
■ The Prevalence of Reading and Spelling Difficulties among Inmates of Institutions for Compulsory Care of Juvenile Delinquents

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Recent studies have focused on reading and writing disabilities among inmates in prisons and at juvenile institutions. Some studies in Sweden have demonstrated that more than half of the delinquents have serious reading difficulties, and for immigrants the situation is even worse. However, these studies have focused on small groups. Furthermore, little attention has been paid to different types of reading and writing difficulties. The main purpose of this investigation was to estimate the prevalence of reading and writing disabilities in juvenile institutions. The study analyses gender differences and differences between immigrants and Swedish pupils. The study included 163 pupils from 22 institutions and used three tests of literacy skills: word identification, spelling and reading comprehension. More than 70% showed some problems in reading and spelling. However, only 11% had serious difficulties. Moreover, the results showed that comprehension ability among immigrant boys was lower than among Swedish boys, despite the same level of word reading skill. The high prevalence of reading and writing disabilities seems primarily to be related to social and cultural factors, home backgrounds, limited school attendance and poor self-esteem rather than to constitutional problems of a dyslexic nature. The implication of this conclusion may be important for the intervention process. Copyright © 2001 John Wiley & Sons, Ltd.

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INTRODUCTION

That there is an association between reading disability and juvenile delinquency is well established, recent studies having demonstrated that more than half of the young institutionalized delinquents have serious difficulties with written language (Sarnecki, 1991; Newman, Lewis and Beverstock, 1994). Also, among adult prisoners the prevalence of reading disability is very high. Recent Swedish studies (Alm and Andersson, 1997; Jensen *et al.*, 1999) show that a considerable proportion (from 45 to 65%) of the Swedish-speaking prisoners has marked problems with reading and spelling. One interpretation of this high proportion would be that early failure on a socially, highly valued skill such as reading would cause an almost traumatic frustration leading to aggression, acting-out behaviour and eventually, in severe cases, to conduct disorders. However, careful longitudinal studies seem to indicate a reversed causal direction. In the New Zealand studies by Fergusson and Lynskey (1997), the relationship between reading disability at the age of 8 years and behaviour problems by the ages of 10, 12 and 14 years was clear. This finding seems to suggest the causal direction we just referred to. However, Fergusson and Lynskey also had data available on the social adjustment of the children when they were 6 years old and even early data from infancy. When these data were taken into account a clear direct association of early behaviour problems with later conduct disorders among adolescents could be established. The correlation between reading disability and behaviour problems then disappeared. The fact that the direct link from reading disability to later conduct problems disappeared when the proper control measures were taken into account clearly gives support for causal interpretation that goes in the other direction. Consequently, social, emotional and conduct problems seem, in many cases, to be important causes of deficiencies in reading acquisition in school.

Whatever causal direction there might be, we still need a more comprehensive assessment of reading problems in the population of juvenile delinquents. The reason is rather obvious. If there is evidence of a high incidence of reading disabilities in this group, we face a social problem of considerable magnitude since it is almost impossible to obtain and maintain a position of employment in the current 'information society' without a satisfactory level of reading and writing skill. If we want to provide good prerequisites for the rehabilitation of young offenders, the improvement of reading and spelling skills should be a strategic element in the treatment given.

The present study involves the assessment of almost a total population of juvenile delinquents institutionalized in special youth institutions in Sweden (called paragraph (§)12 homes). At the present time there are 32 such '§12 homes' in Sweden. Some of the institutions are single sex and some have mixed groups. The institutions are also divided between pure diagnostic institutions and school and treatment institutions. Most of the homes have a secure unit. Depending on the type of institution, the inmates remain in residence from 2 months up to 2 years.

A considerable proportion of the population residing in these homes participated in this study. This target population consisted of boys as well as girls and a large proportion had an immigrant background. As will be seen,

there are good reasons to keep these subgroups separate in the prevalence study.

Our first consideration concerns gender differences. It is a well established fact that girls normally outperform boys in various reading tasks (for a review, see Wagemaker, 1996). In addition, among the reading disabled we note a clear dominance of boys. Whether or not this fact is related to biological factors is not of primary concern in this study. One would also expect a strong gender difference in our population, maybe even stronger than that of the normal population. This expectation of a particularly strong gender difference is based on the following line of reasoning. As noted above, we expect social problems to cause reading problems among juvenile delinquents. The influence of this factor is expected to be stronger for boys. Their reactions to the frustration of failure in learning to read are probably very pronounced with clear aggressive acting out behaviour, which certainly does not benefit the process of reading acquisition. In contrast, the girls, even though they might have considerable socio-emotional problems by the normal age of reading acquisitions, tend to behave in a way which does not interfere with the early acquisition of reading and spelling, i.e. they are less hyperactive and more ready to conform to classroom demands. Our hypothesis is then that the gender differences in the present population are very pronounced.

The other difference of concern is the contrast between native Swedish inmates and young inmates with an immigrant background. The studies of Taube and Fredriksson (1995) confirmed that students with immigrant backgrounds have comparatively lower levels of reading achievement. Myrberg (1996) reported similar patterns among adults, where the immigrants dominated the low performance group. We have then an empirical basis to expect that the immigrants will have a lower performance than native Swedes. We can also further specify our hypothesis with reference to a study by Frederickson and Frith (1998) in which immigrant children were compared with native English children. The basic idea in this study was that language functions seem to have at least two very basic levels: one phonological and one semantic. It seems as if the phonological surface level can be quickly acquired in a new language, enabling the rapid decoding of printed words. The other, deeper layer of the language is more related to semantics, to subtle interpretations and to understanding idiomatic expressions. This is more closely related to cultural competence and, according to Frederickson and Frith (1998), it seems as if this is an aspect of language that takes a long period of time to acquire. If the superficial phonological layer can be acquired within a year or so, the deeper cultural knowledge of the language may take up to 6 or 7 years of stay in the new country.

On the basis of Frederickson and Frith's findings, we can expect that immigrant children will have an adequate level of decoding skill, whereas their comprehension ability will be lower than a matched group of native Swedish children. Some of the poor readers among the native Swedes may have the opposite profile, i.e. they may have inadequate decoding skill but a reasonable level of comprehension. Thus, given the same level of decoding skill, we would expect higher comprehension scores among the native Swedes than among the immigrants.

The hypotheses developed so far concern first of all the prevalence of reading disability. According to Swedish experience, the prevalence in the general population seems to be between 5 and 8%. The other hypothesis is that a gender difference will be very clear (girls are expected to outperform boys), and the third hypothesis is that immigrants will show a different relationship between decoding and comprehension than the native Swedes.

METHOD

Participants

One hundred and sixty-three (114 boys and 49 girls) pupils participated in the study; they were distributed across 22 different institutions (out of a total of 32 institutions). Thus, our attrition was 10 institutions or approximately 60 pupils. Some of the institutions declined to participate with reference to the fact that testing was not in line with their educational philosophy. Other institutions referred to time restrictions. A few institutions were closing down or had just opened and, therefore, could not participate in the study. We have not been able to discover any clear and systematic differences between those institutions who participated and those who did not. We thus assume that the selected institutions and students are fairly representative of the target population.

Table 1 presents details of the participants in terms of gender, age and immigrant status. Immigrants are counted as those who have both parents of foreign origin. Quite a few of the immigrant pupils were probably born in Sweden and showed no obvious difficulties with Swedish. Unfortunately, we do not have any more exact information about the linguistic status of the pupils.

SCREENING INSTRUMENT

Our selection of instruments was based on practical and theoretical considerations. Tests of our hypotheses required reliable and valid assessment of decoding, as well as of comprehension. To ensure full cooperation and

Table 1. Participants distributed in terms of age, gender and background

Age (years)	Boys		Girls		Total
	Swedes	Immigrants	Swedes	Immigrants	
12–13	2	3	3	4	12
14	8	5	3	0	16
15	25	18	16	4	63
16	18	13	4	4	39
Over 16	17	5	9	2	33
Total	70	44	35	14	163

Mean age = 15.5 years.

engaged participation it was important that the assessment instruments were not time-consuming and had an intrinsic enjoyment value. Since the actual administration of the tests was performed by teachers at the institutions, the instrument had to be easy to handle and score. Unfortunately, it was not possible to use IQ test in this context owing to the sensitivity of the testing issue in Sweden. However, the instruction to the teachers was that they should not include pupils who were mentally retarded, not even those with the slightest suspicion of mental retardation. The following tests were included in the screening

The Wordchains Test

Poor word recognition is a major obstacle in the way of successful reading comprehension (Lundberg, 1991; Stanovich, 1992). The wordchains test focuses on decoding skill. The test, in its simplicity, shows high correlation with more complex measures of reading ability (see Jacobson, 1995; Miller Guron, 1999). The subject's task is to scan words written together in a chain (there are three words in each chain) without interword spaces. All of the words were expected to be in the subjects' vocabulary. The test includes a total of 120 chains. The subject is instructed to mark the interword spaces with a pencil. Performance is expressed as the number of correctly marked 'chains' within the testing time of 3 min. A prerequisite for fast and accurate performance on this task is well developed word recognition skills at an orthographic-morphemic level of development (Høien and Lundberg, 2000).

Spelling

Spelling is an indication of phonological skill and awareness of the orthographic representations of words. A conventional dictation test for grades 4–6 [diagnostic reading and writing test for 10–12-year olds (DLS), see Björkquist and Järpsten, 1983] was used to measure the pupil's spelling ability. The test includes 36 words. Each word is presented in a sentence to clarify the meaning of the word. The word is repeated in isolation and the pupil's task is to write the word. The score is the number of correctly spelled words.

Reading Comprehension

The ultimate criterion of good reading is that pupils can understand what they are reading. However, it is not easy to assess what pupils have comprehended of a text, particularly not in a screening investigation. If it had been possible to converse with the pupil about the text they had read, it might have been easier to see how they interpreted the text. However, such methodology is not feasible in a screening investigation. In this study we used tasks from the international reading literacy study by the International Association for the Evaluation of Educational Achievement (IEA), where the reading achievement of 9- and 14-year-old pupils was compared in about 30 different countries (Elley, 1994). We selected texts and tasks from this study that were brief in order to ensure that most participants were not

discouraged. Four texts and 18 questions from the IEA battery were selected for our study. Two of the comprehension tests consisted of connected prose text and two were brief documents or information tasks. By selecting passages designed to be bridging tasks between grade 3 and grade 8, it was possible to use norms from both grade levels.

RESULTS

Word decoding

Figure 1 presents a frequency distribution of the scores on the wordchains test for all pupils ($n = 163$). Collapsing the age groups was justified in this case. It was obvious that the pupils in the age interval investigated reached approximately the same average regardless of age group (no significant differences). The large Swedish standardization study (Jacobson, 1996) also showed that the developmental curve for wordchains reaches a plateau at the age of 16–18 years.

Figure 1 also shows that the results came close to a normal distribution. It is not possible to discern any distinct signs of bimodality. Obviously, there are no qualitatively demarcated subgroups, but rather a continuous variation of reading ability as measured with the wordchains test. Thus, no distinct reading disability group was observed. The average score for normal pupils in the age groups is 62. The pupils in this study had an average of 52.3 points, which is significantly lower than the normal population ($p < 0.01$).

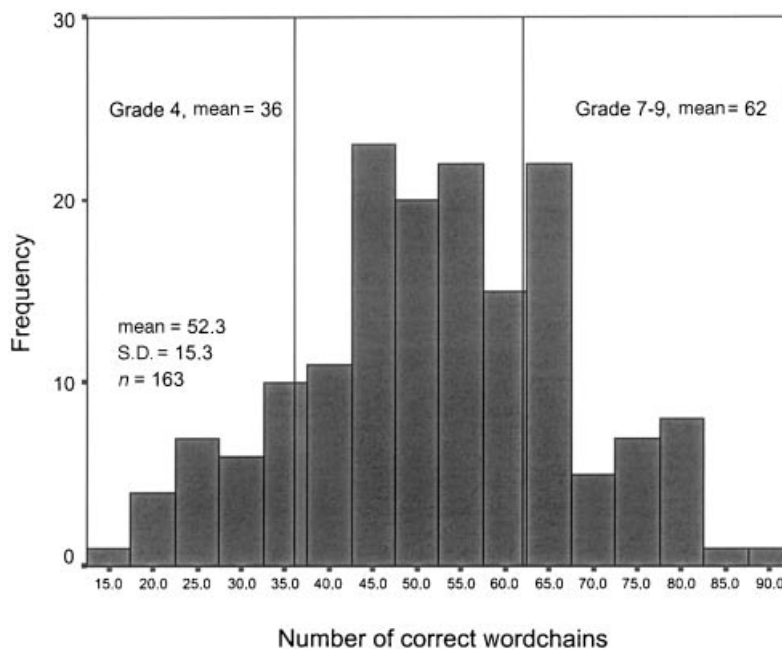


Figure 1. Frequency distribution of scores on the wordchains test for the total sample ($n = 163$). Norm-group means for two grade levels are specified.

However, 28% ($n = 45$) of the pupils reached the norm group average or higher. At the left tail of the distribution we can see that 13% ($n = 22$) of the pupils did not reach the average for grade 4. Their reading development must then be regarded as seriously behind and it would be far from a simple task to help them to reach an acceptable level. The composition of this extreme group of poor readers is specified below.

In Figures 2 and 3, the results have been divided on the basis of gender. The mean value of the boys was significantly ($p < 0.01$) lower than that of the girls (49.7 versus 58.2, respectively). As many as 17% of the boys reached the mean level of grade 4 but 6% of the girls performed at this low level.

On the other hand, approximately 28% of the pupils (23% of boys and 41% of girls) reached or exceeded the normal average. The gender difference in word decoding among juvenile delinquents in this study was then at least as large as in the normal population.

Spelling

The spelling test had 36 items. Figure 4 shows a frequency distribution of the whole group. Since the test is standardized for ages 10–12 years, a markedly skewed distribution with a strong accumulation of scores near the ceiling level was not unexpected. However, we can note that the average score was below the mean value for 12-year-olds (28.5 versus 32.0). The average score for boys was 26.7 and for girls it was 32.6. This difference was significant ($p < 0.01$). However, 50% ($n = 81$) of the pupils reached 32 points or more. On the other hand, more than one in four (27%) did not even reach the

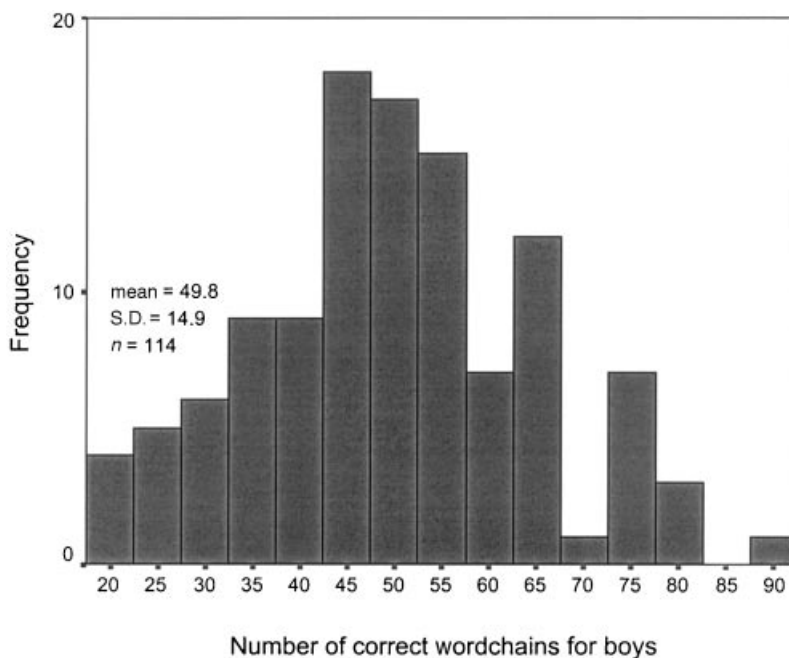


Figure 2. Frequency distribution of scores on the wordchains test for the boys ($n = 114$).

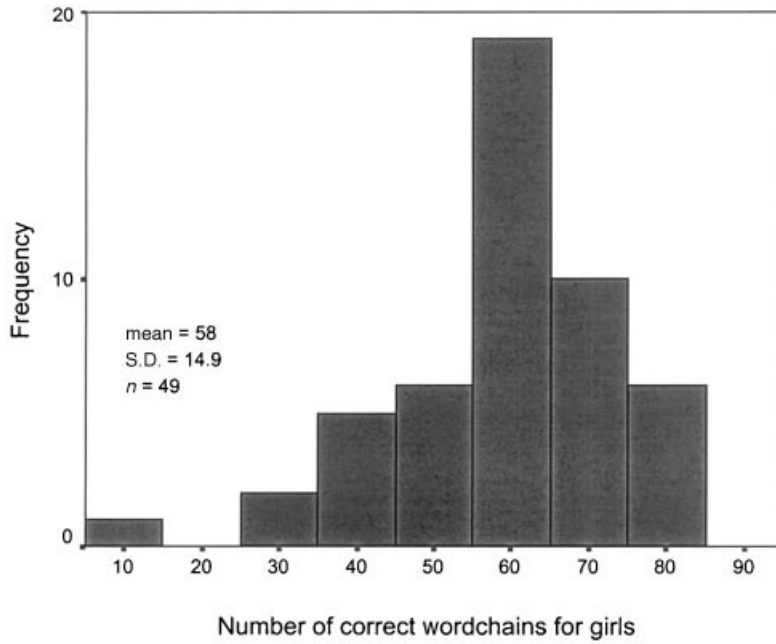


Figure 3. Frequency distribution of scores on the wordchains test for the girls ($n = 49$).

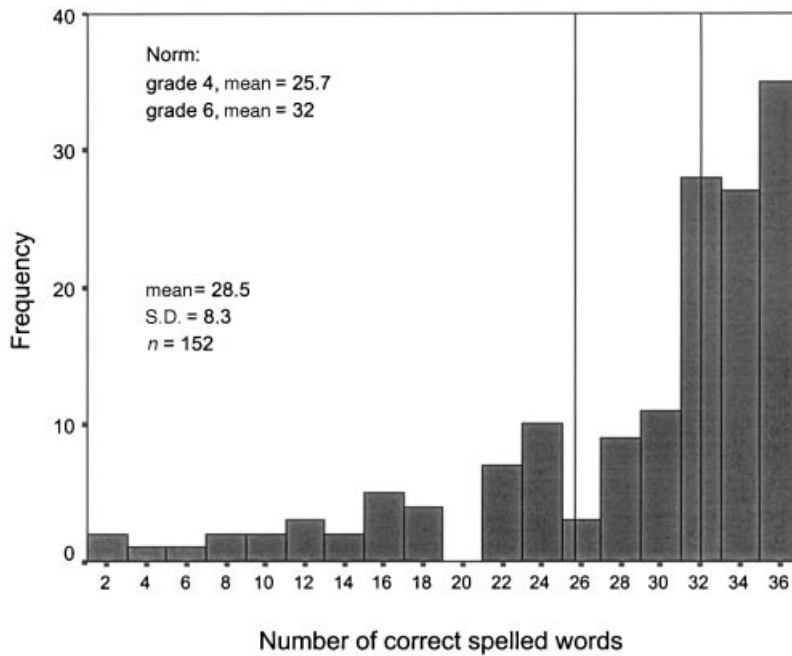


Figure 4. Frequency distribution of scores on the spelling test for the total sample ($n = 152$).

average level for 10-year-olds (25.7 points). There were 33% ($n = 35$) of the boys and 13% ($n = 6$) of the girls at this low level. The gender gap was wider on this test than in the normal population (5.9 versus 2.8 points).

Reading Comprehension

The maximum score on the comprehension test is 18 points. Figure 5 shows a frequency distribution for the whole group. Sixteen percent ($n = 17$) of the boys did not reach the average level (11.4 points) for grade 3. Only 8% ($n = 4$) of the girls showed such a low achievement (there was no significant difference between boys and girls in reading comprehension in the whole group). Nearly half of the boys (47%) and girls (49%) had a reading comprehension score above the average for grade 8 (16.4 points). However, it should be noted that the reading tasks are rather easy and the text amount modest.

The test items in the comprehension test could be divided into nine items relating to prose reading and nine items relating to document reading.

Table 2(a–c) shows that there was a significant difference between native Swedes and immigrants in terms of prose reading in the whole group (Table 2a) and for boys (Table 2b). There was no significant difference in document reading. For girls (Table 2c), there was no significant difference in either prose reading or in document reading.

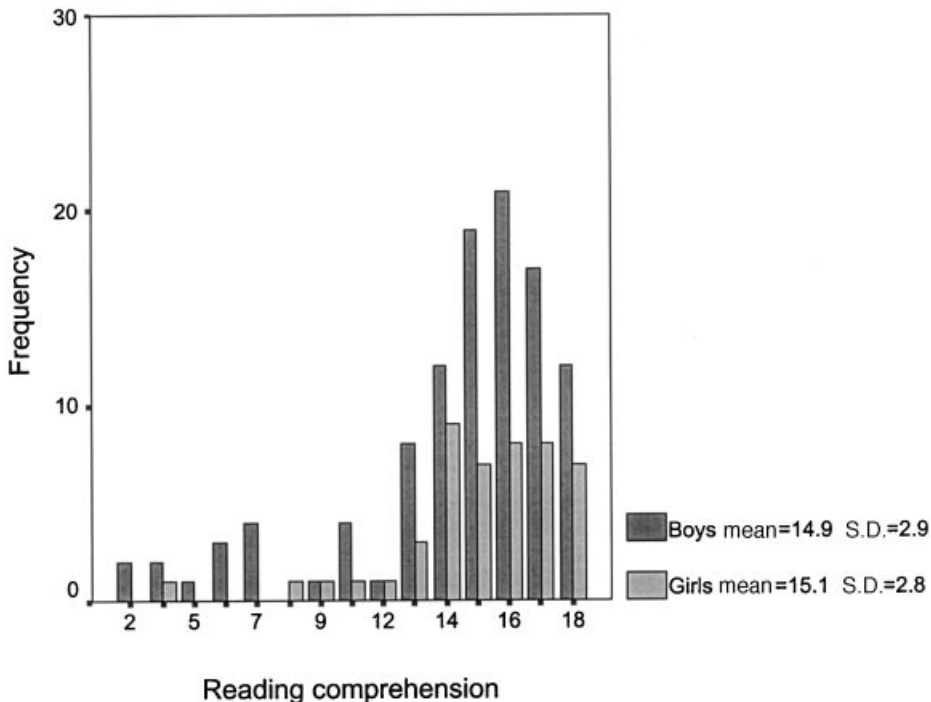


Figure 5. Frequency distribution of scores on the reading comprehension for boys ($n = 114$) and girls ($n = 49$). Norms for two grade levels are specified.

SERIOUS READING AND WRITING DIFFICULTIES

Frequently posed questions concern the incidence of serious reading difficulties in various subpopulations. However, such questions are not easy to answer since there is no clear demarcation line on the continuous performance scale. Any limit that is set is, by necessity, an arbitrary one. Despite this basic problem, we think it is possible to find a consensus region where most people agree that we are dealing with true and very serious reading problems. In this study, we decided to use the average performance level in grade 4 (10-year-olds) as the upper limit of achievement on wordchains and spelling. This is certainly a rather low criterion, but educators often assume that 10-year-olds have reached sufficient fluency for independent reading, although there is still a long way to go before full automatization.

Figure 6 presents a scatter plot of the results of the wordchains and spelling. As can be seen, the correlation between word reading and spelling is rather high ($r = +0.69$) despite the very skewed distribution of the spelling scores. The critical limits of seriously poor performance (below grade 4) on the two tests are marked in the figure (wordchains < 36 points and spelling < 26 points).

In total, 17 (11%) pupils were located in this area. Only two of these pupils were girls. If we use the same criteria as Alm and Andersson (1997) did in their study of adult inmates (below grade 7 in word decoding and below grade 6 in spelling), a total of 58 (38%) pupils performed below these criteria and only eight of them were girls. Forty-eight percent of boys achieved

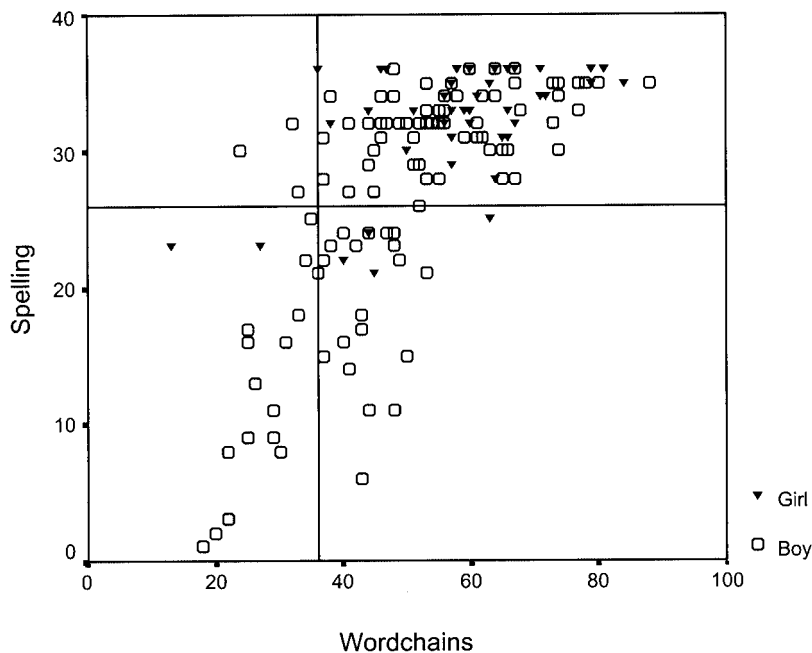


Figure 6. Spelling scores plotted against wordchains scores for the total sample ($n = 152$). Critical limits for low performance are specified (spelling < 26, wordchains < 36). The lower left quadrant includes cases with serious literacy problems.

below the criteria, which is almost the same result as in Alm and Andersson's (1997) study (54%). In the whole group of inmates, 71% performed below at least one of these criteria.

The imbalance between the sexes among very poor readers and spellers was even greater than has been found in other investigations (see Pennington, 1991). The overrepresentation of immigrants among pupils at institutions for juvenile delinquency may have contributed to the large share of pupils with serious difficulties. More than half of the pupils in the left lower quadrant had immigrant backgrounds. This means that 18% of all immigrant pupils were located here, whereas only 7% of the Swedish pupils occupied a position in the lowest achievement region.

DISCUSSION

The main purpose of this investigation was to describe the extent of reading and writing difficulties among pupils in juvenile institutions. Our measuring instruments have been rather simple and have probably not captured all aspects of the complexity of literacy skills. However, our earlier experience and an abundance of international research show that the aspects focused on are central components in reading ability and show high associations with more advanced aspects of reading. Three main hypotheses guided the present study. First, a relatively high incidence of reading difficulties was expected among inmates in juvenile institutions. Second, based on the assumption that reading problems among the inmates are, to a large extent, caused by socio-emotional factors, we expected a wider gender gap than in the normal population. The reaction pattern on early failure was supposed to be more detrimental for reading acquisition among boys than among girls. Finally, we expected immigrant pupils to have greater difficulties with reading comprehension than native Swedes, even when they had equal word decoding skills, since reading comprehension was assumed to require greater prior knowledge, vocabulary and cultural competence.

In this study we found that more than two-thirds of pupils in juvenile institutions had some difficulties with the written language. However, only 11% seemed to have very serious disabilities. There was a large and significant difference between boys and girls, where girls outperformed boys in both word decoding and spelling. There was no difference in reading comprehension. Furthermore, there was a significant difference between native Swedes and immigrants in prose reading, despite the same age and the same level of word decoding. Thus, our three main hypotheses have been supported by the data obtained in this study.

The pupils with serious reading and spelling difficulties obviously need very extensive and qualified pedagogical support if they are to reach a level where they can cope with the elementary literacy demands in working life and in society. On the other hand, more than one in five of the pupils are actually decoding and spelling at a normal level or above. These pupils may have a good potential for success during their further studies. However, if reading comprehension is included, only approximately half of these good technical readers achieve at or above the level of the normal population.

Thus, even if the pupils have good technical reading skills they may still have difficulties with reading comprehension, which is at the very core of the reading process.

The middle group, with more than half of the pupils, is certainly not made up of very good readers, but they may have good potential for improvement. In this group there are probably many factors that cause their problems, and most of these pupils should not be characterized as dyslexic. Their lack of proficiency in reading and writing is most likely related to other factors such as irregular schooling and chaotic home conditions with deprived stimulation.

Girls are generally better readers than boys are. However, in this study there is no difference in reading comprehension between boys and girls, although girls display much better technical skill. One way of understanding this dissociation between comprehension and decoding with regard to gender differences might be the following line of reasoning. Reading comprehension, which is a delicate and subtle process, is easily disrupted by irrelevant emotional processes such as traumatic memories, long periods of time with physical and psychological stress, parental neglect and deprivation etc. Girls might, in general, have stronger tendencies than boys to be preoccupied with inner conflicts and worries, and to be more concerned with unsolved problems than boys, who might be expected to have a more outward orientation towards the demands of the immediate situation. This possible difference in orientation (for a review, see Cross and Madson, 1997) might help to explain the fact that girls are underachievers in reading comprehension, i.e. they comprehend at a lower level than is expected on the basis of their technical reading skill. One reason for this underachievement may be that girls are more disrupted than boys are when they try to understand a text. They have greater difficulties with fully allocating their mental resources to the comprehension task, as they are preoccupied with worries and inner conflicts. Hermodsson (2000) described how girls are more occupied with suicidal thoughts. Girls also reported depression more often than the boys.

This investigation did not show any significant difference between native Swedish pupils and immigrant pupils in word decoding or spelling. However, immigrant boys scored significantly lower on reading comprehension, particularly on prose tasks. This dissociation requires a different explanation than the one proposed in the case of gender differences. We have pointed out that reading comprehension requires deep language processing, inferences and interpretation of idiomatic expressions, rich vocabulary, and world knowledge. These requirements are also closely related to insight into Swedish traditions, values and norms. In other words, the poorer reading comprehension observed among immigrant pupils is more related to lack of cultural competence than to problems with word decoding. The educational implication of this interpretation is then that the process of constructing meaning and the raising of cultural competence are more important than exercises in word identification.

The differences observed between boys and girls and Swedes and immigrants might be related to IQ differences. Unfortunately, it was not possible to use the IQ test in this study. However, there is no reason, according to

experienced teachers, to assume that these groups differ widely in terms of IQ.

We have not focused on dyslexia in this study, even though much of the current research converges on the fact that problems with word decoding and spelling are critical symptoms of dyslexia. However, the instruments used in this study did not permit us to determine the prevalence of dyslexia in the population of inmates; a closer investigation of phonological factors would be necessary for this. Further analysis of the causes of reading failure among juvenile delinquents and closer examination of phonological skills will be reported in a forthcoming study.

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