

## Experiments on Story Comprehension and Recall\*

GORDON H. BOWER  
*Stanford University*

The author reviews psychological research on how people understand and remember brief stories. Understanding characters in stories and remembering their actions is alleged to use methods and rules similar to those invoked in actual person perception. We try to understand a character's actions as the manifestation of a plan to achieve some goal or satisfy some motive. One experiment showed that if the text obscures the goal and plan of the main character, college students judge it to be incoherent and they recall it poorly. In another experiment, an emotionally charged problem and motive for the character was hinted at before the subject read a set of dull, colorless episodes involving that character. Later memory tests showed that the character's alleged motive influenced the reader's interpretation of the text, directed his inferences regarding what was going on between the lines, and distorted his recall of the text. Later experiments showed that the meaning a reader derives from a story depends on the character he identifies with. After reading a story while identifying with a given character, the reader is more likely to recall thoughts of that character, to describe events from his station point, and to give a sympathetic interpretation to his actions. Thus, my character's mishaps were forced by external circumstance, whereas his adversaries' mistakes reflected their incompetence. A final experiment showed that readers are likely to identify with that character whose emotional mood is similar to their own as they read. Subjects made happy or sad as they read via a posthypnotic suggestion identified with the happy or sad character of a story, believed he was the central focus of the story, and remembered most about him.

This paper reviews my research into how people understand and remember coherent prose. Specifically, I and my research group are psychologists working on how people recall elementary stories that have a strong narrative thrust. These involve the sorts of human dramas that we all find interesting.

---

\*Invited address at meeting of the Western Psychological Association, Seattle, Washington, April 21, 1977. The author's research is supported by a research grant, MH-03950, from the National Institutes of Mental Health. Requests for reprints should be sent to: Dr. Gordon H. Bower, Dept. of Psychology, Stanford University, Stanford, Calif. 94305.

### WHY STUDY STORY COMPREHENSION?

Why should anyone study story understanding and recall? I think there are several reasons. First, stories are one type of coherent discourse, so they provide a rich context for investigating many linguistic phenomena such as continuity of referents and continuity of a topic across sentences. Study of multiple-sentence phenomena would seem to be the next step upward from our previous focus on single sentences in psycholinguistics. Second, and more importantly, I think story comprehension gives us a way to illuminate cognitive processes, because the procedures people use to understand and remember stories are very general. In fact, in understanding stories, we seem to use much the same principles and procedures that we use when we are interacting with people in real settings, trying to interpret or explain why some person acts the way he does. I think we interpret storybook characters and their actions using the same motivational schema we use to understand real-life characters. Therefore, story understanding provides an experimental microcosm or small test tube in which psychologists can isolate and study how people understand the social-behavioral world around them.

Although I am mainly interested in memory, I must often refer to people's understanding of stories, since comprehension seems always highly correlated with recall. Across a variety of experiments in which we have varied the coherence of some text, the variations have had a similar impact on recall and on comprehensibility of the texts. Superior memory seems to be an incidental byproduct of fully understanding a text, so a theorist should try to explain how a story is comprehended if he wants to account for how it is remembered.

A number of scientists—linguists, psychologists, rhetoricians, computer scientists—are now working on story understanding. I owe my greatest intellectual debts to David Rumelhart (1975), Dick Anderson (1977), Roger Schank and Bob Abelson (1977), Walter Kintsch (1974), and my research students at Stanford—John Black and Justine Owens. I will relate to you some of our thoughts and some experiments on how people understand and remember simple narrative stories. With these preliminaries aside, I will begin my substantive points.

### SIMPLE STORIES HAVE A CONSTITUENT STRUCTURE

First, we should recognize that simple stories—nursery stories, fables, folktales, myths, TV westerns, or police-detective stories—have a relatively simple structure, at least at an abstract level. The story begins with a setting, a cast of characters, in particular, the hero, and a problem for the hero to solve. The knight wants to rescue the beautiful damsel from the dragon, the cowboy

sheriff wants to capture the cattle rustlers, and the detective wants to find the murderer. After learning of the problem, the hero performs appropriate actions given the constraints of his setting which are instrumental to bringing about his goal. Typically he must perform a series of actions, each either failing or succeeding in achieving some small subgoal along the way to achieving a top-level goal. The typical story describes the hero's attempts to achieve successive subgoals, the various outcomes, and the new subgoals. The story eventually comes to an end when the hero achieves his initial goal, or clearly fails and gives up—often with a moral drawn at the end. I think most of us would agree with this sort of schematic sketch of simple problem-solving stories.

### TO UNDERSTAND IS TO IDENTIFY PLANS

In understanding a story, I think what readers do is try to explain to themselves why the hero acts as he does at each step. We try to identify his plan, that is, his goal, and how his actions are connected to achieving that goal. For this purpose, readers use the naive psychology of the layman, couched in terms of simple principles which assume that goals produce motives, that motives call up plans, that plans precede and cause actions, that actions are performed for positive expected benefits, that human motives comprise a simple list like duty, love, greed, curiosity, desire for success, and that interactions with others follow simple principles such as reciprocity. Reciprocity is the idea that you do unto others as you believe they are trying to do unto you. It underlies the revenge motif that is so prevalent in stories, whereby the hero gains revenge upon some offending villain.

Rather than talking abstractly about story constituents, I will present a concrete illustration. One should keep in mind these ideas regarding subgoals-motives-and-actions as one reads the story below which was used in our research. The story is called "The Old Farmer and His Stubborn Animals." We have adapted it from David Rumelhart (1975); it is reproduced here with successive propositions numbered.

(1) There was once an old farmer (2) who owned a very stubborn donkey. (3) One evening the farmer was trying to put his donkey into its shed. (4) First, the farmer pulled the donkey, (5) but the donkey wouldn't move. (6) Then the farmer pushed the donkey, (7) but still the donkey wouldn't move. (8) Finally, the farmer asked his dog (9) to bark loudly at the donkey (10) and thereby frighten him into the shed. (11) But the dog refused. (12) So then, the farmer asked his cat (13) to scratch the dog (14) so the dog would bark loudly (15) and thereby frighten the donkey into the shed. (16) But the cat replied, "I would gladly scratch the dog (17) if only you would get me some milk." (18) So the farmer

went to his cow (19) and asked for some milk (20) to give the cat. (21) But the cow replied, (22) "I would gladly give you some milk (23) if only you would give me some hay." (24) Thus, the farmer went to the haystack (25) and got some hay. (26) As soon as he gave the hay to the cow, (27) the cow gave the farmer some milk. (28) Then the farmer went to the cat (29) and gave the milk to the cat. (30) As soon as the cat got the milk, (31), it began to scratch the dog. (32) As soon as the cat scratched the dog, (33) the dog began to bark loudly. (34) The barking so frightened the donkey (35) that it jumped immediately into its shed.

Reading this, one notices how a series of subgoals are being recursively generated and stacked up on one another, to a level about four deep; and then the main character just knocks them over like dominoes in order to achieve his final goal. Each successful action in the Farmer story has an outcome which sets up the condition for its dependent action to occur—the farmer gets milk from the cow in order to give it to the cat so that the cat would scratch the dog, and so on.

The Farmer story has what we call a very tightly knit goal structure. It is easy to identify the Farmer's goal and his plan to achieve it. But now suppose that we delete the Farmer's main goal, of getting the donkey in the shed, and we reorder the actions a little to prevent the reader inferring the top goal. When we do this, we obtain the text shown below.

*Old Farmer Narrative—No Theme*

There was once an old farmer who owned some very stubborn animals. One evening the farmer was taking a walk, when he saw his donkey. The farmer pulled the donkey, but the donkey didn't move. Then he pushed the donkey, but still the donkey didn't move. Then the farmer went to his cow and asked for some milk. But the cow replied, "I would rather have you give me some hay to eat." Then the farmer saw his dog, and he asked him to bark loudly. But the dog refused. Then the farmer went to the haystack and got some hay. When he gave the hay to the cow, the cow gave the farmer some milk. Then the farmer asked his cat to scratch the dog. But the cat replied, "I am thirsty and would be happy if you would get me some milk." So the farmer gave his milk to the cat. As soon as the cat got the milk, it began to scratch the dog. As soon as the cat scratched the dog, the dog began to bark loudly. The barking so frightened the donkey that it jumped immediately into its shed, which the farmer had built at the time he had purchased the donkey.

This text involves much the same propositions as in the coherent story, but now there is no plan or goal that ties the episodes together. According to our hypothesis, then, people should find this a largely incomprehensible text.

TABLE 1  
Comprehensibility Ratings and Recall Percentages of  
the Coherent vs. the Themeless Texts

Measure	Themeless text	Coherent story
Comprehensibility Rating (of 10)	5.0	9.7
% Propositions Recalled	.58	.80

Moreover, they should remember it considerably worse than do subjects who read the coherent version.

A former student, Perry Thorndyke (1977), examined this issue in a study with Stanford University students. He obtained the results shown in Table 1. The results were as expected. Subjects rated the themeless text as considerably less comprehensible than the coherent version, and they also recalled many fewer propositions of the themeless text. Basically, subjects could not figure out the *point* of the themeless text—they could not see why the Farmer was doing these arbitrary actions. The actions do not fit into the usual causal schema readers expect in coherent stories.

#### GOAL AND MOTIVE AS ORGANIZING FOCI

I am proposing that we understand and recall a narrative to the extent that we can identify the plan of the hero—what his problem is, what his goal is and how it generates subgoals, what the constraints are on his actions, and how each action is relevant and instrumental to his current subgoal. Our ability to identify people's plans or intentions from their actions and instigating circumstances is presumably a social skill we have learned and use often in our interpersonal lives. We simply use that skill when we read a narrative and identify the motives, methods, and madneses of fictional characters.

According to this hypothesis, the goal and motive of a character provides the focus around which the reader organizes his understanding of that character's actions and assesses their relative importance. Events come to be interpreted according to their relevance to the character's plan for satisfying his motive. In particular, his motives guide the inferences we draw from his actions. For example, when Desdemona begs Othello to restore Cassio to the military rank from which Othello demoted him, the audience (and Desdemona) see this as a simple plea done as a small favor for a causal friend, and it reflects her generous nature. In contrast, Othello whose jealousy and suspicions of Cassio and Desdemona have been aroused by Iago, views her

actions as a deceitful and callously vile attempt by his wife to improve the lot of her lover.

How could we show that a reader's knowledge of a character's motive organizes the way he understands the text? We did a memory experiment to examine this question. Justine Owens, John Black, and I (1978) designed the experiment diagrammed in Fig. 1. We had four groups of subjects read a bland, neutral text which acted as a sort of dull, uneventful Rorschach card onto which subjects could project their own meanings. They read the text under one of four conditions: two with no particular character in mind, and two with a rather unusual character and problem in mind. The neutral text was a sequence of five situation scripts: making a cup of coffee, visiting a doctor, attending a lecture, going shopping in a grocery store, and attending a cocktail party. These were stereotyped vignettes of a bland, boring nature, each about seven sentences long. For instance, the script for "Visiting the Doctor" read as follows:

Nancy went to see the doctor. She arrived at the office and checked in with the receptionist. She went to see the nurse who went through the usual procedures. Then Nancy stepped on the scale and the nurse recorded her weight. The doctor entered the room and examined the results. He smiled at Nancy and said, "Well, it seems my expectations have been confirmed." When the examination was finished, Nancy left the office.

That is hardly exciting literature, but it proved entirely servicable as a bland Rorschach card. Subjects in the neutral control conditions read the five neutral episodes with only the name of the main character, called Nancy or Jack. Other subjects read a three-line description of the character plus his or her problem as background just before they read the neutral episodes. I will describe the experiment just for the Pregnant Nancy strand since the Football-player Jack strand was similarly constructed. You should notice how slight or minimal is the sketch of the character's problem and motive.

Nancy woke up feeling sick again and she wondered if she really were pregnant. How would she tell the professor she had been seeing? And the money was another problem.

College students who read this sketch interpret Nancy to be an unmarried coed who is dreadfully afraid she is pregnant as a result of an illicit affair with her college professor, and that she is concerned about how to confront him and pay for a probable abortion. Very little of this scenario was actually said. The sketch could just as well fit a happily married woman who's overjoyed at her pregnancy but slightly troubled that she will have to cancel an educational

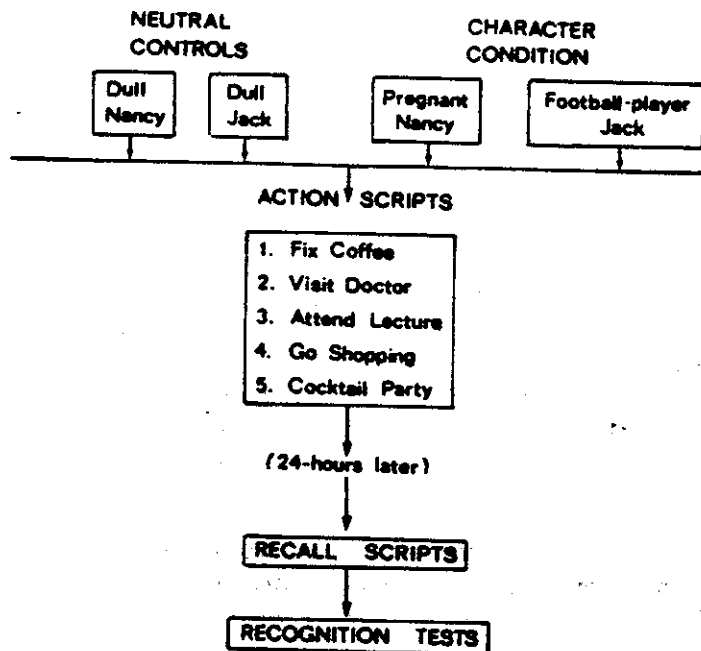


FIG. 1. Schematic of experimental design. Subjects in the character condition read a brief sketch of the character and his problem before reading the scripts.

movie she has been directing with a college professor at the studio. Though it fits the facts just as well, the happy pregnancy script is definitely not a dominant idea for college students.

Our subjects read the scripts, then returned the next day to recall them and to take a recognition test. The interesting comparison, of course, is that between recall by subjects in the Character condition versus those in the Control condition. The results showed that the character-plus-problem given just before the story had a large effect on performance. A simple, though simplifying, summary is to say that most episodes were interpreted and recalled in terms of their relation to Nancy's pregnancy and its consequent problems. This was despite the fact that the scripts being recalled were colorless and unemotional.

What are some of the interpretive distortions one might expect in recall? Here are a few examples: Because Nancy is said to have awakened feeling sick, most subjects interpreted this as the morning sickness of early pregnancy, so they recalled Nancy as getting up in the morning and coming downstairs to fix her breakfast coffee. None of that was in the text. The four succeeding episodes are interpreted as successive scenes within Nancy's day, with

appropriate bridging connectives. Thus, subjects will say that *after* breakfast, Nancy went to the doctor to check whether she is pregnant. Ambiguous phrases like "the nurse went through the usual procedures" receive definition in memory in terms of pregnancy tests. And the doctor's marvelously vague remark, "My expectations have been confirmed" becomes twisted into "Your fears have been confirmed" or simply the declaration "You're pregnant." Subjects recall that Nancy hurried from the doctor's just in time to make her class lecture which is given, of course, by none other than the culprit professor himself. The text said that Nancy wanted to ask the lecturer something but was unable to since he was surrounded by others at the end of the lecture, but subjects recall that the question Nancy could not ask him was decidedly not about the contents of his lecture. Subjects tended to forget the grocery episode entirely since it could not be related in any way to Nancy's problem. At the cocktail party, Nancy sees a professor but for some reason does not get to talk to him. In recall, subjects say it is the self-same scoundrel who is now avoiding her. None of these specifics was in the story; they are all interpretive intrusions.

The interpretations and distortions are completely different if the main character is a young man named Jack who is worried that he is not heavy enough to make the football team. With Football-player Jack, the neutral statements in the scripts take on entirely different significances. These subjects remember that the doctor told Jack how well he was gaining weight; they remember more about the food at the grocery store; and their recall of the cocktail party amounts to a listing of the hors d'oeuvres that Jack ate there. These are all items relevant to his goal of gaining weight.

I have been emphasizing the distortions in recall related to the character's motive. In the Control conditions, of course, there were no differences in the content recalled for Dull Nancy versus Dull Jack. They are functionally ciphers.

Besides directing the course of inferences from actions, the motive or goal of a character also determines the significance, and hence memorability of particular facts. Events and facts acquire their significance according to their relevance to attaining the character's main goal. Given different goals, different facts become salient. Our recall data showed such selective influences of the characters' motive. Thus, Nancy subjects rarely recalled the Grocery episode since it had nothing to do with her pregnancy problem, but they usually recalled the Lecture episode (whose actor was the culprit). On the other hand, Jack subjects usually recalled the food items in the Grocery episode but often forgot the Lecture episode since it bore no relation to Jack's weight-gaining goal.

Having cited some qualitative results, I will now examine some quantitative measures of recall for the different groups. These are shown in Table 2. First, subjects in the Character conditions recalled significantly more scripts, and recalled them more often in correct order. As a result, they



TABLE 2  
Measures of Average Recall

Recall measure	Character conditions	Neutral controls
Number of scripts (of 5)	3.7	2.5
Text propositions	29.2	20.2
New inferred propositions	15.2	3.7

recalled more true propositions actually stated in the text. From this fact, we may conclude that a character's motive serves as an integrating focus allowing the reader to relate and associate together the successive events of what is otherwise a very disjointed narrative. The character's motive and plan appears to act like a retrieval cue to aid the reader's recall.

Moreover, subjects in the Character condition wrote down about four times as many new propositions that were not in the text as did the Control subjects. About half of these were script-related inferences and half were the character-related inferences I mentioned before, such as saying that Nancy wanted to tell the lecturer about her plight.

The results discussed so far refer to the subjects' free recall. But similar effects appeared in the recognition memory test. Here, subjects rated on a 7-point scale their confidence that each test sentence was stated explicitly in the scripts they had read the day before. Over half the test items were inferences; some were highly plausible given the character's perspective. An example for Pregnant Nancy would be an item like "The doctor said 'Nancy, you're pregnant.'" Other test items were rather implausible from that perspective, for example, "Nancy wanted to talk to the teacher about her grades." Still other test inferences were plausible things one might do at a doctor's office or grocery store, etc., but these should not be affected by having a specific character in mind. Table 3 shows the relative recognition ratings for the various inferences, where a large number means that the subject thought he had seen that sentence in the text.

TABLE 3  
Relative Recognition Ratings for the Three Types of Inferences  
for the Two Conditions<sup>a</sup>

Inferential test items	Character condition	Neutral condition
Character-appropriate	.76	.04
Neutral (script fillers)	.80	.78
Character-inappropriate	.19	.43

<sup>a</sup>"Positive Old" judgments are scaled to be 1.0, and "Positive New" would be 0.

In comparison to the controls, subjects who read the text from the perspective of Pregnant Nancy gave many more false positive recognitions to test statements consistent with this perspective, gave an equal number of inferences not related to the character's problem, (e.g., Nancy read a magazine while waiting to see the doctor), and gave many fewer false positives to statements inconsistent with this perspective (Nancy's grades). Moreover, our other experiments indicate that some of these effects occur during the reading and learning of the material as well as affecting the subject's response bias or willingness to agree to any plausible statement during testing.

What can we conclude from this study? We find that if the reader conceives of a main character trying to resolve a specific problem, then he uses that as an organizational framework for interpreting actions and events in even an uneventful story—for deciding what is relevant and important, for inferring what must have happened between the lines and why. That framework helps to integrate separate episodes of the text, and it serves as a retrieval prompt for recall. The character's problem provides the reader with a "point of view" that influences the way he sees the world inside the story. And that, of course, determines the meaning he derives from the text.

#### ON DELAYING INTERPRETIVE INFORMATION

In the Pregnant-Nancy experiment the subject was told of the character and her problem before he read the text. That foreknowledge clearly influenced how he interpreted the text and assigned more or less importance to different parts of it. However, it appears likely that some distorting effects on reconstructive memory can be produced by delaying information about the character's motives and not giving it until the time of recall. Mark Snyder, a social psychologist from the University of Minnesota, has done an interesting experiment along these lines with his student, Simon Uranowitz (see Snyder & Uranowitz, in press). Their subjects read an extensive case study describing events in the life of Betty K—her birth, childhood, education, and adult career. The case history provided information about the climate of her home life, her relation to parents, her social life in high school and college, and so on. One week later, subjects took a recognition memory test over the details of Betty's life. Just before the test, half the subjects were told that Betty K was now living a lesbian life style; the others were told she was living a heterosexual lifestyle. The recognition items quizzed the subject's memory for Betty's earlier attitudes towards males and females, her social adjustment, and her dating habits as well as information not relevant to sexual preferences such as names of her friends, schools she attended, and so on.

The results showed a significant influence on recognition memory performance of knowing Betty's present lifestyle. Subjects told that Betty is

leading a lesbian lifestyle tended to distort their memory of events in a direction that would be predictive of impending lesbianism. They tended to remember that Betty was relatively unattractive, had had better relations with women than with men, had been injured by her father, had a gay roommate, was very shy with men, and so on. Subjects told Betty was leading a heterosexual lifestyle distorted their recognition performance in a heterosexual direction, remembering how much she dated, and so on. So, subjects selectively emphasized, even reinterpreted, past events so that the past became consistent with their current beliefs about Betty. One might say that our present knowledge remakes the past. This seems a consequence of our universal tendency to perceive people as consistent, and as having stable personalities that endure through a lifetime. Thus, the germ of what Betty is today was "really there all along."

Snyder and Uranowitz also asked their subjects during the memory test to estimate the prior probability, given Betty's life history, that she would have ended up as a lesbian, and to indicate whether they personally had expected such an outcome when they read the case the week before. With the wisdom of hindsight, subjects tremendously overestimate the probability of that lesbian outcome and claimed they remembered having expected it. Of course, the other subjects told just the opposite, heterosexual outcome for Betty remembered themselves as having expected just that outcome, too, on the basis of the same evidence. The point is that knowing the final outcome highlights and makes salient whatever earlier facts are consistent with that outcome; therefore, we convince ourselves that that outcome was more or less inevitable all along. We convince ourselves even further that we knew it all along. This tendency, called creeping determinism, has been documented by Baruch Fischhoff (1975), who finds that all of us—not only clinical psychologists or historians—fall prey to the belief that whatever outcome occurs must have been determinable and predictable from the earlier facts of the case.

#### POINT OF VIEW AND CHARACTER IDENTIFICATION

My next topic concerns a related phenomenon we are currently studying, namely, how the point of view or perspective a reader adopts influences the meaning he derives from a story. In literary analysis, point of view refers to who is the narrator and what relation he stands in to the characters and events he is describing. Thus literary analysts will distinguish among several styles of first-person narratives, where the storyteller is a participant in the events, and styles of third-person narratives, where the storyteller is like a newspaper reporter, describing events in which he did not participate. The style of narration causes the events of the story to be presented from a particular perspective, and the reader usually adopts that perspective.

Another meaning of the term "perspective" is that it is a framework of knowledge and interests of the reader, and is quite independent of the text. Thus, one can read the Federal budget "from the perspective" of a farmer, a big-city mayor, a welfare recipient, a research grantee, and so on. Used thus, "perspective" would seem to refer to the primary interest of the reader, which determines the type of information in a text that is salient and relevant to his interests.

Pichert and Anderson (1977) demonstrated how readers selectively process text when they are instructed to adopt the perspective of someone reading a text with specific interests in mind. Specifically, a brief story about a boy coming home after school with a friend and giving him a tour of his house was read from the instructed perspective either of a prospective burglar of this house or a prospective buyer of it. If told to read from the perspective of a burglar, the reader presumably calls up his knowledge of a burglar's standard goals and plans. These are to rob without being caught, which requires gaining entry to the house undetected, locating and snatching the portable valuables, not leaving clues, and exiting unseen. Information relevant to these goals (e.g., the location of valuables) receives special attention and rehearsal for memory. In the same way, home-buyer readers would be more likely to notice and remember facts relevant to the structural quality of the house such as the presence of leaky roofs and cracked-plaster ceilings. As anticipated, Pichert and Anderson found that their subjects recalled more information judged to be relevant to their differing perspectives.

As noted, this meaning of "perspective" can involve interests that are external to the story itself. That is, the burglar or home buyer were not characters in the story. These perspective-taking instructions are just a veiled form of orienting or focusing instructions, indirectly telling the reader what information should be selected for learning. In contrast, our research has been concerned with a more subtle aspect of perspective, namely, the character within the story that the reader chooses to identify with. We are interested in what determines the choice of character the reader identifies with, and what influences this identification has upon the way the reader interprets and remembers the story.

A question is, how can we manipulate experimentally the character a reader identifies with? As noted before, in literature, this is often done by letting different characters tell their own version of the story, presuming that the reader will identify with the current storyteller. A famous example of multiple narrators is in the Japanese film *Rashomon* about the beating of a man and rape of his wife by a highway bandit; the scene is depicted first from the perspective of the husband, then the wife, and finally the bandit. But most attempts at writing a story from several perspectives inevitably bring many different alleged factual statements into the competing versions, so one could never be sure that the differing meanings people derive from the text are not a

simple result of the differing information written into the texts. And *that* is not the point at issue.

To avoid those problems, a cleaner research tactic is to have people read one and the same text but induce them to identify with different characters and thus read it from different perspectives. We then see what differences arise in how the reader interprets the text, what implications he draws, and what distortions occur when he reconstructs it from memory. I have followed this strategy in an experiment done at Stanford in collaboration with Justine Owens and Janet Dafoe (see Owens, Dafoe, & Bower, 1977). All subjects read a text the main body of which is about 1200 words long. It describes in the third person a series of events involving two young men, Rich and Harry, and a young woman, Cindy. Cindy is on a job, filming a television commercial for sun-tan lotion, and it requires footage of a good-looking guy waterskiing. She gets her boyfriend, Harry, to drive the motorboat and hires this beachbum model, Rich, to play the waterskier. The story describes them meeting at the dock in the morning, going out on the lake and shooting film of Rich skiing; but along the way, various mistakes, spills, and other mishaps occur involving the skier and the boatdriver, both of whom are competing for Cindy's attention. The story was intentionally vague at key places, leaving room for the reader's perspective to influence his interpretation of particular events. For example, the cause of the mishaps is not explained and so the reader was free to explain the characters' behaviors however they chose:

In running the experiment, we tried to get half the subjects to identify with Rich, the waterskier, and half to identify with Harry, the boatdriver. To bring this about, we had the subject read a 300-word lead-in to the story. The lead-in began with the thoughts and actions of Rich, the model, or with those of Harry, the boyfriend and boatdriver. The induction here was slight and subtle. Thus, the Rich induction begins with Rich sunning himself on a dock, then going into a bar for a drink, where he sees this gorgeous brunette who is eyeing his tanned muscles, and she comes over and asks him to work as a model for her filming the next day. They make an appointment to meet the next morning, at which point the main common story line picks up. By this sort of lead-in, focusing on one character, we hoped to get the reader to consider him as the main character and to thus identify with him, getting inside his head, seeing and feeling things as he does, interpreting events as he might.

Right after they had read the story, our subjects filled out a questionnaire about the story; then, twenty minutes later they had a recognition memory test designed to measure memory for their interpretation of specific statements and events in the story. A given statement of the original text might be tested either as a verbatim copy, or as a falsified lure, or as a closely related sentence that is more or less plausible depending on one's point of view while reading the story. The implications fall into several categories. First,

some of the tested implications referred to thoughts or feelings of specific characters. For instance, if you had identified with the skier, you might have been aware of the chill of the breeze when you rise out of the cold water on your skis, but you would not be aware of that if you were identifying with the boatdriver. A second class of test sentences probed for a causal attributions-explanations of why particular actions and mishaps occurred. For instance, readers identifying with the skier would blame the spills and accidents on the poor boatdriving of Harry, whereas readers identifying with the boatdriver should blame the spills on the poor skiing ability of Rich. Furthermore, if you identified with the boatdriver, then the near collision with another boat would be blamed on those maniacs driving the other boat, not on your momentary inattention. Half the subjects in each group received one of two different recognition memory forms which contained paired-off versions of such attributional implications, some appropriate to the skier's viewpoint, some to the boatdriver's.

The main results are as striking as they are clear. A first result is that people say overwhelmingly that they have visual images while they read, and they tended to locate themselves with the character they were to identify with—either in the boat or on the water skis, or hovering over one or the other. About 85% of the subjects said they had identified with the character we had hoped they would, so our subtle lead-ins to the story are nonetheless effective in this respect. About half of our failures here were women who identified with Cindy rather than the men. Second, we asked subjects to rate Rich's skiing ability and Harry's boat-driving ability on 7-point scales. Ninety two percent of the subjects rated as more able that character they identified with. Thus, character identification affected the reader's attributions—the blame for the spills and accidents was the other guy's poorer ability. We also asked subjects to judge whether a character's difficulties in waterskiing or driving were due to his poor ability or due to external circumstances. Again, when judging the character they identified with in the story, subjects tended to attribute his difficulties to external circumstances rather than his incompetence, whereas the reverse occurred when subjects judged the opposite character they had not identified with. Thus, in explaining Harry's difficulties in driving the boat, most of the people who identified with Harry attributed it to external circumstance, such as other careless drivers on the lake, whereas very few of those who identified with Rich, the skier, make this external attribution—instead, nearly all of them thought that Harry was just an incompetent boat driver. This contrast in internal versus external attributions is a common finding in person perception experiments; that is, we tend to attribute our own behavior to extrinsic causes but attribute that of others to some personal disposition of theirs. Thus, I slipped because I stepped on a banana peel but my enemy slipped because he's a clumsy clod! So, in this experiment, we have created this difference in the subject's attribution of

internal versus external causes of a given action depending on the character with whom he identified himself.

In addition to these attribution questions, we also gave the subjects recognition memory tests. The results here strongly supported the predictions. Table 4 shows recognition ratings for a few selected items to illustrate particular inferences, and also shows overall averages (at the bottom of the table). The columns separate subjects according to the character they identified with during reading. The dependent measure is the relative

TABLE 4  
Relative Recognition Ratings for Five Items and for Means for Subjects Identifying with the Skier or Boat-driver (Confident Old = 1.0)

	Subjects identify with	
	Rich, the skier	Harry, the driver
1. Actual: Rich reached for the handle but it escaped him.		
Form B: Rich reached for the handle, but he wasn't fast enough to catch it.	.62	.86 ✓
Form A: Rich reached for the handle, but the boat hadn't come close enough for him to catch it.	.86	.46
2. Actual: Rich lowered himself carefully in the water.		
Form A: Rich awkwardly lowered himself into the water.	.42	.72
Form B: Rich expertly lowered himself into the water.	.68	.50
3. Actual: The handle left Rich's grasp and went skidding across the water.		
Form B: Rich slipped and lost control and the handle went skidding across the water.	.68	.94 ✓
Form A: The handle was torn from Rich's grasp and the boat unexpectedly jumped ahead.	.92	.32
4. Actual: The engine sputtered and the boat jumped ahead.		
Form A: The engine sputtered and Harry felt the boat jump ahead.	.52	.78
Form B: The engine sputtered and Rich saw the boat jump ahead.	.88	.78
5. Actual: The boat pulled away, while Rich was floating in the water, resting on his skis.		
Form B: As the boat pulled away, Harry looked back at Rich resting on his skis.	.62	.78 ✓
Form A: Rich rested on his skis as he watched the boat pull away.	.74	.38
6. Average of all items sympathetic to boat-driver	.64	.71
Average of all items sympathetic to skier	.76	.56

recognition rating subjects' judgments that the gist of a test item was explicitly stated in the text. The ratings are scaled so that "Confident Old" translates into a score of 1, and "Confident Not Old" translates to zero. Since none of these test implications was stated explicitly, all ought to be rated zero on a strict basis. The only proper comparisons in Table 4 are group differences within a row since difficulty or plausibility of inferences can not be equated from one row to another.

The first item in Table 4 is an example of an ability attribution. In one incident, Rich falls off his water skis and has difficulty catching hold of the handle of the tow rope again. The actual sentence in the story is "Rich reached for the handle, but it escaped him." Note that the cause of his failure is not specified. The interpretation of this cause was specified in two different ways in items contained in two recognition test forms. In one case, the blame is placed on the skier's incompetence. Here, we expect and find that subjects identifying with the boat driver will rate this test sentence as more likely to be old (.86) than will subjects identifying with the skier (.62). In the alternate test form, the blame is placed on the boat driver, and here we find that skier subjects rate this rendering as more probable (.86) than do boat-driver subjects (.46). This flip-over in ratings is the analog of the "Actor-Observer" effect found in studies of person perception, where the "actor" is the storybook character with whom the reader identifies himself. The Actor-Observer effect predicts an interaction in recognition ratings between the biasing form of the question and the character identified with. Each of the items in Table 4 illustrate this interaction and they are representative of the 90 items on the test. Item 2 in Table 4 is another ability attribution, revolving around the adverb for "lowered himself"—either *awkwardly* or *expertly*. Item 3 is also about ability, regarding the cause of Rich's losing control of the tow rope. The form B item attributed that to Rich's clumsiness and subjects identifying with the boat driver remembered it that way; form A attributed the cause of the incident to the boat lurching ahead (i.e., a poor driver) and subjects identifying with the skier remembered it that way.

Item 4 refers to the thoughts and feelings of the different characters. The sentence "... the boat jumped ahead" has no reference point, but the test sentences fill in a station point either at the driver ("Harry felt...") or at the skier ("Rich saw..."). Subjects rate as more likely test sentences which describe the thoughts and feelings of the character with whom they identified themselves.

Item 5 is another illustration of differing spatial perspectives in describing events. People identifying with Harry rate as a likely stated proposition that Harry looked back at Rich as the boat pulled away, whereas people identifying with Rich remember instead how he rested on his skis as he watched the boat pull away from him. In several other items we find that subjects judge as more likely events that are described from the station point of the character with whom they identify themselves. This result is consistent



with the imagery the subjects reported that they had during reading, viz., that they stationed themselves at the site of the character with whom they identified.

These five items give the flavor of the text and the relation of the two test forms to the text. (A given subject took only one test form.) Table 4 also illustrates the results for individual items. The Actor-Observer effect predicts an interaction of specific direction for each tested site in the text, and an overwhelming number of these interactions were observed across test sites. As one summary measure, I have placed at the bottom of Table 4 the average of the recognition ratings for all test items that driver-identifiers should "like" and the similar average for all items that skier-identifiers should "like." The interaction for these pooled results is highly significant statistically. The basic finding is that implications that are consistent with a perspective tend to be rated more highly by subjects who read the story from that perspective.

The results suggest that when a reader identifies with a given character, he steps inside that character's head and sees things through his eyes. Such identification seems to rely upon a social skill we have all learned, of taking another's perspective on the world, in being able to imagine someone's thoughts and feelings. In our story, identification with a specific character led, first of all, to differences in the reader's subjective imagery, in what objects were in his image and their layout in space, relative to the viewer's station point. Second, identifying with a character caused the reader to reflect quite a bit about the thoughts and feelings going through that character's mind. Third, identifying with a character led the reader to explain that character's behavior in different ways from that of other characters. In particular, characters we identify with and are sympathetic to are seen as innocent heroes, suffering the slings and arrows of outrageous fortune, whereas their adversaries are seen as incompetent nimcompoops or evil maniacs. Obviously, at this point, our research on story understanding is beginning to dovetail nicely with attribution theory in social psychology.

#### EMOTIONAL MOOD AND CHARACTER IDENTIFICATION

The foregoing experiment suggests that the meaning a reader derives from a story depends in part upon the character with whom he identified himself. The majority of texts are written in such manner that there is no doubt about who the main character is with whom the reader is to identify... he is introduced first, the author and reader are often privy to his innermost thoughts, his fate is assigned importance, and so on. Such stylistic devices practically force the reader to identify with a central character. But in other stories, the characters are presented in a more balanced fashion (say, in the third person, with an anonymous author). In such cases, we may inquire into

the factors that influence a reader to identify with a particular character. A rather weak generalization claims that a reader will identify more with that character who is most "similar" to him in relevant respects. That is, we tend to like and identify with characters who are like us. The basis for similarity might be sameness of sex, age, race, national origin, social group, beliefs, and so on. The "similarity" principle is weak in several respects: first, any target character may have many similarities and many differences with respect to the reader, and so a unique character is rarely favored by this criterion alone; and second, a character's similarity may be computed relative to the reader's conception of himself as he is (e.g., as a weakling) or to the ideal self he would like to be (e.g., as a courageous hero). This factor must be invoked to explain why people will identify with prestigious or powerful figures in drama despite their dissimilarity to himself. Thus, it would appear that we have no powerful hypotheses to predict in advance the reader's identification. In such a situation, continued empirical exploration is called for.

To this end, Ken Monteiro and I carried out an experiment to see whether the reader's emotional mood would affect the character in a story with whom he would identify. The subjects were college students who were first hypnotized and asked to experience an intensely happy (or sad) emotion, by recreating and reliving some past situation in which they had felt that way. They were then given a posthypnotic suggestion that they would re-experience this emotion when they later read a story the experimenter gave them, but they would forget the source of this suggestion and not attribute their emotion to a suggestion given under hypnosis. After awakening the subjects from hypnosis, they were given the story to read during which they became progressively happier or sadder as instructed.

The story they read was about two college men, Jack and Andre, as they met for and played a friendly afternoon game of tennis. The story narrates their driving to the gym, getting dressed into their tennis clothes, warming up and playing several games of tennis, then showering and dressing into their street clothes. Andre is very happy and enjoying himself: he and his girlfriend are getting along great, his classes are going great, he's in a buoyant mood, joking, singing. He is enjoying the spring sunshine, and he wins the tennis match easily. In contrast, his friend, Jack, feels particularly glum and depressed today. His girl friend has just jilted him and he broods over that loss; he is worried over his exams. Everything goes wrong to irritate and depress him—his car needs repairs, his gym locker jams, he breaks a shoelace, he loses at tennis, he feels scorched by the sun. He is miserable. The story is an approximately balanced account of these two characters, with nearly equal number of facts written about each.

Our subjects read this story in about five minutes while feeling intensely happy or intensely sad. After reading, they answered a questionnaire quizzing them about who they felt was the main character, who had the most

statements written about him, and with whom they had identified themselves. Classifying our subjects on these three criteria, we found that all 16 subjects identified with that character who was in the same mood as they were as they read. So, character identification was controlled entirely by sameness of mood in this study.

These subjects returned the next day and were given a "surprise" recall test for the tennis story. They were not in hypnosis and were in their normal mood during this recall. Any fact recalled by each subject could be classified according to whether it was about Happy Andre, Sad Jack, or about neither of them. The question of interest is whether the person tends to recall relatively more about the character he identifies with (same mood as him). Setting aside recall of the few neutral facts, the proportion of sad facts to sad-plus-happy facts averaged 80% for the sad subjects and 45% for the happy subjects. Also, 80% of the subjects recalled more facts about the character whose mood matched their own. The few reversals occurred for Happy subjects and stem from the fact that the story is not balanced, but appears to be mainly about Sad Jack—or so control subjects told us. That implies that recall following a normal-mood reading should yield more sad facts recalled (say, 40%), and hence happy subjects have the sad bias of the story to overcome.

The conclusion of this experiment is that the reader's emotional mood affects with which character he selects to identify himself, believes that that character is the main character, and that there is more said about him. And when he is later asked to recall everything in a neutral mood, he recalls more facts about the character with whom he identified. We suppose this effect is mediated by the subject paying more attention to or rehearsing the facts about the character who is like himself in mood. It remains to be seen whether the same effect could be obtained by simply telling normal subjects in a neutral mood to identify with Happy Andre or Sad Jack as they read the story.

### SUMMARY

I will now summarize my main points:

First, I claimed that we understand simple narrative stories by trying to explain the action sequence as the working out of a protagonist's plan to achieve some goal. The actions are understood as instrumental in overcoming some obstacle toward the goal. Actions and events that are not on this main, goal-directed sequence of the story will be soon forgotten. Texts which list a series of events not connected by an overall plan or goal of some agent, as in the scrambled Farmer text, are poorly understood and easily forgotten.

Second, the motive or plan of a character provides a strong framework for interpreting and organizing the events in which he or she participates. We showed that when people read even neutral scripts with a character and

motive in mind, for instance, Pregnant Nancy and her problem, they altered their interpretation of the scripts and distorted their recall of them to be consonant with that character's motive.

Third, our current belief about a person can influence the way we reconstruct his or her biography. If told Betty K is a lesbian, subjects distorted their memory of her life history in a direction that would be predictive of impending lesbianism.

Fourth, the point of view the reader adopts while reading a story was shown to influence the imagery, the inferences, and the meaning he derives from the text. When the reader identified with a character in the water-skiing story, he was more likely to think that that character was blameless in accidents, more likely to attribute mishaps to an uncooperative environment than to that character's incompetence. He was also more likely to believe that any implications drawn relevant to that character—his surroundings, his feelings, his explanations of events—were stated in the text when in fact they were not stated at all.

Fifth, in reading stories having characters displaying clear emotions, readers will tend to identify primarily with that character who is feeling the same as they are. Happy readers identify with happy characters, and sad readers with sad characters—all other things equal. By so identifying, the reader will think the story was largely about this character, and he will recall relatively more facts about that character than the text warrants.

In closing, let me note that our studies of story understanding and recall are bringing memory research closer to topics of personality and social psychology, in particular, to attribution theory. This alliance follows as a consequence of assuming that readers understand storybook characters by using the same causal, motivational schema they use to understand people. This seems only proper and fitting, since narrative communication is usually about human affairs, about our emotions, ideals, striving, and goals. It would be absurd to believe that when we read stories, we do not draw upon our methods of understanding people. Because of this, researchers have the opportunity to manipulate the processes of story comprehension in a manner so as to catch in midflight and analyze the journey people take as they try to understand the events happening around them. And to illuminate that darkness, to chart that journey, is the goal of cognitive psychology.

#### ACKNOWLEDGMENTS

Especial thanks are due to the students who have collaborated in these experiments—John Black, Janet Dafoe, Ken Monteiro, Justine Owens, and Perry Thorndyke.

## REFERENCES

- Anderson, R. C. The notion of schemata and the educational enterprise. In R. C. Anderson, R. T. Spiro, & W. E. Montague (Eds.) *Schooling and the acquisition of knowledge*. Hillsdale, N.J.: Lawrence Erlbaum Associates, 1977.
- Bower, G. H., & Monteiro, K. P. Emotional mood and character identification in story memory. Unpublished manuscript.
- Fischhoff, B. Hindsight  $\neq$  foresight: The effect of outcome knowledge on judgment under uncertainty. *Journal of Experimental Psychology: Human Perception and Performance*, 1975, 1, 288-299.
- Kintsch, W. *The representation of meaning in memory*. Hillsdale, N.J.: Lawrence Erlbaum Associates, 1974.
- Owens, J., Bower, G. H., & Black, J. B. The "Soap-Opera" effect in story memory. Unpublished manuscript.
- Owens, J., Dafoe, J., & Bower, G. H. Taking a point of view: character identification and attributional processes in story comprehension and memory. Speech at American Psychological Association Convention, San Francisco, August 29, 1977.
- Pichert, J. W., & Anderson, R. C. Taking different perspectives on a story. *Journal of Educational Psychology*, 1977, 69, 309-315.
- Rumelhart, D. E. Notes on a schema for stories. In D. G. Bobrow & A. Collins (Eds.), *Representation and understanding: Studies in cognitive science*. New York: Academic Press, 1975.
- Schank, R. C., & Abelson, R. P. *Scripts, plans, goals, and understanding*. Hillsdale, N.J.: Lawrence Erlbaum Associates, 1977.
- Snyder, M., & Uranowitz, S. W. Reconstructing the past: Some cognitive consequences of person perception. Unpublished manuscript, University of Minnesota, April, 1977.
- Thorndyke, P. W. Cognitive structures in comprehension and memory of narrative discourse. *Cognitive Psychology*, 1977, 9, 77-110.

Page 10 of 10

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60  
61  
62  
63  
64  
65  
66  
67  
68  
69  
70  
71  
72  
73  
74  
75  
76  
77  
78  
79  
80  
81  
82  
83  
84  
85  
86  
87  
88  
89  
90  
91  
92  
93  
94  
95  
96  
97  
98  
99  
100

