3;6 to 10;0 years), and Aarssen (1996) for Dutch-speaking N-children (4;0 to 10;0 years). They both only counted a limited type of referent maintenances (to the boy, dog and frog), and found relatively more maintenances by means of an NP than by means of a pronoun in N-children older than six. For the re-introduction of these referents, an NP is the preferred form. Unlike Bamberg (1986) and Aarssen (1996), we counted all animate referents; as a consequence, more referent maintenances to other living entities in subsequent contributions are counted; then reintroduction is judged differently.

\(^{5}\) ANCOVA with the number of referent maintenances as covariate; group effect: F(1, 164)=4.92, p<0.028; no age- or age*group interaction effect was observed (nine-year-old PI-children excluded).
We also explored whether there are qualitative differences in the ability to successfully maintain reference between two clauses by means of a pronoun: in how many cases the thematic subject strategy was used as opposed the minimal distance strategy, leading to clear co-referential cohesion (see also Aarssen, 1996:37; see for explanation 13.6). The thematic subject strategy seems to be more complex than the minimal distance strategy, because more language material has to be stored and expressed between referent and antecedent. From Table 14.9 we see that in both populations the thematic subject strategy is followed more frequently than the minimal distance strategy in the narrative genre, comparably to the results with respect to the conversational interview genre (see 13.6).

The PI-children successfully use the thematic subject and minimal distance strategy, when the pronoun clearly refers to its antecedent in the previous clause. However, they do this significantly fewer times than the N-children. The older P- and N-children make relatively more successful use of the thematic subject strategy than younger N- and PI-children. The minimal distance strategy increases from four to eight years in the N-children and from four to seven years in the PI-children and than decreases again.

The same pattern was found in conversation for both N- and PI-children. A possible explanation is that from seven years of age, the children talk more about scenes in which two or more different entities are involved within two successive narrative contributions. As a consequence, the referent maintenances to one entity over two contributions decreases at age seven, whereas the referent shifts increase at that age.

54 ANCOVA with the number of referent maintenances as covariate; group effect $F(1,164)=4.19$, $p=0.042$; age effect $F(4,164)=5.16$, $p=0.001$; no age*group interaction effect was observed (nine-year-old PI-children excluded).

55 ANCOVA with the number of referent maintenances as covariate; group effect $F(1,164)=11.13$, $p=0.001$; age effect $F(4,164)=5.16$, $p=0.004$; age*group interaction effect $F(4,164)=4.46$, $p<0.002$ (nine-year-old PI-children excluded).
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Table 14.9  The mean total number of clear co-referential cohesion in two successive clauses by means of the thematic subject strategy and the minimal distance strategy in 75 N-children and 120 PI-children in narrative

<table>
<thead>
<tr>
<th>Strategy</th>
<th>N-children n=75</th>
<th>PI-children n=120</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>thematic subject</td>
<td>minimal distance</td>
</tr>
<tr>
<td>4 yrs</td>
<td>2.9</td>
<td>0.5</td>
</tr>
<tr>
<td>5 yrs</td>
<td>5.0</td>
<td>0.7</td>
</tr>
<tr>
<td>6 yrs</td>
<td>4.1</td>
<td>1.2</td>
</tr>
<tr>
<td>7 yrs</td>
<td>3.8</td>
<td>1.4</td>
</tr>
<tr>
<td>8 yrs</td>
<td>5.7</td>
<td>2.1</td>
</tr>
<tr>
<td>total mean</td>
<td>4.3</td>
<td>1.2</td>
</tr>
<tr>
<td>9 yrs</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

In the scenes depicted in the Frog story the entities involved are mainly animate. Unlike the narrative, the conversation gives the children relatively more freedom in their choice of the number of entities to talk about; they are also confronted with turn alternations in the conversation that mostly also involve a shift of referents. The chains of referent maintenances in the narrative can therefore be longer than in conversation. Fewer instances of clear pronominal referent maintenances, no matter what strategy was used, are observed in narrative than in conversation (see 13.6).

These results suggest that it might be more difficult in the narrative than in the conversational interview genre to express clear pronominal referent maintenances following one of the two strategies. As mentioned earlier, another explanation for the difference in genre performance is that children are sometimes encouraged by the pictures to use pronominal deictic reference (sometimes accompanied by pointing with fingers or eyes to the pictures) instead of cohesive pronominal anaphoric reference.

Furthermore, when children maintained reference with successive pronouns referring to an antecedent that is not clear, we scored this as unclear.

Example 22  Unclear pronominal maintenances by means of pronouns in a chain (PI-child; age 5;9; Picture of the boy on the rock)

Robin: nou, <hij> hij, stond (hij derop) op de stenen.
(now, <he> he, stood <he on it> on the rocks)
Robin: nou hij, staat <op> op de grote steen.
(now, he, stands <on> on the big rock)
Robin: hij, staat door de struiken.
(he, stands through the bushes)

In Example 22, the first 'hij' (he) is not a clear reference at that point in the narrative (the preceding context required a noun) Then, all subsequent mentions using 'hij' are also coded as unclear: although the cohesive link is clear enough, the entity remains unclear.

56 The narrative data of the N-children were recoded with respect to chains of unclear pronominal reference with permission of Roelofs.
unclear. Self-correction would be possible in order to fulfil the needs of the listener. In older N-children we found occasional repairs of unclear pronouns (e.g. Purcell and Liles, 1992) (Example 23).

Example 23  

Self-correction of unclear pronoun (N-child; age 8;9; picture of the boy on the rock)

Koen:  

<en hij, ging op de rots> dat jongetje, ging op de stenen staan.  
(<and he, was climbing on to the rock> that boy, climbed up on to the stones)

In Figure 14.15 we present the percentages of unclear pronominal referent maintenance (within a clause, between two adjoining clauses and with more clauses in between).

Figure 14.15  
The percentage of unclear pronominal referent maintenance (calculated over the total number of referent maintenance) per age group expressed by 75 N-children and 120 PI-children in narrative

The percentage of unclear pronominal reference is indeed much higher in the narrative than in the conversational interview genre in both N- and PI-children. Whereas the N-children did much better than the PI-children in the interview (see 13.6.2), this difference is not observed in the narrative genre. The percentage of unclear pronominal reference in the PI-children as a group is not higher than in the N-children, except in the five- and six-year-old PI-children. We observed a
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significant age-effect: in both groups the percentage of unclear pronominal referent maintenances decreases with age.

Again, a substantial percentage of the unclear referent maintenances is caused by morphological/ syntactic and semantic inappropriateness. As with referent introductions, referent maintenances can be judged as unclear, because of semantic mismatches (Example 24).

Example 24

Gert-Jan: *een hond*, *een hele grote hond,*

(a dog, a very large dog)

Semantic paraphrasis: there is a deer, a very large deer

Gert-Jan: *het is een nijlpaard,*

(it is a hippopotamus)

Semantic paraphrasis: it really is a deer!

As a group the PI-children make significantly more semantic mismatches than the N-children. With age we observed a linear decrease in both N-children and PI-children.

We also observed that unclear referent maintenance by means of zero-pronouns were frequent in direct voice constructions (Example 25).

Example 25

Tanja: *de jongen kijkt uit het raam.

(the boy looks out of the window)

Tanja: *maar oh, wat is dat?*

("but oh, what is that?")

Paraphrasing: the boy says: *but oh, what is that?"

Tanja: *dat is mijn hond."

("that is my dog")

In Example 25 it is not clear whether the narrator or the main character expresses what is said. Not all zero-pronouns in direct voice constructions are unclear. Once the speaker in a direct voice construction is expressed, the other succeeding utterances in the direct voice have an identical underlying main-clause structure as the previous construction. The main-clause can be left implicit to avoid being

57 ANCOVA with the number of all referent maintenances as covariate; No group effect was observed; age effect F(4,164)=7.82, p<0.0001 (nine-year-old PI-children excluded).

58 ANCOVA with the number of bare nouns + definite NP + indefinite NP maintenances as covariate; group effect: F(1,164)=10.43, p< 0.0001; age effect F(4,164)=10.43, p<0.0001; no Age*group interaction effect was found (nine-year-old PI-children included).

59 ANCOVA (Polynomial contrast) with the same covariate; N-children: F(4,69)=5.33, p<0.001, Linearity p=0.0001; PI-children: F(5,113)=7.18, p<0.0001, Linearity: p=0.0001 (nine-year-old PI-children included).
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redundant only if the narrator has made clear in the previous contribution who is talking (Example 23; second arrow).

With respect to the direct voice constructions, we observed large individual differences; significantly more P-children (n=30) than N-children (n=6) frequently use direct voice constructions. It could be a matter of style (Berman and Slobin, 1994), but it seems to be an indication of semantic/pragmatic disability: in direct voice constructions the perspective is with the main character and not, as in indirect voice constructions, with both the narrator and main character (Sanders, 1994). Some PI-children told a large part of the Frog story only in direct voice constructions, especially at most exciting or difficult parts. This results in utterances such as "Frog, frog, where are you?", "au", "sstt", "let's go", "dog, come on, we are going", and so on as if the children only had to fill in the comic strip speaking balloons. With respect to the percentage of unclear referent maintenances by means of direct voice zero-pronouns (N-children: 7%; PI-children: 20%), we observed no significant main-effects, because of the large individual differences. In the amount of unclear referent maintenances by means of zero-pronouns (including the direct-voice-zero-pronouns) (N-children: total mean 28%; PI-children: 51%) we can observe a significant group-effect. With age unclear zero-pronoun maintenances linearly decrease in both populations, although at a higher rate in the N-children.

14.6.3 Conclusion: Referent Maintenance in narrative

In the narrative genre the PI-children produce the same amount of referent maintenances compared to the N-children. The N-children produce significantly more NP referent maintenances that are judged as too clear than the PI-children. The N-children frequently prefer to use an NP where a pronoun would be better to avoid redundancy.

When we look at complexity, two significant group-effects were found. Although the PI-children followed the thematic subject-strategy more than the minimal distance strategy like the N-children, both strategies for clear referent maintenance were used significantly less frequently by the PI-children than by the N-children. This is different from the conversation.

Secondly, the PI-children produce significantly more unclear pronominal referent maintenances of which a substantial percentage was caused by morphological/syntactic and/or semantic inappropriateness. In sum, the results confirm that the PI-children have difficulties in establishing clear referent maintenance in the narrative genre.

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60 Pearson's Chi-square (after continuity correction) = 7.77, df = 1, p < 0.005.
61 ANCOVA with the number of all zero-pronouns used to establish referent maintenances as covariate; Group effect F(1,164) = 8.70, p = 0.043 (nine-year-old PI-children excluded).
62 ANCOVA (Polynomial contrast) with the same covariate; N-children: F(4,69) = 4.75, p = 0.002; Linearity: p = 0.0001; PI-children: F(5,113) = 4.53, p = 0.0001; linearity p = 0.0001 (nine-year-old PI-children included).
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14.7 Referent Shift in narrative

14.7.1 Research questions, definitions and operationalisations

As discussed in 13.7, a referent shift is coded in case a subsequent mention refers to another entity than the previous one. All referent shifts by means of (in)definite NP's and (zero)pronouns were coded as either clear or unclear (Examples 26 and 27).

Example 26 Clear referent shifts by means of definite NP's (PI-child; age 7;8)

Tim: en het jongetje, viel van eenuil..
(and the boy, fell from an owl.)
Tim: <en hij> en het hondje, kreeg de bijen; achter zich, aan.
(<en he> and the dog, got the bees; chasing him.)
Tim: en de uil, vloog achter het jongetje, aan.
(and the owl, flew after the boy.)

Example 27 Unclear referent shift by means of a pronoun (PI-child; age 7;8)

Dianne: hij, heeft een kikker gevonden
(he (=the boy) found a frog.)
Dianne: en <toen> toen <ehm> ging die, hier der <uit> ## uit springen.
(and <then then <ehm> he, jumped out)
Dianne: toen zat hij te slapen.
(then he was sleeping)

In Example 27, it not clear for a listener who does not know the Frog story and who cannot see the pictures, to know to whom the he in the last contribution is referring. As a coder we assume that a listener thinks that the he refers to the previous pronoun 'die' (that) which refers to the frog, whereas the child means the boy. The verb 'sleep' does not disambiguate the reference. A definite NP would have been clear. Here, we want to know whether the PI-children are as good as the N-children in the ability to establish clear referent shifts in the narrative genre. And, do they show a comparable developmental pattern with age?

14.7.2 Results: Referent Shift in narrative

As expected, the number of referent shifts (total mean N-children: 44; PI-children: 40) is much higher in the narrative than in the conversational interview genre (total mean N-children: 14; PI-children: 18). Whereas in the conversational interview genre in both populations the production of referent shifts proved to be lower than the production of referent maintenances, in the narrative genre it is the reverse (total mean N-children: 19; PI-children: 18). This means that in the narrative genre the N- and PI-children mostly talk about two or more living entities in one contribution. The amount of referent shifts is comparable in the P- and N-children as no group-

Note that as coders we must first figure out what the child wanted to express. This is not that difficult because the pictures are of great help. Secondly, we must identify our viewpoint with that of a listener who hears the Frog story for the first time. This is different from conversation, where we as interviewers and coders had a more identical viewpoint.
effect\textsuperscript{64} was found. In the narrative genre the number of referent shifts linearly increases\textsuperscript{65} in both populations with age.

In the narrative genre, we also explored the ratio between definite NP as opposed to pronoun shifts. Referent shift by means of a definite NP is the pragmatically unmarked coding (Figure 14.16). Although children take a small risk of being too clear, a definite NP is the best form to establish referent shifts. We expect that with the children's age in both populations the percentage of definite NPs used for referent shifts will increase. In Figure 14.16 we see that in the PI-children (total mean: 43\%) the percentage of definite NPs is significantly\textsuperscript{66} lower than in the N-children (total mean: 49\%) except at age seven.

We found no linear age-effect, but we see that the percentage of definite NPs increases in the N-children from four to six years of age and in the PI-children from four to seven years of age. Thereafter, the percentage of definite NPs to establish referent shifts decreases, because with an onset of age seven in the N-children and with an onset of age eight in the PI-children. They seem to alternate between pronouns and definite NPs. These results are on the whole comparable to the results found by Aarssen (1996:107), although Aarssen only counted reference to the two main characters (the boy; the dog; the boy and the dog). The use of definite NPs increases from four to seven years and then decreases again from eight to ten years of age. On the basis of these results we cannot assume that the PI-children are one year delayed in comparison to the N-children, because the peak in the production of referent shifts by means of an definite NP in the seven-year-old PI-children resembles the peak observed in the 20 seven-year-old N-children from the Aarssen-population (Aarssen, 1996). A 'definite NP preference for referent shift' peak could not be observed in the German-speaking children, since seven-year-olds were not included. However, such a peak was not observed either in the six-year-olds (Bamberg, 1986). The cases in which a pronoun would have better than an NP in order not to be redundant (Grice, 1975) were very few\textsuperscript{67} in both N-children (1\%) and PI-children (3\%).

\textsuperscript{64} ANOVA: no group- or age*group-interaction effect was observed; age effect: F(4,164)=11.32, p<0.0001 (nine-year-old PI-children excluded).

\textsuperscript{65} Oneway ANOVA: N-children: F(4,70)=4.65, p<0.002, Eta-squared .21, R-squared .14; PI-children: F(5,114)=8.60, p<0.0001, Eta-squared .28, R-squared .25 (nine-year-old PI-children included).

\textsuperscript{66} ANCOVA with the number of referent shifts as covariate; group effect: F(1,164)=6.58, p=0.011; age effect F(4,164)=3.90, p<0.005 (nine-year-old PI-children excluded).

\textsuperscript{67} ANCOVA with the number of referent shifts as covariate; no group- or age*group-interaction effect was observed, only an age effect: F(4,164)=3.56, p=0.044 (nine-year-old PI-children excluded).
The ability to tell a narrative

Figure 14.16  The percentage of definite NP calculated over all reference shifts per age group expressed by 75 N-children (Roelofs, 1998) and 120 PI-children in narrative

When pronominal shifts are used, the chance to be unclear increases (Figure 14.17), especially in the narrative genre. Eliciting a narrative by pictures triggers the use of deictic pronominal reference instead of anaphoric, cohesive pronominal reference.

Figure 14.17  The percentage of unclear pronominal shifts (calculated over the number of pronouns used to establish referent shifts) per age group expressed by 75 N-children and 120 PI-children in narrative

We see that the PI-children produce significantly more unclear pronominal shifts than the N-children, except for the seven-year-old PI-children. These percentages

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68 ANCOVA with the number of pronouns used to establish referent shifts as covariate; group effect: F(1,164)=4.45, p<0.036; age effect: F(4,164)=23.87, p<0.0001) (nine-year-old PI-children excluded).
are indeed much higher than in the conversational interview genre (PI-children: 56% compared to 16%; N-children: 33% compared to 10%) (see 13.7). In the narrative genre, we found a linear decrease with age of the percentage of unclear pronominal shifts\(^69\) only in the PI-children.

We looked for individual differences within age groups and populations by computing age-related cut-off points \((z \geq +1)\) for the production of unclear pronominal referent shifts (Table 14.10). Here, we also want to detect PI-children with moderate and severe difficulties. As in the conversational interview genre, it is imperative that the listener know who is being talked about. Clear pronominal referent assignment is an absolute necessary condition in order to follow Grice’s principle of being informative (1975). Unclear referents disturb the communicative interaction immediately.

Table 14.10  Children diagnosed as having too many unclear pronominal shifts per age group in 75 N-children and 120 PI-children in narrative

<table>
<thead>
<tr>
<th>Unclear pronominal referent shift</th>
<th>N-children n=75</th>
<th>PI-children n=120</th>
</tr>
</thead>
<tbody>
<tr>
<td>cut-off</td>
<td>n=</td>
<td>cut-off</td>
</tr>
<tr>
<td>4 yrs (\geq 100%)</td>
<td>4</td>
<td>(\geq 100%)</td>
</tr>
<tr>
<td>5 yrs (\geq 89%)</td>
<td>2</td>
<td>(\geq 89%)</td>
</tr>
<tr>
<td>6 yrs (\geq 57%)</td>
<td>2</td>
<td>(\geq 57%)</td>
</tr>
<tr>
<td>7 yrs (\geq 55%)</td>
<td>8</td>
<td>(\geq 55%)</td>
</tr>
<tr>
<td>8 yrs (\geq 53%)</td>
<td>2</td>
<td>(\geq 53%)</td>
</tr>
<tr>
<td>9 yrs (\geq 53%)</td>
<td>-</td>
<td>(\geq 53%)</td>
</tr>
<tr>
<td>Total</td>
<td>18</td>
<td>49</td>
</tr>
<tr>
<td>%</td>
<td>24%</td>
<td>41%</td>
</tr>
</tbody>
</table>

We see that in the seven-year-old N-children, there are eight out of fifteen children (53%) that have problems in establishing clear pronominal referent shifts. This is far more than would be expected on the basis of a normal distribution (2-3 out of 15). The rest of the N-population is normally distributed. When we look at both populations, we find a significant difference in the distribution of children that fall within the marked category. There are significantly\(^70\) more PI-children than N-children that have semantic/pragmatic difficulties in establishing clear pronominal referent shifts.

The following developmental pattern arises when we look at the development of referent shifts, taking into account the analysis of the Dutch-speaking 75 N-children (Roelofs (1998) and 20 N-children (Aarssen, 1996) in a picture elicited narrative.

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69 ANCOVA (polynomial contrast) with the same covariate; PI-children \(F(5,113)=12.87, p<0.0001\), Linearity \(p=0.0001\) (nine-year-old PI-children included).

70 Chi-square (after continuity correction)=5.08, \(df=1, p=0.024\).
In phase 1, four-year-old and relatively less frequently five-year-old N-children predominantly use unclear pronominal referential shifts. These pronominal shifts are mainly deictically used and therefore mostly unclear.

In phase 2, six- and seven-year-old N-children use more and more definite NP's in order to establish clear referent shifts.

In phase 3, N-children from eight to ten years start to use more clear pronominal and clear definite NP shifts alternatively.

Like in conversation (see 13.7), the PI-children show the same developmental pattern, only they produce significantly more unclear pronominal referential shifts in narrative. As in the conversational interview genre, the PI-children produce more unclear referent shifts than the N-children due to semantic or morphological/syntactic inappropriateness. The PI-children produce significantly more unclear referent shifts caused by semantic mismatch than the N-children. There is a significant linear decrease with age in both PI-children and N-children.

Whit regards to morphological/syntactic inappropriateness, we observed that the use of zero-pronouns frequently causes unclear referent shifts. We have already discussed how zero-pronouns can be clearly and correctly used in gapping-constructions and in case of topic-drop (see 5.5 and 8.4). Here, we will examine two genre-specific constructions that frequently but not necessarily cause unclear referent shifts. We call them (1) zero-pronominal referent shift and (2) indirect voice zero-pronominal referent shift.

Firstly, in the Frog story narrative, the main characters (the boy and the dog) are searching for the frog. Sometimes children express the subject and verb of a search attempt, but leave unexpressed that it is the frog that is being sought (see 14.3.4) (Example 28).

Example 28 Referent shift by means of zero-pronouns (PI-child; age 5;2) (Picture: the boy standing by the window and looks for the frog)

Nickie: en dan gaat tie kijken Ø
(and then he is looking Ø)

Paraphrasis: and then he (=the boy) is looking for the frog

In Example 28, the semantic role goal (frog) is left implicit by the child, who wrongly assumed that the listener will understand what the boy and dog are searching for. The verb 'kijken' (to look) in Dutch takes an optional argument. The contribution is thus not ungrammatical, but the semantic/pragmatic rules formulated

71 ANCOVA with the number of bare nouns + definite NP + indefinite NP shifts as covariate; group effect F(1,164)= 4.06, p< 0.0001; age effect F(4,164)=10.71, p<0.0001; no Age*group interaction effect was found (nine-year-old PI-children excluded).

72 ANCOVA (Polynomial contrast) with the same covariate; N-children: F(4,69)=4.75, p<0.001, Linearity p<0.0001; PI-children: F(5,113)=6.43, p<0.0001, Linearity: p<0.0001 (nine-year-old PI-children included).
by the maxims of quantity and quality have to be followed by the narrator, making the semantic role goal explicit. We counted these instances as unclear zero-pronouns. Only if it has been made clear earlier (in one of the three previous contributions and not more)\(^\text{73}\) that it is the frog that is lost and must be sought, following the pragmatic rule of reducing redundancy, the thematic role (goal) or syntactic role (object) can be left implicit in the successive contribution (Example 29).

**Example 29** Referent shift by means of zero-pronouns (PI-child; age 9.0)

<table>
<thead>
<tr>
<th>Kasper:</th>
<th>en dan opeens is de kikker, weg.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kasper:→</td>
<td>en dan gaan ze, Ø, zoeken</td>
</tr>
</tbody>
</table>

In Example 29, we see an example of a semantically/pragmatically correct instance of object-drop. It is possible to omit the object in Dutch and for the contribution to be semantically/pragmatically correct. The verb (for searching) has to be clear in its meaning and the subject has to be referentially clear. When we look at the percentage of unclear referent shifts by means of zero-pronouns (N-children: 69%; PI-children: 82%), we observed no significant group-effect. As mentioned above, from a pragmatic point-of-view in direct voice constructions the speaker must explicitly be mentioned by the narrator. This makes it clear to the listener which character says what, especially when the narrator lets the characters speak with each other (Example 30).

**Example 30** Unclear referent shift by means of zero-pronouns in direct voice constructions (PI-child; 6.6)

<table>
<thead>
<tr>
<th>Ivo:</th>
<th>Ø Ø</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semantic/pragmatic paraphrasing:</td>
<td>the boy, said:</td>
</tr>
<tr>
<td>Ivo:→</td>
<td>&quot;kikker, zit je, hier?&quot;</td>
</tr>
<tr>
<td>Semantic/pragmatic paraphrasing:</td>
<td>the owl, said:</td>
</tr>
<tr>
<td>Ivo:</td>
<td>Ø Ø</td>
</tr>
<tr>
<td>Semantic/pragmatic paraphrasing:</td>
<td>&quot;oeh, oeh, nie, ik ben het niet!&quot;</td>
</tr>
</tbody>
</table>

Many investigators do not even mention the existence of direct voice constructions, and were unclear on whether these constructions were coded or not in their material (e.g. Aarssen, 1996). However, the decision not to code zero-pronouns will have a great influence on how to code the next referent. In Example 30, the last 'ik' (I) is correctly scored as referent shift, when the zero-pronoun referring to the owl is scored previously. When this is not done and also the zero-pronoun referring the boy is not scored, then the last 'ik' (I) will wrongly have been coded as referent maintenance.

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\(^{73}\) This boundary is disputable. One has to start somewhere......
The ability to tell a narrative

In Dutch there are pragmatically correct instances of direct voice subject-drop: when the direct speech consists of more than one utterance from the same character, only the first time the narrator must explicitly mention who is the speaker (Example 31).

**Example 31**  Clear referent shift by means of zero-pronouns in direct voice constructions (fictive)

<table>
<thead>
<tr>
<th>Child:</th>
<th>de jongen zegt</th>
<th>&quot;kikker, waar ben je,?&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(the boy, says)</td>
<td>&quot;frog, where are you, ?&quot;)</td>
</tr>
<tr>
<td>Child:→</td>
<td>0,</td>
<td>&quot;ben je, daar?&quot;</td>
</tr>
<tr>
<td>semantic/pragmatic paraphrase:</td>
<td>the boy, says</td>
<td>&quot;are you, there?!</td>
</tr>
</tbody>
</table>

With respect to the direct voice constructions used in establishing referent shifts, we observed large individual differences: 42 PI-children but only 11 N-children produce direct voice constructions\(^{74}\) in establishing referent shifts. The PI-children as a group produce significantly\(^{75}\) more referent shifts by means of a zero-pronoun (3%) than the N-children (2%) in direct voice constructions in which the main clause was totally left implicit. However, when we look at the percentage of unclear shifts by means of direct voice zero-pronouns (N-children: 11%; PI-children: 26%), we observed for both categories no significant group-effect, because of the large individual differences within age groups and populations.

Exploring the use of all unclear zero-pronoun referent shifts, including those in direct voice constructions, we did not observe a significant\(^{76}\) group effect, only an age effect: with age the percentage of unclear zero-pronouns shifts calculated over all zero-pronouns used to establish referent shifts linearly decreases\(^{77}\) with age in the N-children and the PI-children.

**14.7.3 Conclusion: Referent Shift in narrative**

We conclude that in the narrative genre the PI-children produce a comparable number of referent shifts to the N-children; in both populations referent shifts are more productive than referent maintenances in the narrative genre, unlike the conversational interview genre.

Furthermore, the PI-children produce significantly fewer shifts by means of a definite NP and more unclear pronominal shifts. Although more zero-pronominal shifts were used by the PI-children compared to the N-children no significant group effect was observed, because of the large individual differences within age groups. The PI-children produce significantly more unclear referent shifts caused by semantic inappropriateness compared to the N-children.

---

74 Pearson's Chi-square (after continuity correction) = 8.64, df = 1, p< 0.003.
75 ANCOVA with the number of referent shifts as covariate; group effect: F(1,164)=3.96, p<0.048; no age or age*group interaction effect was observed (nine-year-old PI-children excluded).
76 ANCOVA with the number of all zero-pronouns used to establish referent shifts as covariate; age effect F(4,164)=6.61, p<0.0001 (nine-year-old PI-children excluded).
77 ANCOVA (Polynomial contrast) with the same covariate; N-children: F(4,69)=5.91, p<0.0001; Linearity: p=0.0001; PI-children: F(5,113)=4.57, p<0.001; Linearity p<0.0001 (nine-year-old PI-children included).
14.8 General conclusions: the ability to establish referential cohesion in two genres

The PI-children as a group (4;0 to 8;0 years) refer significantly more frequently to living entities in an unclear way than the N-children in the conversational interview genre. Surprisingly this is not so in the narrative genre. Only if we differentiate between referent introductions, maintenances, and shifts, can we observe that the PI-children produce significantly more unclear pronominal referents, confirming earlier results (Dijkhuis, 1994).

As we see from Figure 14.18, there is a significant linear decrease with age in the production of unclear referents (all forms: (in)definite NP's + pronouns) in both groups in both genres: with age the N-children and the PI-children learn how to speak about living entities by using the correct indefinite NP's in case of first mentions, the correct pronominal forms in case of a maintenance and definite NP's in case of referent shifts in both genres.

From Figure 14.18 it is clear that this ability is acquired earlier in the conversational interview genre than in the narrative genre, and that this development starts earlier in the N-children than in the PI-children. What is more, the PI-children seem more delayed in the development of clear referent assignment in the conversational than in the narrative genre.

Figure 14.18 The percentage of unclear referents calculated over all referents per age group expressed 75 N-children and 120 PI-children in conversation (C) and narrative (N)

<table>
<thead>
<tr>
<th>Age</th>
<th>N-chi: unclear referents C</th>
<th>P-chi: unclear referents C</th>
<th>N-chi: unclear referents N</th>
<th>P-chi: unclear referents N</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 yrs</td>
<td>16</td>
<td>22</td>
<td>51</td>
<td>50</td>
</tr>
<tr>
<td>5 yrs</td>
<td>15</td>
<td>14</td>
<td>37</td>
<td>35</td>
</tr>
<tr>
<td>6 yrs</td>
<td>7</td>
<td>14</td>
<td>14</td>
<td>28</td>
</tr>
<tr>
<td>7 yrs</td>
<td>8</td>
<td>12</td>
<td>18</td>
<td>24</td>
</tr>
<tr>
<td>8 yrs</td>
<td>5</td>
<td>13</td>
<td>27</td>
<td>20</td>
</tr>
<tr>
<td>9 yrs</td>
<td></td>
<td>5</td>
<td>16</td>
<td></td>
</tr>
</tbody>
</table>

78 ANCOVA with the mean total number of conversational references as covariate; group effect F(1,164)= 16.62, p<0.001; age effect F(4,164)=7.50, p<0.0001; no age*group interaction effect was observed (nine-year-old PI-children excluded).

79 ANCOVA with the mean total number of narrative references as covariate; age effect F(4,164)=17.22, p<0.0001; no age*group interaction effect was observed (nine-year-old PI-children excluded).

80 ANCOVA (Polynomial contrast) with the same covariate in conversation: N-children: age effect F(4,69)=9.59, p<0.0001; Linearity: p<0.0001; PI-children (nine-year-old PI-children included): age effect F(5,113)=6.95, p<0.0001; Linearity: p<0.0001; Cubic: p<0.012).
The ability to tell a narrative

Next we explored how many N- and PI-children produced extremely many unclear referents in the conversational and narrative genre, largely based on age-related cut-off point \((z \geq +1)\) including the N- and PI-children (Table 14.11).

<table>
<thead>
<tr>
<th>Table 14.11</th>
<th>Cut-off point largely based on the z-scores (z \geq +1) on the variables unclear referents in conversational and narrative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cut-off point unclear referents</td>
<td>(introduction + maintenance + shift)</td>
</tr>
<tr>
<td>conversation</td>
<td>(z \geq +1)</td>
</tr>
<tr>
<td>4 yrs</td>
<td>(\geq 24)%</td>
</tr>
<tr>
<td>5 yrs</td>
<td>(\geq 24)%</td>
</tr>
<tr>
<td>6 yrs</td>
<td>(\geq 10)%</td>
</tr>
<tr>
<td>7 yrs</td>
<td>(\geq 9)%</td>
</tr>
<tr>
<td>8 yrs</td>
<td>(\geq 7)%</td>
</tr>
<tr>
<td>9 yrs</td>
<td>(\geq 7)%</td>
</tr>
</tbody>
</table>

For instance, four-year-old N- and PI-children can be diagnosed as having semantic/pragmatic difficulties with clear referent assignment when in the conversational interview genre more than 24% and in the narrative genre more than 75% of all the referents were coded as unclear.

In Table 14.12 we compare the results of this analysis in both genres. First, in both genres the number of N-children (conversation: 15%; narration: 17%) that represent the marked category \((z \geq +1)\) falls within the limits of normal distribution, but the number of PI-children do not (conversation: 43%; narration: 23%).

<table>
<thead>
<tr>
<th>Table 14.12</th>
<th>Distribution of the number of N-children and PI-children that produced too many unclear referents in conversation and narrative according to their age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unclear referents</td>
<td>N-children</td>
</tr>
<tr>
<td></td>
<td>con</td>
</tr>
<tr>
<td>(z \geq +1)</td>
<td>(z \geq +1)</td>
</tr>
<tr>
<td>4 yrs</td>
<td>2</td>
</tr>
<tr>
<td>5 yrs</td>
<td>2</td>
</tr>
<tr>
<td>6 yrs</td>
<td>2</td>
</tr>
<tr>
<td>7 yrs</td>
<td>4</td>
</tr>
<tr>
<td>8 yrs</td>
<td>1</td>
</tr>
<tr>
<td>9 yrs</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>11</td>
</tr>
<tr>
<td>15%</td>
<td>17%</td>
</tr>
</tbody>
</table>

Note that in the seven-year-old N-children there are too many children that fall within the marked category (conversation: 27%; narrative: 27%). In a normally

\(\text{ANCOVA (Polynomial contrast) with the same covariate in narrative: N-children: age effect } F(4,69)=8.10, p<0.0001; \text{ Linearity: } p<0.0001; \text{ PI-children (nine-year-old PI-children included): age effect } F(5,113)=9.76, p<0.0001; \text{ Linearity: } p<0.0001).\)
distributed N-population there very well might be some children (<18.3%) that have 'low scores' on a certain variable, but in the seven-year-old N-children there are too many that have clear pragmatic referential problems. A comparison between the seven-year-old PI-children and N-children is therefore difficult, since clear patterns of deviant behaviour are more difficult to detect.

Next, we look at the N- and PI-children that have the same problems with clear referent assignment in both genres. We see that this is a smaller group of N-children (7%) than PI-children (13%). Especially in the P-population, there are many six- to eight-year-olds that have only problems in the establishment of clear reference assignment in the conversational interview genre. Probably, to have social (linguistic) contact with an interviewer is more difficult for some PI-children than to tell a narrative on their own. As we see, there are three times as many individual PI-children \( n=79 \) than N-children \( n=24 \) that produce extremely many unclear referents in one of the two genres. This difference\(^{81}\) proved to be highly significant.

The PI-children produced significantly more unclear referents due to morphological/syntactic (e.g. zero-pronouns in an obligatory argument position) and/or semantic inappropriateness (e.g. semantically mismatched noun-phrases). While the PI-children are at the age of learning to apply certain pragmatic rules, they are still suffering from not having developed the correct morphosyntactic and semantic tools to work with. The PI-children were frequently not explicit enough since they left referents unexpressed, used bare nouns that do not contain essential pragmatic information or produced semantically inappropriate NP's. As well as having these problems, they also frequently failed in the correct application of certain pragmatic rules for referent assignment, and wrongly used, for instance, the pronoun 'he' for referring successively to two different male entities.

Thus, what causes the unclarity in the N-population and in the P-population is different in both genres. The N-children more frequently produce the morphologically/syntactical and semantically correct form. What causes the unclearness is a failure in the correct application of semantic/pragmatic rules. The N-children are still developing the application of these rules between age four and eight. At age eight a considerable number of N-children still have difficulties with the semantic/pragmatic rule of taking the listener's perspective into account, and with making the correct presuppositions about what the interviewer is assumed to know on the basis of the given linguistic information or on the basis of the interviewer's world knowledge. The PI-children prove to have even more difficulties of this kind in both genres plus the morphosyntactic and semantic difficulties mentioned above.

Another remarkable fact is that the N-children, especially the six-year-olds, in both genres produce more referents by means of a definite NP that were coded as too clear/redundant than the PI-children. The N-children are thus more explicit than necessary, and frequently failed to apply the semantic/pragmatic rule not to be redundant. However, in all these cases for the investigator it was clear about what

\(^{81}\) Chi-square (after continuity correction)\(=19.86, \text{ df } = 1, p<0.0001 \) (nine-year-old PI-children included).
living entity the child was speaking. The fact that we observed this pragmatic 'failure' in the PI-children less frequently than in the N-children, showed that the PI-children are far more implicit and not even reach the level of overgeneralization of the semantic/pragmatic rule: 'be explicit'.

In general, the pragmatic impact of the difficulties in the correct use of referential cohesive devices by the PI-children should not be underestimated. The PI-interviewers are frequently confronted with information units on all levels that are not clearly morphologically/syntactically and semantically/pragmatically linked to each other. In less severe cases, the PI-interviewers still had to make considerable effort to compute what the PI-children mean; in the worse cases the PI-interviewers, for instance, did not understand what living entity the PI-children exactly were talking about. When with this computational effort still not everything is clear, this can easily lead to feelings of impatience, being bored etc. We might expect the same negative feelings in other people that have to communicate with the PI-children in everyday life. Unclear referent assignment plays an important part in this and may negatively influence the communicative interaction with the PI-children.

14.9 General conclusions: the ability to tell a narrative

The PI-children have difficulties in embedding the beginning of the narrative in time and in expressing the most important plot elements. This seems to be related to an underdeveloped concept of the narrative as a whole. The results also indicate that the PI-children have difficulties in narrating causally related actions according to an underlying internally made plan. As a group the PI-children seem to have a semantic/pragmatic disorder in expressing causality in a narrative (e.g. Bishop, 2002). These results are comparable to earlier findings in autistic PI-children (Tager-Flusberg, 1995) and PI-children on the autistic spectrum and with pervasive developmental disorders (Capps, Losh and Thurber, 2000). The use of complex morphosyntax is an important tool that enables narrators to mark causal distinctions between story events. Although from five years on, English-speaking N-children begin to use complex syntax, such as subjunctions like 'because', to impose a causal narrative hierarchy (e.g. Karmiloff-Smith, 1985), the Dutch-speaking N- and PI-children used too few narrative causal conjunctions to be able to carry out statistical analysis (see 9.6.2). Although they can use causal conjunctions in the Frog story narrative, this type of complex morphosyntax seems rather limited in both N- and PI-children. The expression of causality also requires perspective taking and causal understanding of human behaviour.

We did not find that the PI-children as a group produced significantly more unclear referents than the N-children. This may be due to the large individual differences between the children inside the groups. These differences were even greater in the narrative genre than in the conversational interview genre. The pictures in the narrative task might also have encouraged the PI-children to express a clear referent by means of an NP. However, significantly more PI-children (n=79; 66%) than N-children (24; 32%) produced too many unclear referents in both genres. When we
differentiate between first and subsequent mentions, we observe that there are significantly more PI-children (n=14; 12%) than N-children (n=5; 7%) that have severe semantic problems in establishing clear referent NP-introductions. There also are significantly more PI-children (n=49; 41%) than N-children (n=18; 24%) that have difficulties in establishing clear pronominal referent shifts.

When we look at complexity, we observed that the PI-children followed the thematic subject-strategy more than the minimal distance strategy, and they are comparable in this respect to the N-children as a group. Both strategies for clear referent maintenance, however, were used significantly less frequently by the PI-children than by the N-children. We found also that a substantial percentage of unclear coreferential cohesion was caused by morphological/syntactic and/or semantic inappropriateness.

The difficulties in embedding the start of the Frog story in time, in narrating all plot elements, and in establishing clear co-referential cohesion all confirm that the PI-children, as a group, have severe impairments in telling a cohesively and coherently clearly linked narrative.