

THE EFFECT OF TEXTUAL DIFFERENCES ON CHILDREN'S PROCESSING STRATEGIES

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In this study, we examined whether or not readers use different processing strategies for different texts. Eleven sixth-grade primary school students in Turkey participated. Each participant completed a think-aloud process and a free-recall process by reading an expository text and a narrative text in Turkish. The data obtained were analyzed qualitatively. The results indicated that the comprehension strategies of the readers changed according to the text being processed. When the children processed a text about which they had strong background knowledge and when the text provided them with more overt linguistic clues, they could monitor their comprehension process more efficiently and render a more coherent reconstruction of the texts. We concluded that teachers should consider the effect of textual differences on children's learning process.

Introduction

Much of the learning that takes place in and out of the school is based on successful comprehension of texts and much of the academic failure of the students derives from their misinterpretation of the texts. For this reason investigating the characteristics of good and poor readers has been the main concern of psychologists and reading and educational specialists.

Although there are many theories of reading and studies with regard to these applications, the processing strategies of readers have mainly been classified into three categories: bottom-up, top-down and interactive processing (McCormick, 1988). Reading comprehension that relies heavily on the linguistic features of the text and on the information provided by the text itself is called bottom-up processing (Anderson, Reynolds, Schallert & Goetz, 1977; McCormick, 1988; Celce-Murcia & Olshtain, 2000; van Dijk & Kintsch, 1983).

Top-down processing refers to the conceptual hypotheses which are generated by the reader, dependent on her/his world knowledge. Thus, in top-down processing, "more important than structures which are in some sense 'in' a text are knowledge structures (schemata) the reader brings to the text" (Anderson, Reynolds, Schallert & Goetz, 1977). Interactive processing suggests that reading comprehension is an interactive process containing "both the bottom-up content explicitly activated by the text expressions and the top-down content supplied from the reader's store of world knowledge" (de Beaugrande, 1984).

Today, the consensus is that reading comprehension is an interactive process and what mainly differentiates good readers from poor readers is their ability to process the texts interactively (Celce-Murcia & Olshtain, 2000; Kendeou & van den Broek, 2005; Singer, 1990; Smith, 2006). Good readers use a greater variety of com-

prehension monitoring and executive control strategies more efficiently than poor readers (Thomas & Barksdale-Ladd, 2000). Good readers monitor their comprehension successfully by efficiently integrating textual information with prior information. As a result, they are able to construct a more complete and coherent mental representation of a text. In contrast, poor readers either depend heavily on the textual information itself (local processing) or are stuck into a preconceived schema even if incoming clues provided by the text contradict it.

There have been off-line (after reading) and on-line (during reading) measures for revealing readers' comprehension strategies (Graesser, Singer & Trabasso, 1994; Singer, 1994; van den Broek, 1994). By using the off-line measures of comprehension, one can only observe and assess the product. On the other hand, on-line measures enable the researchers to assess the process and think-aloud methodology, as an on-line measure of comprehension proves to be an efficient tool which adequately charts diverse aspects of text-processing (Pressley & Afflerbach, 1995).

Although there are certain limitations of the think-aloud methodology (Kendeou & van den Broek, 2005; Lau, 2006), it provides valuable information for the memory operations involved in the comprehension process (Graesser et al., 1994; Lau, 2006; Magliano & Millis, 2003; Trabasso & Magliano, 1996; Zwaan & Brown, 1996). The on-line studies (Ballstaed & Mandl, 1984; Laing & Kamhi, 2002; Long & Bourg, 1996; Long, Seely & Oppy, 1996; Magliano & Millis, 2003; Narvaez, van

den Broek & Ruiz, 1999; Suh & Trabasso, 1993; Trabasso & Magliano, 1996; Zwaan & Brown, 1996) which have focused on reading comprehension and inferencing process by using think-aloud procedures provide valuable evidence for what is going on in the mind of the reader during reading. Studies by Graesser, Singer & Trabasso (1994), Trabasso & Magliano (1996) and Zwaan & Brown (1996) point to the fact that backward inferences (explanations) are more necessary than other kinds of inferences for the coherent mental representation of the text, and therefore understanding is explanation-based. Trabasso & Magliano (1996) identify three memory operations that make information available to working memory. These are: (1) the activation of general world knowledge; (2) the maintenance of information in working memory across successive sentences; (3) the retrieval of information from a long-term memory representation of text. Their findings indicate that readers draw more from their world knowledge than from the current sentence or prior text in the think-aloud procedure. On the other hand, the readers also draw from the prior text but in this case they tend to use that information to explain how the focal sentence (the current text sentence which is processed) fits into the text in order to construct the situation model of the text.

The studies related to think-alouds of good and poor readers give insights into the differences between their comprehension strategies as they process narrative texts. Zwaan & Brown (1996) point out that skilled comprehenders generate significantly more explanations but they tend to

generate fewer associations than less skilled comprehenders because this type of information does not contribute to a coherent mental representation of texts. Laing & Kamhi's (2002) findings also support Zwaan & Brown. They indicate that average readers generate significantly more explanatory inferences than below-average readers. Citing Whitney et al. (1991), Magliano & Millis (2003) also emphasize that less skilled readers adopt a local processing strategy and they are less sensitive to the potential causal relationships that could be inferred between story sentences.

Although many of the think-aloud studies have dealt with readers' interactions with narratives, recent research deals with different text types. For example, van den Broek, Lorch, Linderholm & Gustafson (2001) have found that reading goal strongly influenced inferential activity of the expository text processors. Readers with a study goal produced more coherence-building inferences than readers with an entertainment goal when they processed expository texts. A study by Bråten & Strømsø (2003) has also focused on expository texts. They have concluded that university students' strategic processing changed over time, with some of the changes associated with changes in students' perception of the nature of the reading task. Kendeou & van den Broek (2005) have emphasized the importance of the readers' prior knowledge in comprehension of scientific text. They provide evidence that one source of individual differences, readers' misconceptions, has a profound effect on science text comprehension. Their results suggested that readers with misconceptions proceeded

through a text at the same speed and with the same types of processes as did readers without misconceptions. They also activated and integrated their background knowledge with the textual information as did readers without misconceptions. However, the content of the knowledge-based inferences produced by the first group of readers reflected the misconceptions, resulting in fewer valid explanations.

To conclude, think-aloud proves to be a useful method for assessment of comprehension during reading and when this method is used in classroom settings, students who verbalize their reading strategies while reading improve their comprehension (Baumann, Jones & Seifert-Kessell, 1993; Oster, 2001; Sainsbury, 2003).

Purpose of the study

The vast amount of literature on text processing provides us with valuable information about most of the unknowns of the comprehension process. On the other hand, there are still many unanswered questions because of the multi-dimensional character of text processing. For example, comprehension strategies can be affected by many variables such as the text genre, the reader's expectations about the text, the reading tasks, the reader's goals and also the reader's background knowledge related to the text. Moreover, the same individual may understand different things from the same text in different environments, or individuals who belong to different cultures may interpret the same text in different ways.

Although the literature which focuses on the assessment of reading comprehension strategies of readers via think-aloud

is rich in the United States and in European countries, in Turkey the researchers in the field and L1 teachers are not very familiar with the method. Therefore, many of the comprehension failures of Turkish primary school students await urgent solutions. Since on-line studies of reading provide invaluable information related to children's comprehension problems, we find it necessary to assess Turkish primary school students' comprehension strategies by using the think-aloud method in this pioneering study.

Based on the above mentioned rationale, this study aims to address the following research question:

1. Do sixth grade primary school children exhibit different reader characteristics with different texts?

Method

The study is based on a qualitative analysis of data obtained from the think-aloud and free-recall protocols of sixth grade students in Turkey. The children read two texts in their first language (Turkish). For the analysis and categorization of the think-aloud protocols, we used Wade's (1990) categories which were the extensions of bottom-up, top-down and interactive processors. She had determined five main comprehender categories. The good comprehender is an interactive reader who successfully combines bottom-up and top-down processing strategies. The non-risk taker is actually a bottom-up processor who assumes a passive role by failing to go beyond the text to develop hypotheses. The non-integrator is a curious mixture of bottom-up and top-down processors. Drawing on textual clues and

prior knowledge, the non-integrator develops a new hypothesis for every segment of the text, never relating them to previous information in the text. The schema imposer is a type of top-down processor who holds onto an initial hypothesis despite the fact that incoming information conflicts with that schema. The storyteller is an extreme top-down processor who draws far more on prior knowledge or experience than on information stated in the text. Wade mentions a sixth category, indicating that some comprehenders belong to two or more of the categories mentioned above.

Participants

Eleven sixth-grade primary school students at Yalınayak primary school in Mersin participated. Two criteria were considered in determining the participants: having sufficient background knowledge of riding a bicycle and being interested in art. To meet the first criterion was not a problem because bicycles are still very commonly used vehicles especially in small cities in Turkey. Therefore, every 11- or 12-year-old child has experience of riding a bicycle. When the child wants a bicycle, parents buy it if they can afford it. If they cannot, the children who have bicycles share them with their friends. For the second criterion, the art classes teacher provided help. He determined which of the students were interested in art. Moreover, the students were interviewed about their enthusiasm in drawing and painting.

The participants had a stimulating environment for art at the school, due to the efforts of the art teacher. They had an art classroom specifically designed for drawing, painting and sculpting, which

exhibited many samples of student work and which made a visitor feel as if he/she were in an art gallery. All of the walls in hallways were full of paintings made by the teacher and the students. Sculptures produced in classes were also on exhibit, as well as bulletin boards which displayed names of famous artists such as Picasso and Van Gogh.

Materials

One expository text and one narrative text were used in the study. These texts were constructed in such a way that readers could not know for certain what the topic was until they read the last sentence of the text, so that the texts could reveal the processing strategies of the children (Smith, 2006; Wade, 1990).

The first text (referred to as the *bicycle passage*) was an expository text, taken from Wade (1990) and translated into Turkish. This text was specifically preferred firstly because its topic is familiar to Turkish children. The second reason for our deciding to use this text was that it could easily be translated into Turkish because of the syntactic structure of the text sentences and the vocabulary. That is to say, the translation would not create cross-linguistic problems and would preserve the meaning in the original text. To ensure accuracy of the translation, the text was translated into Turkish by four instructors in the ELT department at Mersin University and by the researcher. These five translations were assessed in terms of their common points and also in terms of their cross-linguistic features to obtain the final version of the bicycle passage.

Text 1 used in the study is given below:
Text 1

1. The first thing you will want to do is find a big person to help you out.
2. Have the grown-up hold on tight so that everything remains steady while you climb up.
3. The grown-up must walk beside you and hold on to make sure you don't fall over.
4. Then you can start going faster and faster.
5. When you gain speed, the grown-up will have to run alongside of you to keep up and still hold on.
6. When you have peddled up to a good speed and you feel like you can keep your own balance, you can tell the grown-up to let go.

The second text (referred to as the *sculptor passage*) was a narrative text. This text was constructed specifically for the purpose of this study. It was developed together with the art teacher of Yalınayak Primary School. We assumed that the students had developed an adequate schema necessary for the comprehension of the passage since they were all interested in drawing and painting, and the school provided them with an enriching atmosphere. Text 2 used in the study is given below:

Text 2

1. The new tenant who moved into the basement of our apartment was a rather eccentric man.
2. His clothes covered with dust, and the skin of his hands hardened with too much work gave more the impression of a construction worker.

3. As far as I could see through the half-closed door, the man was hammering something in front of him, giving it a finish with something sharp and pointed like a nail, and shaking the dust off with the help of a brush.
4. And while doing all these, he looked meticulous as if he was treating something living.
5. My interest had intensified.
6. I decided to open up the door.
7. There stood a stone in front of the man.
8. He caught me while I was watching him secretly one day.
9. He said "Come on, get in".
10. A bit hesitant, I entered.
11. The stone in front of him had turned into a bird which had extended its wings as if to fly.
12. "You carved the stone into such a nice figure" I said.
13. And he told me "I'm a sculptor".

The texts used in the study had different discourse structures. In the bicycle passage, the non-interactive readers who failed to understand the gist of the passage before they had processed the final text sentence ("When you have peddled up to a good speed ..."), would have been able to identify the topic of the passage if they could infer "bicycle" from the reference in this final sentence to peddling. That is to say, the final chance for activating the correct schema "riding a bicycle" for the non-interactive readers was to make the correct inference with the help of the linguistic indicator "have peddled". Prior to the final sentence, the text included linguistic markers of the topic such as "hold on tight, climb up, walk beside, gain speed,

run alongside". By using these textual clues, an interactive reader could correctly guess the topic of the text before reading the final sentence. However, it was not possible to find nouns as the vocabulary to help the reader activate the "bicycle" schema in the text for the above mentioned vocabulary which would help the reader trigger the relevant background knowledge were all action verbs. So we can say that although the text had a familiar topic for our participants, it might be a difficult one for them to process since the vocabulary which would serve as the linguistic markers of the topic (hold on tight, climb up, walk beside, fall over, go faster, gain speed, run alongside, etc.) could collocate with various nouns to activate schemas. When the students read the second text sentence, for example, they could relate the vocabulary "hold on tight" and "climb" to "ladder" or "tree" rather than "bicycle". Therefore, in order to activate the correct schema, the participants had to process the local textual clues very carefully as they read sentences 3, 4 and 5 and relate these to the global meaning of the passage. Otherwise, the text could be misinterpreted.

As with the first text, the second text, the *sculptor passage*, explicitly stated the topic of the text in the final text sentence: "And he told me 'I'm a sculptor'." The non-interactive readers who failed to activate the correct schema until they had read the final sentence would have been able to find the topic of the passage upon reading this final sentence, if they knew the meaning of the word "sculptor". The sculptor passage also included linguistic elements which could be used by the students as clues to activate the relevant schema. For

example, lexical items in the text such as "hammering", "something sharp and pointed like a nail", "dust", "brush", "stone" and so on were linguistic markers of the topic. Thus, the children who had background knowledge of the subject could activate the relevant schema by using these clues. The vocabulary which should help the reader activate relevant prior knowledge included both the verb class and noun class vocabulary. Nouns such as "dust", "brush", "stone" and "figure" could serve as the concrete indicators of the topic and help the reader to activate appropriate background knowledge when they were collocated with the verbs such as "to give a finish", "to hammer", "to carve".

As to the superstructures of the texts, being a narrative text, the sculpture passage might be easier for the students to process than the bicycle passage. Since children are exposed to narratives very frequently beginning from early childhood, they may have a more developed formal schema of narratives than the formal schema of expository texts. Therefore, although both texts were appropriate to our participants' background knowledge, the bicycle text can be considered as a more difficult text in terms of its discourse structure because of the reasons stated so far.

Procedures

In this study, the children's reading comprehension strategies were assessed via the think-aloud and the free-recall procedures. The think-aloud procedure is preferred as an on-line measure of reading comprehension strategies. Free recall was used as an off-line measure of reading comprehension.

The think-aloud procedure was based on existing methods (Suh & Trabasso, 1993; Trabasso & Magliano, 1996; Zwaan & Brown, 1996). Before reading the assigned texts, the participants practised thinking aloud by reading a sample text. The text was presented one sentence at a time to the participants. Then they said out loud any thoughts that came to mind following each sentence and before proceeding to the next sentence.

After completing the practice session, each participant first thought aloud for the bicycle passage and then the sculptor passage. During this process participants read each sentence at their own pace and verbalized their understanding of the sentence in the context of the text. Following Wade (1990) and Yau (2005), during the verbal reports of the participants, we asked non-directive probe questions to make each reader clarify what he or she based their hypotheses on.

After the think-aloud procedure, the participants were asked to recall what they had understood from the passages. These were also recorded. The data obtained in this way were transcribed. Then, the researcher and two trained raters independently placed each student in one of the reader categories mentioned in the method section for each text. Fleiss's kappa was used for inter-rater agreement. Kappa coefficient values suggested strong agreement (Fleiss, 1981) as an initial inter-rater agreement both for the first ($\kappa = 0.75$) and the second ($\kappa = 0.79$) texts. Disagreements were resolved through consensus.

Results and Discussion

Table 1 summarizes the qualitative data obtained from the think-aloud protocols of the children.

The think-aloud data pointed to the fact that children's processing strategies may change according to the texts processed. As expected, the students were more successful in processing the sculpture passage than the bicycle passage. It can be seen that only one participant used an interactive reading strategy for the bicycle passage whereas five participants processed the sculptor passage interactively. Moreover, three participants who were placed in the mixed reader category for the sculpture passage, began to process the text as a non-risk taker but turned out to be an interactive reader as they read the text sentence 7. Therefore, it is possible to say that the participants in this study had a more detailed and strong schema related to the sculptor passage which was ready to be activated by the textual clues in the passage.

This result is not surprising because of the reasons we noted earlier related to the

differences in the discourse structure of the texts. As was mentioned in the materials section, in the bicycle text the vocabulary to be used by the processors was rather vague and could be associated with various nouns to develop hypotheses to comprehend the text. Therefore, this might be the reason why three of our participants (Participants 1, 4 and 11) behaved as non-risk takers when they processed this text. Wade (1990) states several reasons why especially young readers tend to process the texts as non-risk takers. One of these is the reader's difficulty in accessing an appropriate schema when it is signalled by the text. We can say that when this signalling is vague for the readers, they may not want to take the risk of making a mistake and preferred a passive role during their interaction with the text.

On the other hand, six of the participants (Participants 2, 3, 6, 8, 9 and 10) were classified as schema imposers for the bicycle passage. One reason why readers over-rely on top-down processing may be related to the fact that they may lack or be

Table 1: Results Related to Think Aloud Protocols of Children

Participants	Passage I: Bicycle		Passage II: Sculptor	
	Processor Category	Finding the topic or not	Processor Category	Finding the topic or not
1	non-risk taker	+	non-risk taker	-
2	schema imposer	+	interactive	+
3	schema imposer	+	mix (non-risk taker+interactive)	+
4	non-risk taker	+	mix (non-risk taker+interactive)	+
5	non-integrator	+	mix (non-integ+story teller)	-
6	schema imposer	-	interactive	+
7	interactive	+	interactive	+
8	schema imposer	+	interactive	+
9	schema imposer	+	interactive	+
10	schema imposer	+	mix(non-risk taker + interactive)	+
11	non-risk taker	+	mix (sc.imp+non-int)	-

unable to use strategies for comprehension monitoring to check their understanding against the text (Wade, 1990). Therefore, although cultural context and schema (Richeit, Schnotz & Strohner, 1985; van Dijk & Kintsch, 1983) play a significant role in the child's interpretation of the texts and although they help the reader fill the gaps for successful top-down processing, when the reader lacks local processing strategies (bottom-up processing) and when she/he heavily relies on preconceived schema, incorrect inferences and misinterpretation may result (Anderson, Reynolds, Schallert & Goetz, 1977). In Turkish culture "adults always support youngsters" is a strong cultural schema, and for this reason, some of the participants (Participants 6, 9 and 10) who were unable to process the local characteristics of the text used this schema to interpret the bicycle text though it led them to develop incorrect hypotheses related to the text. Participants 3 and 8 held on to the "child is learning to walk with the help of an adult" schema as they processed the text. Participant 2, as a schema imposer, activated "to climb up something high" and went on to interpret the rest of the text by trying to force the new information to fit this schema.

Another important observation was related to the children's success in finding the topic of the texts during the think-aloud procedure. Only one student (Participant 7) who used the interactive reading strategy for the bicycle passage was able to activate the correct schema before reading the final text sentence. This participant developed a valid hypothesis about the topic of the text after reading text sentences

3 and 4, and thought aloud as "this text is about riding a bicycle". In contrast, nine children who were identified as non-interactive readers for the bicycle passage could not identify the topic of this text until they read the final text sentence. After reading "When you have peddled up to a good speed and you feel like you can keep your own balance, you can tell the grown-up to let go", these children gave indications of surprise with a big smile on their faces because they realized that they had misinterpreted the text. One of the students (Participant 6) could not understand the gist of the text even after reading the final text sentence.

For the sculptor passage the situation was different. Two of the participants (Participants 8 and 9) were able to develop correct hypotheses about the text as they began to process text sentence 3: "As far as I could see through the half-closed door, the man was hammering something in front of him, giving it a finish with something sharp and pointed like a nail, and shaking the dust off with the help of a brush." Six participants (Participants 2, 3, 4, 6, 7, and 10) thought aloud as "The man could be a sculptor" after reading text sentence 7: "There stood a stone in front of the man." These were expected results because for the children certain parts of the text served to activate the schema better than other words or phrases in the text (Landry, 2002). Three of the participants (Participants 1, 5 and 11) were not able to identify the topic of the text before reading the final text sentence.

The categories presented in Table 1 will be discussed on the sample protocols of the participants. Since the texts were in Turkish and the think-aloud procedure was

conducted in Turkish, we translated the think-aloud protocols into English for the purpose of this article. The analysis undertaken here follows the Turkish transcriptions. We tried to preserve the meaning in the original form of the protocols in the translated versions. The numbers indicate the participants' responses for each text sentence, and the sentences in parentheses indicate the researcher's remarks.

Participant 6

Think-aloud protocol of Text 1

1. For everything you want to do, you should find a grown-up to help you. You should get his idea, consider your idea and then make a decision.
2. In other words, while you are doing something in your mind, he can do just the opposite of what you are doing in order to help you keep your balance, meaning "show the right way to you".
3. While you are doing that, if you are tempted to do something bad, the grown-up will be there to protect you.
4. Even if you insist on going your way, the grown-up will always be with you to prevent you from doing bad things.
5. Now the grown-up has pulled you out of trouble, you can speed up for good things in life.
6. When you are saved and start relying on yourself, you can say to the adult to let you go.

This participant uses the top-down strategy for processing the first text and becomes a schema imposer. Beginning from the first text sentence he activates the schema "adults should always support

youngsters" or "youngsters should respect ideas of adults". Once this schema is activated, he does not change his interpretation of the text even though the incoming information conflicts with the preconceived schema. The think-aloud protocol here illustrates that he holds onto the initial schema and tries to force the new data to fit this schema.

Think aloud protocol of Text 2

1. That is to say, this man is a bit snappish or unfriendly.
2. He is a man who wears rags. He is cold and also dirty.
3. The man is carving something, like a sculpture or something which produces dust, like a tree. He is carving something or giving a shape to something.
4. The thing in front of him is something living, like a tree. He looks as if he is beating something wooden.
5. He was curious to know the thing in front of the man. (What might the man be doing?) A sculpture or giving a shape to something.
6. Since he wanted to see what he was doing, he opens up the door.
7. As far as I know, there's a stone in front of the man. He is beating a stone or a similar thing. He is shaping a stone in front of him. (What might he be doing?) As he is beating the stone, he might be sculpting something.
8. (Silence)
9. When the man caught him, he must have asked ...
10. Since he is a strange man he couldn't figure out why he invited him.
11. That is to say, he turned the stone into a bird which had extended its wings to

- fly. (Who is this man?) He is probably a sculptor.
12. When he saw the stone, everything made sense. He thought he had made a wonderful thing. (What did he do?) The sculpture of a bird.
 13. My guess was correct. (Where did you get the clues from?) Something sharp and pointed, a stone. We worked like that in our sculpture class.
6. Oh! He is teaching him how to ride a bicycle. The child is riding a bicycle. When the child feels that he can do it by himself, he will tell the grown-up to let him go since he doesn't need his help anymore. I first thought that the child was trying to walk but it turns out that the passage is about riding a bicycle.

The think-aloud protocol for the sculptor passage illustrates that this participant becomes an interactive reader when he processes this text. He is capable of grasping every textual clue successfully and using these clues in activating the correct schema. His think-aloud sentences (3), (5) and (7) are the salient examples of his interactive comprehension monitoring strategies.

Participant 9

Think-aloud protocol of Text 1

1. It says that we need a grown-up all the time, the things that we don't know ... That is to say we need them.
2. Here the grown-up ... I couldn't understand.
3. Here it explains some of the duties of the grown-up. Or it says that the grown-up will always watch over you.
4. There is no danger for the child on the road anymore. Then the grown-up probably let him go.
5. The child speeds up. When he speeds up, the grown-up becomes anxious, for he can fall down. For this reason, he goes on holding the child. (What do you think he wants to help the child with?) Here it explains the danger.

This participant can also be classified as a schema imposer. When her think-aloud protocol is analyzed, just as Participant 6, she activates and imposes the "adults support youngsters" or "duties of adults towards youngsters" schemas for the text sentences (1) and (3), and with the text sentence (4), she continues with another schema "adults protecting children from danger". Only when she reads the final sentence, does she grasp what the text is about.

Think-aloud protocol of Text 2

1. Here it writes about the block of flats and it says that the new tenant's behaviours were a little bit strange.
2. It writes that his clothes are also strange. The observer gets the impression that he is a construction worker.
3. This child or man tries to see what he is doing through the half-closed door. He is curious about the thing the man is doing. He is hammering something; this can be the wall or a piece of wood, in order to give it a shape. He is using something pointed like a nail for giving it a finish. In my opinion, he is either a construction worker or an artist-sculptor.

4. In my opinion rather than being a construction worker, he is someone who is interested in painting or sculpting. He works carefully. Maybe he reflects his feelings in it and for this reason he is very meticulous. (How did you understand?) I also like painting very much and while doing this I try to be meticulous. (What clues did you use in the text?) He was using an instrument like a nail, and a hammer.
5. The man or the child becomes curious while watching him through the half-closed door.
6. He is trying to learn what it is. He decides to open up the door.
7. What he sees is a stone. Maybe in the construction field ..., or trying to give a shape to it. Maybe he is sculpting.
8. The man caught him when he realized that somebody had been watching him.
9. He seems to have asked him to come in. In my opinion he came in because he was very curious.
10. On the one hand he was eager to know what he was doing, and on the other hand he was afraid to enter the room.
11. He might have sculpted something. By giving a shape to the stone, he must have sculpted a bird.
12. Seeing the stone, the boy was impressed. (What might be this man's job?) In my opinion he is a sculptor.
13. The man is a sculptor.

In contrast to the way she processed the first text, the same participant (Participant 9) becomes an interactive reader for the second text. Drawing on textual clues and prior knowledge, she develops appropriate hypotheses for every text sentence. The

think-aloud protocol of this student is a striking example of the effect of prior knowledge or prior experience on successful text processing. For example, in the think-aloud sentence (4) she interprets the new information on the basis of her personal experience related to the topic: "I also like painting very much and while doing this I try to be meticulous."

When the think-aloud protocols of all participants are considered in general, their reconstructions of the sculptor passage are more coherent texts compared to their reconstructions of the bicycle passage. The results of this study suggest that prior knowledge of the readers affects their processing strategies.

A majority of research deals with the relationship between readers' inference processes and their reading comprehension (Graesser, Singer & Trabasso, 1994; Halldorson & Singer, 2002; Long & Bourg, 1996; Narvaez, van den Broek & Ruiz 1999; Suh & Trabasso, 1993). These studies also focus on when inferences are made; that is to say, whether they are drawn during reading or after reading. In this respect, we observed that the participant (Participant 6) who was stuck into the "adults always support youngsters" schema during the think-aloud, retained this schema for his recall of the text. Once he processed and reconstructed the text on the basis of this schema, he stored it in his long-term memory.

Recall protocol of Participant 6

When you want to do something you have to get the idea of an adult. After getting his idea and combining it with your own idea, you start the

work. If the grown-up made good suggestions and if you do not consider his suggestions, then you can do bad things in life. However, the grown-up still supports you in order to prevent you from doing bad things. For this, he holds onto your hand in order to make sure you don't fall over. If you start to gain speed in life, he also speeds up and holds you tight. When you become sure that you are safe in life (not doing bad things) by the help of the adult and gain speed just like the pedals of a bicycle, you can tell him to let you go.

Instructional implications

It is very important for classroom teachers to know the variables that affect the reading comprehension of children in educational situations. One of these variables is the reader's background knowledge. In the comprehension process a great deal of meaning construction derives from students' background knowledge, which we call a "schema". The comprehender's schema determines how new information will be processed by leading people to interpret the messages in certain ways. For this reason in reading classes, it is helpful to begin with activities that provide students with the necessary background knowledge related to the text to be comprehended whenever the teacher is aware of the fact that the students lack the required schema. In the case of a sufficient schema, the students can be supported by pre-reading activities to activate the appropriate schema or the teacher can help his/her students by activating not only one

but as many as possible alternative schema to construct meaning from the text when they start reading. Then they can be given help to practise which schema adequately accounts for the incoming information in the text to develop suitable hypotheses. To achieve this end, the teacher can use activities during reading to help check if the activated schema matches the local characteristics of the text.

Our results also reveal that culturally imposed schemas can be very influential on individuals' interpretations of the texts. Therefore, the teacher should carefully analyze the texts to be used in the reading classes. The teacher should try to foresee which textual elements can trigger the culturally imposed schemas of the students and yield misinterpretations of the text.

There are various types of comprehension strategies, and those used by the text processors may change according to the texts being processed. As Landry (2002) states, "different types of texts require readers to adjust their schema and shape constructs with their own experience". Lau (2006) also emphasizes the importance of the type of reading material and the reading task on readers' strategy use. In this respect, the same reader may exhibit different characteristics with different texts. Therefore, in instructional situations it is important for teachers to help their students develop both the content schemas and the formal schemas by providing them with enriched teaching-learning environments. If the students see the multiple relations between a concept and the knowledge that is associated with the concept (semantic maps), they will be more strategic readers. The more

they develop their prior knowledge and build an efficient network of these in their cognitive structure, the more they will be good readers. With respect to this, the results of this study indicate that not only the overt curriculum but also the hidden curriculum (Oliva, 2001; Henson, 2001) of the school plays an important role in the development of the world knowledge of the students. Related to the sculpture passage, the stimulating environment the school provided our participants helped them in learning the concepts related to art.

Since this study points to different reading behaviours of students with different texts, teachers should carefully consider the texts to be used for measurement of comprehension, with particular regard to their students' background knowledge. Such an attitude can be helpful in achieving an objective assessment of student reading comprehension skills.

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