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# Students in higher education with reading and writing difficulties

Raija Pirttimaa\*, Marjatta Takala\*\* & Tarja Ladonlahti\*\*\*

## Abstract

The aim of this study is to explore adult students' descriptions and understandings of their reading and writing difficulties, and to describe the ways they are coping with them. In higher level studies, information is typically gained by reading and giving evidence of knowledge acquisition in writing. When students have difficulties with these essential academic skills, studying and lifelong learning can be hard work as well as time-consuming. General understanding of dyslexia and reading difficulties at the higher education level has improved, although considerable ambiguity remains about what these mean in practice. This is a qualitative, interview-based study that seeks to improve our understanding of these difficulties. The data were analysed using content analysis, and our findings are presented in terms of: (a) the social experiences of students; (b) their expectations and solutions with respect to their academic progress; and (c) the individual strategies employed for coping with reading and writing tasks.

*Keywords:* higher education, special education, reading and writing difficulties, dyslexia

## Introduction

Problems or difficulties with reading and writing are not different from the manifestation of symptoms of dyslexia. According to Macdonald (2009, 1), "individuals labelled as having dyslexia cannot be separated from individuals with general reading difficulties". For example, in the Finnish school system students do not need to have a dyslexia diagnosis to be eligible for remedial instruction to improve their reading and writing skills. This means that special education which aims to help children with dyslexia does not differ from special education for those who have reading and writing difficulties. In spite of childhood special education, intervention or rehabilitation, many adults continue to have problems with reading and writing or are diagnosed with dyslexia. In this article, we consider dyslexia and serious reading and writing difficulties as synonyms. Although all of our participants had serious challenges in reading and/or writing, not all of them had a formal diagnosis. When encountered on a daily basis (Smith et al. 2004), problems with reading and writing not only affect studying but also career development. There is thus a risk that talented

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persons with dyslexia do not study at the level they are capable of or would prefer to, or that the outcomes of their studies do not meet the requirements for participation in the knowledge society, thereby potentially threatening their possibilities for lifelong learning. From the standpoint of sociocultural theory, a person's sense of identity is affected by what is valued in the society and culture around the person (Kozulin et al. 2003). Literacy skills are valued in modern society and they are important for one's self-concept, which poses a problem for people with dyslexia. When compared with their normally achieving peers, people with dyslexia seem to have a lower academic self-concept than their general self-concept (Zelege 2004). Because dyslexia affects self-esteem, students with reading and writing difficulties may develop social and emotional problems, including psychiatric problems, more often than adults without dyslexia (Riddick et al. 1999; Stampoltzis and Polychronopoulou 2009; Undheim 2003; Wadlington and Wadlington 2005). Lowered self-esteem and increased anxiety levels commonly occur in adult students with learning difficulties (Price and Gale 2006). As a result, they may suffer not only from social and emotional problems, but may also experience academic failure (Everatt 1997; Reis and Ruban 2005). However, the situation is not so straightforward. Burden (2008) studied the relationship between dyslexia and various aspects of self-perception, such as self-concept and self-esteem. Further, Burden (2005) conducted a study with 50 dyslexic boys whose self-efficacy increased while attending a special school for children with dyslexia in comparison to the regular school they had previously attended. There appears to be an urgent need for more studies about the relationship between dyslexia and self-concept. It seems it is not immutable, but with improved literacy skills the relationship to the academic self-concept is reciprocal (Burden 2008). This suggests that dyslexia also needs to be studied from a lifelong perspective, and as having effects on more than literacy performance itself. Since few of such studies have been done in Finland, this research aims to give a voice to adults who have problems with reading and writing.

### **Dyslexia and problems with reading**

Dyslexia is considered to be a specific developmental and learning disorder. Recent definitions emphasise that reading problems in dyslexia are due not to poor teaching or laziness, intellectual challenges or traumatic brain damage. The cause of dyslexia is genetic in origin and has a neurological background; it is also a lifelong state (Ramus et al. 2003; Hannula-Jouppi et al. 2005; Matsson et al. 2011; Ramus et al. 2005; Vellutino et al. 2004). In Finnish educational contexts, this developmental problem is referred to as "reading and writing difficulties" (Holopainen and Savolainen 2008; Syvälahti 2006).

Reading skills can be divided into two components – reading comprehension and decoding. This leads to three types of reading problems: in decoding, in comprehension or in both (Gough and Tunmer 1986). Not all reading problems stem from dyslexia. However, according to the widely accepted theory of dyslexia, the

condition is mainly caused by problems in phonological coding and the persistence of poor phonological skills. Problems with phonological decoding lead to difficulties in connecting spoken and written words. This and other challenges in phonological ability seem to be the core deficit in dyslexia (Elbro 2004; Goswami 2002; Høien and Lundberg 1999; Samuelsson, Herkner and Lundberg 2003; Vellutino et al. 2004). Miller et al. (2006) tested the double-deficit hypothesis of dyslexia on adults (N = 133). The hypothesis posits that dyslexia is more severe in adults who have problems with both rapid naming and phonological awareness than in those who have only one of these major problems. Better reading achievement was associated with better phonological awareness and more fluent rapid naming. Both of these skills are also good predictors of fluent reading in adulthood. Miller et al. (2006) assume that adults have learned how to compensate. They emphasise the importance of assessing adults' reading fluency, because it reveals persistent deficits. A reading comprehension study showed that phonological awareness accounted for less of the variance in reading comprehension accuracy (Miller et al. 2006) than did listening comprehension, working memory, IQ, vocabulary or general knowledge, all of which were found to be more crucial. In this study, no single cognitive process was dominant in predicting reading comprehension; instead, a combination of several processes seemed to provide the best account of reading comprehension difficulties. Problems with reading comprehension seem to include persistent deficits not only in word recognition skills but also in vocabulary, working memory and listening comprehension (Ransby and Swanson 2003). However, dyslexia is not the same as reading comprehension, although they do occasionally overlap (Lehto 2006).

This study concerns adults who are studying and have reading difficulties or diagnosed dyslexia. The focus of this article is on their social experiences, the effects of reading problems on their studies and their strategies for coping with reading and writing. The study also discusses the readiness of higher education to meet the challenges posed by these students. There are more studies about children with reading problems than about adults, and significantly fewer studies about adults (Gwernan-Jones and Burden 2010) studying and facing challenges with reading.

### **Consequences of difficulties in reading and writing**

Although dyslexia appears to be a literacy problem, it has other consequences as well. Problems in pragmatic awareness were studied with 20 dyslexic and 20 non-dyslexic adults (Griffits 2007). The working memory is easily overloaded in social situations and misunderstandings can occur. Inferential information such as metaphors and jokes appears to be difficult, owing to their reliance on verbatim recall. The gist of stories is understood by adults with dyslexia. However, they may struggle when recalling inferred information. Inferred information requires greater processing because the verbal working memory needs to process syntactic and semantic material. The conscious mind can derive inferred information from stored information

(Baddley 1994; Engle and Conway 1998; Griffiths 2007). This indicates that adults with dyslexia often feel that they have problems understanding social interactions (Griffiths 2007) and this element is part of our study.

In an ethnographic study by Goldberg *et al.* (2003), persons (N = 41) with learning difficulties were followed for 20 years. The aim was to identify factors promoting success. Those who had succeeded had high self-awareness, and they were proactive, decisive and emotionally stable. They were able to set suitable goals for themselves and to benefit from social help. Their learning difficulty was only one part of their life; they were also aware of their strengths. They had warm relationships with others and had received support from their families. However, many experienced a feeling of shyness and difficulties in forming social relationships. They felt that their learning difficulty had seriously affected their life. A Dutch study of dyslexic adults aged between 20 and 39 years found some less positive ways of coping, such as avoidance, tricks, camouflage, overcompensation and repression (Hellendoorn and Ruijsenaars 2000). Many negative school experiences were reported, including humiliation, being bullied and feelings of not belonging. However, negative coping strategies could be avoided through remedial help. More than half of the participants had experienced problems with making social contacts. These relationships were characterised by fear and failure as well as by feelings of being different. The most powerful source of help was support from the family. Despite their negative experiences and feelings, most participants regarded themselves as strong and persistent. Various positive ways of coping were mentioned, such as openness, asking for help, using computer spellcheck and grammar programs, developing specific learning strategies and other practical solutions (Hellendoorn and Ruijsenaars 2000).

Everatt, Steffert and Smythe (1999) found evidence of a link between dyslexia and creativity. This suggests that adults diagnosed with dyslexia might be capable of inventing compensatory strategies in reading and writing. The strengths that have been associated with dyslexia are good comprehension, oral and visual skills, and problem-solving (Reid and Kirk 2001).

There has also been research on people with dyslexia who have been successful. Fink (1996), for example, found that they are passionate readers. Kerka's (2002) suggestion that a vocational orientation is a better choice for students with dyslexia than an academic career demanding better reading skills may therefore not be the best possible advice. Nevertheless, in Finland young people diagnosed with dyslexia seem to more often choose a vocational career (see Holopainen and Savolainen 2006).

## **Reading and writing in higher level studies**

Diagnosing dyslexia in an adult can be difficult because adults have had time to create compensatory strategies and they may thus not recognise what their main problem with studying is (see Illingworth 2003). Dyslexia in older students (age 40+) has often remained unrecognised at school (Dale and Taylor 2001). The

true prevalence of dyslexia among adults is unknown. However, it has been calculated that around 3%–5% of adults have dyslexia to an extent which may prevent them from participating as fully as others (Hellendoorn and Ruijsenaars 2000). The Niilo Mäki Institute (2006), a leading Finnish research foundation, reported that up to one-fifth of Finnish adolescents do not attain the level of reading skills needed to survive in the knowledge society.

How many of these adults are studying in higher education is unknown. In Finland, upper secondary school usually leads to studies in higher education. Mehtäläinen (2005) calculated that about 3% of upper secondary students had reading difficulties. Even higher numbers have been reported in other countries (Chard and Couch 1998; Riddell, Tinklin and Wilson 2005). In Finland, students at this level can receive some extra time or accommodations while doing their final national exams (Matriculation Examination Board 2014). However, no accommodations are available while trying to access higher level studies. In Finland, retaining any data about students with reading and writing problems or any another disabilities studying in higher education is not permitted. The students alone are responsible for informing the organisation, teachers or professors about their challenges with their studies. At school age, 9% of the whole population had received support for reading and writing difficulties in Finland (Statistics Finland 2010). The National Institute for Health and Welfare collects various statistics, but they are mainly related to disability services, such as transportation. In 2013 study in the six largest cities in Finland showed that 2.2% of the inhabitants received some kind of disability service from the state (Vartiainen 2013). However, dyslexia is not mentioned as such in these. Chard and Couch (1998) calculate that in Britain 19% of students (after basic education) have dyslexia. Riddell, Tinklin and Wilson (2005) reported in their follow-up that during the period 1995–2000 the proportion of cases of reading disabilities in higher level education rose from 17.9% to 32.7%. These figures indicate that the situation is a common one. Yet these statistics must be interpreted in their respective contexts because definitions obviously differ, as do the uses of statistics.

Although general knowledge about dyslexia in higher education has increased, considerable ignorance remains. It has also been argued that there is a need for research which reflects the personal and social experiences of dyslexia (see Macdonald 2009). It would be much easier to walk into a library with a white cane and ask for help than to explain that you have dyslexia and thus have difficulties in finding a book (Riddick 2001). An invisible disability like dyslexia is harder to understand than a more visible one (Mullins and Preyde 2013; Riddick 2001).

### **Supportive pedagogy in higher education**

Early intervention is important. A recent meta-study (Galuschka et al. 2014) on the effectiveness of treatment approaches to reading disabilities shows that these

difficulties can be ameliorated with appropriate treatment. However, not everyone has received help early enough. The reality appears to be that students with challenges in higher education feel that they do not receive enough support (Griffin and Pollak 2009). The staff at higher education institutes, which are mainly based on heavy reading curricula, need more information on how to work with academically vulnerable college students, such as those struggling with reading and writing (Quick 2013). The staff members (N = 182) easily forgot that the low-achievers were also their students and that their responsibility was to take care that they too reach their potential. Outside of teacher education, 57% of staff members reported they had enough knowledge to work with this vulnerable group. Within teacher education, the amount rose to 81%. Yet the majority of staff members participating in this study expressed their willingness to learn new ways to help all students achieve good results (Quick 2013).

Technology, especially social media, has increased the possibilities for students struggling with reading. In addition, surprising ways of promoting learning have been used, such as Facebook. With some struggling adult students, this social media platform was useful, among other things, for helping to remember deadlines and increasing control over learning. Its use was enthusiastically received by students (Barden 2014). However, teachers often face many challenges in using web-based systems and they would need more support for practice (Rytkönen 2014). Students with reading problems seldom mention any special methods, but they express hopes that the teacher would see them as individuals, not just as dyslexics, and that suitable conditions for learning, such as sufficient time and space, are provided (Nielsen 2011). To help both teachers and students, a project called Design for All in Higher Education was initiated by the Ministry of Education in Finland in 2005. The goal was to promote physical, mental and social design for all and dyslexia was mentioned in the list of diversities. This project produced material for higher education and it is accessible through the Internet (Design for All 2011). However, who has read this material, and changed his or her pedagogy after doing so, is unknown. It seems that support for both teachers and students does exist, but it needs to be found.

## **Method**

This study used interviews to find out more about the higher education experiences and coping strategies of adult students with reading and writing challenges.

### ***Participants***

The sample in our study consisted of 10 students from different types of Finnish higher educational institutions: science universities (n = 8), a university of applied sciences previously known as a polytechnic (n = 1) and an open university (n = 1). These universities are all located in the same geographical region in Finland and

state on their websites that they serve about 35,000 students (the number does not include the open university). The participants were recruited by sending an email through the local dyslexia and learning disability association, Diverse Learners, to all members. Thirteen individuals interested in participating responded by email or telephone. During this initial contact, the researcher asked them about their studies, reading and writing problems and possible diagnosis of dyslexia. The aim was to find persons with problems in this area and who were in higher education. Because the researchers were interested in subjective experiences (e.g. social experiences), participation was limited to students who reported difficulties with reading and writing, or who had earlier been diagnosed as dyslexic. The final sample included 10 people: three persons were omitted from the original sample because they did not primarily have reading difficulties. All participants reported that they were slow readers, that they made mistakes and that their reading difficulties also led to comprehension problems. All reported having several writing problems: typically their writing was slow and “full of mistakes”. Six of the ten participants also reported having problems with mathematics and seven reported problems in concentrating. Among the participants there were three males and seven females, with ages ranging from 21 to 49 (mean 35.3 years). The participants over 30 years of age ( $n = 6$ ) had studied previously and had obtained qualifications either at the university or vocational training levels. All participants had a background upper secondary school or equivalent education, which is a precondition for higher education and university studies. Entrance exams are also compulsory for studies (except for the open university). Three of the participants were studying full time and the remainder were studying alongside work. The length of time the participants had been studying for their degree at the time of this study ranged from one to seven years, except for one person who had retained student status for 21 years and only had their master’s thesis left to complete. The participants’ teachers had recognised their reading and writing problems during the first years of school. Special education teachers had also identified most of the participants as having dyslexia. One participant had been diagnosed by a paediatrician, one had consulted a psychologist, and two had consulted speech therapists. One participant did not remember if he had received a diagnosis, but he had experienced reading and writing difficulties during his school years and was continuing to have similar problems. The fact that in Finland special education teachers have a master’s degree in education (Hausstätter and Takala 2008) means that they are able to identify dyslexia (also see Haapanen 1995). In addition, in Finland, a diagnosis of dyslexia by a medical professional is not needed in order to implement special education interventions. After basic or primary education during adolescence or adulthood, five participants had received special education or therapy to help them cope with dyslexia. This had been organised by the local learning disability association.



### ***Data collection***

The data were collected in semi-structured interviews. The tape-recorded interviews took place at a site chosen by the participants. The actual interview lasted about one hour, and the total interview time for all participants was 12 hours. The interview began with questions on background variables (age, education, occupation, employment status, studies, family history, rehabilitation/special education history etc.). The main topic of the interview was reading and writing difficulties. Our preselected themes related to this topic were social experiences, effects on studying, and coping strategies in managing reading and writing.

### ***Data analysis***

The main method used was content analysis (Franzosi 2008). However, elements of thematic analysis were also used when searching and reviewing the main themes (see Braun and Clarke 2006). All of the interviews were transcribed and the transcriptions were analysed by means of content analysis. The text was first read several times to gain a general understanding of the content. The interview themes were studied and main categories formed around them. However, new categories were also open if they appeared. The approach was theory-based. The focus was on personal experiences, which were reflected on through earlier research findings on dyslexia. The fidelity of the findings was confirmed by individual analysis, performed separately by each author, followed by a comparison and discussion of the results.

## **Findings**

The preselected themes are broadly discussed below, based on the responses received from the participants.

### ***Social experiences: disclosure?***

Persons with dyslexia may decide to hide their problems, a phenomenon that was also found in our study. The informants reported that they always carefully consider whether they need to mention their problems openly in public. First of all, mentioning one's dyslexia or related problems with reading and writing means admitting that such problems exist. There is the risk of being negatively labelled with terms such as "lazy" and "stupid" (Interviewee 2 and 10) or "careless" (Interviewee 7). Those who seek to hide their difficulties are in danger of being disempowered. It may be difficult for them to claim their entitlement to support (see Illingworth 2005) or support may come too late and second-order problems may arise.

I tell people [about my dyslexia] when I consider that it is reasonable [. . .] If the listener has no idea [about dyslexia], no knowledge, I'd rather not say, there might be some [negative] attitudes [. . .] they think you are lazy (Interviewee 10).

The second, and perhaps most stressful, reason for remaining silent about their difficulties was the participants' suspicion that, if they mentioned their difficulties, this might lead to obstacles for them in continuing their studies. There was evidence to support this fear. Some had previously suffered negative consequences after mentioning their reading and writing problems or dyslexia. One participant reported very negative attitudes of other students:

... during one group assignment I told them about my difficulties, but they got angry with me because I hadn't done the work at the same pace as the others and, as a result, the group I was participating in hadn't been very successful. And so the group was angry with me (Interviewee 3).

The third reason given by the informants for hiding or not mentioning their dyslexia was that it had not been necessary. They had enjoyed close, understanding relations with the other students and teachers and were able to use all their strategies of compensation or draw on all the support they needed: "Not necessary because they know about this [reading/writing difficulties or dyslexia]" (Interviewee 9).

In addition, mixed feelings were reported. People asked, for example, how it was possible for someone with dyslexia to pass the entrance exam. In other cases, some considered the student to be pretending/faking when asking for special treatment: "[When asking for support] the teacher thought that I wanted to get through my studies easier than the others" (Interviewee 6). Sometimes the problem was dismissed: "I suppose people don't take my dyslexia seriously [...] they think that if I did my job properly there wouldn't be any problems [with reading or writing]" (Interviewee 7). At other times, the emotions linked with dyslexia were passed over with humour, which was not always supportive: "I'm not always in the mood to make jokes [about my problems]" (Interviewee 5).

However, students also reported receiving helpful mental support along with unawareness and negative attitudes: "The professor [who knew my problems] interrupted this tearing apart [of my essay] quite quickly and asked my opponent to concentrate on the content [rather than the spelling mistakes]. I haven't worked with him [the opponent] since" (Interviewee 5).

All participants said that they had talked about their problems with their fellow students and teachers at some point during their studies. They usually told others about their dyslexia in situations where they needed support or accommodation or other help in their studies. Mentioning one's problems and asking for support seemed to be easier in a small department where relations with staff were close. The consequences were not always, as was often expected, negative. Supportive and neutral attitudes were also reported: "In our department people are nice enough ... and they [their attitudes] are good. Even though it is a small department ... they are busy and they don't necessarily give all the materials in advance" (Interviewee 9).

In another case, the response to revealing dyslexia was reported as “nothing special” (Interviewee 1).

### ***Effect on studies: Lowering the level, slowing down the pace***

Dyslexia has had a strong impact on the participants’ studies and their results: they have succeeded tolerably well but not necessarily on the level they might have expected to. These effects were first described and the respondents were then classified into three types. Some participants described a constant feeling of underachievement: “I am never satisfied with what I put down on paper” (Interviewee 5). “I felt that they [source texts read for the exam] were too long and there was too much to learn and too much to read. And at that point I cut down and lowered my sights” (Interviewee 7). Dyslexia also influenced their choice of courses as well as their choice of careers. The study programme should not include a lot of languages and courses should be organised in a suitable way: “[I choose] courses where you do not need to read a lot of languages” (Interviewee 1). Commonly, in Finland, the further a student advances, the more important knowledge of foreign languages becomes, mainly for the purpose of obtaining all the requisite information. This makes studying slow and demanding for university students with dyslexia: “I need lots of time to understand everything, first I have to translate everything into Finnish; I can’t read and understand English” (Interviewee 1), or “[I can concentrate] for a maximum of 25 minutes, I can’t be attentive for long periods” (Interviewee 7).

Some had even given up their studies at a critical point because writing the final thesis had proven to be too hard: “I got three different kinds of advice [on how to write the thesis] and by that time I was totally confused and didn’t know what to do. And it took about a year during which I tried and tried to write but didn’t succeed” (Interviewee 10).

### ***Strategies for coping with reading and writing***

Two of the participants reported benefiting from medical support. One had been taught by his doctor to use “head position” exercises and another reported finding certain vitamins and dietary supplements helpful. All of the informants said that they had overcome many obstacles by applying pedagogical ideas and learning strategies that they had created, either intuitively or by training, for themselves. Approaches of this kind are termed coping strategies in studies by Price and Gale (2006) and Heiman and Precel (2003). Such strategies are described by Gerber, Ginsberg and Reiff (1992) as “learned creativity”. Finding and utilising appropriate strategies can empower learners and raise their grades (Long, MacBlain and MacBlain 2007). In many cases, factors for success were clearly known: “[when studying] it is easier . . . to have good materials in Finnish and a delimited course area” (Interviewee 4).

The strategies used by our adult students concerned environmental changes, compensation or other individual strategies, and the use of technology. While

strategies are valuable, the participants also stressed the importance of having the right attitude. One participant explained that she had “grown out of her childhood shyness into a self-directed and independent student who is able to apply creative strategies” (Interviewee 6).

Environmental changes were reported to be helpful. Many informants had benefited from the extra time the university had allowed them in exams: “I have an hour of extra time; some regulation says that if you need it you can ask for it. I have only one hour of extra time [in exams]” (Interviewee 1). When the situation is stressful, such as when there is a shortage of time or other pressure, persons with dyslexia fail easily. When the atmosphere is relaxed and supportive, everyone is more successful: “I studied Italian and the teacher said that you do not need to know anything and we proceeded very positively, there was no pressure . . . studying languages started to go well. Then I went to German lessons, another teacher. No help! No success” (Interviewee 10). Along with teachers, technology was also helpful for others: “In exams at the university, I can use a computer. Otherwise, I waste a lot of time now I don’t need extra time . . . It is difficult to listen and to take notes. Some [teachers] have taken printouts for me in advance” (Interviewee 8). Often the study environment is noisy. However, people react individually to extraneous sounds. Some people find music disturbing and some are irritated by an echo, but others need extra sounds: “If there is music or someone is speaking, it takes my concentration away” (Interviewee 9). “At home, I keep the radio on all the time . . . at work I keep the door to the corridor open. I can hear sounds/voices. It helps me concentrate” (Interviewee 7). “I need silence. It [noise] disturbs me immediately” (Interviewee 8). All of the factors mentioned above can be labelled environmental changes.

Strategies for coping with texts may help to overcome the difficulties. Visual strategies, such as using different colours to highlight important issues, seem to help many people to remember things: “I repeat [as a memory strategy]” (Interviewee 7). “I colour them all [in a book] and underline the most important issues and add something” (Interviewee 1). “I go to a shop and search for a certain shape [not text]” (Interviewee 6). “I had studied from my sister’s notes and the same task was given in the test. I like switched a film projector on and without understanding . . . I did it [the test] correctly” (Interviewee 6). “I have a sight/vision memory. I can also concentrate on listening and noise doesn’t disturb me. [After listening] I need to read it only once” (Interviewee 2). When teachers make small changes to the materials they are using or change the way they teach, everyone benefits. Alternative ways to show evidence of learning are preferred: “Yes, yes, I would like to have oral examinations. Not home essays, they are neither fluent nor easy. Essays are uncomfortable” (Interviewee 3). Alternative ways of acquiring information also help pave the way for success. Teachers who include a mixed mode of instruction or blended learning strategies in their traditional face-to-face lecturing and textbook reading

offer more possibilities for students to overcome obstacles and realise their potential (Jääskelä and Pirttimaa 2007). Research findings (Camahalan 2006; Takala 2006) suggest that the use of metacognitive strategies in learning to read has positive implications for reading achievement. Often such strategies are connected to visual images or to motor or kinaesthetic elements: “My hand remembered . . . I have body memory” (Interviewee 6); “I remember faces better than names” (Interviewee 7).

Compensation strategies are also commonly used: “Dyslexia has taught me specific compensatory strategies. If the regular system doesn’t function, something else has to be used” (Interviewee 10). Another adapted to the situation with creativity: “I went on a two-week-long intensive language course and I decided this is role playing” (Interviewee 6). Learning foreign languages causes problems for many persons with dyslexia. However, one participant (who was a professional sign language interpreter) said that sign language was easy to learn. Learning in authentic environments makes language lessons easy.

Technology can encourage students who lack the reading and writing skills necessary for success in higher education to study more at this level. Computers and various assistive technologies help students make gains beyond what they have previously achieved (see Engstrom 2005). Computers have helped many, especially spellcheck programs: “It has helped because I searched on the Internet for systems that train the 10-finger touch system” (Interviewee 5). However, computers may also make learning difficult (see Habib *et al.* 2012): “ICT helps, like word processing etc., but typing with both hands is difficult. The problem is not with the computer. There are [when using a computer] so many things to observe at the same time and then there is this layered system that causes problems when you can’t keep things in mind, nor perceive the system as a whole” (Interviewee 3). Computers are useful in producing readable texts and, hence, many persons with dyslexia have poor handwriting. The handwriting of one-third of pupils aged 11–12 was poor, and that of 12% or more was so poor that they were in the dyslexic category. Over 95% could not meet the handwriting speed criterion and boys were more than 10% slower than girls (Montgomery 2008). Handwriting difficulties were also reported by the participants in our study: “My brain functions quicker than my hands. It must be chaotic for them (teachers) to read” (Interviewee 2); “I make a lot of mistakes when writing” (Interviewee 9).

## **Summary of the results**

This study used a qualitative methodology. The aim was to determine what reading and writing problems mean to students in higher education by listening to their voices. The focus was on the kinds of positive and negative issues related to social situations, as well as studying styles and strategies for coping with reading and writing difficulties. The reading and writing difficulties encompassed both studying styles and coping strategies. The findings are summarised in Table 1.

Table 1. Summary of the main findings: Higher education students (N = 10) describe their reading and writing difficulties

Social experiences	Effect on studies	Strategies to manage with texts
Negative labelling	Lowering the goals	Medical support
Support denied OR received	Smaller choice of courses	Environmental changes
Doubts of faking	Avoiding foreign languages	Compensation
Mixed feelings	Termination or prolongation of studies	Use of technology

The main finding is that features mentioned in the literature also emerged in the interviews with the 10 participants studying at university level. Students with reading and writing difficulties can easily encounter social challenges. To overcome these, such students need to develop personal studying styles and coping strategies. Reading and writing difficulties can lead to underachievement, or to the prolongation and even termination of studies. The informants in this study described many ways of coping with texts, showing that adult students with dyslexia are not inferior to people who are non-dyslexic. They are active and positive and aware of their difficulties. A surprising result was that, although information on reading difficulties is available, it is apparently not used by staff members in educational institutes. Specific people should therefore be delegated the responsibility of developing procedures and disseminating the information.

## **Discussion**

Reading and writing skills play an essential role in university-level studies (Quick 2013). Information is typically acquired by reading and evidence of learning is given in writing. Studying and lifelong learning can be challenging and time-consuming work if the student has difficulties in these essential academic skills. In this study, the participants most often met those challenges by increasing the time they spent on studying, lowering their standards and finding individual solutions when reading or writing was required.

It should be noted that the first two solutions (more time and lowering standards) may also lead to problems. One such problem is social. A student with dyslexia/reading and writing difficulties does not advance at the same pace as their peers. This slower progression may lead to social isolation, chiefly in the initial stage of studies, a time when young students get to know each other and can benefit greatly from social relationships. The social aspect of higher education studies is connected not only to academic work, but also to the individual's personality, friendships and growth from adolescence into adulthood. Low achievement may induce low self-esteem or self-image, especially in cases where the student knows that they could perform better. It is reasonable to think that experiencing low self-esteem for several years could lead to depression or other negative mental health outcomes. In contemporary society, however, several higher education institutes offer

psychological services and provide information on mental health issues on their website (see e.g. Aalto University 2013).

The third solution, devising individual solutions to overcome obstacles, can be empowering. When one's own strategies or solutions are efficacious, this reduces the negative consequences of the difficulties. However, an individually achieved feeling of success cannot be the only solution to the situation. Clearly, if one's studies proceed slowly and require increasing effort, the risk of stress and termination of studies or dropping out is high. We conclude, therefore, that universities should develop ways to support students with reading and writing problems. Although ideas are posted on university websites and these documents refer to the Non-Discrimination Act (2004), this information needs to be delivered actively to all university teachers.

Several accessibility initiatives have been implemented in Finland, including projects of universal design and equal opportunities for persons with disabilities (Design for All 2011). Clearly, in this study, not all teachers were aware of this. Dyslexia was typically dismissed and students with reading and writing problems were neglected or forgotten. Even when the student had frankly discussed his or her problems, the teacher often had no ideas for supporting or helping the student to write the thesis. Consequently it could be several years before corrections were made. This also raises the question of whether there is enough study guidance or career counselling at the university level. Individual study guidance sessions could offer confidential situations for discussing learning problems and planning on how to proceed with studies. As the interviews showed, disclosure is a critical issue for students with difficulties.

Technological or environmental changes were the participants' first priority (e.g. quiet environments, access to texts before the lecture, clear presentations). Such changes are practicable and easy to implement. The participants also stated that if teachers possessed better teaching skills it would be easier to follow instructions. Better teaching skills could mean the flexible use of different teaching methods and materials. It also places the responsibility on the teacher or subject-related academic staff instead of leaving it with the central student service. Studies in university pedagogy have become more and more common in the academic world (University of Helsinki 2014). These studies should categorically include information and practical ideas in relation to reading and writing challenges. Individual learning plans should not only include timetables but also support for studies through personal tutoring. It should also be possible to learn how to study at the university level. These learning-to-learn skills are often minimal and seldom taught at schools (Kupiainen *et al.* 2011). Students with diverse learning difficulties could also benefit from career planning. If it is possible to predict that their future occupations are going to demand extraordinary effort due to their dyslexia-related problems, students might find it helpful to make post-study work plans for the future during their studies.

The psychological consequences of having dyslexia/reading and writing problems should also be considered. Studies should promote student engagement and enhance self-efficacy (Long, MacBlain and MacBlain 2007), which may shorten the time spent studying. Developing practical skills in managing reading and writing could also be useful. Presently, teaching in this area is mainly organised by disability associations. Alternatively, the students themselves must develop their own survival skills regarding reading and writing tasks.

This study has its limitations. There were only 10 participants, the sample was gender-biased, the informants were not tested, and their ages varied. Nevertheless, the fact that the results confirm those of existing studies is an indication of their reliability. However, what is surprising is the limited amount of support available to students with dyslexia at the university level, given that special education and other forms of support are well-developed in Finnish schools. This knowledge and these practices have not yet spread to higher education.

Devising and planning support for lifelong learning in the case of adults diagnosed with dyslexia or having reading and writing difficulties involves the planning of universally suitable learning environments and teaching, and also of individual support systems. Thus not only should educational authorities be aware of a wide range of students' needs, but political and economic involvement is also required. Future research could focus more closely on the social or emotional issues raised in connection with dyslexia as well as support systems.

This study is strongly based on students' views regarding the challenges they face in university studies. However, the issue is not confined to the individual level. In planning higher education, emphasis has also been placed on economic considerations. According to the new guidelines in Finland (as well as those in many other countries), funding for universities will increasingly be based on student outcomes. It is, therefore, to the benefit of all parties that, once selected, students get all the support and flexibility they need to complete their studies. One way is to deliver information about reading and writing difficulties while providing concrete methods for how to promote learning when reading is a challenge.

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## References

- Aalto University. (2013). Mental wellbeing and health. <https://into.aalto.fi/display/fiopintopsykologi/Henkinen+hyvinvointi+ja+mielenterveys> (Accessed 2014-06-03).
- Baddley, A. D. (1994). *Human memory. Theory and practice*. Mahwah: Lawrence Erlbaum.
- Barden, O. (2014). Facebook levels the playing field: dyslexic students learning through digital literacies. *Research in Learning Technology* 22, 1–18, doi: <http://dx.doi.org/10.3402/rlt.v22.18535>
- Braun, V. & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101.
- Burden, R. L. (2005). *Dyslexia and self-concept*. London: Whurr.
- Burden, R. L. (2008). Is dyslexia necessarily associated with negative feelings of self-worth? A review and implications for future research. *Dyslexia*, 14(3), 188–196.
- Camahalan, F. M. G. (2006). Effects of a metacognitive reading program on the reading achievement and metacognitive strategies of students with dyslexia. *Reading Improvement*, 43(2), 77–93.
- Chard, G. & Couch, R. (1998). Access to higher education for the disabled student: a building survey at the University of Liverpool. *Disability & Society*, 13(4), 603–623.
- Dale, M. & Taylor, B. (2001). How adult learners make sense of their dyslexia. *Disability & Society*, 16(7), 997–1008.
- Design for All. (2011). *Possibility to study for all in higher education institutes. An ESOK-project between 2009–2011. [Esteetönopiskelu korkea-asteen oppilaitoksissa\_ ESOK-projekti 2006–2011]*. <http://www.esok.fi/esok-hanke/> (Accessed 2014-06-05).
- Elbro, C. (2004). *Läsning, läsundervisning*. Malmö: Liber, Elanders Berlings.
- Engle, R. W. & Conway, A. R. A. (1998). Working memory and Comprehension. In *Working Memory and Thinking*, R. H. Logie, J. Kenneth & J. Gilhooly (eds.), 67–91. Hove: Psychology Press.
- Engstrom, E. U. (2005). Reading, writing, and assistive technology: an integrated developmental curriculum for college students. *Journal of Adolescent and Adult Literacy*, 49(1), 30–39.
- Everatt, J. (1997). The abilities and disabilities associated with adult developmental dyslexia. *Dyslexia*, 5(1), 28–46.
- Everatt, J., Steffert, B. & Smythe, I. (1999). An eye for the unusual: creative thinking in dyslexics. *Dyslexia*, 5(1), 28–46.
- Fink, R. P. (1996). Successful dyslexics: a constructivist study of passionate interest reading. *Journal of Adolescent & Adult Literacy*, 39(4), 268–280.
- Franzosi, R. P. (2008). *Content analysis. Volume I. Sage benchmarks in social research methods series*. England: Sage Publications.
- Galuschka, K., Ise, E., Krick, K. & Schulte-Körne, G. (2014). Effectiveness of treatment approaches for children and adolescents with reading difficulties: a meta-analysis of randomized controlled trials. *PLOS ONE*, February 2014. doi: 10.1371/journal.pone.0089900 (Accessed 2014-06-04).
- Gerber, P., Ginsberg, R. & Reiff, H. (1992). Identifying alterable patterns in employment for highly successful adults with learning disabilities. *Journal of Learning Disabilities*, 25(8), 475–487.
- Goldberg, R. J., Higgins, E. L., Raskind, M. H. & Herman, K. L. (2003). Predictors of success in individuals with learning disabilities: a qualitative analysis of a 20-year longitudinal study. *Learning Disabilities Research & Practice*, 18(4), 222–236.
- Goswami, U. (2002). Phonology, reading development and dyslexia: a cross-linguistic perspective. *Annals of Dyslexia*, 52(1), 141–163.

- Gough, P. B. & Tunmer, W. E. (1986). Decoding, reading, and reading disability. *Remedial and Special Education*, 7(1), 6–10.
- Griffin, E. & Pollak, D. (2009). Student experiences of neurodiversity in higher education: insights from the BRAINHE project. *Dyslexia*, 15(1), 23–41.
- Griffiths, C. C. B. (2007). Pragmatic abilities in adults with and without dyslexia: a pilot study. *Dyslexia*, 13(4), 276–296.
- Gwernan-Jones, R. & Burden, R. L. (2010). “Are they just lazy?” Student teachers’ attitudes about dyslexia. *Dyslexia*, 16(1), 66–86.
- Haapanen, M-L. (1995). “Kukia poimi ja kukia kana, te sepele nistä ja omalesi ana” – kehityksellinen dysleksia. [Developmental Dyslexia]. *Duodecim*, 111(6), 573–582.
- Habib, L., Berget, G., Sandnes, F. E., Sanderson, N., Kahn, P., Fagernes, S. & Olcay, A. (2012). Dyslexic students in higher education and virtual learning environments: an exploratory study. *Journal of Computer Assisted Learning*, 28(6), 574–584.
- Hannula-Jouppi, K., Kaminen-Ahola, N., Taipale, M., Eklund, R., Nopola-Hemmi, J., Kääriäinen, H. & Kere, J. (2005). The axon guidance receptor gene *ROBO1* is a candidate gene for developmental dyslexia. *PLoS Genetics*, 4(1), e50. Epub 2005 Oct 28.
- Haustätter, R. S. & Takala, M. (2008). The core of special teacher education: a comparison of Finland and Norway. *European Journal of Special Needs Education*, 23(2), 121–134.
- Heiman, T. & Precel, K. (2003). Students with learning disabilities in higher education: academic strategies profile. *Journal of Learning Disabilities*, 36(3), 248–258.
- Hellendoorn, J. & Ruijsenaars, W. (2000). Personal experiences and adjustment of Dutch adults with dyslexia. *Remedial and Special Education*, 21(4), 227–239.
- Høien, T. & Lundberg, I. (1999). *Dyslexi. Från teori till praktik*. Uppsala: Almqvist & Wiksell.
- Holopainen, L. & Savolainen, H. (2008). Nuorten lukemisen ja kirjoittamisen vaikeudet. [Reading and writing difficulties among young people]. In *Luki-vaikeudesta Luki-taitoon*, M. Takala & E. Kontu (eds.), 203–229. [From reading difficulties to reading skills] Helsinki: Gaudeamus.
- Illingworth, K. (2005). The effects of dyslexia on the work of nurses and healthcare assistants. *Nursing Standard*, 19(38), 41–48.
- Jääskelä, P. & Pirttimaa, R. (2007). Blended learning as a teaching strategy in Open University of Jyväskylä. 4th International Conference in Open and Distance Learning. In *Forms of Democracy in Education: Open Access and Distance Education*, 70–72.
- Kerka, S. (2002). *Learning disabilities and career development*. Practice Application Brief, no. 20. <http://www.gpo.gov/fdsys/pkg/ERIC-ED463446/pdf/ERIC-ED463446.pdf> (Accessed 2014-06-05).
- Kozulin, A., Gindis, B., Ageyev, V. S. & Miller, S. M., (eds.). (2003). *Vygotsky’s educational theory in cultural context*. Cambridge: Cambridge University Press.
- Kupiainen, S., Marjanen, J., Vainikainen, M. & Hautamäki, J. (2011). Oppimaan oppiminen Vantaan peruskouluissa. Kolmas-, kuudes- ja yhdeksäsluokkalaiset oppijoina keväällä 2010. [Learning to learn skills in the city of Vantaa’s comprehensive schools. Third, sixth and ninth graders as learners in spring 2010]. City of Vantaa and Centre for Educational Assessment.
- Lehto, J. E. (2006). Tekstinymmärtäminen ja sen vaikeus. Challenges in text comprehension. In *Luki-vaikeudesta luki-taitoon*, M. Takala & E. Kontu (eds.), 125–148. [From reading difficulties to reading skills]. Helsinki: Gaudeamus.
- Long, L., MacBlain, S. & MacBlain, M. (2007). Supporting students with dyslexia at the secondary level: an emotional model of literacy. *Journal of Adolescent & Adult Literacy*, 51(2), 124–134.
- Macdonald, S. J. (2009). Towards a social reality of dyslexia. *British Journal of Learning Disabilities*, 1–9. doi: 10.1111/j.1468-3156.2009.00601.x

- Matriculation Examination Board. (2014). The Finnish Matriculation Examination. <http://www.ylioppilastutkinto.fi/fi/english> (Accessed 2014-05-28).
- Matsson, H., Tammimies, K., Zucchelli, M., Anthoni, H., Onkamo, P., Nopola-Hemmi, J., Lyytinen, H., Leppänen, P. H., Neuhoff, N., Warnke, A., Schulte-Körne, G., Schumacher, J., Nöthen, M. M., Kere, J. & Peyrard-Janvid, M. (2011). SNP variations in the 7q33 region containing DGKI are associated with dyslexia in the Finnish and German populations. *Behavior Genetics*, 41(1), 134–140.
- Mehtäläinen, J. (2005). *Erityisopetuksen tarve lukiokoulutuksessa*. [The need of special education in higher secondary school]. Jyväskylä: Koulutuksen arviointineuvoston julkaisuja 11.
- Miller, C. J., Miller, S. J., Bloom, J. S., Jones, L., Lindstrom, W., Craggs, J., Garcia-Barrera, M., Semrud-Clikeman, M., Gilger, J. W. & Hynd, G. W. (2006). Testing the double-deficit hypothesis in an adult sample. *Annals of Dyslexia*, 56(1), 83–102.
- Montgomery, D. (2008). Writing and the national literacy strategy: cohort analysis of writing in year 7 following two, four and seven years of the national literacy strategy. *Support for Learning*, 23(1), 3–11.
- Mullins, L. & Preyde, M. (2013). The lived experience of students with an invisible disability at a Canadian university. *Disability and Society*, 28(2), 147–160.
- NMI. (2006). Niilo Mäki Instituutti: *Viidenneksellä nuorista puutteita lukutaidossa*. <https://www.jyu.fi/ajankohtaista/arkisto/2006/03/tiedote-2009-10-01-20-12-37-109496> (Accessed 2014-06-05).
- Nielsen, C. (2011). The most important thing: students with reading and writing difficulties talk about their experiences of teachers' treatment and guidance. *Scandinavian Journal of Educational Research*, 55(5), 551–565.
- Non-Discrimination Act. (2004). Yhdenvertaisuuslaki. <http://www.finlex.fi/en/laki/kaannokset/2004/200400021> (Accessed 2014-06-06).
- Price, G. & Gale, A. (2006). How do dyslexic nursing students cope with clinical practice placements? The impact of the dyslexic nursing students: pedagogical issues and considerations. *Learning Disabilities: A Contemporary Journal*, 4(1), 19–36.
- Quick, R. L. (2013). Exploring faculty perceptions toward working with academically vulnerable college students. *College Quarterly*, 16(4), 3.
- Ramus, F., Rosen, S., Dakin, S. C., Day, B. L., Castellote, J. M., White, S. & Frith, U. (2003). Theories of developmental dyslexia: insights from a multiple case study of dyslexic adults. *Brain*, 126, 841–865.
- Ransby, M. J. & Swanson, H. L. (2003). Reading comprehension skills of young adults with childhood diagnoses of dyslexia. *Journal of Learning Disabilities*, 36(6), 538–555.
- Reid, G. & Kirk, J. (2001). *Dyslexia in adults: education and employment*. Chichester: Wiley.
- Reis, S. M. & Ruban, L. (2005). Services and programs for academically talented students with learning disabilities. *Theory into Practice*, 44(2), 148–159.
- Riddell, S., Tinklin, T. & Wilson, A. (2005). New labour, social justice and disabled students in higher education. *British Educational Research Journal*, 31(5), 632–643.
- Riddick, B. (2001). Dyslexia and inclusion: time for a social model of disability perspective? *International Studies in Sociology of Education*, 11(4), 223–236.
- Riddick, B., Sterling, C., Farmer, M. & Morgan, S. (1999). Self-esteem and anxiety in the educational histories of adult dyslexic students. *Dyslexia*, 5(4), 227–248.
- Rytkönen, A. (2014). University of Helsinki teachers as users and adopters of change of web-based learning environments in teaching. Academic Dissertation. Faculty of Behavioral Sciences. University of Helsinki.

- Samuelsson, S., Herkner, B. & Lundberg, I. (2003). Reading and writing difficulties among prison inmates: a matter of experiential factors rather than dyslexic problems. *Scientific Studies of Reading*, 7(1), 53–73.
- Smith, J. H., Fawcett, A. J., Nicolson, R. I. & Fisk, J. E. (2004). Dyslexic students have more everyday cognitive lapses. *Memory*, 12(2), 174–182.
- Stampoltzis, A. & Polychronopoulou, S. (2009). Greek university students with dyslexia: an interview study. *European Journal of Special Needs Education*, 24(3), 307–321.
- Statistics Finland (2010). Comprehensive school pupils receiving part-time special education. [http://www.stat.fi/til/erop/2010/erop\\_2010\\_2011-06-09\\_tau\\_005\\_fi.html](http://www.stat.fi/til/erop/2010/erop_2010_2011-06-09_tau_005_fi.html) (Accessed 2014-06-03).
- Syvälähti, R. (2006). Kokemuksia lukioetuksen alkutaipaleelta [Experiences from the beginning of teaching dyslectics]. In *Rakkaudesta erityispedagogiikkaan. Juhlakirja: erityispedagogiikan professuuri 20v*, M-L. Kieksi (ed.), 52–63. [From love to special education. A commemorative volume for Professor Hautamäki] Helsinki: University of Helsinki.
- Takala, M. (2006). The effects of reciprocal teaching on reading comprehension in mainstream and special (SLI) education: *Scandinavian Journal of Educational Research*, 50(5), 559–576.
- Undheim, A. M. (2003). Dyslexia and psychosocial factors. A follow-up study of young Norwegian adults with a history of dyslexia in childhood. *Nordic Journal of Psychiatry*, 57(3), 221–226.
- University of Helsinki. (2014). Centre for Research and Development of Higher Education. <http://www.helsinki.fi/yty/english/index.htm> (Accessed 2014-06-03).
- Vartiainen, A. (2013). Kuuden suurimman kaupungin vammaispalvelulain mukaiset palvelut ja taloudelliset tukitoimet 2012. [Disability services and economic support in the six biggest cities]. Kuusikko-työryhmän julkaisusarja. [http://www.kuusikkokunnat.fi/SIRA\\_Files/downloads/Vammaispalvelut/Kuusikko\\_VpL-raportti\\_2012net.pdf](http://www.kuusikkokunnat.fi/SIRA_Files/downloads/Vammaispalvelut/Kuusikko_VpL-raportti_2012net.pdf) (Accessed 2014-06-03).
- Vellutino, F. R., Fletcher, J. M., Snowling, M. J. & Scanlon, D. M. (2004). Specific reading disability (dyslexia): what have we learned in the past four decades? *Journal of Child Psychology and Psychiatry*, 45(1), 2–40.
- Wadlington, E. M. & Wadlington, P. L. (2005). What educators really believe about dyslexia. *Reading Improvement*, 42(1), 16–33.
- Zelege, S. (2004). Self-concepts of students with learning disabilities and their normally achieving peers: a review. *European Journal of Special Needs Education*, 19(2), 145–170.