Literacy development of low-achieving adolescents: The role of engagement in academic reading and writing

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Chapter 1

Reading comprehension proficiency and development: the roles of affective, cognitive and behavioral engagement in the classroom

In search of ways to increase academic success of low-achieving adolescents, this longitudinal study explored the roles of affective, cognitive and behavioral engagement in reading comprehension proficiency and development of a group of 63 students. In the course of grades 7 to 9 students’ self-efficacy beliefs, intrinsic values, utility values, reported effort and reported self-regulation were investigated. In addition, the time students were on-task in literacy activities in language arts and social studies was coded. Furthermore, students’ reading comprehension was measured in each grade. Intrinsic value and behavioral engagement in social studies explained differences in reading comprehension among low-achieving adolescents, whereas self-efficacy beliefs, utility value, reported effort, reported self-regulation and behavioral engagement in language arts did not. More importantly, the study shows that although the adolescents in our study are low-achieving; they improve significantly in reading comprehension proficiency from grade 7-9. However, not all low-achieving adolescents progressed to the same extent. Although engagement is regarded as an important predictor of reading proficiency in the literature, none of the affective, cognitive and behavioral engagement aspects investigated could explain differences in reading development among low-achieving adolescents in a meaningful way. Theoretical and practical implications of this study are discussed for a better understanding of the role of engagement in low achieving adolescents’ literacy development.

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2 This chapter is based on:
1.1 Introduction

Adolescents need to acquire sufficient reading comprehension skills to participate successfully as students and citizens in school and life (Alvermann, 2001; Biancarosa & Snow, 2006). Yet, studies have indicated that many adolescents have difficulties in comprehending texts at levels required by the school curriculum and from the view of future professions and citizenship (Alliance for Excellent Education, 2006; Baumert et al, 2001; Inspectie van het Onderwijs, 2008; Hofman, Spijkerboer & Timmermans, 2009; OECD, 2000; Olson, 2006). Although a great deal of research has examined factors that enhance reading comprehension (Baker & Brown, 1984; Pearson, Roehler, Dole & Duffy, 1992; Pressley, 2000; Oakhill & Cain, 2007; Van Gelderen, Schoonen, Stoel, De Glopper & Hulstijn, 2007; Vidal-Abarca, Mañá & Gil, 2010), few studies have focused on the group of low-achieving adolescents, adolescents who are not disabled but still have difficulties with text comprehension (Guthrie, Wigfield & You, 2012). As a consequence, there is little understanding of what differences exist within this group of low-achievers and which educational (e.g. instruction, curriculum), psychological (e.g. knowledge, engagement) and personal background factors (e.g. gender or ethno-linguistic background) improve reading comprehension and facilitate development in reading comprehension of these low-achieving adolescents. One concept that recently has received increasing attention as a possible important predictor of reading comprehension and learning is the concept of engagement. In this study, we focus on low-achieving adolescents’ engagement in reading in school contexts in relation to the level and the development of their reading comprehension proficiency.

Engagement is defined as students’ feelings, thoughts and behaviors concerning a more or less specified object, such as school, learning or reading (Appleton, Christenson & Furlong, 2008; Fredricks, Blumenfeld & Paris, 2004; Guthrie et al., 2012; Linnenbrink & Pintrich, 2003). Research has shown that students’ involvement in school and learning decreases throughout the years. The strongest declines are observed in early adolescence and among low-achieving students (Archambault, Eccles & Vida, 2010; Durik, Vida & Eccles, 2006; Eccles, Wigfield & Schiefele, 1998; Harter, Whitesell & Kowalski, 1992; Jacobs et al, 2002). In addition, studies suggest that differences between students in ability, motivation and effort in school work increase in early adolescence (Nicholls, 1990; Stipek, 1998). This period of personal development is often described as turbulent because of school transition (from primary to secondary) and several socio-emotional changes related to the forming of new social identities with consequences for participation in school and for literacy, including reading (Anderman & Maehr, 1994; Ramey & Ramey; 1994). As reading
becomes increasingly demanding through the grades (Fang & Schleppegrell, 2010), engagement in carrying out reading activities in the classroom may be important for reading development (Guthrie et al., 2012). By focusing on active engagement in the classroom, this study aimed to make a contribution to the existing knowledge base on reading comprehension development and the role of engagement of low-achieving adolescents.

1.2 Theoretical background

1.2.1 Engagement

Contemporary definitions of engagement emphasize that engagement is a multidimensional construct, including affective engagement, cognitive engagement and behavioral engagement (Appleton et al., 2008; Fredricks et al., 2004; Guthrie et al., 2012; Linnenbrink & Pintrich, 2003). Affective engagement refers to motivational factors, including students’ feelings and emotional reactions to a task or school in general, their beliefs about the ability to perform a task and subjective values about the importance and interest of the task. Cognitive engagement refers to students’ willingness to exert mental effort needed to perform challenging academic tasks as well as the use of self-regulatory strategies to guide one’s cognitive efforts. Behavioral engagement refers to the active participation of students in academic activities in the classroom. In this definition, engagement is considered to be determined by motivational processes, cognitive strategies and active behavior. Affective engagement is what energizes students’ behavior, whereas behavioral engagement indicates whether students are actually engaged. Cognitive engagement indicates the depth of students’ engagement (the degree of cognitive effort invested). In this study, we used this multidimensional construct of engagement to examine students’ motivation, their cognitive efforts and actual behavior towards reading within their classrooms.

1.2.2 Affective engagement

In analyzing the role of engagement in reading, Guthrie and Wigfield (2000) have developed the engagement model of reading comprehension. According to this model, engagement in reading is the functioning of motivational processes and cognitive strategies during reading comprehension. Highly engaged readers are internally motivated to read and strategic, while reading frequently and deeply. Consistent with this perspective, we propose that affective engagement in reading refers to motivational processes during reading comprehension. Guthrie and Wigfield (2000) defined reading motivation as “the individual’s personal goals, values and beliefs with regard to the topics, processes and outcomes of reading” (p. 405). It is often assumed that students’ beliefs about their ability to perform a task (self-efficacy) and their
subjective values about the relevance and importance of the task (subjective task values) influence students’ effort, persistence and performance on the task (Wigfield & Eccles, 2000). Accordingly, motivation for reading may not only lead to increased academic achievement and improved learning, but also to growth in skills over time as students who are motivated tend to put more effort in learning. In examining students’ affective engagement in reading proficiency and development, we, therefore, focus on two of the most studied motivational components of reading motivation; self-efficacy and subjective task values.

Self-efficacy for reading is a person’s belief in the ability to effectively complete reading tasks (Bandura, 1997; Chapman & Tunmer, 1995), whereas subjective task value is a complex composite comprising attainment values, intrinsic values, utility values and costs (Eccles, 2005). Students’ beliefs of their abilities and their subjective values of reading have been shown to be related to their selection of activities, the level of commitment and performance (Anmarkrud & Bråten, 2009; Baker & Wigfield, 1999; Chapman, Tunmer & Prochnow, 2000; Greene, Miller, Crowson, Duke & Akey, 2004; Guthrie, Wigfield, Metsala & Cox, 1999; Guthrie et al., 2007; Katzir, Lesaux & Kim, 2009; Wang & Guthrie, 2004). Students tend to participate, persist in reading while facing difficulties and achieve well in reading when they find reading important, relevant and believe they can succeed in it. In addition, students with high self-efficacy beliefs and high task values for reading use strategies that foster deep and internalized text processing, whereas students lower on these measures show less use of these strategies (Schiefele, 1999; Schraw & Lehman, 2001).

Although findings of different studies suggest that self-efficacy and subjective task values are important predictors for reading comprehension proficiency at a given moment in time, less is known about the relationships between these predictors of affective engagement and reading comprehension development. Only a few longitudinal studies have been conducted so far. For elementary students, Becker, McElvany and Kortenbruck (2010) and Taboada, Tonks, Wigfield & Guthrie (2009) found that students’ subjective values are positively associated with reading growth. Guthrie et al. (2007) found that interest, efficacy and involvement measured by interviews predicted reading comprehension growth, but that the same constructs measured by self-report questionnaires did not. For adolescents, Retelsdorf, Köller & Möller (2011) found positive unique effects of reading interest (personal topic interest) and reading enjoyment (activity-related interest) on reading comprehension proficiency and on reading comprehension development. Longitudinal studies into self-efficacy and the relation with reading comprehension development did not give credence for the assumption that self-efficacy affects growth (Aunola, Nurmi, Niemi, Lerkkanen & Rasku-Puttonen, 2002; Chapman & Tunmer, 1997; Guthrie et al., 2007;
Retelsdorf et al., 2011). By examining the relation between self-efficacy and subjective task values as indicators of affective engagement on the one hand and reading comprehension proficiency and development among low-achieving adolescents on the other hand, we intend to determine whether affective engagement is a factor not only associated with the current level of reading comprehension but also with growth in reading comprehension.

1.2.3 Cognitive engagement

Cognitive engagement refers to the use of cognitive strategies during reading as well as students’ willingness to exert mental effort to foster deeper understanding of the text. Highly engaged readers are not only more motivated but also show more use of strategies for comprehending the text fully and are willing to exert additional effort in reading (Guthrie et al., 2004; Wigfield et al., 2008). Engaged readers are strategic readers using such strategies as rereading, predicting, questioning, summarizing, clarifying and rereading. The application of these strategies for executing and coordination the reading process are referred to as self-regulation (Duke & Pearson, 2002; Pressley, 2000; Zimmerman & Risemberg, 1997). A great deal of research has been done showing how readers of diverging proficiency process a text and achieve text comprehension (Baker & Brown, 1984; Duke & Pearson, 2002; Pearson et al., 1992; Oakhill & Cain, 2007; Trabasso & Bouchard, 2002; Vidal-Abarca et al., 2010). Together, the findings suggest that better readers are more strategic than poorer readers. Readers who monitor and direct their reading more intensively achieve deeper levels of text comprehension. Most low-achieving adolescents can read words accurately, but have problems with deep levels of comprehension as a result of knowledge deficits (vocabulary, grammar, metacognitive knowledge, genre and conceptual knowledge) and difficulties with self-regulation. Low-achieving readers are found to be primarily focused at achieving a basic understanding of the literal meaning of the text (Chambers Cantrell, Almasi, Carter, Rintamaa & Maden, 2010; Rapp, Van den Broek, McMast, Kendeou & Espin, 2007). However, to achieve text comprehension a reader must construct a so-called ‘situation model’ by connecting the text contents to prior knowledge (Kintsch & Van Dijk, 1978). This requires the expenditure of mental effort for the use of several strategies that assure that these connections result in a meaningful text representation. Especially for low-achievers this may be a very hard task, given their poor knowledge of both conceptual and linguistic issues. On the other hand, self-regulation of low-achieving students is no lost cause as research findings suggest that developing readers gain more knowledge about reading strategies over time and that instruction directed at self-regulation can enhance reading skills, especially of low-achieving students (Alfassi, 2004; Edmonds et al., 2007; Fisher,
Based on these findings, we assume that low-achieving students’ who put more effort in reading and who use more self-regulative activities, will perform better in reading and will obtain more progression in reading proficiency over time.

1.2.4 Behavioral engagement

Behavioral engagement refers to the extent to which students are actually performing academic tasks, including attending to and completing tasks responsibly, following rules and instructions, and exercising self-control (Cameron Ponitz, Rimm-Kaufman, Grimm & Curby, 2009). Behavioral engagement is students’ participation in a set of learning opportunities and tasks as offered by the teacher in the classroom. Students’ behavioral engagement in academic activities is viewed as an important predictor of academic achievement as students’ participation in academic activities is a prerequisite for learning (Fredricks et al., 2004; Pressley, et al., 2001; Greenwood, Horton & Utley, 2002). Studies conducted in kindergarten and elementary schools (Berliner, 1979; Dolezal, Welsh, Pressley & Vincent, 2003; Guthrie et al., 2012; Hughes & Kwok, 2007; Ponitz, McClelland, Matthews & Morrison, 2009) have shown that behavioral engagement in the classroom is positively related to reading achievement. In their longitudinal study, Ladd and Dinella (2009) examined the effect of behavioral engagement of students (5 to 13 years old) on a variety of reading achievement tests. The findings showed that, while statistically controlling for reading achievement in grade 1, the reading development of more engaged students improved more than for less engaged students. In this study, we therefore, examined the impact of low achieving students’ behavioral engagement during reading practices in the classroom on their reading comprehension proficiency and development.

Given the fact that engagement is assumed to be responsive to variation in learning contexts and the learning opportunities and tasks offered by teachers in classrooms (Finn & Rock, 1997), we paid attention to the context in which reading activities are enacted in the classroom. Reading is an activity that is not limited to the language arts but is also enacted across varying disciplines involving different purposes, forms and processes (Biancarosa & Snow, 2006; Van Gelderen, 1994). In the language arts, reading practices mainly focus on increasing reading comprehension proficiency, whereas in content areas reading practices are instrumental for obtaining knowledge about subject contents. We, therefore, focused on two different subject domains: language arts and social studies. Consistent with the engagement perspective, we assume that the behavioral engagement is different for the two subject domains.
1.3 The present study

Research on reading engagement has indicated that affective, cognitive and behavioral dimensions of engagement are important predictors for reading comprehension proficiency. Much less evidence is available concerning the relationships between these dimensions of engagement and reading development, as few longitudinal studies have been performed yet. Moreover, these studies have focused on affective engagement only. There is empirical evidence suggesting that better readers are more engaged than poorer readers. However, especially for the group of low achieving adolescents it is of importance to know to what degree their affective, cognitive and behavioral engagement in reading at school contributes to their reading comprehension. It is yet unknown whether there are differences between these low achievers in the role that different types of engagement play in reading comprehension. In addition, it is also unknown to what degree their engagement in reading at school contributes to their reading comprehension growth.

There is a need for reading research that focuses on low-achieving adolescents (Guthrie et al., 2012). Our current understanding of reading engagement is based upon research primarily directed at students with broad ranges of proficiency and at young and beginning readers. In such populations, patterns emerging in the lowest achieving groups are obscured by the large differences between students. Therefore, findings from these types of reader populations may not hold true for the particular situation of low-achieving adolescents (Baker & Wigfield, 1999; Logan, Medford & Hughes, 2011). Insights in differences that exist among low-achieving adolescents are necessary to understand how education can improve low-achieving adolescents reading comprehension in a way that fits students’ individual skills and attributes. Therefore we explored affective, behavioral and cognitive dimensions of engagement in reading of low-achieving adolescents following them from grades 7-9 in relation to their reading comprehension proficiency level and development of reading comprehension across these 3 grades. The following questions were addressed:

1) How are affective engagement, cognitive engagement and behavioral engagement related to reading comprehension proficiency of low-achieving adolescents?

2) Do low-achieving adolescents progress in reading comprehension proficiency from grades 7 to 9?

3) Do affective, behavioral and cognitive engagement contribute to explaining differences in reading comprehension development of low-achieving adolescents?
1.4 Method

1.4.1 Participants
Low-achieving adolescents are defined in this study as students in the lowest 30-percentile of academic skills as measured by an aptitude test measuring language, reading and mathematics skills prior to admission of Dutch secondary education. In the Netherlands, these low-achieving students are enrolled in the two lowest tracks of prevocational secondary education\(^3\). The sample in grade 7 involved 63 students (36 boys and 27 girls) recruited out of 10 classes from 9 different ethnically mixed schools. In grade 7 the students were between 12 and 14 years old (\(M=14.7\)). Of the sample in grade 7, 32 students were native speakers of Dutch; the other 31 students were non-native speakers of Dutch having various ethnic-linguistic backgrounds. Students diagnosed with a learning or behavioral disorder (e.g. dyslexia, ADHD), were excluded from our sample in order to ascertain that differences in reading development were not related to specific learning or behavioral disorders. From each class 6 to 7 students were selected. Due to attrition (e.g. illness, moving, problems at home or school), the number of participating students decreased in the course of our study. On the other hand, because of mobility of students, the number of classes and schools involved in the study increased. Ultimately, the sample consisted of 52 students distributed over 28 classes and 11 schools in grade 9.

1.4.2 Measures

1.4.2.1 Reading comprehension proficiency
The SALT reading comprehension proficiency test (Van Steensel, Oostdam, & Van Gelderen, 2012.) was specifically designed for Dutch students in the lowest tracks of secondary education. It consists of nine tasks comprising one or two texts and comprehension questions about those texts (multiple choice and short-answer formats). The texts cover four different genres: narrative, argumentative, expository, and instructive. They were selected from four media types which students are likely to come across in their daily lives: (school) books, newspapers and magazines, official documents, and the internet. With respect to text format, a distinction was made between continuous texts and discontinuous texts (containing also graphs, pictures

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\(^3\) Regular secondary education in the Netherlands is divided into three tracks: prevocational secondary education (VMBO), senior general secondary education (HAVO), and pre-university education (VWO). Prevocational education is further divided into four tracks: the basic vocational program, the middle-management vocational program, the combined program, and the theoretical program (Ministry of Education, Culture and Science, 2006).
The topics of the texts were selected on the basis of their relevance for students’ socio-cultural and educational reality. They cover personal issues (negative stereotyping, self-confidence), school subjects (history), human interest, social issues (crime, the environment), rules and regulations, and leisure time activities. The test items were based on the distinction between lower, intermediate and higher levels of understanding, labeled as ‘retrieving’, ‘interpreting’, and ‘reflecting’, respectively (Van Steensel et al., 2012; OECD, 2003). The test consisted of 65 items and the Cronbach’s alpha was .79 in grade 7, .85 in Grade 8 and .82 in grade 9. Next, a sum score representing reading comprehension proficiency across grades 7 to 9 was computed. The measurement of reading comprehension proficiency across grades shows good reliability (Cronbach’s alpha is .90).

1.4.2.2 Engagement

Affective and cognitive engagement were measured using questionnaires. To assess affective engagement, an adapted version of the Attitude Scale towards English as a school subject developed by the Dutch Institute of Testing (CITO) was used. For the purpose of this study, the questions were adapted to reading and writing. Half of the items concerned reading and half of the items concerned writing.

Three aspects of affective engagement were assessed (10 items for each aspect): 1) self-efficacy (e.g. “I am good at reading”), 2) intrinsic value (e.g. “I enjoy reading”), 3) utility value (e.g. “Reading proficiency is important to get a job”). Students were asked to indicate the extent to which the item referring to the three aspects of affective engagement applied to them on five-point scales (1=not at all true; 5=very true).

Two aspects of cognitive engagement were assessed: 1) reported effort (10 items, adapted from the above mentioned attitude questionnaire; e.g. “I exert additional effort to become a better reader”) and 2) reported self-regulative behavior in reading and writing (33 items). The strategies represent the self-regulatory activities generally distinguished in the literature: orientation, planning, monitoring, controlling, testing and evaluation. The reading items (16 items; e.g. “While I’m reading, I check whether I still comprehend what I’m reading.”) are based on previous research into metacognitive knowledge relevant for reading (Baker & Brown, 1984; Pressley, 2000), the writing items (17 items; e.g. “While I’m writing, I consider whether my audience will comprehend what I mean.”) were based on cognitive models for writing (Bereiter & Scardamalia, 1987; Hayes & Flower, 1980; Hayes, 1996). Students were asked to indicate how often they apply a range of reading and writing strategies on a three-point scale (0=seldom to 2=frequently).
The internal consistencies of the five scales for affective and cognitive engagement were established in each grade (7 to 9). The internal consistencies were found to be adequate to good in all cases (.76 < Cronbach’s alpha > .89). Next, for each of the five scales a sum score representing the scores across grades 7 to 9 was computed. The measures of affective and cognitive engagement have quite satisfactory reliabilities across grades (Cronbach’s alpha is .78 for Self-efficacy, .84 for Intrinsic value, and .75 for Utility value, 84 for Reported effort, 82 for Reported self-regulation).

To measure students’ behavioral engagement in classroom activities, real-time observations were conducted in regular lessons of Dutch language arts (LA) and lessons in social studies (SS). For each student we observed two lessons per subject per grade, resulting in an average of 12 hours per student. During classroom observations, two aspects were coded every ninety seconds for every student in the sample (1 to 7 students per class). The first aspect coded repeatedly was whether the lesson was directed at Literacy Activities (e.g. text reading, reading strategies, vocabulary, grammar and spelling). The second aspect coded was whether the target student was On-Task (e.g. working on a problem, answering a question, listening to the teacher or a classmate making an on-task contribution). Since the duration of lessons varied over schools, the observations time differed for individual students. Therefore we corrected the time-on-task scores for observation time by dividing the time that students spent in a particular literacy activity by the total time students were observed. Next, the time that students were on task in the particular literacy activity was multiplied with this quotient⁴. Of the 167 hours of real-time observation, 8 hours were coded simultaneously by two observers. This means that 267 segments of 1.5-min each were coded twice (5% of a total of 6,680 segments). To estimate inter observer-reliabilities we calculated Cohen’s kappa. For Literacy Activities kappa was .89, for On-Task behavior kappa was .80. These reliabilities are sufficient for our research purposes. Next, sum scores representing behavioral engagement in language arts and social studies across grades 7 to 9 was computed. Low correlations between grades were found. However, given the situated nature of behavioral engagement in actual classroom behavior, this is not surprising and did not prevent us from averaging the scores over grades as an approximation of students’ being on task in literacy activities.

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⁴An example of how the scores were corrected for observation time. Student 1’s time-on task in literacy activity = time observed: 50 minutes; time spent in literacy activity: 30 minutes; time on-task in literacy activity: 15 minutes = (30/50)*15 = 9 minutes. Student 2’s time on-task in literacy activity = time observed: 100 minutes; time spent in literacy activity: 30 minutes; time on-task in literacy activity: 15 minutes = (30/100)*15 = 4.5 minutes.
1.4.3 Procedures
The reading comprehension test was administered in the spring semester in each of the three grades in three 45-min sessions. No more than two sessions per day were scheduled to minimize test weariness. Eight tasks were paper- and pencil assignments; the internet task was administered on a computer. The questionnaires were administered in each of the three grades in the fall semester in one 45-min session. Finally, for each subject (LA and SS) in each grade one lesson in the fall semester and one lesson in the spring semester were observed. The reading comprehension test was conducted in students’ classrooms during the school day and administered by trained research assistants. The students’ teacher was always present to maintain order. The questionnaires were administered by trained research assistants in separate group sessions during the school day. Student’s questions were answered by the test leaders according to a standardized protocol.

1.4.4 Missing data
Of our dataset 8.7 % was missing due to attrition. EM estimation was used to estimate and impute the missing data on the dependent variable (reading comprehension). For the independent variables (indicators of engagement), we averaged the scores that were obtained through the grades. As a check, all analyses were conducted both with and without imputed missings. In all analyses the patterns were similar.

1.4.5 Statistical analyses
Because the 63 students taking part in this study originally were selected from 10 different classes from 9 different schools, we checked whether multi-level analyses were necessary by means of the program MLwiN (Rasbasch et al., 2000). Results from the multi-level analyses showed that adding a class level to the student level did not result in a significant improvement of the model fit. Therefore, all analyses were done uni-level. First, means and standard deviations were computed for all variables for the whole sample. To examine the relationships with reading comprehension level, correlations and effect sizes were computed for all engagement variables with average reading comprehension in grades 7 to 9. Students’ development in reading proficiency was examined using GLM for repeated measures. Finally, for examining effects of engagement on reading comprehension development, we used reading comprehension obtained in grade 7 as covariate in explaining reading comprehension in grade 9. We did not use change scores to analyze development, since several studies.

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5School and class level practically coincide in this study, since 10 classes come from 9 different schools, so testing for a school level next to a class level is not feasible.
have shown the regression approach to be superior (Allison, 1990; Pike, 2004; Senn, 2006; Tu, Gunnell & Gilthorpe, 2008). The effects of engagement on development were explored for each of the three time spans: grade 7 to 8, grade 8 to 9, and grade 7 to 9.

1.5 Results

1.5.1 Descriptive results

<table>
<thead>
<tr>
<th>Scale</th>
<th>Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-efficacy</td>
<td>3.85 (.50)</td>
</tr>
<tr>
<td>Intrinsic value</td>
<td>3.00 (.72)</td>
</tr>
<tr>
<td>Utility value</td>
<td>3.94 (.47)</td>
</tr>
<tr>
<td>Reported effort</td>
<td>3.15 (.68)</td>
</tr>
<tr>
<td>Reported self-regulation</td>
<td>1.00 (.26)</td>
</tr>
<tr>
<td>Language arts</td>
<td></td>
</tr>
<tr>
<td>Time spent</td>
<td>40.4 (12.8)</td>
</tr>
<tr>
<td>Time-on-task</td>
<td>32.1 (11.7)</td>
</tr>
<tr>
<td>Social studies</td>
<td></td>
</tr>
<tr>
<td>Time spent</td>
<td>29.6 (15.5)</td>
</tr>
<tr>
<td>Time-on-task</td>
<td>22.3 (10.4)</td>
</tr>
<tr>
<td>Reading comprehension proficiency grade 7</td>
<td>40.5 (7.7)</td>
</tr>
<tr>
<td>Reading comprehension proficiency grade 8</td>
<td>42.6 (8.8)</td>
</tr>
<tr>
<td>Reading comprehension proficiency grade 9</td>
<td>46.7 (8.1)</td>
</tr>
</tbody>
</table>

a) These scales are calculated as the average of the average scores on the scales in each of the grades 7, 8 and 9.

b) These means are the average of the average time observed in two lessons in each of the grades 7, 8 and 9.

The means in Table 1.1 indicate that the students on average have quite some confidence in their literacy abilities and perceive literacy activities in school as quite useful. This is indicated by the average scores for self-efficacy and utility value, being close to 4 on the scale ranging from 1 (not at all) to 5 (very much). Furthermore, the means indicate that the students are neutral concerning their enjoyment of literacy activities; on average the scores for intrinsic value are just above the scale middle point. The means for reported effort and reported self-regulation indicate that students put some mental effort in literacy activities since both average scores are at (or very near to) the scale middle point. For reported effort this is defined by the two extremes: ‘not at all’ and ‘very much’. For self-regulation it is defined by the extremes: ‘sometimes’ and ‘very frequently’ (for executing specific strategies). With regard to
students’ behavioral engagement, the means indicate that time spend on literacy activities in the lessons, not surprisingly, was more in language arts than in social studies. Also, students were on average more on task in literacy activities in language arts (32.1 minutes) than in social studies (22.3 minutes). When time students are on-task is divided by the time lessons were spend on literacy activities, the means show that students were on task 80% of the time in language arts and 75% of the time in social studies. The relative time on task for literacy for these low-achieving students did thus not deviate much between the two types of lessons. The means for reading comprehension proficiency show that the reading comprehension proficiency scores are in the mid range of the test (40-50 out of a maximum of 65) indicating that the test is well suited for these low-achieving students. In addition, as might be expected, the means are higher in the higher grades, indicating average growth.

### 1.5.2 Reading comprehension proficiency

To answer the first research question, correlations were computed between students’ engagement and their average reading comprehension proficiency across grades 7 to 9 ($M=43.24$, $SD=7.49$). Results show that reading comprehension proficiency is significantly predicted by intrinsic value ($r=.369$, $p<.025$, $r^2=.14$) and time-on-task in social studies ($r=.380$, $p<.05$, $r^2=.14$). For both aspects, the $r^2$ indicates that 14 percent of the variance is explained which points to weak associations between these aspects of engagement and reading comprehension proficiency. Contrary to the expectations, the results show no significant correlations for self-efficacy, utility value, reported effort, reported self-regulation and time-on-task in language arts with reading comprehension proficiency of low-achieving adolescents.

### 1.5.3 Reading comprehension development

To answer the second research question, a repeated measures ANOVA was conducted with the scores for reading comprehension proficiency in grades 7-9 as dependent variable. The results show that students progressed in reading comprehension proficiency from grade 7 to grade 9 ($F_{(2,124)}=37.87$, $p=.000$, partial $\eta^2=.38$). Within subject contrasts show that also the difference between grade 7 and grade 8 is significant ($F_{(1,62)}=6.65$, $p=.012$, partial $\eta^2=.09$). In addition, the difference between grade 8 and grade 9 is significant ($F_{(1,62)}=43.17$, $p=.000$, partial $\eta^2=.41$). The effect sizes indicate that growth in reading comprehension proficiency is quite strong, especially from grade 8 to 9. But students improved in reading comprehension proficiency in each grade.

To answer the third research question, the associations of the engagement variables with growth in reading comprehension proficiency were analyzed separately
by means of linear regression for three time spans (7-8, 8-9, and 7-9). Reading comprehension proficiency scores in the previous grades were entered first to control for students’ initial reading comprehension proficiency. For all time spans, the results show that the reading comprehension proficiency in previous grades predicted reading comprehension proficiency in the later grades significantly (7-8 $r^2=.49$, $p<.001$; 8-9 $r^2=.69$, $p<.001$; 7-9 $r^2=.54$, $p<.001$). Next, the engagement variables were entered into the regression separately to examine their contribution to the residual variance in reading comprehension proficiency. Results show that adding intrinsic value to the regression model results in a significant improvement of the model fit for grades 7 and 8 (3% explained variance). The standardized Beta ($Beta=.19; p=.05$) for intrinsic value to predict reading comprehension development between grade 7 and 8, was positive, indicating that intrinsic value was a positive contributor to reading comprehension development. In the left plot of Figure 1.1 the developmental patterns of students with higher and lower intrinsic values based on a medium split, are visualized. The patterns show that low-achieving adolescents with higher intrinsic values improved more in reading comprehension proficiency between grades 7 and 8 than their peers with lower intrinsic values. It also shows that from grade 8 to 9 this trend is not continued.

In addition, reported self-regulation explained 4% of the variance for reading comprehension development between grade 8 and 9 ($Beta=-.15; p=.022$), and explained 7% of the variance for reading comprehension development between grades 7 and 9 ($Beta=-.20; p=.004$). Contrary to expectations, the standardized Betas were both negative, indicating that reported self-regulation contributed negatively to
reading comprehension development. In the right plot of Figure 1 the developmental patterns of students with higher and lower reported self-regulation, are displayed. The patterns show that low-achieving adolescents, who report applying more self-regulation, grow less than students who say to apply less self-regulation.

Finally, none of the other engagement variables was found to have a significant contribution to the explanation of reading comprehension development.

1.6 Conclusions and discussion

Educational researchers have become increasingly interested in understanding students’ engagement in reading in the classroom as a way to increase reading comprehension proficiency and development (Guthrie & Wigfield, 2000; Guthrie et al., 2012). The main objective of this study was to explore the role of affective, cognitive and behavioral engagement in the classroom for reading comprehension proficiency and its development of low-achieving adolescents. The study showed that, although the adolescents in our study are low-achieving and perform below levels required in school and at the workplace, they still improve in reading comprehension proficiency in the first 3 grades of prevocational secondary education. Contrary to pessimistic views about reading comprehension development of low-achieving adolescents (cf. Alvermann, 2001, Biancarosa & Snow, 2006; Inspectie van het Onderwijs, 2008; Hofman et al., 2009), these findings are encouraging in light of the importance of reading comprehension proficiency for youngsters’ academic, professional and societal careers.

Results of this study also show that intrinsic value as an indicator of affective engagement was positively associated with reading comprehension proficiency and there was also a small contribution of intrinsic value to growth in reading comprehension proficiency. A significant contribution of intrinsic value was found in explaining growth between grades 7 and 8, but no effect was found between grades 8 and 9 nor between grades 7 and 9. The findings for intrinsic value are interesting in the light of findings from studies into the effect of reading enjoyment and reading interest on reading comprehension development, indicating that intrinsic value is positively associated with reading comprehension proficiency as with reading comprehension growth (Becker et al., 2010; Taboada et al., 2009; Guthrie et al., 2007; Retelsdorf et al., 2011).

The findings relating to the role of intrinsic value of this study may indicate that, although it contributes to reading comprehension development at younger ages, for low-achieving adolescents the effect of intrinsic value on reading comprehension development diminishes in adolescence. Although all these students struggle with
reading, it is possible that at a younger age some of them experienced more enjoyment leading to more reading and better comprehension. Other low achieving students possibly developed more negative attitudes towards reading already at a young age, leading to less reading and less growth in reading comprehension proficiency. This can explain why the correlation between intrinsic value and reading comprehension proficiency still exists in adolescence, because of the difference in previous reading experiences. But the effect on reading comprehension development may decline over time. This decline may be the result of a decline in leisure time reading that is generally found in adolescence, and is the strongest for low-achieving adolescents (De Vries, 2007; National Endowment for the Arts, 2005; Siebelhoff, Caarels & Cheung, 2010; Nippold, Duthie & Larsen, 2005). In adolescence, reading activities face strong competition of other leisure time activities, such as surfing the internet, watching television, jobs and hanging-out with friends (Land, Van den Bergh & Sanders, 2007; Wilson & Casey, 2007). In contrast, younger children with more positive beliefs about reading are found to read more books and spend more time reading, which is likely to result in increased reading comprehension proficiency (McKenna, Kear & Ellsworth, 1995; Wigfield & Guthrie, 1997). The decline in leisure time reading through the grades is likely to reduce the strength of the association between intrinsic value and reading comprehension development for low-achieving adolescents. Results of Retelsdorf et al. (2011), however, suggest that the association between intrinsic values and reading comprehension growth is stronger when adolescents of all levels of proficiency are compared.

For utility value, no associations were found with or reading comprehension proficiency nor with reading comprehension development. These findings suggest that the importance attributed to reading by low-achieving adolescents’ is independent of both their reading comprehension level and development. Students in our study were on average quite convinced of the importance of reading for their current and future goals; they scored around 4 on a scale ranging from 1 to 5. An explanation may be that students who are motivated by utility of reading primarily view reading abstractly for future use, without sufficient reason to develop skills directed to better comprehension of concrete reading tasks at school. They might therefore be more focused on getting the job done than on understanding texts fully. If their attitude towards reading is defined in this way, it is not likely that they will develop skills for deep text processing. Frequent practice with deep text processing is actually what low-achieving adolescents need to do in order to enhance their reading comprehension proficiency (Schiefele, 1999; Schraw & Lehman, 2001; Wang & Guthrie, 2004; Wigfield & Guthrie, 1997). Furthermore, research has shown that abstract motives for enacting literacy activities of adolescents (such as “reading is important”) often become
overruled by reasons for not enacting literacy activities (such as “reading is boring” or “it’s more fun to play games”) (Van Kruistum, Leseman & De Haan, unpublished results). In addition, future research should provide more insights in the role of undermining motivations, such as task avoidance, lack of control and task difficulty. Studies found, for example, that when students believe they are externally controlled in reading (feeling coerced) they are likely to find reading aversive and report high levels of work avoidance and other school activities (Guthrie et al., 2007; Guthrie, Coddington & Wigfield, 2009; Assor, Kaplan, Kanat-Maymon & Roth, 2005).

Contrary to what theories on self-efficacy presume (Bandura, 1997; Chapman & Tunmer, 1995), no relations were found for the impact of self-efficacy on both reading comprehension and reading comprehension development. Although these findings are not in line with the theoretical assumptions, they do correspond, however, with findings from other longitudinal studies into the role of self-efficacy that did not find empirical evidence of effects of self-efficacy on reading development as well (Aunola et al., 2002; Chapman & Tunmer, 1997; Guthrie et al., 2007; Retelsdorf et al., 2011). That self-efficacy does not turn out to be a predictor of reading comprehension development among low-achieving adolescents may be explained by the high scores on high self-efficacy beliefs found in our sample: around 4 on a scale ranging from 1 to 5. High self-efficacy beliefs are found more often with low-achieving students. They can be a coping strategy of low-achievers to persist in the face of difficulties and can be understood as an effective coping strategy (Klassen, 2002; Harris & Graham, 1992). They are also likely to be fostered by the learning environment. The low-achieving adolescents in our study are enrolled in a tracked school system in secondary education. As a result, these students are surrounded by classmates with similar low reading comprehension abilities. Moreover, literacy tasks are adapted to their abilities and their teachers intend to increase students’ confidence. In such a learning environment, low-achieving adolescents may find themselves quite competent in reading despite the fact that they are poor readers compared with students with higher academic skills. Consequently, students’ self-efficacy beliefs may not match their actual performance. At high levels of self-efficacy, students even may feel overconfident so that they fail to allocate needed resources and effort and therefore may retard instead of boost learning (Salomon, 1984; Sawyer, Graham & Harris, 1992). This may explain why low-achieving adolescents in this study did not become better readers when they felt more confident in their reading skills. It also may explain why no effect of self-efficacy was found on their reading comprehension level, if we assume that the unrealistic estimation of their reading skills for these low achievers was also present at younger ages.
Next to affective engagement, we also examined effects of cognitive engagement on reading comprehension proficiency and development. For reported effort and reported self-regulation no significant relationships were found with reading comprehension proficiency. However, we did find a small but significant negative relation between reported self-regulation and reading comprehension growth. These findings suggest that low-achieving students’ who frequently use reading strategies show less growth in reading comprehension than their peers who use reading strategies less frequently. Given the strong body of research demonstrating positive links between self-regulation and reading comprehension proficiency (Duke & Pearson, 2002; Pearson et al., 1992; Oakhill & Cain, 2007; Trabasso & Bouchard, 2002), we did not expect this finding. One explanation may be that low-achieving students have much difficulty with self-regulatory aspects of reading (Baker & Brown, 1984; Pressley, 2000; Vidal-Abarca et al., 2010). Therefore, more self-regulation may not necessarily result in better comprehension or in more growth over time. For the same reason, the expenditure of more effort does not have to result in better comprehension or more growth. In addition, efficient self-regulation is task and situation-specific. Dependent on the topic and goal of a particular task, prior knowledge, motivation to succeed and linguistic and regulative skills, readers may apply more or less successful self-regulation (Zimmerman & Schunk, 1989). These difficulties of self-regulation may explain that general indications of students’ effort and self-regulation while reading are not (or even reversely) related to reading comprehension proficiency of low-achieving adolescents. The unexpected negative relation with growth may indicate that students reporting more self-regulation are doing so, because of the difficulties they experience with reading comprehension. Another explanation is related to the way we measured self-regulation by using self-reports. Previous studies have revealed that respondents do not always do what they say they do in such general retrospective self-reports (Cromley & Azevedo, 2006; Veenman, Van Hout-Wolters & Afflerbach, 2006). Research that takes the online relation between self-regulatory behavior and specific tasks into account, such as think-aloud procedures, is therefore needed to validate our findings.

In regard to behavioral engagement, a positive relationship was found between reading comprehension proficiency and time-on-task in social studies lessons, but not with time-on-task in language arts lessons. These findings support the idea that effects of engagement are sensitive to variation in learning contexts (Appleton et al., 2008; Finn & Rock, 1997; Fredricks et al., 2004; Guthrie et al., 2012; Linnenbrink & Pintrich, 2003). Nevertheless, the difference found between the effects of engagement between the two learning contexts is striking and requires an explanation. First, we have to emphasize that the effect found for engagement in social studies is on the
level of reading comprehension and not on growth in reading comprehension proficiency. Therefore, we can exclude that the association points to a causal relation between reading comprehension proficiency and the nature of the literacy activities in the two types of lessons (skill oriented in language arts vs. content oriented in social studies). In other words, if the relations were causal, we would expect that students being more engaged in literacy activities in social studies, would not per se be the ones with better reading comprehension proficiency, but would be the ones that grew more in reading comprehension proficiency across the grades 7-9. The results do indicate, however, that better readers are more engaged in social studies than poorer readers. Engagement theorists propose that choice for activities and persistence is determined by students’ self-beliefs and their capabilities. In the classroom, the choice and persistence in activities is quite limited, however, and strongly determined by the opportunities teachers create for students to actually participate in performing reading activities. For example, during whole-class instruction or individualized tutoring there is less choice for students to be on-task or off-task, compared to settings such as individual seat work or group seat work (Cameron Ponitz et al., 2011). Therefore, the different associations may be related to the setting of reading practices (whole-class, individual seat work or group seat work). In-depth analyses of our observational data showed no significant differences between the subject domains. Literacy instruction in both subjects was dominated by individual seat work in which comparable levels of engagement were achieved. In addition, no relations were found between reading comprehension proficiency and level of behavioral engagement in one of the learning settings.

As such, it is more likely that the focus of activities is influencing the different associations between engagement and reading comprehension proficiency. Reading practices that are instrumental for obtaining knowledge about subject contents in the social studies may be more challenging and engaging for better readers than for the poorer readers in our classrooms, resulting in more time on task on such practices of the former group. However, the positive association between engagement in social studies and literacy proficiency does not directly point to instrumental literacy practices causing progression in reading comprehension proficiency. As explained above the direction of the relationship might be the reverse: more proficiency resulting in more engagement in instrumental literacy practices in social studies lessons. This explanation points to the premises of content-oriented language learning as proposed by the approaches of Content-Based Language Learning (Brinton et al., 1989; Bygate et al., 2001) and Concept-Oriented Reading Instruction (Guthrie & Wigfield, 2000; Guthrie et al., 2004). These approaches emphasize the importance of
instrumental reading and writing experience for achieving higher levels of engagement.

The question remains why we were not able to detect associations between students’ level of behavioral engagement in the classroom and their reading comprehension development, while it actually seems likely that students who participate more in the learning opportunities offered will benefit more from education (Pressley, et al., 2001; Greenwood et al., 2002). On one hand, the fact that we did not find relations between behavioral engagement and growth in reading comprehension is quite disappointing, because it suggests that for the low-achieving students in our study it did not matter how much they were involved in language arts or social studies. Their on task behavior did not affect their reading comprehension development in a significant way. However, the relationship between behavioral engagement at school and reading comprehension development is also determined by the quality of students’ behavior and the quality of the learning environment. Although time-on-task behavior does inform us about the amount of behavioral engagement, they do not tell us much about the quality of students’ reading and writing. Nor does time-on-task behavior provide good indications of the quality of the learning environment that students were engaged in. The nature and setting of literacy activities and behavior of teachers determine to what extent students benefit from instruction (Brekelmans, Sleegers & Fraser, 2000; Furrer & Skinner, 2003; Guthrie et al., 2012). Future research into behavioral engagement should therefore not only look at time-on-task behavior, but also focus on the nature of students’ behavioral engagement in relation to the nature of the learning environments.

This study suggests that the role of engagement for reading comprehension proficiency is different for low-achieving adolescents, compared to what is known from earlier studies directed at more heterogeneous samples and younger students. Our findings show the value of research directed at focused samples, directed at the specific situation of low-achieving adolescents. In addition, the results suggest the need to explore the different dimensions (affective, cognitive and behavioral) of engagement to obtain a better understanding of its complex and dynamic nature as well as its consequences (Fredricks et al., 2004; Guthrie et al., 2012). More importantly, however, the findings emphasize the importance of distinguishing between reading comprehension proficiency level and development in examining relationships between engagement and academic achievement. This study has shown that for low-achieving adolescents significant relationships between reading comprehension proficiency and engagement were not accompanied by significant relationships between aspects of engagement and reading comprehension development. This finding is a call for caution in interpreting correlations between
proficiency and engagement in terms of consequences for students’ future reading development. Instead the correlations between proficiency and engagement (intrinsic value and behavioral engagement) presumably provide information about students’ preceding reading development. Such correlations may explain why some low-achieving adolescents are more proficient than others, but they do not tell us which students grow more in reading comprehension proficiency in the studied period of adolescence. We therefore call for more longitudinal studies into reading comprehension proficiency of readers of different ages and levels of proficiency covering the multiple dimensions of engagement and making an explicit distinction between proficiency level and development.

While we believe that this study makes a unique contribution to the field of reading engagement, we also acknowledge its limitations. First, the small sample size calls for caution. Given this small sample we were able to find only sizeable effects of engagement. We therefore cannot exclude that with a larger sample relatively small effects will be found. In addition, we recognize that our findings are not based on a representative sample of low-achieving adolescents and therefore cannot account for all the differences that might exist between their learning contexts (let alone international educational systems). Replication of this study using other samples of low-achieving adolescents is needed to validate our findings. Furthermore, more research is needed to other indicators of engagement, such as goal orientations, undermining motivations and social motivations. Also these aspects may contribute to low-achieving adolescents’ reading achievement (Baker & Wigfield, 1999; Guthrie et al., 2009). Finally, the relationship between engagement and competence are claimed to be reciprocal (Morgan & Fuchs, 2007). The design and analysis used in our study did not capture such effects. They could be unraveled by experimental research designs in which engagement is optimized. Still, we believe that this explorative longitudinal study has made an important contribution to our understanding of low achieving adolescent reading comprehension development and the role of engagement.