Chapter 8

Activating Knowledge of Fictional Characters' Emotional States

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One of Kintsch's most prominent contributions to the understanding of discourse comprehension is his proposal that comprehenders build situational models. Kintsch introduced his theoretical concept of situational models in the following way: "A major feature of our model [of discourse comprehension] is the assumption that discourse understanding involves not only the representation of a textbase in episodic memory, but at the same time, the activation, updating, and other uses of a so-called *situation model* in episodic memory: This is the cognitive representation of the events, actions, persons, and in general the situation, a text is about" (van Dijk & Kintsch, 1983, p. 337).

Kintsch (van Dijk & Kintsch, 1983) argued for the necessity of situational models during discourse comprehension by writing:

> The problem is that a text representation involves not only text elements, but also knowledge elements. How many of these become part of the text representation? In other words, is the text representation the kind of rich, elaborated structure that our intuition as well as our experiments tell us it can be, or is it more text bound? Where do we draw the boundaries? In this book, we have consistently opted for keeping the text representation relatively uncontaminated and unelaborated: Only those inferences become part of it that are necessary to establish coherence at the local or global level. Others have hypothesized much richer text representations including the discourse and its context as well as the internal knowledge brought to bear during interpretation. We propose that these elaborations, except for the ones that are textually necessary as outlined in Chapter 5, are not part of the text representation proper but of a model that the hearer or reader constructs about the

> situation denoted by the text. It is this model which supplies and collects all the relevant information for the adequate comprehension of the text. (pp. 336–337)

Indeed, Kintsch proposed that building a situational model is tantamount to successful comprehension. "To understand a text, we have to represent what it is about. If we are unable to imagine a situation in which certain individuals have the properties or relations indicated by the text, we fail to understand the text itself" (van Dijk & Kintsch, 1983, p. 337).

How are these situational models built? According to Kintsch (van Dijk & Kintsch, 1983), one of the critical steps in building a situational model is activating previously represented knowledge:

> Using knowledge in discourse comprehension means being able to relate the discourse to some existing knowledge structure, which then provides a situation model of it. The process is one of being reminded of past situations, be they specific episodic or generalized semantic ones. Many of the discourses we interpret are about objects, person, places, or facts we already know from past experience. In memory, these experiences form part of (overlapping) clusters of similar experiences. To the extent that they are episodic, they are, of course, subjective and differ from person to person. Thus, each person has subjective experiential clusters about the town he or she lives in, the house, friends, place of work, and major life events. Similarly, each person shares, to some extent at least, other clusters of experiences about such items as countries, towns, historical events, political events, or well-known people. At the other extreme, as decontextualization sets in, these experiences become entirely general or almost so, such as one's knowledge of arithmetic or chess. (p. 337)

DO READERS ACTIVATE EXPERIENTIAL KNOWLEDGE WHEN COMPREHENDING TEXTS?

Kintsch's proposal that comprehension involves activating previously stored knowledge has been one of the many aspects of his work that has greatly influenced my work (see also Gernsbacher, 1990). The experiments described in this chapter were based on that proposal.

Consider the following narrative:

> Joe worked at the local 7-11 store, to get spending money while in school. One night, his best friend, Tom, came in to buy a soda. Joe needed to go back to the storage room for a second. While he was away, Tom noticed the cash register drawer was open. From the open drawer Tom quickly took a ten dollar bill. Later that week, Tom learned that Joe had been fired from the 7-11 store because his cash had been low one night.

What information becomes activated in readers' minds when they read this story? Perhaps readers activate spatial knowledge as suggested by the work of Morrow, Bower, and Greenspan (1989) and Glenberg, Meyer, and Lindem (1987). If readers activate spatial knowledge, then reading the sentence, "While Joe was away, Tom noticed the cash register was open [and] quickly took a ten dollar bill," might stimulate readers to activate knowledge about the typical layout of convenience stores. With that knowledge activated, they might build a mental representation of the 7-11 store such that Tom could not be seen by Joe when Tom was in the storage room and Joe was near the cash register.

Readers might also activate temporal knowledge, as suggested by the work of Anderson, Garrod, and Sanford (1983). If readers activate temporal knowledge, then reading the expression, *Later that week*, might stimulate readers to activate knowledge about the activities that can occur within the period, *1 week*. With that knowledge activated, readers might build a mental time frame for the story that allows other events to occur between the time that Tom took the $10 bill and the time he learned that Joe had been fired. One obvious event is that Joe's boss could have learned of the missing cash.

In Gernsbacher, Goldsmith, and Robertson (1992), we investigated whether readers activate another type of knowledge while comprehending stories. We investigated whether readers activate knowledge about human emotions and use that activated knowledge to build mental representations of fictional characters' emotional states. If so, then reading several sentences in this story might stimulate readers to activate the knowledge of how someone feels when he finds out that his best friend was fired from a job for something the best friend did. In other words, readers might build a mental representation of a fictional character's emotional state. In this case, readers might build a mental representation of *Tom* experiencing the emotional state, *guilt*. In a series of laboratory experiments, we tested this hypothesis.

DO READERS ACTIVATE EMOTIONAL KNOWLEDGE WHEN COMPREHENDING TEXTS?

We began to test the hypothesis that readers activate emotional knowledge when comprehending texts by constructing 24 experimental stories. Each experimental story was intended to stimulate readers to activate knowledge about a particular emotional state. But, importantly, these emotional states were implied without explicit mention of any emotion. The experimental stories described concrete actions, such as Tom going to the 7-11, Joe going to the storage room, Tom taking the $10 bill, and Tom learning that Joe had been fired. But never was there any mention of emotion until a final "target" sentence.

Subjects read the stories sentence by sentence, and unknown to the subjects, the last sentence of each experimental story was a target sentence. Each target

sentence contained an emotion word (e.g., *guilt*), as in "It would be weeks before Tom's guilt would subside." We manipulated whether the emotion word in the target sentence matched the emotional state implied in the story, as does *guilt*, or whether the emotion word mismatched. Across three experiments we manipulated the nature of the mismatch.

In our (Gernsbacher et al., 1992) first experiment, the matching and mismatching emotion words were what we called "perceived converses." By this we meant that the matching and mismatching emotion words were opposite along one important dimension, but they were almost identical along other dimensions. The dimension along which they were opposite was their affective valence: One emotion word had a negative affective valence (for example, *guilt*), whereas the other had a positive affective valence (for example, *pride*). The dimensions along which they were almost identical were their intensity; duration; relevance to self versus others; temporal reference to events in the past, present, or future; and so forth (Frijda, 1986). The 12 pairs of converse emotional states were guilt–pride, boredom–curiosity, shyness–confidence, depression–happiness, disgust–admiration, callousness–care, anger–gratitude, sadness–joy, despair–hope, fear–boldness, envy–sympathy, and restlessness–contentment.

For each pair of converse emotional states, we wrote two stories. For one story, one member of the converse emotional states matched while the other member mismatched; for the other story, the opposite was true. For instance, we wrote two stories for the pair, *guilt–pride*. The story for which *guilt* matched and *pride* mismatched was the story about Joe, Tom, and the 7-11. The other story, for which *pride* matched and *guilt* mismatched, was the following:

> Paul had always wanted his brother, Luke, to be good in baseball. So Paul had been coaching Luke after school for almost 2 years. In the beginning, Luke's skills were very rough. But after hours and hours of coaching, Paul could see great improvement. In fact, the improvement had been so great that at the end of the season, at the Little League Awards Banquet, Luke's name was called out to receive the Most Valuable Player Award.

For this story, a target sentence containing a matching emotion word would be, "It would be weeks before Paul's pride would subside," whereas a target sentence with a mismatching emotion word would be, "It would be weeks before Paul's guilt would subside."

To measure whether readers activated knowledge about fictional characters' emotional states, we measured how long subjects needed to read each story's target sentence. We predicted that the target sentences would be read more rapidly when they contained matching emotion words than when they contained mismatching emotion words, because reading the story would activate information corresponding to the emotional state captured by the matching emotion word.

In addition to the 24 experimental emotional stories, each subject read 24 filler stories. The filler stories were written in the same style as the experimental stories, but they were not intended to activate information about any emotional state; they were relatively neutral, for example:

> Today was the day Tyler was going to plant a garden. He put on his work clothes and went out to the shed to get the tools. The ground was all prepared so he began planting right away. It was a small garden, but then he didn't really need a large one. It was large enough to plant a few of his favorite vegetables. Maybe this year he'd plant some flowers, too.

A filler story preceded each experimental story.

The results of this experiment are displayed by the two bars on the left of Fig. 8.1. These data are subjects' mean reading times for the target sentences in the experimental emotional stories. As those two leftmost bars illustrate, subjects read the target sentences considerably more rapidly when they contained an emotion word that matched the emotional state implied in the story as opposed to when they contained an emotion word that mismatched the emotional state implied in the story.

HOW MUCH EMOTIONAL KNOWLEDGE IS ACTIVATED DURING TEXT COMPREHENSION?

In a further experiment, we altered the nature of the mismatching emotion words to discern how much experiential knowledge about emotions is activated during text comprehension. In this experiment, the mismatching emotion words were not converses of the matching emotion words (as they had been in Gernsbacher et al.'s, 1992, first experiment). Rather, in this experiment, the matching and mismatching emotion words were dissimilar along the dimensions that the converses shared; but, as in our first experiment, the matching and mismatching emotion words were opposite in their affective valence. For instance, following the story about Tom and the 7-11 store, a target sentence with a matching emotion word would be *It would be weeks before Tom's guilt would subside*, just as it was in Gernsbacher et al.'s (1992) first experiment. But a target sentence with a mismatching emotion word would be *It would be weeks before Tom's hope would subside*; *hope* (a mismatching emotion word) has the opposite affective valence of *guilt* (the matching emotion word), but *hope* and *guilt* are not converses. In this experiment, the emotional states were paired in the following way: guilt–hope, pride–shyness, envy–joy, sympathy–anger, disgust–gratitude, admiration–callousness, care–restlessness, despair–contentment, happiness–fear, curiosity–sadness, confidence–depression, boredom–boldness.

The results of this experiment are displayed in the two middle bars of Fig. 8.1. As these two bars illustrate, subjects read the target sentences considerably more rapidly when they contained matching as opposed to mismatching emotion words. However, subjects read the mismatching target sentences more rapidly in this experiment than they did in the first experiment. Recall that the difference

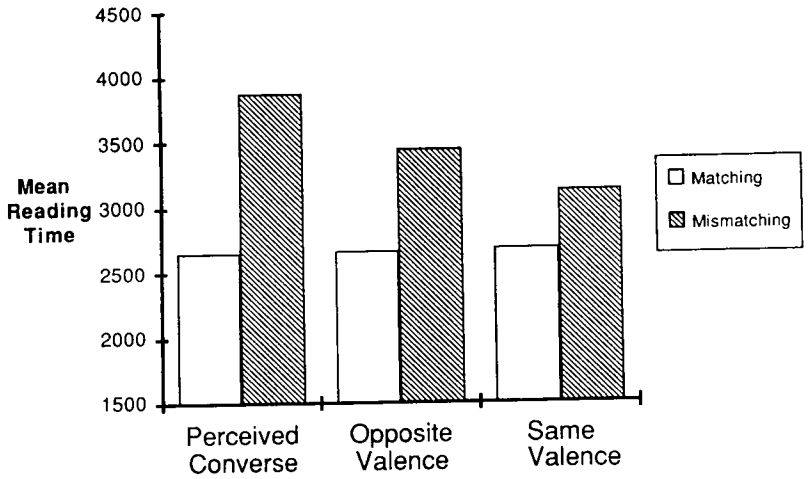

FIG. 8.1. Subjects' mean reading times (in ms) in Experiment 1 and 2 of Gernsbacher et al. (1992) and in a previously unreported experiment. The leftmost bars illustrate reading times when the matching and mismatching emotion words were "perceived" converses (e.g., *guilt–pride*). The middle bars illustrate reading times when the matching and mismatching emotion words were opposite in affective valence, but not perceived complements (e.g., *guilt–hope*). The rightmost bars illustrate reading times when the matching and mismatching emotion word shared their affective valence (e.g., *guilt–shyness*).

between these two experiments was the nature of the mismatching emotion words: In the first experiment, the mismatching emotion words were the converses of the matching emotion words (for example, *guilt–pride*); in this experiment, the matching and mismatching emotion words were dissimilar along the dimensions that the converses shared, although they were still opposite in affective valence (for example, *guilt–hope*).

In a third experiment (Gernsbacher et al., 1992, Exp. 2), we again altered the nature of the mismatching emotion words. In this experiment, the mismatching emotion words were again not the perceived converses of the matching words. In fact, they had the same affective valence as the matching emotion words, although they were less likely than the matching emotion words. For instance, the mismatching target word for the story about Tom and the 7-11 store, which implied the emotional state *guilt*, was *shyness*. *Shyness* has the same affective valence as *guilt*; however, when someone finds out that his best friend was fired for something he did, a person is less likely to experience *shyness* than *guilt*.

The results of this experiment are displayed in the two rightmost bars of Fig. 8.1. Subjects again read the target sentences more rapidly when they contained matching as opposed to mismatching emotion words, as we found in our other

two experiments. However, subjects read the mismatching target sentences more rapidly in this experiment than they did in the other two experiments.

The striking similarity among the three sets of data illustrated in Fig. 8.1 lies in subjects' reading times for the matching target sentences. In each experiment, subjects read the matching target sentences at approximately the same rate, regardless of the nature of the mismatching target sentences. The striking difference among these three sets of data lies in subjects' reading times for the mismatching sentences. The more disparate the mismatching emotion words were to the implied emotional states, the more slowly subjects read the target sentences containing those mismatching emotion words. When the mismatching emotion words were the converses of the implied emotional states, subjects read the target sentences most slowly; when the mismatching emotion words were opposite in affective valence but not converses, subjects read the target sentences less slowly; and when the mismatching emotion words were the same affective valence as the implied emotional states, subjects read the target sentences most rapidly, although not as rapidly as they read target sentences containing matching emotion words.

Gernsbacher et al. (1992) suggested that these data illustrate the role that activation of previously acquired knowledge plays in how readers understand fictional characters' emotional states. The content of the stories stimulated readers to access certain emotional knowledge. In a fourth experiment, we specifically tested the hypothesis that the content of the stories—not the target sentences—activated readers' knowledge of emotional states.

In this experiment (Gernsbacher et al., 1992, Exp. 3), we employed a different laboratory task. We employed a task that some cognitive psychologists argue reflects only what is currently activated in readers' mental representations; it does not reflect how easily a stimulus (such as a target sentence) can be integrated into that representation. The task is simply to pronounce a printed word as rapidly as possible (Balota & Chumbley, 1984; Chumbley & Balota, 1984; Keenan, Golding, Potts, Jennings, & Aman, 1990; Lucas, Tanenhaus, & Carlson, 1990; Seidenberg, Waters, Sanders, & Langer, 1984).

Pronouncing a printed word is considered to be such an easy and relatively automatic task that some researchers assume that subjects do not attempt to integrate the word into their mental representations; presumably, subjects simply pronounce the test word as fast as they can. If most of the test words are unrelated to the stories (and in our experiment, 87.5% were unrelated), subjects are discouraged from interpreting the test words vis-à-vis the ongoing story; they simply view the pronunciation task as an additional (and unrelated) task involved in completing the experiment.

Therefore, subjects in this experiment read the same stories as the subjects in the first three experiments. As in the first two experiments, there was no explicit mention of emotion in the stories. For instance, one story began:

> Joe worked at the local 7-11, to get spending money while in school. One night, his best friend, Tom, came in to buy a soda. Joe needed to go back to the storage

room for a second. While he was away, Tom noticed the cash register was open. From the open drawer Tom quickly took a ten dollar bill. Later that week, Tom learned that Joe had been fired from the 7-11 because his cash had been low one night.

However, unlike the stories in the first three experiments, each story in this experiment was not followed by a target sentence that contained a matching or mismatching emotion word. Instead, at different points during both the experimental and filler stories, test words appeared on the screen, and the subjects' task was simply to pronounce each test word as rapidly as possible.

In the experimental stories, one of the test words was our target word, and it appeared immediately after subjects read the last line of the story (e.g., after they read *Later that week, Tom learned that Joe had been fired from the 7-11 because his cash had been low one night*). The target word either matched (e.g., *guilt*) or mismatched (e.g., *pride*) the emotional state implied by the story. We found that test words were pronounced reliably more rapidly when they matched as opposed to mismatched the characters' implied emotional states. For example, after subjects read the story about Tom and the 7-11, they pronounced the word *guilt* more rapidly than they pronounced the word *pride*. After they read the story about Paul and his brother's little league banquet, they pronounced the word *pride* more rapidly than they pronounced the word *guilt*. Therefore, this experiment demonstrated the powerful role that knowledge activation plays in readers' understanding of fictional characters' emotional states. In two further experiments, we further demonstrated the role that knowledge activation plays.

In one experiment (Gernsbacher & Robertson, 1992; Exp. 1), we manipulated the number of emotional stories that our subjects read. In our previous experiments, all subjects read 48 total stories. Half (24) of the stories were experimental, emotional stories, and the other half (24) were filler, nonemotional stories. In our more recent experiment (Gernsbacher & Roberston, 1992; Exp. 1), there were two conditions such that in a high-density condition, 36 of the 48 stories were emotional stories, and only 12 were nonemotional, filler stories. In a low-density condition, only 12 of the 48 stories were emotional stories, and 36 were nonemotional, filler stories. The data we analyzed were reading times to the target sentences in a "common" set of 12 emotional stories that occurred in both the high- and low-density conditions. Half the target sentences contained matching emotion words, and half contained mismatching emotion words. The matching and mismatching emotion words were perceived converses.

We predicted that the density manipulation would not affect reading times to the matching target sentences. This is because information about the implied (matching) emotional states would already be highly activated by the content of the stories; therefore, the matching emotional states could not be "helped" by the greater activation of emotional knowledge produced by the higher density of emotional stories. Neither could the activation level of the matching emotional states be "hurt" by the lesser activation of emotional knowledge produced by the lower density of emotional stories.

In contrast, we predicted that the density manipulation would affect reading times to the mismatching target sentences. This is because reading many emotional stories should greatly activate subjects' knowledge about emotional states; if so, then mismatching emotional states should be more activated when subjects read a high density of emotional stories. Therefore, the mismatching sentences should have been read more rapidly in the high-density condition than in the low-density condition (because the mismatching emotional states would be more activated in the high-density condition than in the low-density condition).

The results of this experiment are displayed in Fig. 8.2. The data displayed are subjects' reading times for the common set of matching versus mismatching target sentences. As Fig. 8.2 illustrates, subjects read the target sentences considerably more rapidly when they contained matching as opposed to mismatching emotion words. This was the case in both the high- and low-density condition. As Fig. 8.2 also illustrates, the density manipulation did not affect subjects' reading times for the matching target sentences. In contrast, the density manipulation did affect subjects' reading times for the mismatching target sentences: Mismatching target sentences were read more rapidly in the high-density condition than in the low-density condition. Thus, the more emotion stories read by the subjects, the faster they read the mismatching sentences.

Gernsbacher & Robertson (1992) attributed this high-density effect on the mismatching sentences to knowledge activation rather than sentence integration.

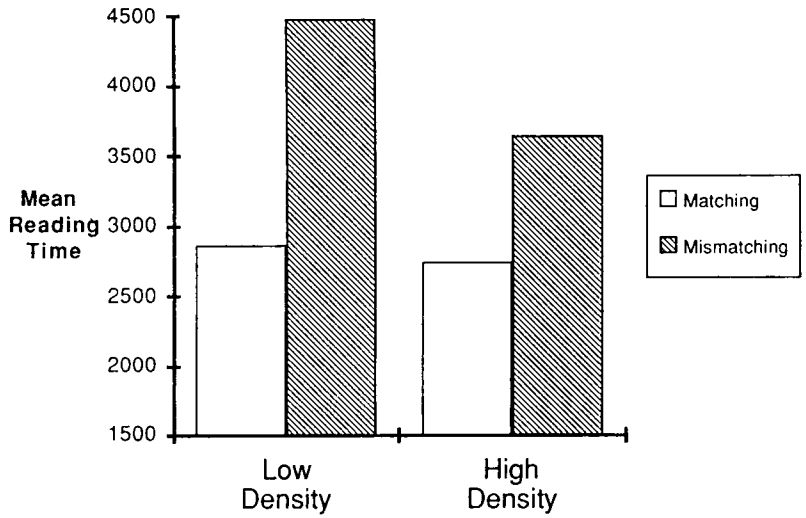

FIG. 8.2. Subjects' mean reading times (in ms) in Gernsbacher and Robertson (1992) Experiment 1. The leftmost bars illustrate subjects' reading times in the low-density condition (25% emotional stories; 75% nonemotional filler stories). The rightmost bars illustrate subjects' reading times in the high-density condition (75% emotional stories; 25% nonemotional filler stories).

The high-density effect manifests knowledge activation rather than the ease with which subjects could integrate the target sentences into their mental representations because the mismatching target sentences and the experimental stories were the same in the high- and low-density conditions; therefore, any difference in reading times must have been produced by factors outside the 12 experimental stories and their 12 target sentences.

We suggested that reading more emotional stories more strongly activates readers' knowledge of emotional states, whereas reading fewer emotional stories less strongly activates readers' knowledge of emotional states. This greater versus lesser activation of emotional knowledge affected subjects' reading times only to the mismatching sentences because information about the implied (matching) emotional states was already highly activated by the content of the stories. However, a counterexplanation for the density effect is that subjects adopted a strategy. In the high-density condition, subjects read more mismatching target sentences. Although subjects also read more matching target sentences in the high-density condition, perhaps the higher incidence of mismatching sentences encouraged subjects to adopt a strategy for dismissing them or reading them less thoroughly.

In a further experiment (Gernsbacher & Robertson, 1992; Exp. 2), we performed a proportion manipulation to investigate this counterexplanation. The logic underlying a proportion manipulation is this: If a certain type of experimental trial occurs rarely, subjects are unlikely to adopt a strategy for that type of trial. But if a type of trial occurs frequently, subjects are likely to adopt a strategy for responding to that type of trial—if the cognitive process tapped by that type of trial is under the subjects' strategic control.

For instance, consider the following experimental task: Subjects see pairs of letter strings (e.g., *bortz–blaugh*). The subjects' task is to decide whether each member of the pair is a word. On some trials, both members are words, and on some of the trials in which both members are words, the two words are semantically related, for example, *bread–butter*. A classic finding is that subjects respond to the second letter string more rapidly when it is a member of a related pair (Meyer & Schvaneveldt, 1971). For example, subjects respond to *butter* more rapidly when it is preceded by *bread* than when it is preceded by *nurse*.

Now, consider the following manipulation: In a low probability condition, only one eighth of the word pairs is related (*bread–butter*; seven-eighths are unrelated (*nurse–butter*). In an equal probability condition, half the word pairs are related, and half are unrelated; and in a high probability condition, the majority of the words are related, and only a small proportion is unrelated.

In each condition, subjects recognize the second word of the pair more rapidly if the pair is related, but the advantage is a function of the proportion of related trials. In the low probability condition, the advantage is smallest; in the high probability condition, the advantage is largest (Tweedy, Lapinsky, & Schvaneveldt, 1977). Presumably, the high proportion of related words encourages subjects to adopt a strategy for capitalizing on the words' relations.

However, subjects do not always adopt a strategy, even when there is a high proportion of a particular type of trial. Subjects only adopt a strategy if they can. For instance, in a *bread–butter* experiment, subjects typically adopt a beneficial strategy when there is a high proportion of related trials. However, they do not adopt a strategy if they are not given enough time to process the first word of the pair; without enough time to process the first word, there is no difference between the low, equal, or high probability conditions (den Heyer, Briand, & Dannenbring, 1983). In other words, there is no effect of the proportion manipulation.

Similarly, a proportion manipulation does not affect how likely it is that subjects will access the less-frequent versus more-frequent meaning of an ambiguous word, for example, the river's edge meaning of the word *bank* versus the monetary meaning. According to Simpson and Burgess (1985), activating the less- versus more-frequent meaning of an ambiguous word is not under subjects' strategic control; therefore, response times are unaffected by the probability manipulation.

To discover whether subjects' reading times for the mismatching sentences in the high-density condition were due to a strategy subjects might have adopted for dismissing or not fully attending to those mismatching sentences, we manipulated the proportion of matching versus mismatching target sentences while holding constant the density of emotional stories. We used the highest possible density of emotional stories—all 36 stories that subjects read were emotional stories.

There were three conditions. In the 75% mismatching condition, the target sentences for 27 stories contained mismatching emotion words, and the target sentences for the remaining 9 stories contained matching emotion words. In the 50% mismatching condition, the target sentences for 18 stories contained matching emotion words, and the target sentences for another 18 stories contained mismatching emotion words. In the 25% mismatching condition, the target sentences for only 9 stories contained mismatching emotion words whereas the target sentences for 27 stories contained matching emotion words.

The data we analyzed were reading times to target sentences in a common set of 18 stories that occurred in all three probability conditions. Half the target sentences contained matching emotion words, and half contained mismatching emotion words. The matching versus mismatching emotion words were perceived converses. If subjects' faster reading times to the mismatching target sentences in the high-density condition manifested a strategy, then the proportion manipulation should have invoked that strategy. That is, subjects should have read the mismatching target sentences most rapidly in the 75% mismatching condition and least rapidly in the 25% mismatching condition. In contrast, if subjects' faster reading times to the mismatching target sentences in the high- versus low-density condition manifested greater knowledge activation, then the proportion manipulation should not have affected subjects' reading times.

The results of this experiment are displayed in Fig. 8.3. In all three probability conditions subjects read the target sentences considerably more rapidly when they contained matching as opposed to mismatching emotion words. However, the proportion manipulation did not affect either the subjects' reading times to the matching target sentences or their reading times to the mismatching target sentences. These data suggest that the effect of the high-density condition on subjects' reading times to the mismatching sentences in our previous experiment was not due to a strategy. Instead, we suggested that in the high-density condition, readers activated more emotional knowledge, and, therefore, they read the mismatching sentences more rapidly.

HOW DO READERS ACQUIRE AND ACTIVATE EXPERIENTIAL KNOWLEDGE?

Together, the experiments reviewed here demonstrate that readers activate previously stored knowledge about emotional states while comprehending narratives. This conclusion fits squarely within the theoretical positions advanced by several leading text comprehension researchers (Fletcher & Bloom, 1988; Graesser & Zwaan, chap. 7, in this vol.; van den Broek & Trabasso, 1986). These researchers

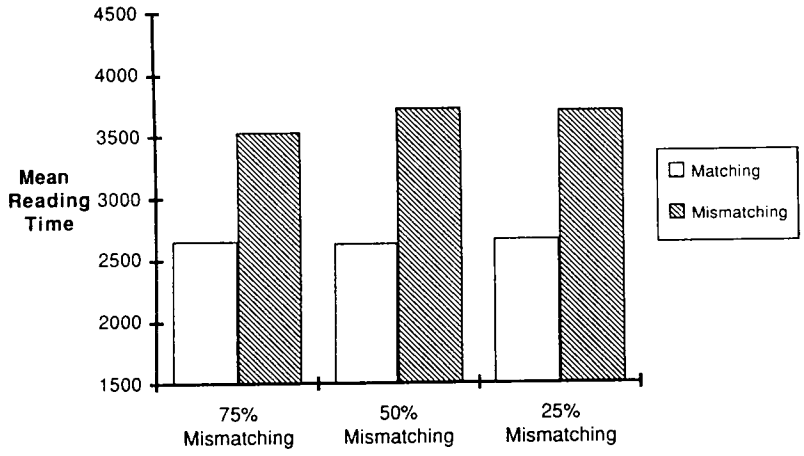

FIG. 8.3. Subjects' mean reading times (in ms) in Gernsbacher and Robertson (1992) Experiment 2. The leftmost bars illustrate subjects' reading times in the condition in which 75% of the stories had target sentences with matching emotion words; the middle bars illustrate subjects' reading times in the condition in which 50% of the stories had target sentences with matching emotion words; the rightmost bars illustrate subjects' reading times in the condition in which 25% of the stories had target sentences with matching emotion words.

propose that the situational models that readers construct contain information about the characters' goals. Thus, when reading the narrative about Paul and his brother Luke, readers' situational models would contain the goal structure of "Paul wants Luke to excel in baseball." Events and their outcomes that are consistent with that goal should therefore lead Paul to experience a positive emotion; events and their outcomes that are inconsistent with that goal would lead Paul to experience a negative emotion.

How is this knowledge about emotional states learned, and how is it activated? Again, my theoretical proposals have been guided by Kintsch, who wrote:

> We assume that during understanding such clusters are retrieved and form the basis for a new model of the situation. Sometimes this model is directly ready for use, sometimes it must be constructed from several partly relevant existing models. . . . Thus, the understander is reminded by the text of some prior experience, and then uses that experience to construct a model of the present situation. (van Dijk & Kintsch, 1983, pp. 337–338)

Kintsch (1988) likened the process by which previously acquired knowledge is activated during discourse comprehension to the process by which a previously learned list of words is retrieved during a recall test. According to Kintsch:

> How people recall relevant knowledge when they read a text is reminiscent of another experimental paradigm that has been studied extensively in psychological laboratories: how people recall lists of words. A widely used explanation for the recall of word lists is based on the generation-recognition principle. Some words are recalled directly, perhaps from a short-term memory buffer, and these words are then used to generate other semantically or contextually related, plausible recall candidates. (p. 179)

We can apply these proposals to describe how readers encode and activate knowledge about emotional states. Presumably, subjects in our experiments had previously encountered experiences (either personally or vicariously, e.g., through literature) that resembled the experiences we wrote about in our stimulus stories. Indeed, we constructed our stimulus stories so that they would be relevant to our undergraduate population of subjects. The stories revolved around typical undergraduate activities, such as going on a date, interviewing for a job, studying for exams, and living in a dorm.

When subjects in our experiments originally encountered experiences (either personally or vicariously) that were similar to those reproduced in our stimulus stories, presumably the subjects themselves or the fictional characters (about whom they were reading or watching in a movie) experienced a resulting emotional state. These emotional states became part of the memory trace. Therefore, reading about similar experiences should have activated those memory traces, and the memory traces included information about the concomitant emotional

states. Our experimental task, which required subjects to continue telling each narrative after they read the target sentence, probably provided even more inducement for subjects to recollect their own experiences in order to think about what the fictional character would do next.

The hypothesis that the ability to understand fictional characters' emotional responses is based on exposure to actual or vicarious emotional experiences predicts that the more emotional situations a person encounters, the more memory traces are stored, and, therefore, the more emotional knowledge is available during comprehension. Indeed, developmental studies demonstrate that older children are more adept than younger children at assessing the appropriate emotional state of a fictional character (Harris & Gross, 1988). Surely, individuals must differ in their ability to experience and interpret emotional states; most likely they also differ in their tendency to encode and activate emotional knowledge. If so, Kintsch would predict that individuals would differ in their ability to comprehend fictional descriptions of emotional events, because—according to Kintsch and supported by the research presented here—comprehension requires activating previously acquired knowledge.

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