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Flexibility in reading literature

Differences between good and poor adolescent readers

Tanja Janssen[1], Martine Braaksma[1], Gert Rijlaarsdam[1] and Huub van den Bergh[2]
[1] University of Amsterdam / [2] Utrecht University

Previous research has shown that adolescent readers differ in their 'online' processing of literary texts. Differences were found in the extent to which these readers performed certain (meta)cognitive and affective activities while reading literary texts. However, readers might also differ in flexibility; that is, in the extent to which they vary their activities during reading. In this study we examined whether good and poor adolescent readers differ in flexibility. Nineteen Dutch students (ten known as good, nine known as poor literature readers) each read five stories while thinking aloud. Think aloud transcripts were analysed for the reading activities students performed. We used a multilevel model to estimate the mean changes in occurrence of activities during reading, as well as the variances between readers and stories. Results indicated that good readers were more flexible: they tended to change their reading activities both within and between stories, whereas poor readers showed more static patterns of response.

Keywords: reading process, literary response, flexibility, literature teaching, adolescent readers, thinking aloud

Reader response approaches to literature instruction receive much support from literature teachers and researchers. There is a growing consensus that students should be encouraged to bring forward their own personal responses to a literary text instead of searching for the predetermined meanings the teacher has in mind (Applebee & Purves, 1992; Eva-Wood, 2008; Poyas, 2004; Van Schooten & De Glopper, 2006). From an educational viewpoint the key question is how beginning readers of literature can develop their personal responses, and — at the same time — learn how and when to use more sophisticated strategies for literary understanding.

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To begin to find answers to this question, knowledge of the literary reading process — in particular knowledge of differences in literary processing between individual readers — is crucial. Schunn and Reder (1998) discerned three approaches to the study of individual differences in cognitive skill. The *strategies approach* assumes that individuals vary in the processes they use. For example, expert readers use different, more sophisticated reading processes than novices. The *parameters approach* assumes that individuals use the same processes but differ in one or more performance parameters that affect how processes are executed. For example, both experts and novice readers engage in decoding and inferencing, but experts may perform these processes faster or more easily than novices. The *cognitive flexibility approach* assumes that people vary in flexibility. According to this approach individuals may use the same set of processes. The difference lies in how well they adapt their processes to the particular task conditions. Some individuals may be more capable of flexibly changing their processes as the situation changes than other individuals. According to Spiro, Feltovich, Jacobson and Coulson (1991), experts are more cognitively flexible than novices, because experts have multifaceted mental representations which permit a better adjustment to changes and a greater knowledge transfer between tasks. In several studies, a relationship was found between a flexible use of strategies and overall performance on different tasks, such as writing and various types of problem solving (Rijlaarsdam, Braaksma, Couzijn, Janssen, Kieft, et al., 2005; Schunn & Reder, 1998, 2001).

In the present study, we investigate adolescents' flexibility in literary reading. Previous studies have shown that adolescent readers differ in the mental processes they use during their reading of literary stories (e.g., Andringa, 1995a; Janssen, Braaksma, & Rijlaarsdam, 2006; Smith, 1991). Successful readers show a more varied repertoire of reading processes in response to literary narratives than less successful readers. Successful readers also appear to be more emotional and evaluative in their responses to stories than less successful readers, who tend to rely on 'repeating activities', such as paraphrasing or retelling the story content. The question that concerns this paper, is whether and how reading activities evolve during reading. In accordance with the cognitive flexibility theory, we assume that more competent readers of literature are more flexible than less competent readers, in the sense that they adjust their activities to the particular text(passage) they are reading.

Differences between competent and less competent literature readers

A body of research provides evidence of differences between expert and novice readers of literature in their 'online' processing of literary narratives. Most studies use transcripts of concurrent thinking aloud which are analysed in a qualitative way. Andringa (1995a), for instance, compared the responses of adolescent

readers, less experienced adult readers, and literature experts to a Faulkner story. The 22 participants read the story under think-aloud conditions. Results indicated that the expert readers were able to perceive multiple perspectives, while the less experienced readers focused primarily on story events, viewing the story from one perspective only. The adolescent readers showed a limited repertoire of text processing activities compared to the adult readers.

Similar findings were reported by Earthman (1992), who conducted a study involving eight college freshmen and eight graduate students reading two short stories and two poems under think aloud conditions. She found that the freshmen produced less elaborated responses than the graduate students. Freshmen tended to retain their initial view of the text, while graduate students read in a more open manner, searching for alternative interpretations, and assuming varying perspectives.

Hanauer (1999) discussed several empirical expert-novice studies in the domain of literature reading and summarized the main findings as follows:

> "(1) Experts analyse the literary text on multiple levels and integrate this information into their interpretations; novices relate to the local level of the text.
> (2) Experts analyse the communicative context of the literary text and the function of various literary patterns within this context; novices follow the narrative and dialogue structure of the literary text.
> (3) Experts manipulate and focus on specific information in the text in order to produce literary interpretations; novices were very influenced by the local level of the text.
> (4) Experts can explicitly discuss the role of formal schematic and textual features in the construction of an interpretation; novices paraphrase the meaning of the text." (ibidem, p, 24).

Clearly, as in other domains, there is a gap between experts and novices, a gap that cannot be easily bridged by instructional interventions. As Peskin (2010) and others noted, becoming a competent reader of literature is a long, slow process, which may take many years of formal literary instruction. Most adolescent readers are unlikely to attain the expert level. In fact, literature teaching at the secondary school level (at least in the Netherlands) is not aimed at students becoming literature experts. Instead, an important aim is for students to become engaged, independent readers of literature. To gain insight into the variability within this group of beginning literature readers, in addition to expert-novice studies, research is needed in which competent and less competent adolescent readers of literature are compared.

Many think-aloud studies have focused on adolescents' literary responses (e.g., Kletzien & Taylor, 1992; Langer, 1990; Peskin, 2010; Rogers, 1991; Smith, 1991). Smith (1991), for instance, analysed the think-aloud responses of five successful and five less successful ninth-grade students, each reading two short stories. Successful readers were found to use more processes (on average 9.4 versus 7.4)

and to give more personal responses than the less successful readers. Noteworthy were the large differences between individual readers. Such variability among adolescent readers has been found in other studies as well (e.g., Kletzien & Taylor, 1992). Each reader seemed to have a characteristic style of response; the particular story appeared to have little effect on how the student responded.

Finally, Peskin (2010) examined differences from a developmental perspective, by studying how students in different age groups processed the same texts in poetic form and in prose form, using think aloud methodology. She found systematic differences in how students in Grade 4, 8 and 12 processed the poetic and prose versions. 4th Graders tended to focus on the real-world situation to which the poem referred, 8th graders recognized the poetic genre, whereas 12th graders demonstrated both genre recognition, conventional expectations related to poetry, and a focus on textual devices. Only the 12th graders enjoyed the poetic forms more than the prose versions.

In these previous studies a limited number of literary texts has been used (usually one or two short stories). Therefore, these studies do not permit generalizations about differences in reading activities across stories. Moreover, previous studies predominantly reflect a 'strategies approach', as described by Schunn and Reder (1998). The underlying assumption is that readers differ in the processes they use; successful readers, for instance, were found to use relatively more personal, interpretive, and/or evaluative processes than less successful readers. Yet, readers may not only differ in the extent to which they use certain processes, but — according to the flexibility hypothesis — also in the extent to which they change or vary their processes in the course of reading. What appears to be missing in previous research is attention to the *time factor* or the moment in the reading process in which certain activities may occur.

Flexibility in literature reading

'Flexibility' is generally regarded as important in literature reading, although there seems to be little consensus on the definition of the concept. Rosenblatt (1938/1999, p. 98) described flexibility as a particular state of mind, 'a freedom from rigid emotional habits'. This flexibility of mind is, according to Rosenblatt, part of the essence of literature reading and a fundamental goal of literature teaching. Other literary theorists (e.g., Groeben, 2001) have related flexibility to the literary convention of polyvalence (Schmidt, 1989); that is, to the ability to actively assign different meanings to a text. Flexible readers are able to generate multiple meanings in response to a literary text. This ability has been associated with

literary competence; it appears to be distinctive for expert readers, but has been seldomly found in beginning, adolescent readers of literature (Andringa, 1995a).

In reading research, still another definition of flexibility has been proposed. Here, flexible reading involves the context-sensitive use of reading strategies in order to consciously direct the process of meaning construction. According to this definition, flexible readers are able to adapt their strategies to their reading purposes, to the nature of the text, and to the context as a whole (Afflerbach, 2000; Pressley & Afflerbach, 1995; Pressley, 2000). In the present study, we take this definition of flexibility as our starting point.

Flexibility in the use of reading strategies may come to light on two different levels: both within a single text and across different texts. Within the reading of one single literary text, readers may adapt their strategies to the particular moment in the reading process. Readers, for instance, may postpone their interpretation or evaluation until they have reached the end of a story (Vipond & Hunt, 1984). Some evidence of flexibility across texts or text genres is provided by Zwaan (1994). He found that skilled readers (undergraduate students) read more slowly and paid more attention to the surface form of the text when they believed they were reading a literary story than when the same text was presented to them as a newspaper story. Similarly, Peskin (2010) found that some student-readers responded differently to a text in poetic format than to the same text in prose format.

Support for the flexibility hypothesis can be found in writing research as well (Breetvelt, Van den Bergh, & Rijlaarsdam, 1994; Rijlaarsdam, Braaksma, Couzijn, Janssen, Kieft, et al., 2005). Analyses of think-aloud protocols showed that able and less able student-writers tended to rely on the same set of writing activities (e.g., goal setting, generating ideas, re-reading), but differed in the moment in the writing process at which they performed those activities. For example, 'generating ideas' during writing positively influenced the quality of the resulting writing product, but only if it occurred in the middle of the writing process. This distribution of 'generating ideas' appeared to be characteristic for the more able writers. 'Generating ideas' during other stages of writing was not predictive of text quality (Rijlaarsdam et al., 2005, p. 130).

Janssen, Braaksma and Rijlaarsdam (2006) used a similar approach to examine students' literary reading processes. In this study, adolescent students each read five short stories under think-aloud conditions. Each story was divided into four conventional phases (title, introduction, middle part, ending). By comparing frequency counts of reading activities between stories and between story phases, we attempted to ascertain whether readers changed their activities in response to the story phases and to different stories. For good readers this appeared to be the case, at least for some of their reading activities (e.g., emotional responses and problem detecting).

In this previous study, 'story phase' and 'story' were examined as separate factors, independently of each other. Results were based on a simple comparison of frequency counts. In the present study, we revisited the think-aloud data of Janssen et al. (2006) by analysing the data with a more fine-grained multilevel model. In contrast to frequency counts, the multilevel model enables us to simultaneously analyse the effects of 'story phase' and 'story' on students' reading activities.

The present study

The aim of this study was to examine whether adolescent readers of literature who are known to be more competent distribute their reading activities differently, both within and across different short stories, than their less competent peers. We assume that the variability in the distribution of reading activities, within the same story and from story to story, is an indication of a reader's flexibility. Our research question is: Do good adolescent readers show more variability in their use of (meta)cognitive and affective activities during their reading of short stories than poor readers of literature? Our expectation was that this would be the case, both within and across short stories.

Method

Design

In this study a so called 'known groups design' was used (Kerlinger, 1973). This design entails that groups of participants with 'known' characteristics (i.e., level of literary reading ability) are compared in order to test hypotheses about differences between these groups. An advantage of the 'known groups design' is that it increases the power for testing hypotheses, by using extreme groups.

In addition, a think-aloud method was used, since this technique provides descriptions of students' reading processes that are not accessible using other methods (such as registrations of eye-movements, or introspective or retrospective accounts of reading strategies).

Participants

The participants were 19 tenth grade students from three secondary schools in the Netherlands (10 females and 9 males; age: M = 15.83 years, SD = .78). We selected the participants as follows.

First, we asked the students of eight classes whether they would like to participate in a study on literary response, in exchange for a small financial reward. About 60 students volunteered. Next, we interviewed the students' literature teachers, asking them to identify, among the volunteers in their own classes, students who were especially competent and students who were below average in reading literature. During our conversations, all eight teachers were able to identify one or two excellent and one or two poor readers among their students. Literary-interpretation skills, reading motivation, general interest in literature, and book reading frequency were among the criteria mentioned by the teachers.

From this 'known group' we recruited 10 students identified by their teacher as 'good readers', and 10 students identified as 'poor readers' of literature, with an equal number of male and female students in each group. One student withdrew from the study, so that 19 participants remained; 10 good (5 male) and 9 poor readers (4 male).

The two groups were similar in age and ethnic representation. For 17 students Dutch was their first language (L1), while for two students (one in each group) Dutch was their second language (L2). All students were enrolled in the highest stream of secondary education, preparing them for university entry. The students were used to reading difficult texts, none had problems with decoding or word recognition, according to their teachers. Their experience with literature reading and instruction at school, however, was very limited. Before the start of the study the students (good and poor readers alike) had received about eight months of formal literature instruction. (In the Netherlands formal literature instruction starts in tenth grade).

To check whether the teachers' assessments in the interviews were confirmed by other data, we asked the students for their school grades and a self-rating of their literary competence. The two groups were found to differ significantly in average grade for the school subject of Dutch language and literature, with good readers receiving higher marks (M = 7.80, SD = .91) than poor readers (M = 6.56, SD = 1.0) on a ten point scale. The groups also differed in how they assessed their own literary competence, with good readers giving themselves higher marks (M = 7.78, SD = .97) than poor readers (M = 6.88, SD = .83). This indicates that good readers were more confident about their literary reading skills than poor readers. Students' average grades and self-ratings corresponded in most cases to the assessment their teacher had provided in the interviews.

Stories

We used authentic short stories, written by recognized authors of modern literary fiction. First, we pilot tested 10 stories by having each story read under think-aloud conditions by two to three volunteers (students not included in the sample).

On the basis of this pilot we selected five short stories that proved to be unfamiliar to the students, and were challenging without being too difficult. The five stories were short (M = 729 words; SD = 171; about 3 pages in print) so that thinking aloud would not take more than about 20 minutes per story.

Each story contained an easy-to-follow surface plot yet invited multiple interpretations beyond the explicit story line. *The Birthday Calendar* by Marianne de Nooyer is a light-hearted story about a boy who — out of boredom — gives marks to his family members, writing them down on a birthday calendar. *Hullay* by Cees Nooteboom is a tragic story about a boy who sees his nephew drowning, but does nothing to help him. *And Then It Was Our Turn* by Kader Abdolah is a story about a family suffering under the dictatorship of the Shah of Persia. Jeanette Winterson's *The Three Friends* is a witty, postmodern fairy tale about three friends searching for 'that which cannot be found'. Primo Levi's *The Interview* is a humorous, sociocritical story about a man who is being interviewed by an alien about life on earth.

The first three stories were originally written in Dutch; for *The Three Friends* and *The Interview* we used authorized Dutch translations.

For the benefit of thinking aloud, we divided each story into 10 to 15 segments, following the paragraphing in the original text. The first segment contained the title; the following segments each consisted of one or two story paragraphs (M = 69.62 words per fragment, SD = 12.86). Each story fragment was copied onto a PowerPoint slide.

Procedure

Two individual sessions were held with each student at the research institute. A session took about 75 minutes, and was led by one of the researchers or a research assistant. During the first session participants watched a short video (two minutes) of a student thinking aloud while trying to solve math problems. The video was intended to acquaint students with the activity of verbalizing their thoughts during task execution, without cueing particular types of literary response (Ericsson & Simon, 1993).

Participants were then given the following instructions: 'You are about to read a few short stories. We would like you to think aloud as you try to make sense of them. Try to put into words everything that is going on in your mind while you are reading.' We asked students to talk as much as possible, emphasizing that there were no right or wrong responses.

Students read the short stories fragment by fragment from a computer screen. Two stories were read during the first session and three stories during the next session, about one week later. For each story we provided some contextual

information, by showing the published version, a picture of the author, and some titles and publication dates of literary works.

The readings were self-paced. By pressing a key on the computer the student could advance to the next story paragraph or return to a previous one. A bar indicated the number of story paragraphs already processed and still to follow. If the participant paused for more than 4 seconds during thinking aloud, the

Table 1. *Coding scheme of students' think-aloud responses*

Reading activity		**Description**	**Sample responses to** *The Three Friends*
RET	Retelling	Retelling, paraphrasing or almost literally repeating story content.	"So, there were three friends and they found another one."
INFER	Inferencing	Stating information not explicitly given by the text, filling in gaps, drawing conclusions, making predictive or explanatory inferences.	"A palace. So they must be rich." "I think something strange is going to happen."
PROB	Detecting problems	Detecting a problem, pointing out a knowledge gap or miscomprehension.	"I don't understand what this means." "What does 'the wainscotting' mean?"
ASSO	Associating	Relating the story to personal experiences or knowledge of the world; making intertextual links.	"I have two friends myself." "The three friends remind me of the three musketeers."
ANA	Analysing	Noticing aspects of form, structure, style or genre; connecting text parts.	"It starts like a fairy tale." "The author uses very short sentences."
EVA	Evaluating	Providing positive or negative evaluations of (parts of) the story.	"I like how this is written (…)." "A bizarre story. I don't like it at all."
EMO	Emotional Responding	Verbal and nonverbal emotional responses to (parts of) the story.	Laughing, sighing, moaning "How sad!" "Yuk!"
META	Metacognitive Responding	Monitoring one's own reading, or reflecting on one's own reading habits or preferences.	"I'll just have to reread this part." "I am pretty used to reading this kind of story."
OTH	Other Activity	Responses that cannot be placed into any of the previous categories.	E.g., reading aloud, commenting upon the think-aloud task, incomprehensible statements.

experimenter provided general prompts (e.g., what are you doing? Or: remember to think aloud). More specific directions were avoided in order not to cue particular types of response. Students were given as much time as they needed.

The think-aloud sessions were audio recorded on the computer; recordings were transcribed verbatim.

Protocol analysis

We collected 92 transcripts, from 19 participants thinking aloud while reading four to five stories (three recordings failed due to technical problems). The transcripts were segmented into meaningful units or statements. To analyse the statements we developed a coding scheme of cognitive and affective reading activities, based on Andringa's scheme of literary reading processes (Andringa, 1995b). Two of the researchers tested the scheme on 30 transcripts collected in our pilot study and revised some of the categories to fit the material. The final coding scheme consisted of eight reading activities, covering most of the student statements in the pilot transcripts (see Table 1).

Student statements were treated as individual cases: each statement was coded. In some cases two different codes could be assigned to one statement; then, two codes were assigned. In Table 2 we present an example of a coded protocol fragment.

All statements in the transcripts (n = 4347) were coded by one of two coders. In order to test the inter-rater reliability a random subset of 10% of the student statements (n = 413) was coded by the two coders independently. The inter-rater agreement was sufficient (Cohen's Kappa .81). Disagreements were resolved in discussion between the two coders.

Descriptive statistics

The total number of statements during thinking aloud varied per student, ranging from 46 to 436 with an average of 229 statements (*SD* = 105). To take differences in number of statements into account, we used proportions (relative frequencies) instead of counts. Table 3 presents the mean proportions of each of the reading activities in the transcripts.

As shown by Table 3, some activities occurred relatively often in the think-aloud transcripts (Retelling, Inferencing, Problem Detecting), whereas other activities were relatively rare (Associating, Analysing, Evaluating, Emotional Responding, Metacognitive Responding). The good readers among the participants generally engaged less often in Retelling or Inferencing, but showed more signs of Problem Detecting, Evaluating, Emotional Responding, and Metacognitive Responding

Table 2. Example of a coded transcript fragment.

	Story fragment	Student's response	Coding
1.	The three friends	[Reads aloud] The three friends.	OTH
		[Laughs]	EMO
		The three little pigs.	ASSO
		Like those comic characters; Huey, Dewey and Louie.	ASSO
		[Goes to the second story fragment]	
2.	Once upon a time there were two friends who found a third. Liking no one better in the whole world, they vowed to live in one palace, sail in one ship, and fight one fight with equal arms.	[Reads silently]	
		[Laughs].	EMO
		It is not really a nice beginning.	EVA
		[Rereads aloud]. "Two friends who found a third".	OTH
		A palace. So they must be rich.	INFER
		I was thinking … [inaudible words].	OTH
		[Goes to the third story fragment].	
3.	After three months they decided to go on a quest. 'What shall we seek?' they asked each other. The first said, 'Gold.' The second said, 'Wives.' The third said, 'That which cannot be found.' They all agreed that this last was best and so they set off in fine array.	[Reads silently]	
		So, they were men.	INFER
		If it cannot be found, why would you go and look for it?	PROB
		To look for wives would be much more fun in my opinion.	EVA

than poor readers. No differences between the two groups of readers were observed in Analysing and Other Activity.

Table 3 also reveals large differences between stories for some activities; Retelling, Inferencing, Evaluating, Emotional Responding, and Metacognitive Responding ($\chi 2 \geq 11.74$; $df = 1$; $p < 0.001$). For other activities (Problem Detecting,

Table 3. Mean proportion (M) and standard deviations (SD) per activity; overall, for good and poor readers, as well as differences between stories.

			Reader							
	Total		**Good**			**Poor**			**Story**	
Activity	*M*	*SD*	*M*	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*
Retelling	0.21	.41	0.10	.05	205	0.27	.22	696	0.21	.04
Inferencing	0.21	.41	0.18	.09	354	0.26	.09	569	0.21	.04
Problem Detecting	0.12	.32	0.15	.07	279	0.10	.05	238	0.12	.04
Associating	0.08	.27	0.10	.05	175	0.07	.10	181	0.08	.01
Analysing	0.04	.19	0.04	.04	79	0.04	.03	85	0.04	.01
Evaluating	0.07	.25	0.12	.07	195	0.04	.03	95	0.07	.03
Emotional Responding	0.07	.26	0.10	.07	189	0.05	.03	128	0.07	.03
Metacogn. Responding	0.03	.18	0.04	.03	94	0.02	.02	47	0.03	.01
Other Activity	0.17	.38	0.19	.06	346	0.14	.14	393	0.17	.02

Associating, Analysing, and Other Activity) the differences between stories are less marked ($\chi 2 \leq 3.25$; $df = 1$; $p \geq 0.071$).

Analysis

Descriptive statistics do not provide an answer to our research question, regarding the distribution of reading activities within and across stories. For this, we need to show differences in the distribution of activities over the reading process as a whole, depending on the reader's literary competence level in conjunction with the particular story being read. Therefore, we used a multilevel model. In this model mean changes in occurrence of reading activities during reading as well as the variance (types) of reader and the variance between stories were estimated. (See the Appendix for details).

Results

In this section we will first focus on how reading activities are distributed over the reading process, averaged over good and weak readers and stories. Then, we will examine differences in the distribution of reading activities between individual readers and between stories (within readers).

Differences between good and poor readers across five stories

To examine changes in the mean occurrence of activities during reading (averaged over readers and stories) we will first focus on the fixed parameter estimates of the model. The fixed parameter estimates for good and poor readers are summarized in Table 4. In Table 4, the mean (β_0), and mean linear change with time (fragment; $\beta_1 * fr_{ijk}^1$), and mean quadratic changes ($\beta_2 * fr_{ijk}^2$) during reading are presented. As it concerns dichotomous variables, the parameter estimates are expressed in logits. (See Appendix).

Table 4 shows that the distribution of activities over the reading process differs between good and poor readers. Not only does the size of the estimates (in logits) differ between the two groups, but so does the shape of the estimated mean curve; Retelling needs a second-order polynomial for good readers (mean quadratic change), whereas for poor readers the (logit of the) probability does not change during the reading process. Thus, only for good readers does the occurrence of Retelling change during reading. The same holds for Inferencing and Emotional Responding. The averages for Problem Detecting, Analysing, Evaluating and Metacognitive Responding are, on the other hand, more or less equally distributed over good and poor readers' reading processes.

The estimated parameters in Table 4 are difficult to interpret since they are expressed on a logit scale (and the transformation of logits to proportions is a nonlinear transformation). Interpretation can be facilitated by approximating the

Table 4. Parameter estimates by reading activity; in logits from the fixed part of the model (see Equation 1 in Appendix); standard errors in brackets.

	Good readers			Poor readers	
Activity	β_0 *Mean*	$\beta_1 * fr_{ijk}^1$ *Mean linear change with time*	$\beta_2 * fr_{ijk}^2$ *Mean quadratic change*	β_0 *Mean*	$\beta_1 * fr_{ijk}^1$ *Mean linear change with time*
Retelling	-2.03 (.21)	0.57 (0.26)	-1.12 (.59)	-1.02 (.35)	
Inferencing	-1.53 (.18)	.41 (.20)		-1.09 (.15)	
Problem Detecting	-1.83 (.16)	.37 (.17)		-2.17 (.18)	.55 (.29)
Associating	-2.42 (.20)	-1.38 (.35)		-2.62 (.47)	-.66 (.33)
Analysing	-3.17 (.25)			-3.19 (.26)	
Evaluating	-2.06 (.20)			-3.08 (.29)	
Emotional Responding	-1.99 (.22)	.59 (.24)	-1.49 (.61)	-2.86 (.15)	
Metacognitive Responding	-3.15 (.28)			-3.98 (.43)	
Other Activity	-1.69 (.14)	-.62 (.17)	1.36 (.44)	-1.79 (.37)	

[1] The actual value of the fixed parameters depends on the scale of the fragments (fr_{ijk}). For convenience sake fr_{ijk} is rescaled as (fr_{ijk}– 7) / 10.

corresponding proportions for each story fragment. These proportions can be interpreted as the likelihood that a given activity occurs in response to a particular story fragment. For instance, for Retelling the logit for poor readers equals -1.02, which corresponds to a proportion of 0.26.

For poor readers this proportion does not change during the reading process; that is, during each story fragment the likelihood that a poor reader will engage in Retelling equals 0.26 (averaged over poor readers and stories). For good readers, the mean likelihood to engage in Retelling during the first fragment is estimated as 0.06 (logit –2.775), during the 7th story fragment as 0.12 (logit -2.03), and during the last fragment as 0.09 (logit -2.29). In other words, the occurrence of Retelling for good readers depends on the story fragment; both at the beginning and at the end of the reading process, good readers are on average less likely to engage in Retelling.

Figure 1 presents the approximated mean likelihood of occurrence of Retelling and Emotional Responding, activities that students used relatively often. The horizontal axis in each panel represents the story fragments (1 to 15). On the vertical axis the estimated mean likelihood of occurrence is presented, for poor (P) and good (G) readers. The scale of the vertical axis differs for the two activities, due to different levels of probability of occurrence.

For poor readers, the mean likelihood of occurrence of Retelling and Emotional Responding remains constant over their reading process, as indicated by the straight lines in Figure 1. In other words, poor readers do not change these activities during reading a story. For good readers, on the other hand, the mean likelihood of occurrence of Retelling and Emotional Responding fluctuates over the course of reading, showing a curvilinear pattern. The mean probability of occurrence gradually increases as the story reading progresses, and decreases again towards the end of the reading process. In the middle part of the reading process good readers are more likely to engage in Retelling and Emotional Responding than at the beginning or at the end of the stories. In other words; for good readers changes over the reading process can be observed.

All in all, good and poor readers not only differ in the overall frequency of activities (as shown in Table 3), but also in the mean distribution of activities over the course of reading. Poor readers tend to show unvarying patterns of response compared to good readers.

Differences between individual readers

Thus far we have reported averages over readers and stories. Differences between individual readers and between stories (within readers) should be taken into account as well. These are expressed in the random part of the multilevel model. The variance estimates are presented in Table 5. The fixed parameters are allowed to

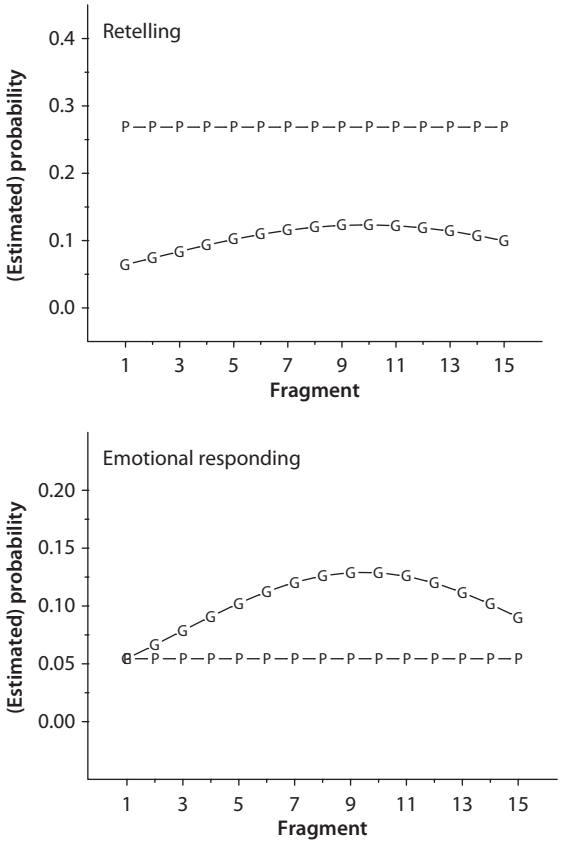

Figure 1.

vary between readers (S^2_{v0k}), as well as between stories within readers (S^2_{u0jk} for variance in average; S^2_{u1jk} for variance in linear change, and $S_{u0jk,\ u1jk}$ for the covariance between both). (See Appendix).

The variance estimates in Table 5 are presented on a logit scale. They cannot be directly transformed to variances of proportions. What is apparent from Table 5, is that the differences between individual good readers are relatively small compared to the differences between poor readers. For good readers, the between-subject variances range from 0.12 to 0.48, for poor readers the estimates vary between 0.13 and 1.92. For example, the between-subject variance for Retelling by good readers is 0.27, whereas the estimate for poor readers is much larger: 1.10. A similar difference is found for Problem Detecting, Associating, Analysing, Metacognitive Responding and Other Activity. In other words, good readers show a relatively low variance in the distribution of most of their activities, whereas poor readers show a relatively high variance.

Table 5. Variance estimates by reading activity; in logits from the random part of the model (see Equation 2 in Appendix); only significant parameters ($p < 0.05$) are presented.

Activity	**Good Readers**				**Poor Readers**			
		Differences between stories				*Differences between stories*		
	S^2_{v0k}	S^2_{u0jk}	$S_{u0jk,\,u1jk}$	S^2_{u1jk}	S^2_{v0k}	S^2_{u0jk}	$S_{u0jk,}$	S^2_{u1jk}
	Variance between readers	*Average*	*Covariance*	*Mean linear change with time*	*Variance between readers*	*Average*	*Covariance*	*Mean linear change with time*
Retelling	0.27	0.34			1.10	0.08		
Inferencing	0.25	0.39			0.16	0.21		
Problem Detecting	0.15	0.57	-0.29	2.24	0.19	0.27	0.30	4.57
Associating	0.24	0.36	0.58	5.85	1.92	0.06	0.74	7.17
Analysing	0.36	0.76			0.46	0.81		
Evaluating	0.32	0.23			0.53	0.80	-0.03	9.67
Emotional Responding	0.38	0.15			0.13	0.00		
Metacogn.Responding	0.48	0.80			1.33	0.78		
Other Activity	0.12	0.12			1.22			

Differences between stories

The between-story variances, in contrast, are generally larger for good readers than for poor readers. As shown in Table 5, the between-story variance of Retelling for good readers is 0.34, whereas the estimate for poor readers is rather small: 0.08. A similar difference is found for Inferencing, Problem Detecting, Associating and Metacognitive Responding. This indicates that good readers' activities are more influenced by the particular story than the poor readers' activities during reading.

To allow further interpretation we transformed the estimates to proportions. Figure 2 shows the differences between individual readers and between stories for Retelling and Emotional Responding. The differences are expressed as the likelihood of occurrence of these activities. The left-hand panels show the differences between *readers*; each line represents one individual reader responding to four to five different stories. The right-hand panels depict differences between *stories* (within readers); each line represents one individual reader responding to one particular story.

In the left-hand panel for Retelling, the lines of individual poor readers are relatively far apart. This indicates that there are large differences between poor readers in the likelihood of engaging in Retelling at any given point in the story. The large variance is caused by two poor readers who are more likely to engage in Retelling than their peers. Noteworthy is that individual poor readers do *not* differ in their mean pattern of Retelling during reading; all poor readers share a steady, unchanging pattern of Retelling in contrast to good readers. The latter form a homogeneous group, with regards to the likelihood of occurrence of Retelling as well as to the curvilinear pattern of Retelling.

The right-hand panel for Retelling in Figure 2 shows that for good readers the estimated probability of occurrence of this activity fluctuates between 1 and 45%, depending on the story, and the fragment within the story. The lines of the poor readers are closer together. In other words, the effect of the particular story on the approximated occurrence of Retelling is relatively small for poor readers.

The left-hand panel for Emotional Responding in Figure 2, shows that the lines for good readers are relatively far apart, indicating differences between individual good readers. However, their pattern of Emotional Responding is similar; there is a high estimated probability for emotional responses to occur in the middle of the reading process. The right-hand panel shows that the estimated variance between stories is relatively large for good readers and relatively small for poor readers. In other words, good readers are more likely than poor readers to change the pattern of their emotional response depending on the particular story they are reading.

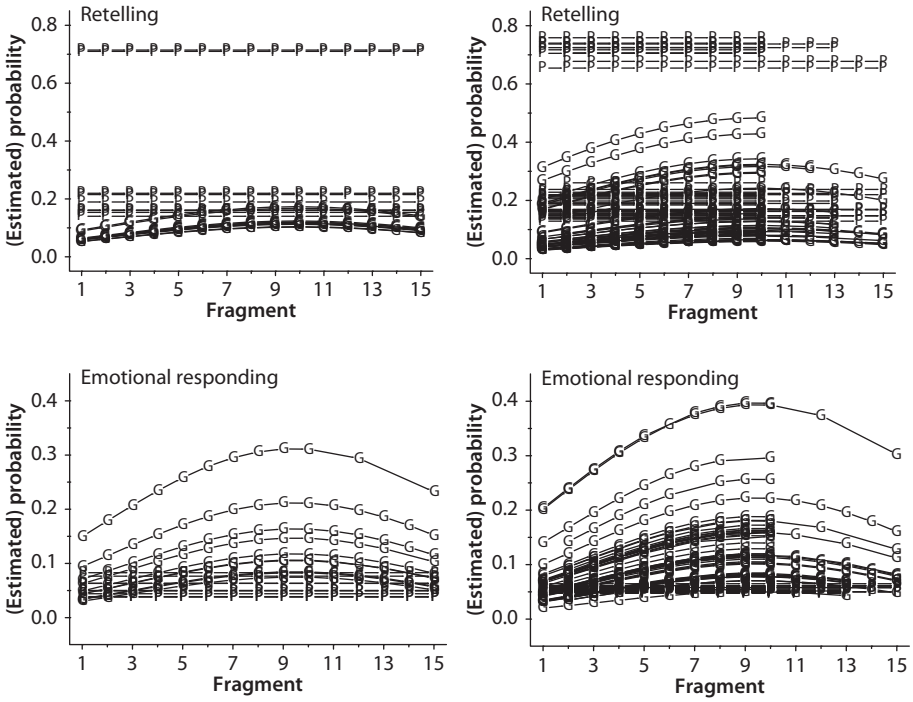

Figure 2.

Discussion

In a previous study we found indications that good and poor adolescent readers of literature differ in their use of cognitive and affective activities during reading (Janssen et al., 2006). It appeared that the two groups not only differed in the overall frequency of particular reading activities (as shown in previous studies of adolescents' reading processes), but also in their *distribution* of activities over the reading process and in response to different stories. Good readers, for instance, adapted some of their reading activities (emotional responding and problem detecting) to the particular story they were reading, whereas poor readers showed a monotonous pattern of response.

In the present study we revisited our data, by positioning them in the light of Schun and Reder's (1998) flexibility theory, and by using a more sophisticated multilevel model (instead of simple frequency counts) for the analysis. Our findings confirmed that good readers showed more variability in activities during reading than poor readers. The occurrence of Retelling and Emotional Responding, for example, was found to change during good readers' reading processes, whereas no changes were observed for poor readers. Good readers' retellings and emotional

responses were most likely to occur during the middle part of the story, while for poor readers the particular story fragment did not influence the estimated probability of occurrence of retellings and emotional responses.

The results of this study also showed that good readers were more likely to change their activities in response to different short stories than poor readers. For example, good readers were more likely to engage in Retelling in response to one story than in response to another story. It appeared that good readers are context-sensitive in their use of the retelling strategy. Poor readers, on the other hand, did not change their retelling activity in response to different stories. The particular story appeared to have no influence on their use of Retelling. Thus, we demonstrated that, although poor and good adolescent readers engage in the same set of activities during reading, they differ in their distribution of activities on two levels; both within and across stories. This finding provides support for the hypothesis that good readers are more flexible and more sensitive to features of the story they are reading compared to their weaker peers.

Limitations of the study

There are a number of limitations to our study. First of all, it was a small scale study, involving 19 participants. Due to the labour-intensive nature of the think-aloud method, we had to find a balance between the number of participants and the number of observations per participant. We opted for a relatively large number of observations for each participant.

Second, by recruiting participants from two extreme 'known' groups, we treated the ability to read literature as a dichotomy (good versus poor in literature reading, according to their literature teacher). Obviously, literary competence should rather be viewed as a continuum, varying from very competent to very incompetent. A more precise indication of students' literary competence could be derived from students' post-reading responses to stories. Such responses can be regarded as an immediate 'outcome' of a reading process. The relationship between outcome and preceding reading activities should be studied, in order to determine which patterns of activities are predictive of the quality of students' post-reading responses.

Third, we dealt with reading activities in a univariate way, although the activities may interact with each other. The increase we observed in Problem Detecting, for instance, may be related to a decrease in other activities such as Associating. When students experience increasing problems in making sense of a story, they probably are no longer able to relate the story to personal experiences or world knowledge (or vice versa). In addition, activities may form adjacent, functionally related pairs. For instance, Problem detecting may be followed by Inferencing.

First, the reader points out a gap in the story or in his or her knowledge base, and then attempts to fill the gap by making inferences. Some combinations of activities may have a higher probability of occurrence at a certain moment in the reading process than others. Such interactions and combinations of reading activities can only be studied with a larger sample size, by analysing the occurrence of several activities simultaneously.

Furthermore, we confined our study to a particular literary genre; to short stories with a clear story line, but inviting multiple interpretations. The question arises as to whether the observed differences in flexibility between good and poor readers are genre-specific. Different stories elicit different responses, especially in good readers. Possibly, differences in (patterns of) reading activities are smaller for one type of story (e.g., realistic stories), and larger for another type of story (e.g., fantasy). The interplay between particular narrative genres and student readers' processing activities should be examined in future studies.

One might argue that our findings are due to an interaction between the type of participant and the demands of thinking aloud. Poor readers may be less confident and less able to verbalize their thoughts and feelings during reading (let alone vary their response patterns) than good readers. Possibly, this study reflects differences in verbal ability in addition to differences in literary reading competence. Yet, poor readers' verbal responses in our study were not less extensive than those of good readers. Indeed, poor readers produced on average 54 statements in response to a story, compared to 41 statements for good readers. Therefore it seems unlikely that the observed differences in reading activities can be solely attributed to differences in verbal ability.

Despite these limitations, our study has yielded new information about differences in adolescents' literary processing. The strategies approach, as described by Schunn and Reder (1998), cannot account for the observed differences for it assumes that different groups of readers use different processes. We found that different groups of readers used more or less the same processes, but in a different configuration. A novel contribution of our study is that it makes two factors visible which hitherto have been neglected in think-aloud studies of literary reading processes: the *time factor* or moment in the reading process (as indicated by story fragment) and the *text factor* or the necessity of using multiple literary texts instead of just one or two, as in most previous studies.

Implications for the teaching of literature

In the present study we did not examine the type of literature instruction our participants had received at school. Therefore, we cannot relate students' literary reading performance to particular teachers or teaching methods. Nevertheless, we

believe that our findings have some relevance for the teaching of literature. In general, teachers and textbooks tend to focus on reader response as the end result of a reading process; they pay little attention to the process itself (Andringa, 1995b). To bring weak adolescent readers of literature to a higher level of expertise, it is clearly not enough to encourage them to express their personal responses to a literary text in the post-reading stage. Nor does it seem advisable to provide a fixed set of reading strategies to be applied to all stories or anywhere in response to a story. Instead, weak readers must learn to differentiate their responses, and to use strategies selectively, depending on the reading phase and the particular literary text at hand.

A process-oriented approach to reading short stories has been developed by Janssen, Braaksma and Couzijn (2009). In a series of experimental studies, an instructional method was developed and tested in which tenth grade students learned to question the text before, during and after reading. Students also learned to generate hypotheses, to fill in 'gaps' in the story, and to substantiate their story interpretations on the basis of textual clues. Students were given explicit *how*, *when* and *why* information concerning the use of self-questioning as a reading strategy, and they practiced the strategy while reading six different short stories. Results indicated that the instructional approach had beneficial effects on students' reading processes, story understanding and story appreciation.

More evidence-based methods need to be developed and tested for fostering secondary school students' literary reading strategies. Such methods must take the openness and aesthetic qualities of literary texts into account, as well as encourage students to think about their mental processes during reading and to use relevant strategies at appropriate moments.

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Appendix

To examine the variability of activities during reading we modeled the occurrence of each activity as a function of 'story fragment'; an approximate indication of the moment in the reading process at which an activity occurred. Furthermore, a comparison between good and poor readers' distribution of activities encompasses both mean changes of activities during the reading process as well as the variance between readers and the variance between stories (within readers). To model these occurrences of activities, a multilevel model appears to be appropriate. Such a model takes the hierarchy of the data into account. Observations of the occurrence of activities are considered to be nested within story fragments, which in turn are nested within stories and readers. This quality of multilevel models makes it possible to analyse the occurrence of activities for individual readers. There is no need to aggregate over all activities (resulting in frequencies per reader or per group, as in Table 2). In a multilevel model, the mean changes of an activity and the variance between stories (within readers) and between readers can be estimated simultaneously.

Let Y_{ijk} be an indicator variable, which indicates whether fragment *i* of story *j* of individual *k* is analysed ($Y_{ijk} = 1$) or not ($Y_{ijk} = 0$). Our aim is to show that the occurrence of an activity varies during reading, and that the occurrence varies between stories as well as between readers. In order to model the relation between the dichotomous dependent variable and the story fragment, a polynomial function is used.

$$Logit\,(Y_{ijk}) = \sum_{p=0}^{p=P} \beta_p * fr_{ijk}^{\,p} \qquad (1)$$

($i = 1, 2, \ldots I_{jk}$; $j = 1, 2, \ldots, J_k$; $k = 1, 2, \ldots K$).

In equation 1, the story fragment is indicated by fr_{ijk}. So, powers of fragment are used to describe the occurrence of (the logit of) Y_{ijk}.[1] That is; the occurrence of an activity at a certain story fragment is written as a function of $fr^0 + fr^1 + fr^2 \ldots$. Such polynomials can take almost any shape depending on the number of parameters (P) and the numerical value of the regression weights (β_p). This, however, can be considered as an empirical matter; the shape of the polynomial (i.e. the number of polynomials needed) can be estimated from the data. The chosen model must fulfil the following requirement; higher order elements are only taken into account if all lower order elements have reached significance. That is, a second order element ($\beta_2 * fr^2$) is only taken into account if the first order element ($\beta_1 * fr^1$) has reached significance. This polynomial describes mean changes in the occurrence of an activity; it describes differences in mean occurrence (over readers and stories) during reading and is referred to as the fixed part of the model.

In equation 1, no differences between readers are allowed in their distribution of a reading activity over the reading process. However, not all individuals may show the same changes during the reading of a story. Readers may, for instance, differ with regard to the intercept ($\beta_0 * fr^0$) or linear change ($\beta_1 * fr^1$) during the reading process. This comes down to loosening the restriction that regression weights (β_p) are invariant over individuals. If there is a difference between individuals, this will show up in the variance of the particular regression weight. From a modeling point of view, the p^{th} regression weight of individual k is considered as a deviation from the average regression weight. We define a residual score, say v_{pk}, which defines the deviation of reader k from the average of the p^{th} regression weight. In that case, the variance of this residual score ($S^2_{v_{pk}}$) is indicative of the differences between readers in this regression weight. So, differences between readers in the intercept show up in $S^2_{v_{0k}}$, and differences between readers in linear change during the reading process show up in $S^2_{v_{1k}}$.

The same line of reasoning holds for differences between stories. A reader may perform different activities in response to different stories, and we also need to model these differences. So, we consider the occurrences of an activity in story j as deviation from the mean occurrences of the k^{th} reader. Hence, u_{pjk} denotes the deviation for the p^{th} regression weight for story j of reader k. The variance between stories within readers may be pooled in order to get an estimate of the differences between stories (within readers).

Please note, that for every regression weight a variance component can be estimated. The number of variance components needed for an adequate description of the differences between stories can be considered an empirical matter (which is evaluated by means of the significance of the estimates).

So far, we have not yet distinguished between good and poor readers of literature. Implicitly, we have assumed that an activity shows the same course over the reading process in both groups. In order to test differences between the two groups we need to define two dummy-variables, say S_{ijk} and W_{ijk}, which are turned on (equals 1) only if a good or a poor reader is involved, respectively. Now we can write the model as follows:

$$Logit\,(Y_{ijk}) = [S_{ijk} \sum_{p=0}^{p=P} (\beta_p^p + u_{pjk} + v_{pk})^* fr_{ijk}^p\,] + [W_{ijk} \sum_{q=0}^{q=Q} (\beta_q^q + u_{qjk} + v_{qk})^* fr_{ijk}^q\,] \qquad (2)$$

($i = 1, 2, \ldots I_{jk}$; $j = 1, 2, \ldots, J_k$; $k = 1, 2, \ldots K$).

In equation 2 there are two polynomial functions; one for good readers (the first part) and one for poor readers (the second part). Both functions are allowed to differ with respect to the numerical value of the regression weights, as well as to the number of regression weights needed to give a description of the observed occurrence of an activity. The fixed part of these

1. As the dependent variable is dichotomous, a logit transformation is used; Logit (Y_{ijk}) = Ln (Y_{ijk} / [1 – Y_{ijk}]).

polynomials ($\Sigma\ \beta_p^p$ and $\Sigma\ \beta_q^q$) describes mean changes in the occurrence of an activity during the reading of a story. Differences between good and poor readers will show up in the number of parameters (regression coefficients) needed to get an adequate description, and/or in the numerical value of these regression coefficients. Differences in the fixed part of the model are indicative of average differences between good and poor readers. It is assumed that the likelihood of occurrence of activities varies for good readers, whereas for poor readers the degree of variability is smaller.

The variance of the residual scores ($\Sigma\ (u_{pjk} + v_{pk})$ and $\Sigma\ (u_{qjk} + v_{qk})$) represents the random part of the model. In this part differences between good and poor readers and between stories (within each group of readers) are expressed.

Author's address

Tanja Janssen
Research Institute of Child Development and Education
University of Amsterdam
Nieuwe Prinsengracht 130
1018 VZ Amsterdam
the Netherlands.

T.M.Janssen@uva.nl