coherence of story superstructure to be evaluated independently of one another.

The children's recall of the category statements in the marked movement version ($M = 7.38$) was significantly better than in the unmarked movement version ($M = 5.50$), $t(69) = 3.28$, $p < .01$, supporting the prediction that the marked and unmarked movement story versions would differ. The only way in which these two story versions differed was in the presence, in the marked movement version, of connectives that preserved local coherence in the story. Thus, this result provides evidence that the presence of local coherence was a significant factor in children's recall of the marked movement story versions. This finding suggests that children's poor recall of noncanonical stories that have traditionally been used in story comprehension studies may have resulted not just from the disruption of story superstructure, but also from the disruption of local coherence and macrostructure. Moreover, speculations that connectives may be important in the processing of noncanonical stories (van Dijk, 1985; Johnson & Mandler, 1980; Mandler & Johnson, 1977) have also been confirmed.

An even more interesting finding, and in fact, an unexpected one, was that the children's recall of category statements in the canonical version ($M = 8.04$) did not differ significantly from their recall of these statements in the marked movement version ($M = 7.38$), $t(69) = 1.17$, $p = .248$. This finding has several implications. In

particular, it shows that the disruption of the story
superstructure, when marked linguistically as in the marked
movement version, did not significantly reduce children's
recall of the story category statements. The connectives
that marked the correct sequence of events in the story
appear to have enabled the listener to create a coherent
macrostructure, and may have also cued the listener to the
true nature of the story category of the moved statements,
possibly by signalling that the moved statement was in fact
a consequence category statement. As a result, the
connectives that established local coherence in the story
may also have served as a link between the construction of a
coherent macrostructure and the story superstructure. The
absence of these connectives in the unmarked movement
version accounts for the significantly poorer recall of the
story category statements in this condition.

4.3.2 Accurate Recall of Story Statement Constituents

As noted in the previous chapter, all the scores for
this measure were converted to percentages so that the
results could be compared across the three story
organization conditions. The raw scores for each of the
subjects are found in Appendix E.

As in the previous measure of recall, planned
comparisons were performed across the three story
organization conditions to evaluate the first hypothesis.
The results of these comparisons are presented in Table 7.

Table 7

Planned Comparisons on the Accurate Recall of Story Statement Constituents

Story Condition	N	Mean	SD	SE
Canonical	24	73.21	13.87	2.83
Marked Movement	24	67.24	10.79	2.20
Unmarked Movement	24	54.28	17.25	3.52

Comparisons	t Values
Canonical vs Marked	1.46
Marked vs Unmarked	* 3.16
Canonical vs Unmarked	** 4.61

* $p < .01$
** $p < .001$

From a statistical perspective, the pattern of results of these pairwise comparisons are similar to those observed in the previous more general measure of recall.

First, the children's recall of the story statement constituents was significantly better under the canonical condition ($M = 73.21$) than under the unmarked movement condition ($M = 54.28$), $t(\quad) = 4.61$, $p < .001$. This result again supports previous literature that has shown that children's recall of noncanonical stories is poorer in terms of the quantity and quality of recall than their recall of canonical stories (Mandler, 1978; Mandler & DeForest, 1979; Stein & Glenn, 1978, cited in Stein, 1979).

Secondly, the recall of story statement constituents was significantly better under the marked movement condition (M = 67.24) than under the unmarked movement condition (M = 54.28), $t(69)$ = 3.16, p < .01. This improvement in recall is in the predicted direction: marked movement > unmarked movement. This finding demonstrates that the increased local coherence in the marked movement version significantly improved the sixth graders' ability to accurately recall the story statement constituents. The children were apparently able to recall more of the constituents accurately because of the increase in local coherence, and the corresponding increased coherence of the macrostructure.

There was no significant difference between children's recall of story statement constituents under the canonical condition (M = 73.21) and their recall of the constituents under the marked movement condition (M = 67.24), $t(69)$ = 1.46, p = .150. The presence of local coherence, and the corresponding increase of coherence in the macrostructure of the marked movement story versions enabled the children to recall its constituents as well as they recalled the constituents of the canonical versions. ~ Thus, the disruption of the story superstructure in the marked movement versions did not have a significant negative effect on children's recall. In light of these results, it would appear that the presence or absence of local coherence was an important factor in children's ability to accurately

recall the story statement constituents of the stories.

Both the more general and traditional recall measure of story category statements, and the more specific recall measure of statement constituents provide evidence that local coherence and the connectives that mark this coherence are important factors in children's recall of noncanonical stories. Most important, however, is the fact that the children were able to recall stories that were locally coherent, and thus globally coherent in terms of macrostructure, as well as stories that were also coherent in terms of story superstructure. This suggests that the canonical story superstructure is not the only significant factor guiding recall. Sixth graders can recall story information accurately even if the superstructure is disrupted, as long as the disruption is marked via linguistic markers such as the connectives. A possible explanation for the positive effect that the connectives had on the children's recall is that children recalling the marked movement story versions were able to devote more of their processing resources to the accurate recall of story information because the connectives provided a coherent story structure, whereas the children recalling the unmarked movement versions were required to devote more of these resources to resolving the incoherence of the story.

4.3.3 Temporal Organization of Recall

In order to determine whether there were significant differences in the way in which subjects ordered their recall protocols across the three story organization conditions, chi-square tests were conducted on (a) the proportion of consequence category statements recalled in the input order position, and (b) the proportion of sequences consisting both of the consequence and initiating event-category statements recalled in the input order across the three story conditions. The raw scores that were used to calculate these proportions are found in Appendix E.

The proportion of consequence category statements recalled for each of the story organization conditions was: canonical (.96), marked movement (.92), and unmarked movement (.77). On the basis of this information, the proportions of these category statements that were recalled in the input order position were calculated: canonical (1.00), marked movement (.84), and unmarked movement (.89). In order to evaluate the first hypothesis, a chi-square test was conducted to determine whether there were any significant differences among these proportions across the three story organization conditions (see Table 8 for results). Results revealed that significantly more consequence category statements were recalled in the input order for the canonical version than the marked movement version $x^2 (1, N = 90) = 7.78$, $p < .01$, and for the canonical version than for the unmarked movement version

Table 8

Results of Chi-square Tests on the Proportion of Consequence Category Statements Recalled in Input Order Position

Comparisons	N	Chi-square Values
Canonical vs Marked	90	** 7.78
Marked vs Unmarked	81	.45
Canonical vs Unmarked	83	* 4.68

* $p < .05$
** $p < .01$

$x^2(1, N = 83) = 4.68$, $p < .05$. However, there was no significant difference in these proportions between the marked and unmarked movement story versions $x^2(1, N = 81) = .45$, $p < .70$.

These findings reveal, not surprisingly, that the children were reordering the position of the consequence categories significantly more often in the marked and unmarked movement versions than in the canonical version. This result confirms the findings in the literature that more reorderings of story information occur in noncanonical stories than canonical stories (Mandler, 1978; Mandler & DeForest, 1979; Stein & Glenn, 1978, cited in Stein, 1979). Nevertheless, it may be surprising that the actual proportion of reordering for any of the story versions was so low: (a) in the canonical version none of the consequence category statements were reordered, (b) in the marked movement version 15.90% were reordered, and (c) in the

unmarked movement version 10.82% were reordered. The

overwhelming majority of consequence category statements

were recalled in the input order position across all three

story conditions despite the fact that the input order

violated superstructure in marked and unmarked movement

conditions.   This finding is in contrast to the results of

c████████ recall of noncanonical stories reported in the

literature, where a ████████ amount of reordering of the

input sequence has been observed (Mandler, 1978; Mandler &

DeForest, 1979; Stein & Glenn, 1978, cited in Stein, 1979).

However, given that only two category statements were moved

in the noncanonical versions used in this study, the low

proportion of reordering may be a function of the amount of

reordering in the presented order. That is to say, the

proportion of reordering in recall protocols may increase

when more statements are moved in the presented stories.

For example, the Mandler (1978) and Mandler and DeForest

(1979) studies that used interleaved stories reported a

significant amount of reordering in the recall protocols,

whereas Bischofshausen (1985), who moved only one statement

in the presented stories, reported that the majority of the

recalled protocols mirrored the input order.

Although there was no significant difference between

the marked and unmarked movement versions, in terms of

recalling the consequence category statements in the input

order position, it is clear that a much lower number of

consequence category statements were accurately recalled in

the unmarked movement story versions. This may indicate
that the increased coherence between the consequence and
initiating event category statements was an important factor
in the accurate recall of the consequence category
statements, although not a factor in the temporal
organization of those statements recalled.

The temporal ordering strategies of the subjects were
investigated by first examining the way in which the
subjects either preserved or reordered the input sequence of
the moved consequence category statements and the adjacent
initiating event category statements. Recall that this
sequence of category statements is significant because the
local coherence between these two categories is preserved
with connectives in the marked movement versions, but not in
the unmarked movement versions. The proportion of sequences
consisting of both consequence and initiating event category
statements was scored across the three story organization
conditions: canonical (.92), marked movement (.90), and
unmarked (.60). On the basis of these figures, the
proportion of sequences that maintained the input order was
calculated: canonical (1.00), marked movement (.84), and
unmarked movement (.86). A chi-square test (Table 9)
revealed that a significantly greater proportion of these
sequences were recalled in the input order for the canonical
than marked movement version, $x^2(1, N = 87) = 7.71, p < .01,$
and than the unmarked movement version, $x^2(1, N = 73) = 5.19$
$p < .05.$ There was no significant difference between the

Table 9

Results of Chi-square Tests on the Proportion of Consequence and Initiating Event Category Statements Recalled in Input Order

Comparisons	N	Chi-square Values
Canonical vs Marked	87	** 7.71
Marked vs Unmarked	72	.08
Canonical vs Unmarked	73	* 5.19

* $p < .05$
** $p < .01$

marked and unmarked movement versions, $x^2(1, N = 72) = .08$, $p < .80$. As such, these results generally reflect the aforementioned findings on the recall of the consequence category statements.

The next step in this analysis involved a closer examination of the way in which subjects: (a) did or did not preserve the local coherence of the two category statements when they were asked to recall the marked movement story versions, and (b) attempted to make the locally incoherent sequence of these two categories coherent when recalling the unmarked movement version. These issues were investigated on the basis of the proportion of sequences consisting of both consequence and intitiating event category statements recalled. A description of the temporal ordering strategies of subjects recalling the marked movement story versions is presented in Table 10, and the strategies of those recalling the unmarked movement story version are presented in Table

11.

In the marked movement version, a very high proportion
of the sequences recalled (.92) preserved input order, as
well as the connective *before this* in the initiating event
category statement. Of the remaining proportion that
maintained the input order, there was only one instance in
which *before this* was replaced by another connective, and
two instances in which no connective was added to connect
the initiating event and the consequence category
statements. This result stands in contrast to the results
of Bischofshausen (1985) who reported that the majority of
subjects did not recall the connective *before* in inverted
sequences. Of the proportion of sequences in which the
input order was not maintained (.16), five sequences (.71)
were simply reversed and marked with either an additive or
temporal connective (i.e., *and, and then, and then later,
then one day*) in the initiating event category statement.
There was one sequence in which the consequence statement
was moved to its canonical position in the story
superstructure (i.e., after the attempt category), and one
sequence in which the input order was reversed, and the
connective *before this* placed in the consequence category
statement.

In the unmarked condition, over half the sequences
(.56) that maintained the input order also contained a
connective where none had been presented. In an effort to
make the sequence coherent, subjects added additive,

Table 10

Temporal Ordering Strategies of Subjects Recalling Marked Movement Story Versions

Local Coherence	Input Order Maintained	Input Order Altered
Retained *before this*	.92	.14
Added Connective	.03	.72
No Connective Added	.05	.14

Table 11

Temporal Ordering Strategies of Subjects Recalling Unmarked Movement Story Versions

Local Coherence	Input Order Maintained	Input Order Altered
Added Connective	.56	.50
No Connective Added	.44	.50

temporal, causal, and adversative connectives. Some examples of these sequences are the following:

1. And Susan found a baby bird.
   And then she heard something in the bushes.

2. And Peter discovered he was sitting in poison ivy.
   So he hiked up a hill.

3. And Tommy he had a bicycle with a flat tire.
   But he was sick.

In addition to adding connectives, subjects also altered the verb tenses of statements in an attempt to make the two statements coherent, as in example 2. The following recalled statements are examples of this strategy.

1. And Peter was sitting in poison ivy.
   And Peter started hiking up the hill.

2. And Peter was sitting in poison ivy.
   And then he went hiking again.

With regard to the connective *meanwhile* which linked
the two episodes of the stories, and which was excluded from
the unmarked movement condition, the majority (63.15%) of
subjects added either an additive connective such as *and* or
a temporal connective such as *then* or *and then* to link the
episodes.

Of those sequences in which the input order was altered
(.13), half contained a connective marking this reversal,
and the other half did not. In all cases, the changes in
input order were as a result of the reversal of the two
statements.

This pattern of temporal ordering suggests that the
children were attempting to either maintain or establish
local coherence across the two noncanonical story versions.
In the unmarked movement version, some of the children tried
to create a coherent story in the face of being asked to
recall an incoherent story. A considerable number of
subjects used connectives or other linguistic devices in
order to make the temporal sequence locally coherent. For
those subjects who were asked to recall the marked movement
story versions, the majority preserved the local coherence
of the two category statements by retaining the connective
before this. When the subjects altered the sequence under
the marked movement condition, they primarily reversed the

sequence of the two statements; thus recalling them in the canonical order, (i.e., initiating event before consequence category), but they did not recall the consequence category in the position defined by the story grammar, that is, after the attempt category. The fact that many of the children made the stories coherent even when they were asked to recall the stories verbatim again illustrates the importance of local coherence in children's processing of stories.

4.4 Comprehension Question Measure

4.4.1 Correct Responses to Comprehension Questions

The statistics on this measure were performed on the subjects' raw scores of the number of correct responses out of 11 wh-questions. These raw scores appear in Appendix E.

Planned comparisons were conducted to evaluate the hypothesis that the number of accurate responses to the comprehension questions should not differ among the canonical and marked movement stories but the number of accurate responses for each of these stories should be significantly greater than for the unmarked movement stories. In Table 12 the results of these analyses are are presented.

All three comparisons yielded significant differences. As predicted, the mean for the marked movement version (M = 8.31) was significantly better than the mean for the unmarked movement version (M = 6.90), ($t(69)$ = 3.29,

Table 12

Planned Comparisons on the Number of Correct
Responses to Comprehension Questions

Story Condition	N	Mean	SD	SE
Canonical	24	9.48	1.46	.30
Marked Movement	24	8.31	1.19	.24
Unmarked Movement	24	6.90	1.77	.36

Comparisons	t Values
Canonical vs Marked	* 2.70
Marked vs Unmarked	* 3.29
Canonical vs Unmarked	** 6.00

* $p < .01$
** $p < .001$

$p < .01$. Again as predicted, the number of correct
responses to these questions was significantly better under
the canonical than the unmarked movement condition,
$t(69) = 6.00$, $p < .001$. However, the number of correct
responses to the comprehension questions was significantly
better under the canonical condition ($M = 9.48$) than under
the marked movement condition ($M = 8.31$), $t(69) = 2.70$,
$p < .01$, contrary to the prediction that the marked movement
and canonical story versions would not differ on this
measure of comprehension.

Before interpreting these results in terms of the role
of local and global coherence, a few comments should be made
with regard to this task. First, during the actual testing

of the children on this measure, it was noted that the

canonical (i.e., chronological) order of presentation of the

wh-questions may have increased the difficulty of the task

for the children who were asked to recall the marked

movement and unmarked movement story versions. The

canonical order of question presentation did not follow the

input order of the marked and unmarked movement versions,

but followed the input order of the canonical versions.

Given that the questions were posed after an immediate

recall task, it is quite likely that the sequence of story

information foremost in the children's memory was the input

order of the story. Thus, the canonical sequence of

presentation of the wh-questions may have benefited the

children listening to the canonical story version more than

the children listening to the two noncanonical versions. In

hindsight, it may have been more appropriate to organize the

wh-questions such that they mirrored the input sequence of

each of the stories, and in this way, queried the subjects'

knowledge of the sequence of events in terms of how the

stories were presented. The way in which the questions in

this task should be organized is problematic because it is

not clear how the sequence of question presentation will

affect the children's performance on the comprehension

questions. Without this information, it is difficult to

ensure that the demands of the task are equitable across the

three groups.

The fact that the children presented with the marked movement story versions did not do as well as those listening to the canonical story versions in responding to the wh-questions would suggest that local coherence did not play the same role in answering comprehension questions as in the recall of the stories. Given that the marked movement versions lacked a canonical story superstructure, it appears that the presence of a canonical superstructure was an important factor in this measure of comprehension. On the other hand, the fact that the children listening to the unmarked movement story versions did not do as well as the children listening to the marked movement story versions suggests that local coherence was also an important factor in children's ability to respond correctly to the questions. The presence of both local coherence and a canonical story superstructure in the stories was essential to the children's successful performance on this task.

A summary of the results of the experiment follows in the Fifth Chapter. Implications for future research are also discussed.

5. CONCLUSIONS

5.1 Summary of the Results of the Experiment

The results of this study support the conclusion that local coherence of story structure is an important factor in children's recall and comprehension of stories. The sixth graders in this study demonstrated an awareness of the function of the connectives, and this knowledge enabled them to recall the marked movement story versions better than the unmarked movement versions and as well as the canonical versions. Local coherence also played an important role in children's ability to answer comprehension questions, illustrated by their significantly better performance in responding to questions on the marked movement than unmarked movement story versions.

Although the presence of a canonical superstructure was not the sole factor affecting the quantity and quality of the sixth graders' recall, it did facilitate their ability to maintain the presented story order in the recall protocols. Moreover, the canonical superstructure was also an important factor in the sixth graders' ability to respond correctly to the comprehension questions: children listening to the canonical stories responded more accurately to the questions than those listening to the marked movement story versions.

These findings emphasize that the processes involved in story comprehension and recall draw on knowledge of both local and global coherence in story structure. Moreover, when the superstructure of a story is disrupted, linguistic devices such as connectives provide the listener with essential information about the global structure of the story. With this information, the listener can create a coherent macrostructure, or global meaning for the story. In this way, the presence of a canonical story superstructure is not the only significant factor enabling story recall or comprehension. Children are able to recall and comprehend story information even when the superstructure is disrupted, so long as the disruption is signalled by linguistic devices such as the connectives. Given these findings, one might argue that the importance of story superstructures in story comprehension has been overstated by those researchers investigating the notions of story grammar and story schema. In actuality, local coherence and a coherent macrostructure are also essential components in story comprehension and recall.

5.2 Implications for future research

The findings of this study have several implications for future research on story comprehension. First, investigators must begin to consider the effect of disrupting story superstructure on the local coherence and cohesion of stories. In order to assess more accurately the

role of story structure knowledge in story comprehension, researchers should focus on adults' and children's comprehension of story versions that are locally coherent and thus coherent in terms of macrostructure, but noncanonical in terms of story superstructure.

Another important factor that should be considered in light of the results of this study is the nature of the task used to assess children's comprehension of stories. This study employed a recall and a comprehension question task, with the former viewed as a measure of recall, and the latter as a more direct measure of comprehension. The patterns of results differed slightly across the two measures, although some potential problems with the latter task were noted that may have contributed to the differences found. Further investigation into the tasks used to assess comprehension of stories, and the way in which tasks may differ in their sensitivity to assessing this comprehension is necessary.

5.3 Conclusion

This study has provided concrete evidence that in story comprehension research to date, the effect of altering the superstructure of the story has been confounded with the disruption of local coherence and a coherent macrostructure. For this reason, special attention should be paid to the role that local coherence, and the connectives that mark this coherence, play in the processing of noncanonical

stories. Lower level components of story structure,
particularly in stories that have been disrupted, cannot be
ignored. The results of this study emphasize the need for
researchers investigating story comprehension to consider
the lower level components and processes involved in
comprehending and recalling stories.

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APPENDIX A: STORIES

Practice Story

Setting

Once there was a fish named Albert, and he lived in a big icy pond in the forest.

Initiating Event

One day, while Albert was swimming around the pond, he spotted a big juicy worm floating on top of the water.

Internal Response

Albert knew that his friend liked worms, so he decided to catch the worm for his friend.

Attempt

Albert swam around the worm twice. Then he bit into it.

Consequence

Suddenly Albert was caught on a fishing hook.

Reaction

Albert realized that he would never see his friend again so he felt very sad.

Story 1: Canonical

Setting

One day both Jennifer and Tom had some bad luck.

Initiating Event

Jennifer lost her dog in the park.

Internal Response

Jennifer was determined to find her dog.

Attempt

So she searche   nd the neighbourhood.

Consequence

Then Jennifer saw her dog digging in a garbage can.

Reaction

Jennifer knew that she would have to give her dog a bath.

Initiating Event

Meanwhile Tom was sick in bed.

Internal Response

But Tom wanted to ride his bicycle.

Attempt

So he snuck out of the house.

Consequence

Then Tom discovered that his bicycle had a flat tire.

Reaction

Tom thought that he should have stayed in bed.

Story 1: Marked Movement

Setting

One day both Jennifer and Tom had some bad luck.

Consequence

Jennifer saw her dog digging in a garbage can.

Initiating Event

Before this, Jennifer lost her dog in the park.

Internal Response

Jennifer was determined to find her dog.

Attempt

So she searched around the neighbourhood.

Reaction

Now Jennifer knew that she would have to give her dog a bath.

Consequence

Meanwhile Tom discovered that his bicycle had a flat tire.

Initiating Event

Before this, Tom was sick in bed.

Internal Response

But Tom wanted to ride his bicycle.

Attempt

So he snuck out of the house.

Reaction

Now Tom thought that he should have stayed in bed.

Story 1: Unmarked movement

Setting

One day both Jennifer and Tom had some bad luck.

Consequence

Jennifer saw her dog digging in a garbage can.

Initiating Event

Jennifer lost her dog in the park.

Internal Response

Jennifer was determined to find her dog.

Attempt

So she searched around the neighbourhood.

Reaction

Jennifer knew that she would have to give her dog a bath.

Consequence

Tom discovered that his bicycle had a flat tire.

Initiating Event

Tom was sick in bed.

Internal Response

But Tom wanted to ride his bicycle.

Attempt

So he snuck out of the house.

Reaction

Tom thought that he should have stayed in bed.

Story 2: Canonical

Setting

One day both Susan and Peter were exploring a forest.

Initiating Event

Susan heard a noise in some bushes.

Internal Response

Susan was determined to investigate the noise.

Attempt

So Susan crawled into the bushes.

Consequence

Then Susan found a baby bird chirping on the ground.

Reaction

Susan knew that she would have to take the baby bird home.

Initiating Event

Meanwhile, Peter was hiking up a hill.

Internal Response

But Peter wanted to take a rest.

Attempt

So he sat down under a tree.

Consequence

Then Peter discovered that he was sitting in poison ivy.

Reaction

Peter was worried that he would get very sick.

Story 2: Marked Movement

Setting

One day both Susan and Peter were exploring a forest.

Consequence

Susan found a baby bird chirping on the ground.

Initiating Event

Before this, Susan heard a noise in some bushes.

Internal Response

Susan was determined to investigate the noise.

Attempt

So she crawled into the bushes.

Reaction

Now Susan knew that she would have to take the baby bird home.

Consequence

Meanwhile Peter discovered that he was sitting in poison ivy.

Initiating Event

Before this, Peter was hiking up a hill.

Internal Response

But Peter wanted to take a rest.

Attempt

So he sat down under a tree.

Reaction

Now Peter was worried that he would get very sick.

Story 2: Unmarked Movement

Setting

One day both Susan and Peter were exploring a forest.

Consequence

Susan found a baby bird chirping on the ground.

Initiating Event

Susan heard a noise in the bushes.

Internal Response

Susan was determined to investigate the noise.

Attempt

So she crawled into the bushes.

Reaction

Susan knew that she would have to take the baby bird home.

Consequence

Peter discovered that he was sitting in poison ivy.

Initiating Event

Peter was hiking up a hill.

Internal Response

But Peter wanted to take a rest.

Attempt

So he sat down under a tree.

Reaction

Peter was worried that he would get very sick.

APPENDIX B: COMPREHENSION QUESTIONS

Practice Story

1. Who was in the story?

2. Where did Albert live?

3. What did Albert spot floating on top of the water?

4. Why did Albert decide to catch the worm?

5. How many times did Albert swim around the worm?

6. What did Albert do after he swam around the worm?

7. What happened after Albert bit into the worm?

8. How did Albert feel after he was caught on a
   fishing hook?

Story 1

1. Who were the characters in the story?

2. What happened to both of them?

3. What did Jennifer lose?

4. What was Jennifer determined to do?

5. Where did Jennifer search for her dog?

6. Where did Jennifer see her dog?

7. What did Jennifer know she would have to do?

8. Where was Tom?

9. What did Tom want to do?

10. How did Tom get to the place?

11. What did Tom discover?

12. How did Tom feel at the end of the story?

Story 2

1. Who were the characters in the story?

2. What were they both doing?

3. What did Susan hear?

4. What was Susan determined to do?

5. Where did Susan crawl?

6. What did Susan find?

7. What did Susan know she would have to do?

8. Where was Peter?

9. What did Peter want to do?

10. Where did Peter take a rest?

11. What did Peter discover?

12. How did Peter feel at the end of the story?

After a brief conversational period in which the school
activities of the day were usually discussed, the
experimeter (E) began:

Okay, I want to thank you for helping me with my project.
I'm interested in how people remember stories.
Over the next 10 minutes you'll hear 2 short stories on this
taperecorder (E motions to recorder).
After each story, I'll ask you to tell the story back to me,
and I'll record you telling the story on this recorder (E
motions to other recorder), because otherwise I won't
remember what you've said.

Now, I want you to listen to each story very carefully
because you'll hear the story only once.
Then after you hear the story, I want you to do something
before you tell it back to me, I want you to count backwards
from 100 by threes.
You start at 100 and go backward by threes.
Now you won't have to count all the way to zero, I'll tell
you to stop counting before that.
After I've asked you to stop counting, then I'd like you to
tell me the story exactly as you heard it.
Okay?
I'd like you to tell me the story exactly as you heard it.
Then when you've finished telling me the story, I'll ask you
some questions about the story.

Okay, do you have any questions?

(E answers any questions).

Are you ready?
Here's the first story - listen carefully.

(E plays story on recorder. After story finishes, E
switches off the recorder).

Okay, now I want you to count backwards by threes starting
at 100.

(E times 30 seconds of counting, also keeps counting on
track).

Okay good, you can stop there.

(E turns on recorder).

Now I would like you to tell me the story <u>exactly</u> as you heard it.
Whenever you're ready.

(When it appears S is finished) Okay, are you finished?
Great work, now I'll ask you some questions about the story.

(After all the questions are completed).

That was great, now we'll do the second story in exactly the same way.
Ready?

(Same instructions for the second story beginning at the point where E turns on the recorder to play the stories for the subject).

APPENDIX D: SCORING PROCEDURES

Scoring Sheets

CANONICAL VERSION

Story #:   Subject #:   Age: Sex:

SEQUENCE	SCORES	STATEMENTS RECALLED
Given	Recalled	
SETTING		
INITIATING EVENT		
INTERNAL RESPONSE		
ATTEMPT		
CONSEQUENCE		
REACTION		
INITIATING EVENT		
INTERNAL RESPONSE		
ATTEMPT		
CONSEQUENCE		
REACTION		

MARKED AND UNMARKED MOVEMENT VERSIONS

Story #:   Subject #:   Age: Sex:

SEQUENCE	SCORES	STATEMENTS RECALLED
Given	Recalled	
SETTING		
CONSEQUENCE		
INITIATING EVENT		
INTERNAL RESPONSE		
ATTEMPT		
REACTION		
CONSEQUENCE		
INITIATING EVENT		
INTERNAL RESPONSE		
ATTEMPT		
REACTION		

Constituent Analysis of the Stories

Decision Rules

In this constituent analysis, the subjects of the category statements were not always scored as separate constituents. The reason for this was that once the protagonists had been introduced in the setting statement and the initial statements of the two episodes in the story, the subjects of the following statements were established or understood. Because the subject constituents in these following statements were in a sense redundant, these constituents were included with their respective predicate constituents. However, the subject constituent was scored separately for those statements in which the subject was first introduced. These statements were the setting and both initiating event category statements in the canonical version, and the setting and both consequence category statements in the marked and unmarked movement versions.

This decision rule also applied to the subjects of the embedded clauses, wherein the subject and predicate of these clauses were scored as one unit if the subject of the embedded clause was the same as the subject of the main clause. If they were not the same, the subject of the embedded clause was scored as a separate unit.

The idiomatic expression *to take a rest* was scored as one unit. This decision was based on the principle that idiomatic expressions should be treated as single lexical units. Although not a idiomatic expression, the sequence of the auxillary verb *have* and its necessary object were also treated as one unit (i.e., *had some bad luck* and *had a flat tire*).

In story 2, the noun phrase *a baby bird* was scored as two constituents (i.e., /a baby/bird/) in the first statement in which it was mentioned and as one unit in the following statements. The reason for this was that once it had been established that the bird was a *baby* bird, the constituent *baby* was redundant and for these reasons was scored only once.

The constituent analyses of the stories are on the following pages. The slash marks (/) indicate the constituent boundaries.

Story 1: Canonical

Setting

/One day both/Jennifer/and Tom/had some bad luck.

Initiating Event

/Jennifer/lost/her dog/in the park.

Internal Response

/Jennifer was determined/to find/her dog.

Attempt

/So she searched/around the neighbourhood.

Consequence

/Then Jennifer saw/her dog/digging/in a garbage can.

Reaction

/Jennifer knew/that she would have to give/her dog/a bath.

Initiating Event

/Meanwhile Tom/was sick/in bed.

Internal Response

/But Tom wanted/to ride/his bicycle.

Attempt

/So he snuck/out of the house.

Consequence

/Then Tom discovered/that his bicycle/had a flat tire.

Reaction

/Tom thought/that he should have stayed/in bed.

Story 1: Marked Movement

Setting

/One day both/Jennifer/and Tom/had some bad luck.

Consequence

/Jennifer/saw/her dog/digging/in a garbage can.

Initiating Event

/Before this,/Jennifer lost her dog/in the park.

Internal Response

/Jennifer was determined/to find/her dog.

Attempt

/So she searched/around the neighbourhood.

Reaction

/Now Jennifer knew/that she would have to give/her dog/a bath.

Consequence

/Meanwhile Tom/discovered/that his bicycle/had a flat tire.

Initiating Event

/Before this,/Tom was sick/in bed.

Internal Response

/But Tom wanted/to ride/his bicycle.

Attempt

/So he snuck/out of the house.

Reaction

/Now Tom thought/that he should have stayed/in bed.

Story 1: Unmarked movement

Setting

/One day both/Jennifer/and Tom/had some bad luck.

Consequence

/Jennifer/saw/her dog/digging/in a garbage can.

Initiating Event

/Jennifer lost/her dog/in the park.

Internal Response

/Jennifer was determined/to find/her dog.

Attempt

/So she searched/around the neighbourhood.

Reaction

/Jennifer knew/that she would have to give/her dog/a bath.

Consequence

/Tom/discovered/that his bicycle/had a flat tire.

Initiating Event

/Tom was sick/in bed.

Internal Response

/But Tom wanted/to ride/his bicycle.

Attempt

/So he snuck/out of the house.

Reaction

/Tom thought/that he should have stayed/in bed.

Story 2: Canonical

Setting

/One day both/Susan/and Peter/were exploring/a forest.

Initiating Event

/Susan/heard/a noise/in some bushes.

Internal Response

/Susan was determined/to investigate/the noise.

Attempt

/So Susan crawled/into the bushes.

Consequence

/Then Susan found/a baby/bird/chirping/on the ground.

Reaction

/Susan knew/that she would have to take/the baby bird/home.

Initiat   Event

/Meanwhile, Peter/was hiking/up a hill.

Internal Response

/But Peter wanted/to take a rest.

Attempt

/So he sat down/under a tree.

Consequence

/Then Peter discovered/that he was sitting/in poison ivy.

Reaction

/Peter was worried/that he would get very sick.

Story 2: Marked Movement

Setting

/One day both/Susan/and Peter/were exploring/a forest.

Consequence

/Susan/found/a baby/bird/chirping/on the ground.

Initiating Event

/Before this,/Susan heard/a noise/in some bushes.

Internal Response

/Susan was determined/to investigate/the noise.

Attempt

/So she crawled/into the bushes.

Reaction

/Now Susan knew/that she would have to take/the baby bird/home.

Consequence

/Meanwhile Peter/discovered/that he was sitting/in poison ivy.

Initiating Event

/Before this,/Peter was hiking/up a hill.

Internal Response

/But Peter wanted/to take a rest.

Attempt

/So he sat down/under a tree.

Reaction

/Now Peter was worried/that he would get very sick.

Story 2: Unmarked Movement

Setting

/One day both/Susan/and Peter/were exploring/a forest.

Consequence

/Susan/found/a baby/bird/chirping/on the ground.

Initiating Event

/Susan heard/a noise/in the bushes.

Internal Response

/Susan was determined/to investigate/the noise.

Attempt

/So she crawled/into the bushes.

Reaction

/Susan knew/that she would have to take/the baby bird/home.

Consequence

/Peter/discovered/that he was sitting/in poison ivy.

Initiating Event

/Peter was hiking/up a hill.

Internal Response

/But Peter wanted/to take a rest.

Attempt

/So he sat down/under a tree.

Reaction

/Peter was worried/that he would get very sick.

Scoring Decision Rules

During the scoring of the recall protocols, several decision rules had to be made with regard to the scoring of the story category statements and the statement constituents. Decision rules on the pronominalization and ellipsis of noun phrases in statement constituents were formulated, as well as rules on the presence or absence of verbs of cognition in the internal response and reaction category statements, and the collapsing of the internal response and attempt category statements.

Scoring of Story Statement Constituents

Pronominalization

The decision rule for pronominalization was designed to take into account that subjects would quite naturally pronominalize proper or common nouns in their recall of the stories, but also to ensure that the decisions made about the accuracy of the recall of the constituents reflected when these proper or common nouns were necessary in the story.

The pronominalization of common nouns was permitted in all instances provided that the referent had been introduced in a preceding utterance. With regard to proper nouns, the names of the protagonists had to be recalled in the setting statement, and in the initial statement of the respective episodes for each story condition, otherwise the subject constituent in these statements was scored as incorrect. The reason for this scoring criterion was that the correct recall of the characters' proper names in these statements was essential to the cohesion and structure of the story. Once the characters were introduced in the setting statements and the initial statements of the episodes, further mention of the character could be made by way of pronouns.

If the names were incorrectly recalled (i.e., Joan instead of Jennifer), the constituent was scored as incorrect in the setting statement, but not thereafter in other statements when the incorrect name was used.

If the subject did not recall a name or names, the constituent was scored as incorrect in the setting statement but not thereafter in the initial statements of the respective episodes.

Ellipsis

In scoring the recall protocols, it was observed that some subjects ellipsed story information in their recall of

constituents when this information had been recalled in the preceding statement. Therefore, the following decision rule was adopted.

If the subject or object of a constituent is ellipsed, the subject will receive a correct score for the constituent provided that the correct noun phrase appears in the statement immediately preceding that utterance, and provided that the remainder of the constituent is correctly recalled. The actual number of constituents in which information was ellipsed was extremely low.

Scoring of Story Category Statements

Verbs of Cognition

In the recall of the internal response and reaction category statements of both stories, the presence of a verb of cognition or a mental verb is essential to the meaning of these story category statements. These verbs (i.e., thought, was worried, knew, was determined, wanted) or similar mental verbs had to be recalled in order for the statements to be scored as correct.

In the consequence category statements that contained the mental verb *discover*, the statement was scored as correct even when the mental verb was not recalled because the primary piece of story information in this category statement is what was discovered and not the fact that the subject became aware of the consequence.

Internal Response and Attempt Category Statements

Several subjects combined the internal and attempt category statements. Not many of these statements were recalled in this manner, and this pattern of recall was observed only in the second episode internal response and attempt category statements. For both stories, *wanted* was the mental verb in the internal response category statement.

Presented: He wanted to ride his bicycle.
           So he snuck out of the house.

Recalled : And he snuck out of the house
           and went to ride his bicycle.

Presented: He wanted to take a rest.
           So he sat down under a tree.

Recalled : Because he wanted to sit down for a rest.

In order for the attempt category to be scored as
correct, some form of concrete action that was motivated by
the character's internal response had to be expressed. In
this way, the first example would have been credited with a
correct score for the attempt statement, whereas the second
example would not have received a correct score for this
category statement.

With regard to the internal response category, the rule
that some form of mental verb had to be recalled when one
was given applied here. Therefore, the first example would
not have received a correct score for the internal response
category statement whereas the second example would have.

APPENDIX E: RAW DATA

In the following presentation of the raw data, the measures used to assess the recall and comprehension of the stories are referred to as measures 1, 2, 3, and 4 as follows.

Measure 1: Accurate Recall of Story Category Statements (total: 11).

Measure 2: Accurate Recall of Story Statement Constituents (totals: canonical and unmarked movement: 35, marked movement: 37).

Measure 3: Number of Consequence and Initiating Event Category Statements Recalled ((#) total: 2 for each), and the number of these statements recalled in the input order (IO).

Measure 4: Number of Correct Responses to Comprehension Questions (total: 11).

Stories 1 and 2: Canonical Version

Subjects	Measure 1	Measure 2	Measure 3				Measure 4
			Init. Event		Consq.		
			#	IO	#	IO	
(#)	(11)	(35)	(2)		(2)		(11)

Story #1

15	10	31	2	2	2	2	11.0
21	8	26	2	2	2	2	10.0
34	4	18	2	2	2	2	7.0
36	10	30	2	2	1	1	11.0
41	8	26	2	2	2	2	9.0
43	7	23	2	2	2	2	8.5
44	11	35	2	2	2	2	10.0
47	10	29	2	2	2	2	9.5
48	7	24	2	2	1	1	8.0
49	7	22	2	2	2	2	8.0
52	10	33	2	2	2	2	10.5
57	10	31	2	2	2	2	11.0

Story #2

11	8	24	2	2	2	2	11.0
14	9	27	2	2	2	2	10.0
25	5	17	0	0	2	2	9.0
45	10	27	2	2	2	2	11.0
59	9	26	2	2	2	2	10.0
60	5	16	2	2	2	2	7.0
61	6	26	2	2	2	2	7.0
63	5	22	2	2	2	2	7.0
65	7	20	2	2	2	2	10.0
66	8	28	2	2	2	2	11.0
71	10	28	2	2	2	2	11.0
72	9	26	2	2	2	2	10.0

Stories 1 and 2: Marked Movement Version

Subjects	Measure 1	Measure 2	Measure 3				Measure 4
			Init. Event		Consq.		
			#	IO	#	IO	
(#)	(11)	(37)	(2)		(2)		(11)

Story #1

4	6	20	2	1	2	1	8.0
9	10	31	2	2	2	2	10.0
13	5	18	2	1	1	0	7.0
16	9	27	2	1	2	1	9.5
17	7	25	2	2	2	2	7.0
18	5	16	2	2	1	1	6.0
26	7	26	2	2	2	2	8.0
29	8	30	2	2	2	2	9.0
37	9	30	2	2	1	1	8.0
40	7	23	2	1	2	1	9.5
42	5	19	2	1	1	0	7.0
46	9	28	2	1	2	1	9.0

Story #2

2	7	20	1	1	2	2	7.0
3	9	26	2	2	2	2	8.0
7	9	29	2	2	2	2	11.0
8	7	27	2	2	2	2	9.0
19	9	25	2	2	2	2	8.0
27	8	24	2	2	2	2	9.0
55	6	24	2	2	2	2	8.0
58	7	25	2	2	2	2	8.5
62	8	29	2	2	2	2	8.0
64	9	24	2	2	2	2	10.0
67	6	26	2	1	2	2	8.0
70	5	22	2	2	2	2	7.0

Stories 1 and 2: Unmarked Movement Version

Subjects	Measure 1	Measure 2	Measure 3				Measure 4
			Init. Event		Consq.		
			#	IO	#	IO	
(#)	(11)	(35)	(2)		(2)		(11)

Story #1

6	1	5	0	0	0	0	3.0
22	6	23	1	1	2	2	6.0
28	7	20	2	2	2	2	7.5
30	.8	25	2	2	2	2	7.0
31	7	23	2	1	2	1	9.0
33	5	20	2	2	2	2	7.5
35	7	22	.2	2	;1	1	8.0
39	7	21	2	2	0	0	7.0
51	2	12	1	1	1	1	6.0
53	3	16	1	1	2	2	5.5
54	4	13	2	2	0	0	7.5
56	9	26	2	2	1	1	7.0

Story #2

1	6	22	2	2	2	2	7.0
5	9	31	2	2	2	2	10.0
10	6	20	1	1	2	2	6.0
12	3	13	0	0	1	1	4.0
20	6		2	2	2	2	7.0
23	5	17	1	0	2	1	6.0
24	2	9	1	0	2	1	7.5
32	6	24	2	2	2	2	7.0
38	9	26	2	2	2	2	11.0
50	4	17	1	1	2	2	7.0
68	7	21	1	1	2	2	8.0
69	3	13	2	0	1	0	4.0