



Reading and Writing Development of Low-achieving Adolescents. The Roles of Linguistic Knowledge, Fluency, and Metacognitive Knowledge

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and metacognitive knowledge**

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Summary in English

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Many adolescent students have to cope with insufficient reading and writing skills. They are for example unable to comprehend information from schoolbooks, or to write text that is understandable to those it is addressed to. This results in disappointing educational achievement and reduced motivation. Eventually it may even lead to dropping out, which of course is undesirable for both the student and for society.

Especially low-achieving adolescents who are relatively poor in reading and writing would benefit from successful interventions. Although research focusing on low-achieving adolescents could yield outcomes beneficial to teaching reading and writing to this population, little research has been directed at the question of how individual differences in reading comprehension and writing proficiency within this group can be explained. This is the background which led to the research project SALSA (an acronym for Study into Adolescent Literacy of Students At-Risk), funded by the Dutch Organization for Scientific Research (NWO). Within this project the reading and writing development of poor readers and writers in Grades 7-9 has been investigated. This dissertation is part of the SALSA-project and is specifically directed at the role of various types of knowledge and skills, that are important to the (development of) reading comprehension and writing proficiency of low-achieving adolescents.

A substantial part of the students visiting lower vocational tracks of education in the large western cities of The Netherlands (the target population of the SALSA-project) is made up of students from immigrant backgrounds. Many of them have been raised with another language than - or next to - Dutch. Since various studies have indicated that children from immigrant families generally score less well in regard reading comprehension and writing proficiency, our study distinguished between two groups of students, namely: 'native' students, for whom Dutch is the only language spoken at home, versus 'language-minority' students with whom another home language is spoken next to Dutch.

We know that for reading comprehension and writing proficiency, the availability of knowledge is an important condition. Not just linguistic knowledge, such as vocabulary, spelling, and grammar (command of forming words and

sentences), but also knowledge about the composition of texts and about efficient strategies that can be applied in reading and writing of texts (metacognitive knowledge) is important. Apart from knowledge, fluency (or speed) with which words and sentences can be processed is important in reading comprehension and writing proficiency. In general, someone who performs basic reading and writing processes effortlessly, retains more working memory capacity for dealing with other aspects of the text, as compared to someone who is less fluent. The resultant capacity can be applied to, for example, linking sentences and paragraphs, which aids the understanding of a text, or helps to improve the clarity of a text one writes oneself.

Several studies have shown that reading comprehension and writing proficiency of the general population of adolescents is strongly associated with linguistic knowledge. Students who have more linguistic knowledge are generally more able to understand the content of a text, and are able to write better texts. At the same time it is true that less knowledge of a language often corresponds with weaker reading and writing skills. Fluency seems to be less predictive. Whether, and to what extent, these same associations exist within the more homogeneous group of low-achieving adolescents, has to our knowledge not been investigated until now. Such information is extremely relevant for reading and writing education directed at (language-minority) low-achieving adolescents. Although knowledge of such relations between linguistic and metacognitive components on one hand and reading comprehension and writing proficiency on the other does not directly lead to successful educational interventions, it is certainly informative for educational experiments directed at improving low-achieving adolescents' reading comprehension and writing proficiency.

Sixty students initially participated in the research presented in this dissertation. Their skills in reading comprehension, in writing proficiency, and in various components of reading and writing (linguistic knowledge, metacognitive knowledge, and fluency) was tested in each of the first three grades of the two lowest tracks of vocational education. To measure the reading and writing skills we used a test that was developed in the SALSA-project (Van Steensel, Van Gelderen & Oostdam, 2013). The knowledge the students possessed was tested through a number of written tests, covering receptive vocabulary as well as grammatical knowledge, orthographic knowledge, and metacognitive knowledge. The level of fluency was established with a test for word decoding (known as the Three Minutes Test), as well as with a number of computerized tests measuring speed and accuracy with which students could read words and sentences, and speed of lexical retrieval. In the statistical analyses, we investigated associations between

knowledge and fluency on one hand and students' level and development of reading comprehension and writing proficiency on the other.

The empirical part of this dissertation consists of three studies. In the first (Chapter 2) we addressed the question to what extent the differences in level of reading comprehension, were associated with differences in knowledge (a composite variable consisting of vocabulary knowledge, grammar knowledge, and metacognitive knowledge), and fluency (a composite variable consisting of speed and efficiency of word recognition, and speed of sentence verification). This analysis considered our students in seventh grade only. It turned out that associations differed between the native- and the language-minority students. For the first group of students, differences in fluency correlated significantly with differences in reading comprehension, while this contribution was negligible for language-minority students. For the language-minority students, however, it turned out to be much more predictive what level of knowledge they possessed. An explanation is that language-minority students, who scored significantly lower on both linguistic knowledge and reading comprehension, could not utilize the advantage of more efficient word recognition, because their faltering knowledge denied them access to word meaning.

The two other studies (Chapters 3 and 4), were directed at the development of reading comprehension and writing proficiency of native and language-minority low-achieving adolescents in the course of Grade 7 to 9. We first investigated to what extent knowledge and fluency are correlated to the level of reading comprehension and writing proficiency. Knowledge of vocabulary and grammar was substantially related to students' levels of reading comprehension and writing proficiency. That is, in general, those adolescents who were better readers and writers possessed more vocabulary and grammar knowledge than their peers who were relatively poor in reading and writing. This finding is in line with what we know from research on students across the whole ability range. In addition, metacognitive knowledge played an important role in reading comprehension. Students possessing more knowledge of text building and of reading and writing strategies, were also better in understanding texts. In addition, contrary to what was found in seventh grade (Chapter 2), fluency was not predictive for native students' reading comprehension. Possibly the progress in fluency these students experienced resulted in more effortless processing, such that limited fluency was no longer an obstacle in text comprehension.

In respect of writing proficiency, it turned out that, next to vocabulary and grammar, sentence verification speed showed a substantial correlation with the quality of written texts. Reviewing and rewriting of text constitutes an important part of the writing process. The ease of sentence reading may be related to the

ease of reading and reviewing one's own text. For low-achieving adolescents this may result in higher quality texts.

In Chapters 3 and 4 we also analyzed the development of reading comprehension, writing proficiency and the linguistic and metacognitive components from Grade 7 to 9. Contrary to what is sometimes asserted, namely that the reading and writing development of low-achieving adolescents stagnates, we found clear evidence of progress. Our analyses show that students progressed substantially, both with regard to reading comprehension and writing proficiency as with regard to knowledge and fluency. We further found that the progress in reading comprehension and writing proficiency of the native and language-minority students in our study, differed. The language-minority students initially scored significantly lower than the native- students, but in the course of Grade 7 to 9 they showed more progress. This progress was so strong, that at the end of Grade 9 there were no significant differences in reading comprehension and writing proficiency between the two groups. What did remain though, were significant differences between the language-minority and native- students with respect to vocabulary and grammatical knowledge (an advantage of the native students).

The final series of findings from Chapters 3 and 4 concerns the association between gains in reading comprehension and writing proficiency on one hand and gains in knowledge and fluency on the other. There were individual differences with respect to the extent to which students progressed. Part of these differences in development in reading comprehension can be statistically explained by an increase in vocabulary knowledge. This was the case only for the language-minority students. Gains in grammatical knowledge can be related to development in writing proficiency. We are aware that a causal relationship cannot be established with the analyses that were performed. Nevertheless, it is plausible that part of the association can be construed as causal, meaning that vocabulary is a requirement for text understanding, and grammatical knowledge is a requirement for writing proficiency. It is also possible that progress in reading comprehension and writing proficiency advances knowledge of vocabulary and grammar. Previous research has demonstrated that new words can be learned through reading. In the same line of reasoning, by increasing their writing experience students could become more aware of the role and the correct use of grammatical structures. Further research is required to determine the causality of the correlation obtained, within the population of low-achieving adolescents.

Our research was conducted with a relatively small sample, as only sixty students participated in Grade 7. Because of this, it could be that we have missed (small) effects that would have shown up in a larger sample. Despite this limitation we can however draw some lines to educational practice. More knowledge of

vocabulary and grammar go together with better reading comprehension and writing proficiency. These components therefore play an important role in the reading and writing process of low-achieving adolescents. Full attention could be given to this in the reading and writing education of these young people. In addition, metacognitive knowledge of these students was quite limited. Increasing that kind of knowledge may help students to become better readers and writers. Of course, it remains important to not only focus on the linguistic and metacognitive components of reading and writing but also offer students enough opportunity and encouragement to read and write texts.

Finally we want to emphasize that, in view of the progress in reading comprehension and writing proficiency that was obtained in this study, there is no reason for pessimism as to what low-achieving adolescents are capable of. On the contrary! The young people who took part in our research progressed significantly. Students can derive much value from high yet realistic expectations that a teacher has of their achievements. These expectations should certainly be stated while teaching low-achieving adolescents.