

Comprehension of Stories with No-Obstacle and Obstacle Endings

Susan R. Goldman and Connie K. Varnhagen

University of California, Santa Barbara

GOLDMAN, SUSAN R., and VARNHAGEN, CONNIE K. *Comprehension of Stories with No-Obstacle and Obstacle Endings*. CHILD DEVELOPMENT, 1983, 54, 980-992. Comprehension of stories with and without obstacles to goal attainment was examined. 16 second- and fifth-grade students and 16 adults listened to and read single-episode stories in which (1) the protagonist met the episode goal (no-obstacle ending) and (2) an external state prevented the protagonist from meeting the episode goal (obstacle ending). Several aspects of story understanding were assessed: free and cued recall for presented information, additions to free recall, responses to questions requiring causal inferences, and story preference data. For the children, recall of actions taken to meet the goal (attempt information) was affected by both ending and whether they had read or listened to the stories. The inclusion of outcome information in free recall was affected by ending. Responses to causal inference questions provided strong evidence for hypothesized differences in the causal links between the attempt and successful versus unsuccessful goal attainment. These differences were attenuated in the adult data. Finally, there was a developmental trend toward increased preference for the obstacle stories. These results suggest that processing characteristics of a task as well as prior knowledge of problem-solving behavior affect story understanding.

Research on story comprehension is increasingly focusing on the importance of the content information as well as on the causal and logical relations in a simple episode (e.g., Nezworski, Stein, & Trabasso, 1982; Stein & Trabasso, 1982; Trabasso, Secco, & van den Broek, in press). The earlier research focus on the psychological validity of story grammar analyses (e.g., Mandler & Johnson, 1977; Stein & Glenn, 1979) specified a set of grammatical categories with particular types of logical relationships between them. A simple story was postulated to contain two higher-order grammatical categories—the “setting” and the “episode.” The setting sets the context for the episode. It introduces the protagonists and general time and place information in which the episode occurs. The episode, in its simple and general form, comprises five grammatical categories that are causally and logically related to one another. It typically describes some conflict and its resolution. For the most part, comprehension studies have used stories where the conflict is successfully resolved.

Comprehension of stories describing successful resolution compared with unsuccessful resolution was examined in our research. Successful resolution was defined as a story in which a neutrally described protagonist formulates a goal and attains it, whereas an unsuccessful resolution was one where an obstacle external to the protagonist prevented goal attainment. These are manipulations of story content that have implications for the causal structure of the episode.

The implications of these two types of stories can be understood with reference to the schematic diagram of a simple episode (Figure 1). Both the story grammar categories and causal structure are shown. The first category in the episode, the “initiating event,” marks a change in the story environment set up by the setting. This event causes the protagonist to respond, information occurring in the “internal response” category. Emotional responses and goal formulation are two salient kinds of content in this category. A series of actions

This research was supported by the Faculty Development Program, University of California, Santa Barbara. Portions of this work were reported at the National Reading Conference, San Diego, December 1980. Thanks to Janelle Brunner Hartwig for help with data analyses and to James W. Pellegrino for comments on the manuscript. For their cooperation, we thank the staff and students at Isla Vista and Brandon Schools, Coleta, California. Reprint requests should be addressed to Susan R. Goldman, Department of Education, University of California, Santa Barbara, California 93106.

occur next, comprising the "attempt." The attempt is directly caused by the internal response and indirectly caused by the initiating event. It is undertaken "in order to" (Lichtenstein & Brewer, 1980) attain the goal. When the attempt is successful it directly causes the "consequence"—namely, goal attainment. The "reaction" conveys the protagonist's response to the outcome of the attempt, as described in the consequence.

In contrast, certain kinds of obstacles occurring in the consequence can "interrupt" the causal chain. Obstacles that have this property are normally external events over which the protagonist has limited or no control. These events cause unsuccessful resolution and a disruption in the causal chain of events, from the protagonist's viewpoint. Note that the causal chain would not be interrupted in the same way if the nature of the protagonist's attempt created the obstacle. Thus, no-obstacle and obstacle stories have the same causal chain for the first four

categories but differ with respect to the logical relationship between these and the story ending. We examined the effects of this difference on children's comprehension.

Two aspects of comprehension were assessed: story memory and answers to questions requiring causal inferences. Story memory was assessed via free recall and cued recall—that is, literal questions. It was expected that memory for the no-obstacle stories would be superior to that of the obstacle stories. This expectation was based on the notion that no-obstacle stories would more readily match the schema for simple stories, thereby facilitating the construction of a coherent internal representation (see, e.g., Brown, Collins, & Harris, 1978). For the obstacle stories, constructing a coherent internal representation would involve extra work on the part of the comprehender. This extra work would generally involve bridging the gap or interruption in the causal chain.

There are several possibilities for

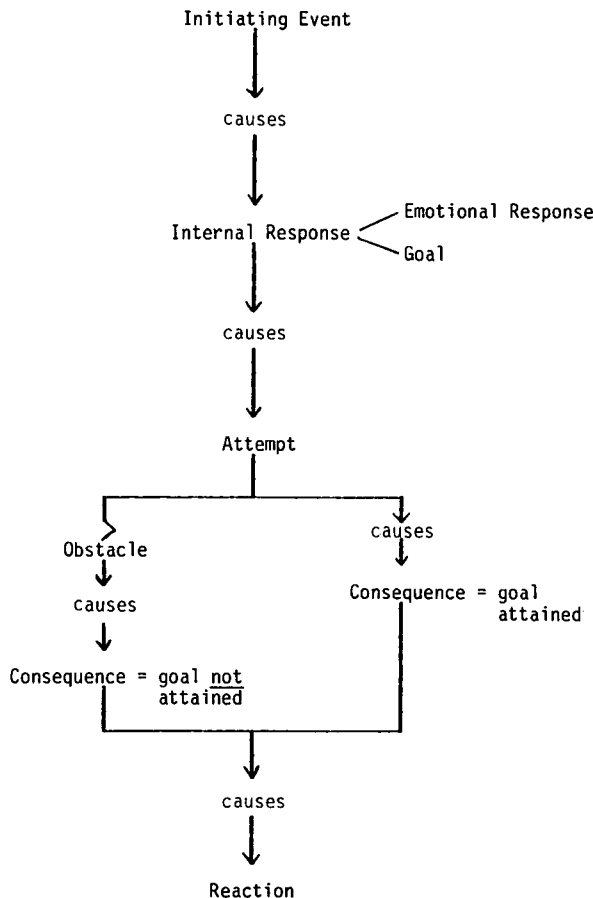


FIG. 1.—Schematic of causal chain in episodes with and without obstacles to goal attainment

bridging this gap, ranging from making relatively sophisticated inferences so that the attempt and consequence could be causally linked, to relatively unsophisticated connective inferences that merely mark the disruption in the causal chain—for example, “He tried but . . .”. Both free recall and cued recall measures were included in order to address the issue of whether the causal structure differences affected story memory per se, as compared with the selection of information to include in the story productions. It might be that failure to attain the story goal would make certain presented information more important to include in free recall, even though *memory* for the presented information was equivalent for the two types of stories. We expected no developmental differences in memory for the no-obstacle stories, but the extra work necessitated by the obstacle stories would lead to better performance by older children.

In addition, these memory issues were examined in listening and reading comprehension situations. In one of the few studies comparing children’s comprehension after listening and reading, Hildyard and Olson (1978) reported that listening led to the presence of more inferences in recall, whereas reading led to more literal recall of the presented text. Thus, for the no-obstacle stories it was expected that more exact recall would occur after reading but that after listening there would be more evidence of alterations to the surface text in the form of meaning-consistent elaborations. In contrast, for the obstacle stories we expected generally better story memory after reading than listening. This prediction was based on the task characteristics and processing demands of the obstacle ending. Reading was self-paced, whereas listening was speaker-paced. If the obstacle endings require more work to construct an internal representation, the time constraints during listening might negatively affect the success of the process.

Causal understanding was examined by using Why questions to assess more directly the nature of the logical relationships constructed among story events. Previous research suggests that this measure often reveals relationships not directly stated in free recall (e.g., Graesser, Robertson, & Anderson, 1981; Stein & Glenn, 1979; Goldman & Varnhagen, Note 1). Since the causal chain for the no-obstacle and obstacle stories is the same through the attempt, the causal links for initiating event-internal response and internal response-attempt were expected to be the same for the two endings. For the

no-obstacle endings, the attempt-consequence link was expected to show direct causal connection. On the other hand, it was expected that the obstacle would be linked to some type of external causal agent. For both endings, the reaction would be causally linked to the consequence since it was emotionally consistent with the previous success or failure. No a priori predictions regarding listening versus reading were made. Task-related differences might be expected, however, if listening and reading resulted in extreme differences in memory for presented information.

A final issue related to the concept of a story was pursued. Some data can be interpreted as indicating that stories are supposed to have “happy” endings, although the definition of a “happy” ending depends on the qualities of the protagonist (see, e.g., Botvin & Sutton-Smith, 1977; Stein, 1979; Stein & Policastro, in press). A story-ending preference task was included in the present study. It was expected that younger children would prefer the no-obstacle endings, whereas older children and adults would prefer the obstacle endings. This prediction was based on the assumption that there are developmental changes in the definition and/or functions of a story, with older individuals coming to prefer stories that convey something out of the ordinary or unexpected.

Method

Subjects

Sixteen second graders (mean age = 7.7 years, $SD = .52$) and 16 fifth graders (mean age = 11.5 years, $SD = .40$) participated in the study. All children were reading at or above grade level according to their mid-year level in the Macmillan Reading Curriculum, Series R test (1974). All subjects were native English speakers. Eight males and eight females within each grade level were included. All children attended the same elementary school in a middle-class neighborhood in southern California.

In addition, 16 college-age adults participated as partial fulfillment of a requirement for an introductory psychology class at the University of California, Santa Barbara. This group was included primarily for their causal understanding and preference task data.

Materials and Design

Four stories were written that were identical in content up to the story ending. An example story is shown in Table 1. Each

984 Child Development

that the protagonist attains the goal. The reaction category contains an emotional state and an action consistent with goal attainment. In the obstacle version, an event that the protagonist has no control over is described. This event prevents goal attainment. The subsequent reaction is an emotional state and an action consistent with having not met the goal.

In addition to the dog theme shown in Table 1, the other story themes were: (1) a girl who wants to make a home for some ants; (2) a horse who wants to eat some carrots; and (3) a beaver who wants to patch a hole in his dam. The vocabulary used in the stories was selected to be consistent with that of the second-year level of the reading curriculum used by the school.

For each story, literal questions ("What" and "How") and questions requiring causal inferences ("Why") were constructed. The What and How questioning is essentially a cued-recall task. Information in all but the setting category was cued. The Why questions were asked about the information in all but the setting and initiating event categories. The questions for the example story are shown in the bottom portion of Table 1.

Comprehension of no-obstacle and obstacle stories was tested in listening and reading tasks, producing four treatment conditions for each subject. Stories were assigned to the treatment conditions using a Latin square method. The four treatment conditions were assigned to four presentation orders using a second Latin square. The resulting design was a Latin square confounded factorial with two between-subjects factors, grade and presentation order, and two within-subjects factors, treatment condition (listening vs. reading tasks \times no-obstacle vs. obstacle versions) and story. Four subjects (two males and two females) within each age group received each of the presentation orders.

Procedure

The procedure for the elementary school children differed from that for the adults. Second and fifth graders were seen individually in sessions lasting approximately 30 min. They were told to listen to or read out loud each story because they would later be asked to retell the story and answer questions about it. A sample story was presented to familiarize the subjects with the comprehension task, recall instructions, and probe questions. After listening to or reading

each story, subjects performed a simple distractor task (counting backwards) to reduce immediate memory effects. Subjects were then asked to recall the story. The What and How probes, followed by the Why probes, were presented. Then the next story was presented. At the end of the session, subjects were shown the two versions of each story and asked which way they preferred the story to end and the reason for their preference. The experimenter briefly read over the two versions to refamiliarize the children with the stories and different endings. The sessions were tape recorded and later transcribed.

The adults were seen in small groups of three to four per session, with sessions lasting approximately 40 min. The procedural differences were that these subjects read silently from booklets for the reading task, wrote their recall protocols, and wrote answers only to the Why probe questions. The preference judgment task also involved silent reading and written responses.

Scoring

Each free-recall protocol was scored for meaning-preserving recall of presented information and for additions to presented information. The latter included inferred propositions and connectors between predicate propositions. Inferred propositions included transitive inferences and elaborations of presented information (see, e.g., Omanson, Warren, & Trabasso, 1978; Paris & Lindauer, 1977). In a few cases added material contradicted presented information. These were excluded from the inference analysis. Predicate connectors are terms that indicate temporal or logical relations among propositions. The presented story contained only one type of predicate connector (*and*). If terms such as *so*, *but*, or *because* appeared in the free recall, these were inferred logical connections. Note that it is very difficult to determine the function and meaning of *ands* that are included in free recall. Accordingly, both presented and added *ands* were excluded from the analyses.

Scoring was done independently by the two authors. Interrater reliability was above 90%, and disagreements were resolved in discussion. For each subject, three scores were computed from the free-recall data: proportion of presented propositions within each category recalled in a meaning-preserving fashion, number of inferences, and number and type of propositional connectors. These scores were submitted ini-

tially to analyses of variance in which presentation order and story were included as factors. The effects of these two factors and their interactions were nonsignificant in all of the analyses. Thus, we reanalyzed the data using a four-factor mixed ANOVA model; grade was the between-subjects factor, and there were three within-subjects factors—task (listening vs. reading), ending (no-obstacle vs. obstacle), and story category (six levels). The college data were analyzed in separate three-factor within-subject analyses.

The cued-recall data were scored in terms of the predicates only. These were compared with the predicates included in free recall to compute the conditional probability of remembering a predicate that was not in the free recall when the literal question about it was asked. These probabilities were computed for each subject by category and condition. Comparisons were conducted on the mean conditional probabilities for each grade. The responses to the Why questions were classified into a series of categories, and frequency differences were tested. The categories are described in the next section. Interrater reliability was 95%.

Results and Discussion

Memory for Presented Information

An analysis of the proportion of accurately recalled propositions in the free recall indicated that the effect of grade failed to reach conventional levels of statistical significance, $F(1,30) = 3.7$, although fifth graders recalled more (.54) than did second graders (.45). This factor did not interact

with any of the within-subject factors. Consistent with our predictions regarding listening and reading, however, there was a significant task \times ending interaction, $F(1,30) = 6.66$, $p = .02$. After listening to obstacle ending stories, less was recalled (.45) than in the other three conditions ($M = .51$). These data are shown in Table 2.

However, other significant first- and second-order interactions involving grammatical category, task, and ending suggest an important qualification to the supported prediction. Simple main-effects tests indicated that recall of four of the six categories was equivalent across all four conditions, and the means across conditions are shown in the lower portion of Table 2. The cued-recall data were also equivalent across conditions for each of these categories; for each category more was in memory than was in the free recall, but this was not related to task and/or ending. Thus, the predicted effects of ending after listening and reading were localized and restricted to the two categories involved in the causal structure difference—the attempt and consequence.

Recall of information in the attempt category was related to both task and ending, $F(1,30) = 5.9$, $p < .05$. As the means in Table 2 show, after reading, this information was better recalled for the obstacle ending than the no-obstacle ending, whereas the reverse was true after listening. Our interpretation of this effect is related to characteristics of the two tasks. In the listening task, the rate of input was constant, externally controlled, and the text was not available to look at. Pro-

TABLE 2
MEAN PROBABILITY OF MEAN-PRESERVING
FREE RECALL OF STORY INFORMATION

	LISTENING		READING	
	No Obstacle	Obstacle	No Obstacle	Obstacle
Total story .....	.52	.45	.49	.52
Attempt .....	.64	.45	.56	.64
Consequence .....	.63	.46	.59	.44
Setting .....			.46*	
Initiating event .....			.57*	
Internal response .....			.48*	
Reaction .....			.36*	

* Means across four conditions since there were no differences related to task or ending.

cessing of the obstacle information may have required resources in excess of those required to process goal-attainment (no-obstacle) information. These extra resources may have been diverted from the process of storing the actions just prior to the obstacle information, leading to poorer memory for this information. In the reading task, however, attempt information could be re-examined since the text was in front of the subject. The occurrence of the obstacle may have caused individuals to go back and check the attempt. Such rereading would explain superior recall of the attempt information.

The cued-recall data support these interpretations. If the attempt information was in memory but not included in free recall, the conditional probability for attempt recall should be greater for the obstacle than for the no-obstacle condition in the listening task. They were not significantly different ($z = .99$). Conversely, in the reading task the conditional probability should be greater in the no-obstacle condition than the obstacle condition. They were equal. Thus, memory for information in the attempt was affected by the obstacle, but these effects differed after listening and reading.

Recall of information from the consequence category was affected by ending only. For both listening and reading, successful consequence information was recalled better than unsuccessful, $F(1,30) = 12.44, p < .01$. Unlike the results for the attempt category, the difference does not appear to result from memory loss. For both tasks, the cued-recall conditional probabilities were significantly higher in the obstacle condition than in the no-obstacle condition, .81 versus .40 for listening ($z = 2.48$) and .81 versus .53 for reading ($z = 2.15$). Thus, the effect of ending on consequence information may be related to differences in the selection/production constraints that operate when recalling stories with successful resolutions as compared with unsuccessful resolutions.

For the adult subjects there were no differences related to task or ending in either the free- or cued-recall data. There was an overall category effect, which replicates previous findings of the recall behavior of adults (e.g., Mandler & Johnson, 1977)—specifically, Setting (.80) = Initiating Event (.78) > Attempt (.51) = Consequence (.52) = Internal Response (.49) = Reaction (.41), according to Tukey's HSD, critical value = .17, $\alpha = .01$.

To summarize, there was no global effect of ending on memory for presented information. Only memory for attempt information was affected. Predictions about memory after listening and reading were in the expected direction but only for information in the attempt category, information just preceding the obstacle. Consequence information was not differentially remembered, but ending did affect the likelihood of including presented consequence information in free recalls of the stories. Finally, the older children remembered more than the younger children, but the same pattern of effects was observed at each age level.

Additions to Presented Information

Inferred propositions.—The number of propositions added to the stories during recall was higher for the fifth graders (4.27) than for the second graders (3.42), $F(1,30) = 4.3, p = .05$, but grade did not enter into any interactions. More inferences were added to obstacle stories (4.32) than to no-obstacle stories (3.36), $F(1,30) = 4.24, p = .05$. The predicted task \times ending interaction did not reach conventional levels of statistical significance, $F(1,30) = 3.64$, although it was in the predicted direction. The means are shown in Table 3. Note that the distribution of inferences over the categories did not differ across the four conditions.

The tendency for a greater number of propositions to be added to obstacle stories than to no-obstacle stories after listening and the absence of an overall task effect provide only weak support for the notion that listening generally leads to more higher-order processing than reading (see Hildyard & Olson, 1978). However, the data suggest that listening to a story in combination with the "interrupted" causal structure may lead to more elaborated recall of the presented information.

Predicate connectors.—Differences in the causal structures of the obstacle and no-obstacle stories were reflected in differences

TABLE 3

	MEAN NUMBER OF INFERRED PROPOSITIONS	
	No Obstacle	Obstacle
Listening	3.00	4.69
Reading	3.72	3.97
Entire story	3.36	4.33

in both the number and type of connectors included in story recalls. Table 4 shows the mean number of predicate connectors in the story recalls. More connectors were added to the obstacle stories than to the no-obstacle stories, $F(1,30) = 4.59, p < .05$, for the children, and $F(1,15) = 6.4, p < .01$, for the adults. There were no task effects or interactions. The fifth graders did include more connectors than the second graders, $F(1,30) = 7.45, p < .01$, but grade did not enter into any interactions.

There were also differences in the frequency with which temporal, causal, and disjunctive connectors were added to the stories. Temporal connectors indicate sequence or time-ordering relations among story events—for example, *then, when, after, while*. These were added more often to the no-obstacle stories than to the obstacle stories, $F(1,30) = 15.52, p < .01$, for the children, and $F(1,15) = 4.48, p < .05$, for the adults. Causal connectors indicate some type of cause-effect relationship among events—for example, *so, because, since*. These were more frequently added to obstacle stories than to no-obstacle stories by both children, $F(1,30) = 23.68, p < .01$, and adults, $F(1,15) = 5.49, p < .05$. Disjunctive connectors indicate contrast among events—for example, *but, although*. These were more frequent in obstacle stories than in no-obstacle stories for both children, $F(1,30) = 6.17, p < .025$, and adults, $F(1,15) = 11.06, p < .01$.

Thus, the causal structure was more explicitly marked in the surface structure recalls of the obstacle stories than in those of the no-obstacle stories. Rather than causal connectors, the latter were characterized by temporal markers. The interrupted structure of the obstacle stories was marked by the use of disjunctives, all of which occurred between the attempt and consequence. In addition, there may be a general effect of the causal structure manipulation such that the

interrupted structure may make individuals more sensitive to the logical relations among events leading them to being more explicit about these when they recall stories.

Why Questions

As discussed in the introduction, the obstacle and no-obstacle stories have the same causal structure or links among the first four categories. Thus responses to Why questions about internal response and attempt information should not differ, whereas responses to consequence and reaction information would be expected to differ. These general predictions were supported by the data. Note that there were no differences in responses related to task, and the data were collapsed across this factor.

As expected, for the internal response questions and the attempt question none of the ending comparisons were significant, and the reported data are the means across endings. The dominant response to the emotional response following the initiating event was the initiating event, a state presupposed by the occurrence of that event or a state that resulted from that event. Adults (.72) more frequently gave this response than did the children (.54), $z = 2.77, p < .01$. The remainder of the children's responses were distributed across a variety of categories, none of which were frequent enough to analyze. This finding is consistent with previous theoretical analyses and empirical data on the relation between the initiating event and an emotional response following it (e.g., Mandler & Johnson, 1977; Stein & Glenn, 1979; Stein & Trabasso, 1982; Trabasso, Stein, & Johnson, 1982).

Responses to why the protagonist had a particular goal were more variable than the responses to the emotional reaction. There were three dominant response categories, and the proportion of responses in each were not significantly different from one another. The category "anticipated consequences of goal attainment" refers to statements that

TABLE 4
MEAN NUMBER OF PREDICATE CONNECTORS IN STORY RECALL

	Total	Temporal	Causal	Disjunctive
Children:				
No-obstacle ending ...	4.75	2.44	2.25	.06
Obstacle ending	5.78	1.25	3.72	.84
Adults:				
No-obstacle ending ...	2.81	1.56	1.19	.06
Obstacle ending	3.75	1.00	1.81	.94

988 Child Development

explain that the protagonist formulated the goal to obtain a desirable resultant situation—such as, *So he could have a friend* (Jimmy story), *So he could have a safe home* (Beaver story). These have been classified separately since they seem to represent a forward rather than backward causal connection (see Stein & Trabasso, 1982). For children and adults, 34% of the responses occurred in this category. The other two response categories refer to states or events that could be assumed to be active at the point in the story when the goal was formulated, essentially leading to the goal (see Graesser et al., 1981; Lichtenstein & Brewer, 1980). There were no significant differences among age groups; 30% of the responses referred to setting information and 33% to initiating events, emotional responses, and states presupposed by or resulting from them. Finally, the attempt was seen by almost everyone (87% of the responses) as being undertaken “in order to” accomplish the goal.

The data from these three questions illustrate that the representation of the relationships among the story categories with the same content were the same for both obstacle and no-obstacle stories, as predicted. Furthermore, the obtained responses replicate previously reported research.

As discussed in the introduction, the logical relationship between the attempt and consequence information differs for the no-obstacle and obstacle endings. This difference should be reflected in responses to the Why questions about the consequence information. In the no-obstacle stories the first action in the consequence is goal attaining. This action essentially indicates that the previous attempt, done to accomplish the story goal, has in fact caused the goal to be attained and thus the reasons it was formulated to be removed. Therefore, responses to this question should reflect this relationship; the data in the upper section of Table 5 show that this is the case. For the children, this relationship is the dominant response. It is, however, given significantly more often by them than by the adults, $z = 2.37, p < .05$. Adults tend to also give goals superordinate to the actual story goal (Adult > [Grade 2 = Grade 5], $z = 2.42$) and superordinate motivating states. All of these responses, however, reflect the logical relationship between the protagonist's intended purpose and an attempt that successfully meets that purpose. Thus the theoretical causal structure of the simple episode is manifested in these data.

The prediction for the second action in the consequence is a bit more complicated.

TABLE 5
RESPONSES TO WHY QUESTIONS ABOUT CONSEQUENCE INFORMATION

	Grades 2 & 5	Adult
No-obstacle consequence:		
First action:		
Accomplishes story goal or removes initiating event or emotional response . . . . .	.58	.36*
Accomplishes superordinate goal . . . . .	.14	.32*
Removes superordinate motivating state . . . . .	.18	.18
Second action:		
New goal or motivating state . . . . .	.72	.92*
Property of protagonist . . . . .	.21	.05*
Previous initiating event or emotional response . . . . .	.07	.03
Obstacle consequence:		
Obstacle state:		
State or event external to protagonist . . . . .	.88	.61**
Protagonist's faulty attempt . . . . .	.12	.39
	Grades 2 & 5 and Adult	
Failure to meet goal:		
Obstacle state . . . . .		.67
Protagonist's faulty attempt . . . . .		.22

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

Since the first action has actually accomplished the story goal, new goals or motivating states for this second action ought to be given. That is, intentional actions have a purpose behind them (Graesser et al., 1981). If the original purpose has already been met, new purposes should be inferred. The data in the second panel of Table 5 show that both children and adults do in fact relate this second action to a new goal or motivating state. The adults do this significantly more often than the children ($z = 2.43$, $p < .05$). The children show a greater tendency than the adults to stay within the original episode by appealing to personal properties and attributes of the protagonist ($z = 2.22$). Finally, response category 3 shows that only a very few individuals relate this action back to the original initiating event and internal response. Thus, both actions in the no-obstacle consequence are related to goals, replicating previous work (Stein & Trabasso, 1982; Trabasso et al., 1982). However, actions occurring after the episode goal has been met are related to new goals.

In the obstacle stories, a different set of causal relationships is predicted. As discussed in the introduction, the obstacles in these stories are essentially states over which the protagonist had no control. Responses to the Why obstacle should reflect states and events external to the protagonist. The data in Table 5 indicate that 88% of the children's responses fall into this category. This is a significantly greater proportion than that of the adults ($z = 3.29$, $p < .01$). The adults gave external causes in 60% of the cases, but in 40% of the cases they constructed a causal link between the attempt and obstacle by saying that there was something wrong with the protagonist's attempt. Thus the adults tended to assign more control and responsibility to the protagonist than did the children, thereby constructing a direct causal link between the attempt and consequence.

The second statement in the obstacle consequence directly stated that the protagonist could not attain the goal. The obvious prediction is that the obstacle state should be seen as the cause of not attaining the goal, especially since it directly preceded this statement in the story. This was the dominant response for each age group, and there were no significant differences between age groups. Despite the obviousness of this prediction, 22% of the subjects (no age differences) did see the protagonist as responsible for his own failure, although

the frequency of this response is significantly less than the obstacle state response ($z = 6.68$, $p < .01$). Thus, the causes of the obstacle state were viewed as external by the children but not by the adults, and goal failure was interpreted as caused by the existence of the obstacle.

The children's responses to the consequence information Why questions clearly reflect the differences in causal structure between no-obstacle and obstacle stories. Of interest is the finding that adults tended to maintain the attempt-cause-consequence link in the obstacle stories by making the protagonist responsible for the obstacle. This finding probably reflects a more sophisticated adult approach to solving problems. Adults may tend to interpret a wider range of obstacles as avoidable with appropriate planning than do children. The similarity in the causal structure may also be why no differences related to ending were observed in the free recalls.

The final set of Why questions deals with reaction category information. In both endings an emotional state and an action were presented and questioned. These emotions and actions were constructed to be consistent with normal responses to goal attainment or nonattainment.

As the data in Table 6 show, the emotional states were causally related to the consequence in both no-obstacle and obstacle stories. The positive emotion states were caused by meeting the goal, and the negative were caused by failure to meet the goal. Thus for both endings the emotional reaction is caused by the outcome of the episode, a relationship predicted by the hypothesized causal structure.

Predictions for the final actions differ somewhat for the two endings. While goals or motivating states are expected for actions in both cases, in the no-obstacle stories, new goals and motivating states are expected since the original ones have been removed by attaining the story goal. The data in the lower half of Table 6 indicate that the youngest children responded this way more often than the fifth graders ($z = 3.68$) or the adults ($z = 2.42$). In contrast to the youngest group, the two older groups tended to construct causal links that stayed within the original story, giving the positive emotional state or a property of the protagonist. Thus, for the older groups, the final story action appears to bear a closer relationship to the whole episode than for the younger chil-

TABLE 6
RESPONSES TO WHY QUESTIONS ABOUT REACTION INFORMATION

		Grades 2 & 5 and Adult		
Emotional states:				
No obstacle—positive emotion:				
Story goal met or initiating event or emotional response removed .....				.65
Protagonist's evaluation of self .....				.17
Obstacle—negative emotion:				
Story goal not met or original problem still exists .....				.72
Protagonist's evaluation of self .....				.09
		Grade 2	Grade 5	Adult
Final actions in story:				
No obstacle:				
New goal or motivating state .....	.78	.37		.52
Positive emotion from story .....	.14	.28		.23
Property related to protagonist .....	...	.23		.16
		Grades 2 & 5 and Adult		
Obstacle:				
Negative emotional state .....				.38
Story goal not met or original problem still exists .....				.37

dren. In the obstacle stories, the final action was causally connected to the whole episode by all groups. Either the directly preceding negative emotional state was given or the original unmet story goal was given.

As a whole, the responses to the Why questions support the hypothesized logical relationships among story categories. For both endings, internal responses are generally seen as resulting from the initiating event and/or states implied by that event, and attempts are related to the story goal by "in order to" links. For the no-obstacle endings, the success of an attempt directly causes goal attainment and subsequent actions tend to be related to new goals and motivating states. However, there was a tendency for older children and adults to more tightly connect actions in the reaction category to other information from the episode. For the obstacle endings, the children went outside the episode to explain the obstacle more often than the adults. However, the remaining information in these stories was causally related to failure to attain the goal by all subjects. Thus there is strong support for a different causal structure for episodes in which a protagonist attains the episode goal as compared with those in which a protagonist fails to attain the episode goal.

Story Ending Preferences

A final question addressed by the present research concerns preferences for the two types of endings. As noted in the introduction, previous research suggests that children expect heroes and positively described characters to meet their goals but villains and negatively described characters to fail (Botvin & Sutton-Smith, 1977; Stein, 1979). The protagonists of the stories used in this research were neutral; that is, no positive or negative information was given. However, the story preference data indicate an overwhelming preference for the goal-attainment endings.

Table 7 shows the frequencies with which subjects said they liked the no-obstacle version better than the obstacle version, collapsed across stories. Within each age group, there was a significantly greater choice of the goal-attainment version, $z = 5.32$ for second graders, $z = 4.33$ for fifth graders, and $z = 2.85$ for adults. Comparisons across age groups showed that the youngest children chose the goal-attainment version significantly more often than the fifth graders, $z = 2.04$, and the adults, $z = 3.59$, while the difference in proportions for the fifth and adults was nonsignificant, $z = 1.63$.

Table 7 also shows the categories into which the justifications for these choices

TABLE 7

STORY ENDING PREFERENCES AND JUSTIFICATIONS FOR THE PREFERENCES

	GRADE 2		GRADE 5		ADULT	
	No.	%	No.	%	No.	%
Prefer no-obstacle, goal-attainment version	61	95	53	83	44	69
Reasons for no-obstacle preference:						
Like happy endings	55	90	48	91	29	66
Relationship between character and outcome	2	3	...	...	12	27
Like story topic	3	5	4	8	1	2
More realistic .....	...	...	...	...	2	5
No reason	1	2	1	2	...	...
Prefer obstacle, goal-not-attained version	3	5	10	17	20	31
Reasons for obstacle preference:						
Relationship between character and outcome .....	...	...	4	40	13	65
More realistic	1	33	3	30	6	30
Like story topic	2	67	1	10	1	5
No reason .....	...	...	2	20	...	...

NOTE.—Maximum *N* is 64 for the second graders and adults and 63 for the fifth graders.

were classified. Ninety percent of the time that children chose the goal attainment version, they said it was because they liked stories to have happy endings. This reason was used significantly less often (66%) by those adults choosing this ending, $z = 3.26$. Finally, 40% of the fifth graders' and 65% of the adults' justifications for choosing the obstacle version involved a relationship between the story character and the ending; that is, the characters got what they deserved. These justifications indicate moral evaluation of the characters and their actions in the story. These age differences are consistent with the adults' tendency in the Why obstacle questions to hold the protagonists responsible for their failure. Thus, when a neutral protagonist is described, the youngest children prefer the no-obstacle ending because they "like happy endings." Older children and adults tend to shift preference to the obstacle ending and make more evaluative inferences about the protagonist. These data may reflect a general bias toward simpler things on the part of younger children. They may also indicate that older children and adults prefer greater complexity in a story, and the obstacle provided this.

The results of this experiment indicate that the occurrence of an external obstacle that prevents goal attainment affects the causal link between the attempt and consequence, especially for children. The causal chain differences were manifested most strongly in the responses to the Why

questions and in the types of predicate connectors that were added in retelling the stories. Effects on memory for presented story information were localized and restricted to information just preceding the consequence. That is, attempt information was better remembered after reading the obstacle versions but after listening to the no-obstacle versions. This phenomenon probably results from differences in the resources required to process the two endings in conjunction with limitations on processing resources imposed by listening versus reading tasks.

In addition, while the causal structure differences did not affect memory for consequence category information, the differences did affect selection/production criteria guiding the retellings. It may be that judgments about what is most critical in retelling a story depend on whether or not the story goal is met. This pattern of effects was observed for both second- and fifth-grade children. That the adult data did not show this pattern of effects may be related to two factors. The first, and less interesting, is simply the difficulty level of these stories; they were very easy for adults. The most interesting possibility is that 40% of the adults did construct a direct causal link between the attempt and obstacle consequence. Thus, for many of the adults, the causal structure of the two endings was similar. This difference between adults and children may be related to the acquisition of more sophisticated planning and problem-solving

992 Child Development

strategies, knowledge used to interpret and evaluate the behavior of story characters.

Finally, the fact that the predicted *global* memory effects were not found implies that simple assumptions about schema and predictions about schema guidance in comprehension require additional investigation. While it may well be that comprehension is guided by schema, it is also clear that there is a great deal of flexibility in the operation of this process. Such flexibility probably arises from the way a schema is selected and used during comprehension as well as from variations in the actual contents of a schema.

Reference Note

1. Goldman, S. R., & Varnhagen, C. K. *Comprehension of multi-episode stories: Memory for embedded versus sequential episodes*. Paper presented at the meeting of the Psychonomics Society, Philadelphia, November 1981.

References

- Botvin, G. J., & Sutton-Smith, B. The development of structural complexity in children's fantasy narratives. *Developmental Psychology*, 1977, **13**, 377-388.
- Brown, J. S., Collins, A., & Harris, G. Artificial intelligence and learning strategies. In H. O'Neil (Ed.), *Learning strategies*. New York: Academic Press, 1978.
- Graesser, A. C., Robertson, S. P., & Anderson, P. A. Incorporating inference in narrative representations: A study of how and why. *Cognitive Psychology*, 1981, **13**, 1-26.
- Hildyard, A., & Olson, D. R. Memory and inference in the comprehension of oral and written discourse. *Discourse Processes*, 1978, **1**, 91-117.
- Kintsch, W. *The representation of meaning in memory*. New York: Wiley, 1974.
- Lichtenstein, E. H., & Brewer, W. F. Memory for goal-directed events. *Cognitive Psychology*, 1980, **12**, 412-445.
- Macmillan Publishing Co. *Macmillan Reading Curriculum, Series R*. New York: Macmillan, 1974.
- Mandler, J. M., & Johnson, N. S. Remembrance of things parsed: Story structure and recall. *Cognitive Psychology*, 1977, **9**, 111-151.
- Nezworski, T., Stein, N. L., & Trabasso, T. Story structure versus content in children's recall. *Journal of Verbal Learning and Verbal Behavior*, 1982, **21**, 196-206.
- Omanson, R. C., Warren, W. H., & Trabasso, T. Goals, inferential comprehension, and recall of stories by children. *Discourse Processes*, 1978, **1**, 323-336.
- Paris, S. B., & Lindauer, B. K. Constructive aspects of children's comprehension and memory. In R. V. Kail & J. W. Hagen (Eds.), *Perspectives on the development of memory and cognition*. Hillsdale, N.J.: Erlbaum, 1977.
- Stein, N. L. How children understand stories: A development analysis. In L. Katz (Ed.), *Current topics in early childhood education* (Vol. 2). Norwood, N.J.: Ablex, 1979.
- Stein, N. L., & Glenn, C. G. An analysis of story comprehension in elementary school children. In R. O. Freedle (Ed.), *New directions in discourse processing* (Vol. 2). Norwood, N.J.: Ablex, 1979.
- Stein, N. L., & Policastro, M. The concept of a story: A comparison between children's and teachers' viewpoints. In H. Mandl, N. L. Stein, & T. Trabasso (Eds.), *Learning and comprehension of text*. Hillsdale, N.J.: Ablex, in press.
- Stein, N. L., & Trabasso, T. What's in a story: An approach to comprehension and instruction. In R. Glaser (Ed.), *Advances in the psychology of instruction* (Vol. 2). Hillsdale, N.J.: Erlbaum, 1982.
- Trabasso, T., Secco, T., & van den Broek, P. Causal cohesion and story coherence. In H. Mandl, N. L. Stein, & T. Trabasso (Eds.), *Learning and comprehension of text*. Hillsdale, N.J.: Erlbaum, in press.
- Trabasso, T., Stein, N. L., & Johnson, L. R. Children's knowledge of events: A causal analysis of story structure. In G. Bower (Ed.), *Learning and motivation* (Vol. 15). New York: Academic Press, 1982.
- Turner, A., & Greene, E. Construction and use of a propositional text base. *JSAS Catalog of Selected Documents in Psychology*, 1978, **8**, 58. (Ms. No. 1713)

This document is a scanned copy of a printed document. No warranty is given about the accuracy of the copy. Users should refer to the original published version of the material.