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Individual Differences That Influence Reading Comprehension

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Theories about reading have moved away from viewing the reader as a passive recipient of textual input, as a *tabula rasa* on which the author sketches his or her message. Under this view, reading comprehension is easily explained by the success of the textual input entering and staying intact within the mind of the reader. Adopting this view, some character educators can assert that reading moral stories to children will build moral literacy and moral character due to the nature of the stories themselves. That is, as long as the children “hear” the stories, they will absorb the story messages. This is the view promulgated by former secretary of education William Bennett in his wildly popular book, *The Book of Virtues*. Bennett (1993) contends that hearing moral stories will develop moral literacy, which then leads to moral character. There is no evidence for his claims. William Kilpatrick (1993) agrees with Bennett, saying that “good books do their own work in their own way” and “it is not necessary or wise for adults to explain the ‘moral’ in each story” (p. 268). In fact, recent research has disconfirmed a “passive reader” theory and the claims made by Bennett, Kilpatrick, and others. These findings are reviewed in this chapter.

We find that readers are active comprehenders. They use their knowledge and strategies to construct meaning from a text (Pressley & Afflerbach, 1995). The reading process resembles more closely the interaction of a breeze on a landscape. The breeze has an influence on the features, moving dirt and debris about and shaping erosion, but only so far as the structures of the landscape allow. Constructivist reading theory takes into account the nature of the reader (the landscape) in response to the textual input.

Constructivist reading research tells us that at least five things about the reader matter in reading comprehension: reader skills, reader knowledge, reader cognitive development, reader culture, and reader purpose. Leaving the discussion of general reading comprehension skills to others, this chapter address the influence of (1) reader expertise in the knowledge domain of the text, (2) the sociomoral cognitive development of the reader,

(3) the degree to which the cultural assumptions of the text match those of the reader, and (4) the reader's purpose for reading (e.g., for fun or to study). All four factors concern elements that the reader brings to the reading situation and that affect the reader's processing of the text.

READER KNOWLEDGE

Individuals who read or view the same text often end up with different mental models or understandings of the text. For example, a 16-year-old gunslinger named "Doug," who had performed nine drive-by shootings over the previous year in his hometown of Omaha, Nebraska, considered the films *South Central* and *Boyz 'n the Hood* to be affirmations of his aspirations and lifestyle (Hull, 1993). In contrast, most viewers of either one of these films created a mental model with an explicit moral lesson about which behaviors and life choices *to avoid*. What are the factors that lead to these radically different comprehensions of the same text?

Traditionally, reading researchers have studied the causes of individual differences in the comprehension of texts along two lines, reader skill and reader knowledge. Reader skill concerns basic reading and language abilities, including essential decoding skills such as word recognition, vocabulary, and memory, as well as higher level skills such as reading strategies and forming inferences. Readers with more of these skills are better at comprehending texts (e.g., Cunningham, Stanovich, & Wilson, 1990; Palmer, MacLeod, Hunt, & Davidson, 1985). "Doug"'s misunderstanding of an antigang movie may have been influenced by poorly developed text comprehension skills. But there are other sources for reader misunderstanding.

A second type of individual difference that researchers study is differences in the specific knowledge brought by the reader to the text. Constructivist theory generally assumes that an individual processes or interprets experience based on previous experience or knowledge. Cognitive schema theory (CST) suggests that when an individual is presented with information, a schema or knowledge structure is activated to interpret the information. Derry (1996) suggests that there are three types of schemas or knowledge structures that can be activated in an individual: memory objects (specific small units of related characteristics), cognitive fields (an activated set of memory objects), and mental models (an overall meaning structure of a particular situation or experience). Such mental activations occur during reading. If the reader lacks the knowledge (and therefore the activations) requisite for interpreting the information in the text, the reader will misunderstand or misinterpret the text.

In general, as a reader reads and remembers text, he or she attempts to create a coherent mental representation by integrating text information and by elaborating on the text with prior knowledge about the world (van den Broek, 1994). Prior knowledge often comes in the form of general knowledge structures. General knowledge structures, such as specific scripts (e.g., Brown, Smiley, Day, Townsend, & Lawton, 1977; Schank & Abelson, 1977) and schemas (e.g., Anderson & Pearson, 1984; Bartlett, 1932; Bobrow & Norman, 1975; Rumelhart, 1980; Rumelhart & Ortony, 1977), have been shown to affect how readers comprehend a particular text. For example, due to extensive familiarity with grocery stores, a reader likely has a general knowledge "script" (or cognitive field) of the type and order of events that occur in grocery stores (a grocery store script) that af-

When readers read, they apply prior knowledge in order to build a coherent mental model (overall meaning structure) of the text (McNamara, Miller, & Bransford, 1991; van Dijk & Kintsch, 1983). Texts are cognitively modeled or represented in several ways. In a vein similar to cognitive schema theory, van Dijk and Kintsch (1983) proposed three types of mental representations built in the process of reading: the surface structure (which words are presented in which order), the propositional text base (which propositions are presented in which organization), and the situation or mental model (what the text is depicting). Whereas the propositional text base is based primarily on the text itself, the *mental model* of a text tends to be knowledge dependent (e.g., van Dijk & Kintsch, 1983). Moravcsik and Kintsch (1993) found that high-knowledge readers achieved a deeper level of understanding, enabling them to construct an appropriate situation or mental model that allowed them to elaborate texts correctly. Low domain knowledge prevented readers from forming an adequate mental model, which led to erroneous elaborations and inferences during recall. When texts are inconsistent with the reader's activated knowledge structures and mental model, readers understand poorly (Bransford & Johnson, 1972), recall wrongly (Steffensen, Joag-Dev, & Anderson, 1979), and even distort memory to fit with their schematic structures (Bartlett, 1932; Narvaez, 1998; Reynolds, Taylor, Steffensen, Shirey, & Anderson, 1982). Inadequate schema activation or inappropriate mental modeling may explain "Doug"'s response to the antigang films. Inadequate schema activation is characteristic of differences in moral text comprehension.

THE SOCIO-MORAL COGNITIVE DEVELOPMENT OF THE READER

Generally, research in socio-moral development has focused on moral judgment (i.e., reasoning used to advocate a certain action choice in a moral dilemma). In this tradition, researchers recognize that people conceptualize moral problems differently, based on developmental age and education (e.g., Kohlberg, 1984; Rest, 1986). As individuals develop in moral judgment, transformations occur in how they construe their obligations to others. These transformations can be viewed as changing moral schemas (memory objects and cognitive fields) about how it is possible to organize cooperation (Rest, Narvaez, Bebeau, & Thoma, 1999). As moral judgment matures, an individual's concerns expand, and he or she is able to consider the welfare of more and more "others" when conceptualizing ideal forms of cooperation (e.g., at the lowest schema, one is primarily concerned for self, whereas in the most developed type of schema, one includes concern for strangers). Perhaps "Doug"'s misunderstanding of the antigang message was influenced by developmentally limited moral judgment schemas.

The effect of moral judgment development on reading has been examined in several studies. Narvaez (1998) studied the effects of moral judgment development on the recall of narratives. Real-life, complex narratives were used with embedded moral reasoning at different stages of moral judgment. Moral arguments were presented in a stream of contextual detail. As in real life, the narratives intertwined events with people's rationalizations and interpretations of those events. Participants were asked not only to recall what actions generally occurred in the narrative but also what the protagonist was thinking about in the narrative. As in real life, the participant had to think over a decision situation while trying to sort out the reasoning and reconstruct what happened.

moral action), and moral action (implementing and following through on the moral choice). All four components were included in each story.

We examined whether children understood the themes of moral stories as intended. We selected themes that were understandable to younger children (e.g., persevere for the good of others, be honest with strangers, do not lie for friends, be responsible and trustworthy by completing your duties to others) rather than more adult themes, such as principles for sustaining constitutional democracies. We focused on correct versus incorrect choice of the moral theme from among distractors. Participants from third and fifth grades and from a university were tested on whether or not they understood the author-based lessons (i.e., the moral themes) from several moral stories. They were asked to identify the theme from a list of message choices and to identify which of four alternative vignettes had the same theme. Participants also rated the set of message and vignette choices for closeness of match to the original story. Reading comprehension was used as a covariate. Developmental differences in moral theme understanding were significant, even after accounting for reading comprehension differences. Younger participants were more attracted to lower moral judgment stage distortions of themes, suggesting that moral judgment development is a factor in moral theme comprehension. The reader seems to impose a level of cognitive moral sophistication (a set of moral schemas or cognitive field) on the initial interpretation of the moral story.

Imposing his moral schemas on the story, "Doug" may have been attracted to a more simplistic understanding of the theme. He may have ignored or missed the contradictory elements in the story because of a very personal, tacitly held understanding of causal and necessary events in the social world. Culture operates in a similar manner. As readers read or view a text, they seem to impose a culturally based cognitive field on the text as well.

THE DEGREE TO WHICH THE CULTURAL ASSUMPTIONS OF THE TEXT MATCH THOSE OF THE READER

What knowledge do people from different cultures draw on when they read culture-specific texts? Cultural knowledge seems to affect comprehension much like background knowledge. Similarly, when texts are inconsistent with the expectations or high-level knowledge structures of the reader, the reader will understand poorly (Bransford & Johnson, 1972), recall wrongly (Steffensen et al., 1979) and even distort memory to fit with the reader's mental schemas (Reynolds et al., 1982). A classic example is Bartlett's (1932) seminal work with the "War of the Ghosts" folktale, in which participants showed an increasingly distorted recall over time of this Native American story, making it conform to familiar story schemas. Bartlett was the first in this century to provide evidence for the influence of cultural expectations on narrative recall. In subsequent research, Harris, Lee, Hensley, and Schoen (1988) found that routines from another culture were increasingly recalled erroneously over time by those from a different culture, indicating a conceptual influence during memory retrieval. Readers apply culture-based schemas to the way they mentally represent the text (e.g., Reynolds et al., 1982). For example, when Harris et al. (1988) asked participants to recall texts about events in a different culture, they found distorted recall, as in the following story. The text said:

ticipants took an inventory of their orientation to individualism or collectivism. Reading skill differences were controlled by individually standardizing each reader's responses.

As expected, there were no significant differences in reaction time for reinstatement (nonmoral) probe words based on collectivism score. But we did find significant differences in reaction time to moral probe words based on collectivism scores. Further, significant differences in reaction time to moral probe words remained after holding cultural background constant. That is, collectivism scores, regardless of cultural-ethnic background, were significantly related to reaction time for moral inferences but not for nonmoral inferences. We concluded that cultural-ideological background can influence moral inferences while reading. The process of reading about helping or not helping relatives activated a cognitive field concerning relating to others and affected the mental model of the text.

Cultural influences on reading often transpire without awareness. Reading is also influenced by the reading context and the reader's conscious goals. Another factor in determining intraindividual variation in the pattern of inferential activity during reading is the purpose the reader has for reading (e.g., Walker & Meyer, 1980).

THE READER'S PURPOSE FOR READING

A critical role for reading purpose in the comprehension process is implied by findings that orientation to (or goal while reading) the text during reading influences recall (e.g., Pichert & Anderson, 1977; Anderson & Pichert, 1978). Readers claim to modify their reading strategies according to reading goal. For example, Lorch, Lorch, and Klusewitz (1993) asked readers what kinds of different reading tasks they experienced and how they perceived the processing demands for the different types of reading tasks. The participants broadly distinguished two categories of reading tasks, reading for school (study) purposes and reading for stimulation or entertainment.

School reading was perceived as less interesting, slower, involving less anticipation of future text events, more attempts at integration, and more rereading, and also as more taxing of understanding and memory. In contrast, reading for entertainment was perceived to involve an increased effort to find relations among ideas and events in the text, more anticipation of forthcoming text events, more interest, and more analysis of writing style. Lorch et al. (1993) provide a rich description of text types and reader perception of their demands.

Narvaez, van den Broek, and Ruiz (1999) reported that reading purpose influenced the pattern of inferences that readers generated as they read. Readers with a study goal were more likely to engage in rereading and evaluating the text and to indicate knowledge-based coherence breaks than were readers who were reading for entertainment. This pattern of findings corroborates readers' assessments of their own reading processes, in particular their perception that school/study reading involves more rereading and attempts at integration (Lorch et al., 1993). The findings also suggest that the "search-after-meaning" principle (Graesser et al., 1994; van den Broek, 1990)—according to which the reader attempts to explain each element in the text before continuing to the next element—applies particularly to readers who are reading to study rather than to readers who simply read for entertainment.

Narvaez, van den Broek and Ruiz (1999) also examined the interaction between

to their levels of moral judgment development. As has been found in schema research (e.g., Bransford & Johnson, 1972; Dooling & Lachman, 1971), discourse that presents implicit or fragmented moral reasoning may activate moral schemas more strongly (as a means to fill in coherence breaks). When the textual information conflicts with reader knowledge, the reader's preexisting knowledge is likely to prevail unless the reader is dissatisfied with the level of explanation his or her knowledge provides (Anderson, 1983). This "dissatisfaction" with moral reasoning schemas can be generated through class discussion with peers (see Power, Higgins, & Kohlberg, 1989).

Explicit educational curricula and instruction concerning moral topics such as social behavior change (e.g., drug use prevention or abuse recovery) may not be properly understood if the moral judgment capacities of the audience are not accommodated. Instructors should be aware that students may be understanding texts in ways different from the author's intention or the perspective of the instructor. Just as teachers attempt to match the reading level of a text with the student's level of reading skill, moral and social education programs should attempt to match the moral reasoning level of a text with the level of the student's moral reasoning capacities. Of course, in order to create the context for cognitive growth, texts should be selected that contain familiar and slightly more advanced moral reasoning (to promote "dissatisfaction" with existing schemas). Curricula advocating behavior change, such as character education curricula, should be thoroughly piloted in order to gauge what is understood by the target audience. A curriculum that works with one age group may not work with another.

Comprehension of Moral Themes

In order to promote the development of general theme comprehension, the instructor should facilitate student practice of gist recall and generalizing from texts (see Williams, Brown, Silverstein, & deCani, 1994 for a direct teaching approach). For *moral* theme comprehension, instructors also can focus on specific moral aspects of texts. A list of actions that teachers can take based on the process model of moral behavior (Narvaez, Mitchell, Endicott, & Bock, 1999) follows.

1. Assist students to become aware that some demands in a story are in conflict with others (e.g., personal/inner, outer/social). This may be studied by discussing: What was the problem? What was the worst thing the character faced? Were there differences in what people wanted? What were the differences?
2. Increase students' moral sensitivity to the configuration of the situation. This may be accomplished by asking these questions: What was going on? Who was thinking about what was going on? Who could be affected? Who was affected?
3. Help students reason about possible actions (moral sensitivity and reasoning) by posing questions such as: What could be done? What would happen if ____? What outcomes might occur? How might people react?
4. Focus students' attention on their own, as well as characters', personal identities and moral motivation, with questions like: What did the character think about when deciding/doing the deed? What kinds of ideals were driving the character in the story?
5. Increase students' awareness of sacrifice or sublimation of personal gratification for a greater good (moral motivation). Ask: How did the action affect each char-

ences in cultural and moral practice. In addition, using a variety of cultural texts may not only bring some relief to diverse students but also encourage the “mainstream” students to widen their views of the world.

Regardless of what the instructor does, the students may not understand what is intended due to developmental, cultural, and expertise differences. The instructor needs to continue to counter the related misconceptions by helping students hone study strategies that focus on comprehension and that develop thinking, knowledge, and multicultural reading skills.

Reading Purpose and Strategies for Comprehension

Strategies readers use are not always appropriate for comprehension. Readers tend to generate associative inferences with study texts. Instructors and students need to realize that associative elaborations alone are not enough for learning (see Trabasso & Magliano, 1996). Explanatory inferences are also vital (e.g., van den Broek & Kremer, 1999). Yet readers with a study purpose do not automatically use strategies that are related to increased understanding (Chi et al., 1994). Students need assistance in learning helpful reading strategies when reading expository texts. Reading strategies focused on comprehension—in which causal relations are central—are related to better reading comprehension (see also van den Broek & Kremer, 1999) than study strategies such as questioning or outlining. A focus on comprehending a text is more likely to “transform” knowledge into the type of mental representation that promotes long-term learning (Scardamalia & Bereiter, 1984).

Instructors (and texts) need to ask the questions that will lead the reader to make inferences that are related to increased retention, such as causal relations between elements of the text, predictions, and explanations. Students naturally perform these behaviors with narrative texts and need to activate such strategies when studying. Readers need instruction on how to transfer the strategies that they know and apply automatically when reading narrative texts to their reading of expository texts. Instructor coaching can assist readers to monitor their comprehension strategies and activate comprehension-enhancing techniques. Conscious strategic reading will help with comprehension and memory.

Most important, instructors should remember how complex is the interaction between reader and text. Based on the memory objects and cognitive fields built from experience, every reader will have a different mental model of a text. Only those with more expertise, development, and/or similarity in world knowledge to the author will have a mental model of the text that resembles that of the author.

OUR FUTURE RESEARCH AGENDA

Moral text comprehension research is in its early stages; hence there is much work to be done. Although we have studied moral theme comprehension, moral narrative recall, and on-line moral inferencing, it is still unclear what the key features of moral discourse comprehension are. How common is it? How is it used? For example, how does moral theme comprehension relate to persuasive discourse generally? What factors other than moral reasoning and background knowledge influence the interpretation of persuasive discourse? When persuasive discourse is used for prevention of risky behaviors, how do

in terms of reading comprehension? How easy is it to change a reader's cultural cognitive field? (4) What are the specific, identifiable ways that cultural background influences reading comprehension?

There is abundant work to be tackled in the study of individual differences and text comprehension. The mapping of the variety of differences alone will take many years of study. Identifying the instructional strategies that increase reader abilities in each area will require ingenious and persevering research programs.

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