Didactic Consequences of Dyslexia in Norwegian EFL Classrooms

A systematic review

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Abstract

Dyslexia is a common disorder affecting language learning, including foreign language learning. All Norwegian teachers are required by law to adapt their teaching to individual student needs. Despite this, very little is taught in teacher training programs concerning how to adapt teaching in foreign languages for students with dyslexia.

This thesis conducted a systematic review of all currently available didactic adaptations for teaching English as a foreign language that is applicable to a Norwegian context. A systematic search lead to the identification of twelve relevant research papers. These were analyzed in light of current linguistic knowledge concerning dyslexia as a disorder. This analysis found that, though some aspects of dyslexia are researched in a didactic context, other aspects are not. Avenues of further research are suggested.

Preface

As I attempt to stand on the shoulders of giants, I am grateful to have the opportunity to thank everyone who has contributed to my thesis. My supervisors, Mila Vulchanova and co-supervisor Anita Normann, have contributed theoretical and practical insights that have elevated my understanding of linguistics, dyslexia, and didactics, making my thesis possible. Anne Marit Letnes, who both proofread my thesis and have discussed several aspects of it with me, has also been an invaluable asset in this process. My family, most particularly my husband, deserves recognition for their patient listening to my thesis ravings. For this, they have my gratitude.

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Abbreviations

EFL	English as a Foreign Language
FL	Foreign Language
L1	First Language
L2	Second Language

1. Introduction

The adaptation of teaching for students with dyslexia is a recurring and complex theme in Norwegian schools today. A large part of the student population is diagnosed with a disorder, and teachers are expected to be able to adapt their classroom practice for each individual. However, teacher training programs do not focus on these different disorders; current teacher training curricula from Norwegian universities reveal that the lack of focus on learners with disorders is palpable (Norwegian University of Science and Technology, 2013; University of Bergen, 2013a; University of Bergen, 2013a; University of Oslo, 2013a; University of Oslo, 2013b).

Adapting teaching in the English foreign language classrooms is no different; according to Norwegian law, all teachers are supposed to adapt their teaching for all students (Opplæringslova, 1998). However, lack of focus on the disorder does not enable teachers to fulfill these legal obligations. It is reasonable to assume that this lack of knowledge inhibits teacher adaptations, and as such, it should be rectified as soon as possible.

In order to include a larger focus on the didactic consequences of dyslexia in teacher training programs, it is necessary to have an overview of available theoretical knowledge. This knowledge must be applicable in the desired context, as well as being supported by current linguistic research on the cognitive demands of dyslexia as a disorder. A review of current research on the didactic consequences of dyslexia, placing this research in a current linguistic context, can therefore be invaluable in the process of including a larger focus on the disorder.

This review will focus on currently available didactic research on dyslexia, as well as placing this research in a context of current linguistic research. Search methods for collection of these research articles will be discussed in depth, and the articles will be synthesized and analyzed. Finally, currently unexplored avenues of research will be suggested for future reference. This will all be considered in light of linguistic theory of dyslexia, which will be discussed in section 2.

2. Dyslexia

The large number of people affected by dyslexia makes the disorder highly relevant to any educator. An estimated 3-10 % of the population meets the criteria for the disorder (Snowling, 2000; Willcutt & Pennington, 2000; Frith, 1999). However, the differences between dyslexia and "ordinary" poor reading may be hard to grasp. This section will provide an overview of dyslexia as a disorder, including the deficits associated with it and possible compensatory strategies.

2.1 Definition

There is no universally accepted definition of dyslexia as a specific learning disability or as a disorder. This has affected research and practice related to the disorder (Helland, 2007). However, there are several key similarities in different definitions of dyslexia.

Dyslexia has often been defined as a discrepancy between cognitive abilities and reading attainment (Snowling, 2000). However, there are several difficulties associated with this approach. A deficit definition disables stable diagnoses, as reading level changes over time (Snowling, 2000; Frith, 1985). It also hinders diagnosis in less able children, for who expected reading attainment is negligible (Snowling, 2000; Frith, 1985). Therefore, other factors should be more important in diagnosing dyslexia.

Problems with reading and spelling are also seen as central to the disorder (Reid Lyon, Shaywitz, & Shaywitz, 2003; Ziegler & Goswami, 2005). These problems must persist when other causes are absent (Reid Lyon et al., 2003; Ziegler & Goswami, 2005). Poor reading that can be accounted for by lack of schooling or other disorders do not characterize dyslexia. Lack of literacy attainment that can be explained by low intelligence is also insufficient to give ground for a dyslexia diagnosis (Ziegler & Goswami, 2005).

The cause of these problems with spelling and reading is generally agreed upon among theorists. It is generally attributed to a deficit in the phonological processing of language (Helland, 2007; Firth, 1999; Ziegler & Goswami, 2005), though the cause of this phonological deficit is hotly debated. The consequences of this deficit will be discussed in section 2.

It is also generally agreed upon that dyslexia is neurobiological in origin (Ziegler & Goswami, 2005; Frith, 1999; Reid Lyon et al., 2003). This is evidenced by fMRI scans showing differences between brain development with and without dyslexia: People with dyslexia show symmetry in the planum, where most controls are asymmetric (Snowling, 2000). This also

points to a genetic origin of the disorder, as brain development is genetically determined. However, researchers differ in opinion as to whether specific subtypes of dyslexia can be acquired, for instance through strokes or brain-related accidents (Frith, 1985), or one has to be born with the disorder (Ziegler & Goswami, 2005; Tallal, Miller, & Fitch, 1993).

The cognitive basis of dyslexia can result in several different behavioral differences, and is modified by environmental factors (Frith, 1999; Snowling, 2000). Based on differences in environment, people with dyslexia can therefore have different amounts of challenges, in different ways. The condition can exist without the behavioral sign of it, and vice versa (Frith, 1999).

These theoretical understandings can be summed up in a simple definition of dyslexia: Dyslexia can be said to be a specific learning disorder that is neurobiological in origin. It presents with several deficits, the most well-known being difficulties in acquisition of reading and spelling. This difficulty is commonly viewed as a consequence of poor phonological processing. However, environmental factors can enable people with dyslexia to experience fewer deficits.

2.2 Three theories of the origins of dyslexia

Despite some consensus of the effects of dyslexia, the origins of the disorder are still very much up for debate. There are currently several major theories of dyslexia. This section will briefly and neutrally introduce the phonological theory, the rapid auditory processing theory and the multiple deficit hypothesis, making no claim of the validity of either.

2.2.1 The phonological theory

The phonological theory of dyslexia seeks to explain the difficulties associated with the disorder by appealing to the phonological deficit. Proponents of the theory claim that dyslexics have impairments with retrieval, storage and representations of speech sounds, leading to poor grapheme-morpheme connections (Ramus et al., 2003). Most theories accept the phonological deficit as important to the difficulties associated with dyslexia, but proponents of a strong phonological deficit claim that this deficit is the root cause of all other problems with the disorder. An extended version of this theory has also been proposed (for a review, see Bishop and Snowling, 2004).

2.2.2. The rapid auditory processing theory

Though proponents of the rapid auditory processing theory accept the influence of a phonological deficit on people with dyslexia, they claim that the basis of this deficit can be found in a deficit in the perception of rapid sounds (Tallal et al., 1993). Goswami et al. (2010) argue that difficulty in sensory perception of acoustic cues for rhythmic timing is the root cause of the phonological deficit, and shows that a universal cross-language sensory deficit exists for people with dyslexia.The effect of this deficit in auditory processing is seen as the root of deficits in other senses as well, including affecting motor control speech output (Tallal et al., 1993)

2.2.3 The multiple deficit hypothesis

Both the phonological deficit theory and the rapid auditory processing theory propose a simple single deficit hypothesis of the origins of dyslexia. Pennington (2006) argues that this view presents a too simplistic origin of the disorder. He claims that dyslexia and other disorders must have more complex origins, as simpler models are unable to account for the frequency of comorbidities, as well as current theoretical findings (Pennington, 2006).

Pennington (2006) presents a multiple deficit hypothesis, where the origins of dyslexia are seen as multifactoral, influenced by a host of risks and protective factors. These factors, in turn, influence the development of congitive functions, leading to the presentation of behavioral problems (Pennington, 2006). This hypothesis explains the prevalence of comorbidities, as different disorders share the same risk factors. However, more research is needed to ensure a larger factual platform for the theory.

2.3 Gender differences in the diagnosis of dyslexia

Dyslexia as a diagnosis is more frequent in males than in females (Ramus et al., 2003). In referred samples, there are three times as many males as there are females (Willcutt & Pennington, 2000). However, some studies show that the frequency of dyslexia is more evenly distributed between genders in population samples. Here, the ratio is 1,5 males with dyslexia to every female with dyslexia. The reason for this is unclear, but may be related to differences in comorbid disorders between the genders.

The gender difference can also be due to the fact that boys in general are weaker readers than girls. When an arbitrary cut-off is determined, with no reference to gender, it stands to reason that more males will fall below the cut-off point (van der Wissel in Snowling, 2000). Therefore, reading tests not allowing for gender differences in making a cut-off will discover

more males with reading difficulties than females. These tests are therefore problematic when used as a basis for referral for further testing.

However, studies also show differences in the presentation of dyslexia between genders. Berninger, Nielsen, Abbott, Wijsman and Raskind (2008) found that males with genetic markers for dyslexia are more impaired in handwriting, composing and spelling than their female counterparts. Females were also found to be more accurate when reading a text out loud. Though both genders were equally likely to have the neurocellular basis of dyslexia, the severity of the associated deficits differed significantly between the genders.

Similar findings have been found in other studies. Feldman et al. (1995) found that girls presented with less severe symptoms than boys, and argue that this is the reason for lack of referrals for further testing. They saw being female as a protective factor in the presentation of dyslexia. These findings strengthen the suggestion of there being a significant amount of undiagnosed female dyslexics.

Regardless of female gender being a protective factor in dyslexia, males are still referred more easily than females. There is substantial evidence for selection bias in referrals for further testing. Vogel (1990) found that females have to exhibit more severe markers of learning disabilities in order to be referred than their male counterparts. She also found that females that are referred generally have lower IQs than referred males.

2.4. Deficits

There are several deficits that are associated with dyslexia, some of which extend far beyond written language (Frith, 1999). Dyslexia is associated with deficits in the phonological process, problems with speech perception, verbal short-term memory deficits, and temporal deficits, causing the well-known difficulties with reading and writing. Dyslexia is also comorbid with several other disorders. This section will provide an overview of these deficits.

2.4.1 Phonological deficit

Although problems with literacy are the most apparent deficit associated with dyslexia, people with dyslexia struggle with several tasks related to phonological processing (Snowling, 2000). Indeed, there is a widespread acceptance for the phonological deficit as the core deficit associated with dyslexia (for a review of theories of dyslexia, see Ramus et al., 2003).

The phonological deficit comes to the surface in several different manners. Children with dyslexia struggle to preserve number of syllables and phonemes (Farnham-Diggory &Nelson, 1983 in Frith, 1985), misspellings betray phonological problems (Nelson and Warrington; Frith in Frith, 1985).

Frith (1999) claims that deficits related to information processing, word repetition, picture naming and verbal short-term memory can be attributed to an impairment in phonological processing. She argues that the cognitive phonological processing deficit surfaces in several different behaviors, but that these all originate in poor phonology. All other deficits associated with dyslexia can therefore be seen as consequences of a cognitive phonological deficit.

2.4.2 Verbal short-term memory

People with dyslexia show difficulties in recall involving the phonological loop (Jeffries and Everatt, 2004), though the degree of this impairment varies (Helland, 2007). They have a normal memory span for visual information, but their memory span for verbal items is significantly impaired compared to age-matched controls (Snowling, 2000). People with dyslexia also show different brain activation when presented with rhyme and short-term memory tasks than their neurotypical peers.

Jeffries and Everatt (2004) researched verbal short-term memory in children with or without special educational needs. A battery of tests supposed to assess working memory was administered to 40 development-typical children and 47 children with special educational needs, 21 of which had dyslexia. These children had been matched for age and gender as far as possible. The group with special educational needs performed significantly worse on most tasks, though it was hard to differentiate between children with dyslexia and those with other educational needs. The similarities between the group with dyslexia and the group with other special educational needs suggest that deficits may be held in common across these groups.

2.4.3 Temporal deficit

The temporal deficit in people with dyslexia is an impairment associated with tempo perception, auditory rhythmic perception and tapping to a beat.This deficit is linked to the rapid auditory processing theory described above; where some theorists claim that the temporal deficit is the cause of the phonological deficit.

Studies show that people with dyslexia have rhythmic difficulties (Overy, 2000).These temporal processing difficulties may lead to auditory and sensory difficulties, thus leading to language and literacy difficulties (Overy, 2000). The temporal deficit appears to be strongest

in childhood, but persists into adulthood (Thompson & Goswami, 2008). Whether this is due to cognitive development or compensatory strategies remain unclear.

Thompson and Goswami (2008) correlate aspects of musical development with literacy and language. Perception and production of rhythmic and temporal patterns is a crucial part of language acquisition, and language is connected to music through auditory rhythmic timing and accuracy of motor tapping. The experiment carried out by Thompson and Goswami (2008.) showed that typically-developing children were significantly more sensitive to auditory processing tasks than their peers with dyslexia. The group with developmental dyslexia was also impaired in frequency detection, rise time discrimination and duration discrimination.

Interestingly, Thompson and Goswami (2008) also found that those with poorest consistency in tapping where those with poorest literacy and phonological development. This difference cannot be explained by motor dexterity. This suggests that musical aptitude and literacy development is very closely connected. This will be referenced again in section 3.

Overy (2000) also argues for a close link between music and language. She notes how music and language requires similar cognitive skills, and argues that the similarities between musical problems and language problems stem from this similarity. She suggests that the aforementioned phonological deficit associated with dyslexia in reality is a symptom of a difficulty with rapid temporal processing.

2.5 Reading, writing, and spelling

People with dyslexia struggles to "read quickly, accurately and with good understanding", which is the "hallmark of a good reader" (Reid Lyon et al., 2003, p. 6). Learning to read has been defined as "integrating a system for processing written language with one that already exists for processing spoken language" (LaBerge & Samuels in Snowling, 2000, p. 63). Reading is a process where visual symbols are matched to units of sound, thus decoding written speech. Readers attempt to assemble these sound units into understandable morphemes and lexemes, thereby making reading in an alphabetic language highly demanding of phonological processes. Stanovich and Siegel (in Snowling, 2000) found that poor reading and poor phonology were closely linked. The aforementioned deficits associated with language learning with dyslexia are therefore highly relevant to reading, writing and spelling with dyslexia.

In alphabetic languages, phonological understanding provides the basis for orthographic representation. Numerous studies show a causal connection between phonological awareness and development of reading and spelling (Goswami, 2002).The phonological deficit associated with dyslexia hinders the development of alphabetic skills, thus hindering acquisition of literacy.

Spelling is seen as more challenging to people with dyslexia than reading is, as compensatory strategies are harder to implement (Snowling, 2000). Word reading benefits from semantic support, where the reader can "guess" the content of a word or phrase by taking the surrounding words into consideration. Reading difficulties are also easier to hide than spelling difficulties. Therefore, spelling is a more sensitive test than reading to ascertain dyslexia (Frith, 1999). Educators should therefore pay extra attention to spelling when they suspect dyslexia.

In spelling, inconsistent orthographies present people with dyslexia with a significant obstacle. In addition to this, the phonological deficit hinders implementation of phonetic spelling strategies.

Frith (1985) presents a model for literacy acquisition where a beginning reader goes through three stages. The logographic strategy relies on instant recognition of words on sight, where a reader recognizes a limited number of words based on their shape. This is followed by the alphabetic strategy, wherein a reader acquires the rules for converting symbols into sounds. The final stage is the orthographic stage, where orthographic units are used as wholes. A reader must pass through all these stages to complete their literacy acquisition. She argues that an arrest at the logographic stage is typical of developmental dyslexia, and that alphabetic skills will never be fully automatized. However, a person with dyslexia can still appear to be a good reader, if effective compensatory strategies are implemented. It is also worth noting that this description of stages is based on learning English as a first language, and that progression may differ in other orthographies.

2.5.1 The role of orthography

Though most symptoms of dyslexia are consistent across languages, this is not the case when it comes to orthographically different languages. People with dyslexia may present significantly different manifestations of the disorder when confronted with a deep orthography with inconsistent grapheme-phoneme matching than when confronted with a consistent and shallow orthography (Ziegler & Goswami, 2005). For instance, non-word

reading is easier for people with dyslexia in languages with shallow orthographies than in languages with deep orthographies. Though not all research agrees that orthographic depth has relevance for reading (eg. Tainturier, Roberts, & Leek, 2011), it is important to consider the role of orthographic transparency in literacy acquisition for people with dyslexia.

Learning to read and write in a transparent orthography seems to lessen the phonological difficulties people with dyslexia experience, though it does not eliminate the phonological deficit associated with dyslexia (Goswami, Gombert, & de Barella, 1998). Consistent feedback from a transparent orthography may help in the process of segmenting different phonological representations, lessening the effects of the phonological deficit (Snowling, 2000). This effect is not found for English readers, who have to struggle with a very deep orthography (Bruck in Snowling, 2000).

Goswami (2002) shows that awareness of phonemes arises after awareness of syllables and onset/rime in language, and that it arises as a consequence of direct phonemic training. This rise of phonemic awareness is associated with learning to read, though there is controversy surrounding this claim (Ziegler and Goswami, 2005). However, phonemic awareness and reading ability are reciprocal; higher phonemic awareness enabler better reading, and vice versa (Snowling, 2000). This phonemic training can be helped or hindered by the nature of the orthography of the language in question.

Ziegler and Goswami (2005) claim that differences in reading accuracy approximately reflect the relative transparencies of different orthographies. Consistent, transparent orthographies enable literacy acquisition, while an inconsistent, deep orthography presents more challenges. The bidirectional inconsistency of English makes it an especially challenging case – one sound can be spelled in several ways, and one letter or combination of letters can be realized as several different sounds. This is seen as the explanation for the comparatively poor reading performance of English-speaking children, compared to more consistent orthographies (Ziegler & Goswami, 2005).

In addition to the difficulties associated with inconsistent orthographies, learning problems are compounded in languages with complex syllabic structures (Goswami, 2002). Consistent orthographies can enable bootstrapping of phonological awareness in people with dyslexia, but not to the degree where they will be as efficient as their typically developing peers (Goswami, 2002). Therefore, people with dyslexia learning to read in a consistent orthography should have fewer issues with literacy than people with dyslexia learning to read

in an inconsistent orthography. Similar differences should be seen between learners with dyslexia in languages with simple and complex syllabic structures. However, neither group will be as efficient readers and writers as their non-dyslexic peers.

Differences in orthographic structure across languages also result in different reading strategies (Goswami, 2002). Inconsistencies, for example the aforementioned bidirectional inconcistency of English, may lead to several reading strategies within one orthography (Ziegler & Goswami, 2005). The consequences of this for learning a second language are unclear, but it implies that second language learners must learn new reading strategies when learning to read in their new language.

The role of different cultural approaches to orthography and reading should also not be underestimated. Frith (1999) argues that dyslexia is a greater obstacle in cultures that place a high premium on reading and literacy than in cultures where other aspects of the culture are emphasized. Though orthography plays a very important role in the acquisition of literacy, the performance of readers with dyslexia is therefore also highly influenced by environmental variables (Frith, 1999).

2.5 Dyslexia and comorbidities

In addition to struggling with deficits related to dyslexia, most people with this diagnosis have additional challenges. It has been reported that 60 % of people with dyslexia meet the criteria to be diagnosed with at least one other disorder (Willcutt and Pennington in Germanó, Gagliano and Curato, 2010). These comorbid disorders are not major psychiatric disorders, such as schizofrenia. Rather, they are mostly considered to be relatively minor – hyperactivity, allergies, and stuttering have been reported to be comorbid with dyslexia (Snowling, 2000).

The most common disorder to be comorbid with dyslexia is ADHD (Kroenberger and Dunn in Germanó et al., 2010), though some research suggests that the ADHD associated with dyslexia differs from ordinary ADHD in that individuals with dyslexia and ADHD lack the deficit in executive control ordinarily associated with dyslexia (Pennington, Grossier and Welsh in Snowling, 2000). This relationship is bidirectional: Individuals diagnosed with dyslexia are more likely to also be diagnosed with ADHD, and vice versa (Germanó et al., 2010). Though both disorders are prevalent, the high rate of ADHD in people with dyslexia –

36-39 % of the population (Germanò et al., 2010) - makes it highly unlikely that this is by chance.

However, some research suggests that comorbidities with dyslexia can be more serious disorders. Some researchers have found that individuals with specific reading disorders are five times fore likely than the general population to exhibit symptoms of antisocial behavior. Willcutt and Pennington (2000) found that children and adolescents with reading disability were significantly more likely than children and adolescents without reading disability to meet the criteria of ADHD, oppositional disorder, conduct disorder, overanxious disorder and depression.

Interestingly, gender differences in the distribution of these comorbid disorders suggest consequences of having dyslexia. Externalizing symptoms, such as ADHD or aggressive behavior, were more likely to occur in males. Internalizing symptoms, such as depression, were more likely to occur in females (Wilcutt and Pennington, 2000). As mentioned in section 1, males are more likely to receive a diagnosis of dyslexia than females. The externalizing comorbidities associated with male dyslexia may be an important contributing factor to this gender difference. Visible, externalizing boys are reffered for a diagnosis, while calmer, internalizing girls are not. This is in line with research on teacher refferals of internalizing and externalizing symptoms, which show that children with externalizing symptoms are more likely to be referred (Pearcy, Clopton, and Pope, 1993).

2.6 Compensation

The deficits associated with dyslexia, though they may in some cases be very severe, can be compensated for. People with dyslexia can excel in educational settings – a cognitive impairment does not necessarily equal behavioral difficulties (Helland, 2007). Though people with dyslexia typically arrest before the automated stage of reading, their reading skills can continue to improve. Reading comprehension is highly influenced by environmental factors, despite a genetic phonological impairment, and can therefore be improved (Snowling, 2000). Compensatory strategies enable this improvement, though their nature is often unclear. The effort this requires may be considerable, and it is unlikely that all deficits will be mediated. However, a person with dyslexia can, on the surface, become a good reader and writer.

There is a considerable amount of evidence that show that learners with dyslexia benefit from language-specific interventions focused on improving phonological awareness, combined

with very structured reading programmes that emphasise the connection between sign and sound (Snowling 2000). There are several different programmes with such a focus. Implementation of such programmes can improve the reading skills of learners with dyslexia considerably, enabling them to function on a higher level of literacy.

In the midst of this focus on dyslexia, it is also important to remember that beginning readers with dyslexia will benefit from some of the same practises as neurotypical beginning readers. Practising reading will enable people with dyslexia to become better readers. Some problems with reading comprehension may stem from lack of training, which lead to a smaller vocabulary and less background knowledge (Reid Lyonet al., 2003). Though lack of feeling of achievement may lead to lack of motivation for reading, people with dyslexia should therefore be encouraged to practise.

Connecting different aspects of reading can also enable people with dyslexia. People with dyslexia cope better with the semantic and pragmatic aspects of reading than with its phonological basis (Snowling, 2000). In practice, this means that reading and understanding sentences is easier than single-word reading, as they can use sentence-level context to bootstrap their single-word understanding. Teaching people with dyslexia how to efficiently use context-based reading strategies may therefore enable them to function as readers on a higher level.

Preventative work is also an important factor. Several studies have found that playing word-games involving rhymes, phonemes or other forms of phoneme identification increase phonetic awareness later in life (Snowling, 2000). Proper training before starting school can therefore have a lasting effect on attainment in reading. This is especially true if the games emphasise the connection between sound and letter (Snowling, 2000).

As mentioned above, the link between music and language has been established. This connection can be exploited to improve language and reading skills in people with dyslexia. Overy (2000) found that musical training can remediate deficits in the cerebellum and the planum, and she argues that musical training may develop and improve temporary processing skills. Musical training cannot replace language lessons, but if used effectively, they can compliment and consolidate the knowledge language lessons seek to impart.

These strategies, among others, may enable people with dyslexia to overcome some of the deficits associated with the disorder, and thus attain a higher level of literacy. However, it is

unclear how these strategies would be implemented in a second language setting. This will be investigated later, after the introduction to general theories of second language acquisition.

3. Second Language Learning

3.1 Definition of terms

The terms *second language*and *foreign language* have often been used more or less interchangeably, especially in American research contexts (Marckwardt, 1963). Both terms refer to a language other than the native language(s) which has been acquired after the native language. However, a distinction is made between the terms in the British tradition (Marckwardt, 1963).

A *second language* (L2) has often been defined as a language learned after one's native language (Cook, 2008), learned in a target language community and needing this target language to function in society (Harmer, 2007). The language may be used in school instruction, or function as a *lingua franca* in contexts where there are speakers of widely diverse languages present (Marckwardt, 1963).

A *foreign language* (FL), on the other hand, has been defined as a language learned in order to be used as a tool of communication, for example in conjunction with travel or business (Harmer, 2007). This method of language learning relies on formal instruction, most often being taught in classrooms (Marckwardt, 1963).

Though they can be defined as distinct terms, the lines between second and foreign language is often blurred, and categorization can be a challenge. The same can be claimed for the distinction between second and foreign language learning. This is further complicated by the lack of a consensus on the use of these terms within the field; no two researchers use "second language" in quite the same way. With this in mind, this thesis will use *second language* in the American sence, unless otherwise specified.

3.2 The Nature of L2 Learning

Speaking more than one language is increasingly common. Pure monolinguals are becoming rare, as globalization makes fluency in more than one language an important part of everyday life (Cook, 2008). Despite this, the nature of L2 learning remains unclear.

Cook (2008) argues that there should be a distinction between an L2 learner and an L2 user. Large parts of the literature only mention the former, without regard for the latter. According to Cook (2008), this oversimplifies the nature of L2 learners and users. Even though some continue their language learning, many become fossilized in their language, and simply use

what language they have acquired at that point. This distinction is highly relevant, as learning a language and simply using it requires different amounts of involvement. Terminology will therefore be used accordingly.

Schwartz (1998) claims that humans have an innate L2 instinct, in the same manner as the L1 instinct. This L2 instinct utilizes the same cognitive structures that enable first language (L1) acquisition under the Chomskyan model of Universal Grammar. She claims that L2 learning is driven by L1 grammar, guided by available input in the target language. This view of L2 learning, though objections may be raised against it, is in line with current thinking of language acquisition in general.

This line of thinking is echoed in research on bidirectional effects of language. Cook (2008) argues that L2 learning also has an effect on L1 ability. He claims that learning a L2 can lead to better reading in L1 and increasing ability to solve problems. However, instructions given in L2 are more easily forgotten than instruction given in L1. Therefore, different language systems seem to be closely connected, but still making different cognitive demands of the language user.

As in all other areas of learning, individual variables are important to the outcome. Learning styles, learning strategies, and affective variables are central to differences in individual learning (Ehrman, Leaver, and Oxford, 2003). Affective variables are especially central in understanding L2 learning with dyslexia, and will be discussed in detail below.

3.2.1 L2 Teaching

Though L2 is taught in several different contexts around the world, there is some common ground. Speech is dominant in most L2 classrooms, and L2 teachers aim for their students to have a native-like competence in the language in question (Cook, 2008). A general focus is placed on reading, writing, speaking and listening, and teachers are encouraged to incorporate these skills in every lesson (eg. Harmer, 2007). However, some differentiation between different contexts is necessary to fully explain L2 learning.

The availability of the target language is one of the major influences on L2 learning (Cook, 2008; Harmer, 2007). L2 teaching must therefore be conducted differently in different languages, according to availability. Learning English in French Canada will be very different from attempting to learn Swahili at Norwegian universities, due to severely different learning contexts.

The case of critical periods for language learning also affects teaching methods. Age of acquisition affects learning style, where younger learners are better at language learning in general, but older learners have a better understanding of metalinguistic concepts, such as grammar (Cook, 2008). Teaching styles have to be adapted to reflect these different learning styles.

The nature of L1 orthography influences the acquisition of an L2. A study by Akamatsu (2003) revealed that Persian learners of English were less adversely affected by case alternation than Chinese and Japanese learners were. As Persian is an alphabetic language, while Chinese and Japanese are non-alphabetic, it was hypothesised that the alphabetic background of Persian learners enabled them in their English learning. Similar writing systems in L1 and L2 therefore seem to enable L2 learning.

3.3 English as an L2

Though there are similarities in teaching styles in classrooms around the world, it is important to take different L1s into consideration. Research on second language acquisition can be used in teaching, but only if it is valid, ethical, generalizable to the context in question and has been conducted in a language reasonably close to the relevant L1 (Cook, 1999). Therefore, a closer look at the current situation of English as an L2 is necessary.

The position of English on the world scene is worthy of mention. Though it is used as a native language in some of the most powerful countries in the world, the number of non-native English speakers today significantly outnumbers native speakers (Harmer, 2007). English is more common as a second language than as a first. This affects the availability of English, and thus determines relevant teaching methods. It is used as a means of communication between speakers who do not share a native language (Harmer, 2007). As such, it is useful for business, travel and pleasure. Though one is not a native speaker of English, competency in the language becomes vital to the ability to function in an increasingly globalized world, possibly affecting language learning motivation.

The orthography of English is also worthy of mention. As discussed in Section 1.5.1, English has a bidirectionally inconsistent orthography. It is considered to be very deep, and can therefore present a challenge for L2 learners, especially those who are phonologically challenged. Learners of English as a Foreign Language (EFL) with different orthographic

backgrounds could therefore face very different challenges in learning to read and write in English.

3.3.1 English as an L2 in Norway

The situation in Norway is no exception. Though Norway has several official languages (including several varieties of Sami), there is only one commonly used administrative language – Norwegian, in the form of bokmål or Nynorsk (Kulturdepartementet, 2008). However, the use of English, especially in academia, is widespread (eg. Mæhlum, 2002). This situation is similar to the use of English in other, Western European countries (Ljosland, 2008). Though not in everyday use, English is therefore important to gain access to certain areas of Norwegian society.

The importance of English as a bridge to the world at large is noted in the Norwegian curriculum, which emphasizes the language's importance in international communication, culture, science and travel (Utdanningsdepartementet, 2010). The subject is considered important for gaining both language and cultural knowledge, as language is seen as an important part of citizenship (Utdanningsdepartementet, 2010).

The role of English in common cultural consumption should also be mentioned. Though English is the current language of science, it is also the language dominating pop culture (Harmer, 2007). As such, Norwegian English learners meet English everywhere – subtitled on TV, as lyrics in music, as storytelling element in video games and as the most commonly used language online. Though English is not an official language, it is widely used, also outside of educational and professional environments.

In contrast to the orthography of English, Norwegian orthography is considered to be semi-transparent. On a scale of 1-5 of, where 1 is transparent and 5 is deep, Norwegian is considered to be a 3 (Helland, 2007). English, on the other hand, is considered to be a 5 (Helland. 2007). Challenges of English as an L2 learners in Norway should therefore be similar to learners with similar orthographic backgrounds – not deep, but not transparent orthographies.

English as a school subject is also discussed in different terms than other language subjects. Where French and Spanish are called "foreign languages", English is simply referred to as "English" (Utdanningsdirektoratet, 2010). This emphasises the differentness of English in Norwegian schools, and how the language is treated differently than other language subjects.

Based on this information, should English in Norway be classified as a second or a foreign language? It is formally taught in order to be a means of communication, but it is also necessary to a certain degree to function in normal society, especially for those who spent time immersed in online and popular cultures. Depending on the language user, English could therefore be both a second and a foreign language in Norway.

4. Dyslexia and Second Language Learning

As discussed above, both dyslexia and L2 learning as academic fields are surrounded by controversy. Therefore, it is to be expected that making these fields converge would provoke similar dissention. However, this does not seem to be the case. Though some early research suggests that people with dyslexia learning English as a L2 are at no significant disadvantage (Jung, 1981), most current research agrees that language-related variables are the most important in acquiring new languages (eg. Sparks, Patton, Ganschow, & Humbach, 2009).

Helland and Kaasa (2005) argues that explicit L2 learning, as is the case in school subjects, put demands on memory functions that are typically impaired in people with dyslexia, such as verbal short-term memory. This section will explore this claim, linking dyslexia and second language learning.

4.1 Reading

As discussed in section 1, the most well-known behavioral impairment associated with dyslexia is difficulty in reading and writing, though other deficits remain central to foreign language learning. Sparks, Patton, Ganschow and Humbach (2012) argue that this deficit also inhibits L2 learning, as poor reading in L1 will be generalized to poor reading in L2. This, in turn, will affect listening comprehension, syntactic understanding, and general knowledge of the language and associated cultural areas (Sparks, 1995).

Sparks (1995) argues that poor readers become poorer in language skills that are typically enriched by reading. As poor readers tend to avoid reading, they encounter few new words. This, in turn, deters growth in skills that are viewed as necessary for successful L2 learning, such as an extensive vocabulary, grammatical understanding, and cultural knowledge.

However, not all students with dyslexia show the expected problems in L2 reading. Miller-Guron and Lundberg (2000) describe the DPER phenomenon, or the Dyslexic Preference for English Reading. Some Swedish students with dyslexia were found to prefer reading in English to reading in their L1. Miller-Guron and Lundberg (2000) argue that this may be due to lower expectations of performance in L2 reading, leading to increased feeling of achievement and motivation for students with dyslexia. This will be discussed in more detail in section 4.3.

4.2 Phonological variables

Several studies have shown the importance of phonological deficits in L2 learning. Hu (2008) found that poor phonological awareness lead to slower and less accurate learning of new L2 color words. L2 word learning has been found to be negatively affected by having a poor phonological loop (Walter, 2008). As the phonological deficit associated with dyslexia can be severe, this can be a significant hindrance in L2 learning, as vocabulary learning is central in any language acquisition. However, proper compensatory skills, at the level of syllables and words (van der Leij and Morfidi, 2006), or phonological instruction (Sparks and Ganschow, 1993), can help people with dyslexia to learn a L2

Sparks (1995) provides an overview of the deterimental effects poor phonology can have on L2 learning, and claims that students with difficulties in phonology are likely to experience difficulties in an L2 classroom. He claims that phonological processing problems may have long-term effect on all language processing skills, including those that are important for L2 learning. Learners with poor phonological processing will have difficulties with perception and production of new phonological strings and impeded speech and listening comprehension (Sparks, 1995).

4.3 Affective variables in L2 Learning with Dyslexia

Affective variables in learning are variables that are related to the individual's inner life, such as motivation, attitude, stress and anxiety (Sparks, 1995). These variables are important for any learning, including language learning (for a review, see Dörnyei, 2003.). In addition to the aforementioned language disabilities, several studies have shown that language learners with dyslexia are affected by affective variables in a different manner than their non-dyslexic peers.

Motivation is the driving force behind learning. A students' motivation is a measure of his desire to learn, his attitude towards learning in general and his willingness to work to achieve goals. A motivated student will work harder, be more eager to learn and enjoy the learning task more than a non-motivated student will (Masgoret & Gardner, 2003). Motivation is often seen as a combination of work-intensity and long-range goals. These goals help sustain student motivation (Belmerchri & Hummel, 1998). Motivation enables the student to adapt to internal and external stimuli (Harlen & Crick, 2002).

Szaszkiewicz (2013) found that the affective reactions of the interviewed students were related to teacher actions and reactions, and less to the language learning situation in itself. Lack of understanding for the consequences of dyslexia among Norwegian ESL teachers was seen as an influencing force in their teaching, affecting teacher practice and attitude. Similar results have been found on the other side of the teacher's desk – an a questionnaire, over 80 per cent of asked Swedish English teachers answered that they do not have enough knowledge about dyslexia to help them in their language teaching (af Sandeberg, 2010). Students felt that their work was praised too little and critiqued too much, an approach that is known to negatively affect motivation (Skaalvik & Skaalvik, 2007). This, coupled with a lack of feeling of achievement among students with dyslexia, could contribute to their continued lack of motivation for language learning.

Stress and anxiety are other affective factors that are important in any school subject, including classroom language learning. Studies using the Foreign Language Classroom Anxiety Scale, which is designed to measure anxiety in relation to foreign language learning, have shown that the relationship between anxiety and language learning is consistently moderately negative (Horwitz 2001). One such study found that anxiety accounted for 36.8 per cent of foreign language learning variations – a very significant contributor (Chen & Chang, 2004). Learning disabled students are also more prone to stress than their non-disabled peers (Heiman & Kariv, 2004), further hindering their learning processes.

Some researchers, lead by Richard Sparks and Leonore Ganschow, see this anxiety as the result of poor language learning, rather than the cause of it (eg. Ganschow et al.,1994). Stress and anxiety are therefore important aspects to consider for understanding the language learning difficulties of learners with dyslexia.

4.4 Students with Dyslexia in L2 Classrooms in Norway

Norwegian schools have a policy of inclusion. This means that students with learning disabilities, whatever they may be, are included in regular classes of students as far as possible (Kunnskapsdepartementet, 2011). These students, as all other students, have a right to have their teaching adapted to their level (Kunnskapsdepartementet, 2009). As a result of this policy, teachers with little to no knowledge of the challenges associated with different disorders are placed in charge of adapting their teaching to the needs of the people with these disorders. Therefore, clear ways of adapting classroom instruction, well founded in academic research, is necessary to fulfill the legal obligations of schools and teachers.

5. Methodology

The goal of any literature review is to identify gaps in the existing body of literature (Gay, Mills, & Airasian, 2009). In order to do this, any review must work from clearly stated boundaries, such as the scope or criteria for inclusion. This section will explain the scope of the present review, discuss the criteria for inclusion and exclusion, and describe how the search for relevant materials was conducted. It will also identify and discuss possible sources of bias in the selection of relevant materials.

5.1 Scope of the review

The aim of this review is to find properly researched and implementable methods for teaching English as a foreign language to students with dyslexia, preferably in a regular classroom setting. It is also required that these teaching methods can be generalized and applied in a Norwegian school context, as outlined in section 3.4. Based on these criteria, two explicit research questions were formed:

- What research is currently available on didactic for learners with dyslexia in the EFL classroom?
- How does this research align with current linguistic and cognitive research on dyslexia as a disorder?

The scope of this review is therefore to find all didactic literature on EFL acquisition of students with dyslexia that is relevant to a Norwegian EFL school setting.

5.2 Criteria for inclusion and exclusion

One of the challenges of conducting a successful literature review is setting clear boundaries for the process of inclusion and exclusion of research. Gay et al. (2009) argue that these parameters must be set acording to the amount of research done in the field in question. If a field is well-researched, one should only include works directly related to the research question. However, if there has been little research, as in the case for adaptations for EFL learners with dyslexia, one should include all research that is related in a meaningful way (Gay et al., 2009). However, despite being little researched, it is still important to only include relevant research. Therefore, criteria for inclusion and exclusion must be wide enough to include all relevant sources, but narrow enough to exclude research that is deemed irrellevant.

The formulation of clear criteria for inclusion and exclusion form the basis of any systematic review. It clarifies the requirements for studies to be included in the review, and makes the research process easier for the reviewer (Booth, Papaioannou, & Sutton, 2012). Clear statement of these criteria also makes the review more transparent and replicable, thus increasing the reliability of the review (Booth et al., 2012). A brief explanation of the criteria for inclusion and exclusion of research in this review is therefore important, in order to enable the readers' understanding of the present selection process.

These criteria were formed on the basis of identifying research that would be applicable to Norwegian EFL classroom teaching. Factors that would be incompatible with this goal were therefore important to identify, to enable selection of appropriate papers. Therefore, criteria were created to exclude papers that would not be generalizeable to this context.

Four important criteria for inclusion – English as a target language, a definition of dyslexia, second/foreign language learning, and interventions – were identified. Four criteria for exclusion were also identified from the theory; non-alphabetic first language, different cultural settings, unknown languages, and irrelevant settings. These formed the basis of all inclusion and exclusion of research for this review. The criteria are discussed in more detail below. The inclusion of research with widely differing orthographies will also be discussed.

5.2.1 English as a target language

The unique role English has as the current world *lingua franca*, outlined in section 2.3, changes the available methods for teaching the language. Affective variables in language learning can be affected, as motivation for language learning may increase as a result of the current usefulness of English as a world language. The complexity of the English orthography also necessitates this criterion, as it is possible that suggested exercises may not be transferrable from one target orthography to another. Therefore, all included research must study English as a target language.

5.2.2 Current definition of dyslexia/reading disorders

If research is going to be applicable to several contexts, compared and contrasted, it stands to reason that all included research must be founded on the same theoretical understanding. Included research must therefore include a definition of dyslexia or reading disorders that aligns with current linguistic research, as outlined in section 1. This is also to ensure that no included research is based on outdated knowledge, and thus not applicable. It also ensures that

all included research is founded on the same theoretical basis, enabling comparisons between different results.

5.2.3 Second/Foreign Language Learning

As outlined in section 2, there are significant differences between L1 and L2 learning and language environments. It therefore stands to reason that procedures for enriching English as a L1 cannot easily be transferred to learning English as a L2. Any research conducted on enriching English as a L1 has therefore not been considered for inclusion.

5.2.4 Intervention

All included research must contain research-based or suggested interventions that can be generalized to and used in Norwegian EFL classroom teaching. The research must also be conseptualized by the author of the research, and not simply reported second hand. This criterion thus also excludes all research that is not primary, ensuring that no result will be reported more than once. It therefore also ensures that the review will be balanced.

5.2.5 Non-alphabetic first language

As outlined in section 2.2.1, English language learners with non-alphabetic L1 backgrounds face different challenges in their language learning than learners with alphabetic L1 backgrounds. It is therefore reasonable to assume that interventions for English learners with dyslexia with this background will differ significantly from interventions for English learners with dyslexia with an alphabetic L1 background. Due to this, studies conducted on people with dyslexia with non-alphabetic L1 background, such as all studies on Chinese or Japanese learners, have been excluded from the present review.

5.2.6 Different cultural settings

Different cultural settings enable language learning in different ways. The English language learning of persons with French L1 background in Canada will differ significantly from the English language learning experience in Norwegian classrooms, as increased language input lead to increased language learning (e.g., Farukh & Vulchanova, 2014; Farukh & Vulchanova, under review). Differences in the cultural significance of the English language also lead to different affective learning variables (Bemerchi & Hummel, 1998). These factors are considered as vitally important to language learning, and any variation in them is therefore likely to be the cause of different learning experiences.These differences lead to an inability to transfer the results of research made in such settings to the currently relevant EFL setting. Therefore, such studies have been excluded.

However, this does not exclude all research conducted in somewhat differing language environments. Research conducted in countries where English may be used to communicate between speakers with different L1s, such as Israel, has been included, as this use of English is not deemed sufficient by the researcher to constitute a severely different cultural setting to the one relevant for this review.

5.2.7 Researcher does not know language

This review can only include research that has been written in languages the researcher is well-versed in. Due to this, papers written in any other languages than English, Norwegian, Swedish, and Danish have been automatically excluded from the study, despite the fact that their contents may have been highly relevant.

Some of these papers may have been made available through automatic translation services, such as Google Translate. However, the reliability of such services is questionable, and the possibility of lost nuances in the reported findings was considered to be too grave to risk. Such use of automatic translation could give the appearance of wider applicability than the review really has, and could be a source for misinformation. The negative impact of these translation services is therefore considered more grave than any benefit these excluded studies may provide.

5.2.8 Not relevant setting

As stated above, this review aims to find relevant methods for EFL teaching to people with dyslexia in a Norwegian school setting. Some studies have been conducted in an environment that cannot be generalized to the relevant classroom setting. Examples of this are interventions using unavailable technology, such as EEGs, or studies on bilinguals, for whom the language experience is known to differ. The lack of relevance to the scope of the review has lead to these studies also being excluded from the present study, as they cannot be generalized to the desired classroom setting.

5.2.9 The inclusion of different orthographies

Different orthographic depths has been proven to affect language learning (Farukh et al., 2014, Farukh et al., under review), and for this reason it was seen as desirable to only include orthographies similar in depth to Norwegian. As described in section 1.5.1, different orthographies play an important role in learning to read for people with dyslexia. This also has an effect on learning English as a L2, as discussed in section 2.3. Originally, this effect on English language learning formed the basis of excluding studies done in languages with

shallow orthographies, such as Finnish or Italian, or deep orthographies, such as Hebrew without vocal markers (Joshi & Aaron (Eds).,2013).

However, excluding texts on the basis of orthograhy resulted in a severely limited amount of primary texts, as only two research papers were able to conform to all required criteria. As several more papers were necessary to form a reliable systematic review, the criteria needed to be widened. Different levels of orthography were deemed, by the researcher, to be the least critical criterion for exclusion, and it was therefore removed.

The removal of this criterion drastically increased the number of primary texts, making it six. The increase of primary texts also increases the possibility of citation search, and therefore increases the probability of identifying and including all research relevant to the review. It also enables the inclusion of more research found during the citation search. It was therefore considered necessary to narrow the exclusion criteria.

5.3 Search methods

In order to find and identify as much relevant research as possible, several search strategies were utilized. While conducting these searches, all articles were simultaneously title sifted; only those titles that contained at least one inclusion criteria and none of the exclusion criteria were considered sufficiently relevant to be included for further consideration.This section describes the method of these searches.

5.3.1 Database search

In order to find the most relevant databases to search for this review, the database search of the Norwegian University for Science and Technology was accessed. This search engine identifies relevant databases based on subject. For the purposes of this review, all databases identified as relevant for pedagogy was searched. As databases relevant for English language were listed together with those relevant for English literature, all databases under this heading without any literary references in the titles were also included.

This search for databases identified a total of twelve relevant databases: *JSTOR, Tailor & Francis Online, Oxford Journals, PubMed, Wiley Online Library, Idunn, Scopus, IngentaConnect, ProQuest, EBSCO Host, Københavns biblioteker,* and *Nasjonalbiblioteket NORART*. These were searched systematically, using the same key words and phrases.

To ensure the relevance of any hits generated during the database search, Boolean logic was employed. Any terms inside quotation marks would have to be present in the typed order. The Boolean operator AND was used to combine search terms, narrowing the possible search hits by requiring the presence of both search strings (Booth et al., 2012).

Due to the academic disagreements of use of terms both within both second language research and dyslexia research, several possible search strings were identified. In the theoretical literature, reading difficulties similar to dyslexia have been referred to as *dyslexia*, *reading disability* or *specific language impairment*. Second language learning has been referred to as *second language acquisition*, *second language learning*, *foreign language learning*, and *foreign language acquisition*. In order to exhaustively search the literature, all these terms needed to be included, and combined with each other.

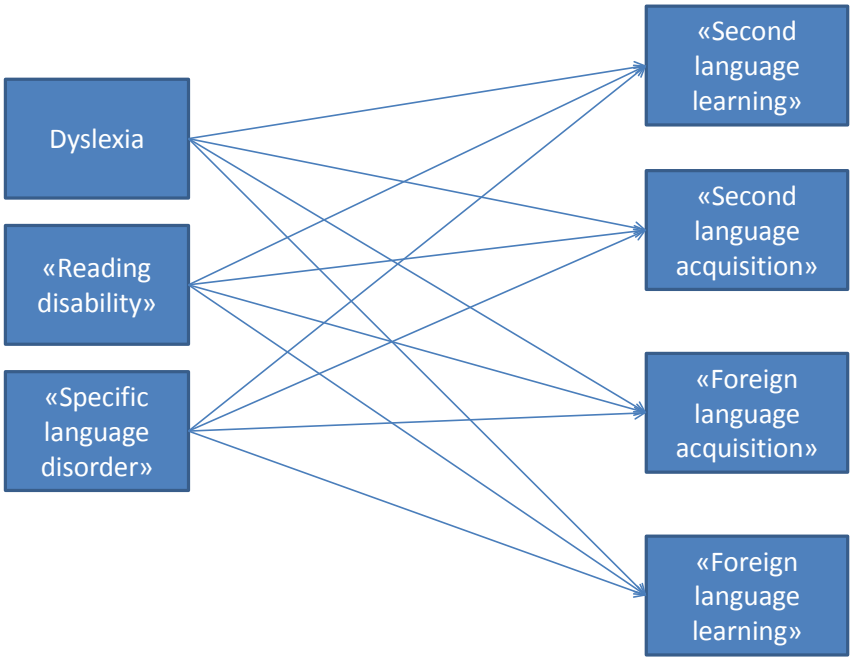

Figure 1. Combination of included search terms

As research written in Norwegian, Danish or Swedish is also eligleble for inclusion, the search also needed to include terms in these languages. However, as research written in these languages is limited, Boolean logic was not employed in these searches. They consisted of single word searches – *dyslexia*in all languages (*dysleksi* or *dyslexi)*, and similarly with

second language (*andrespråk/andresprog/andraspråk)* and *foreign language* (*fremmedspråk/fremmedsprog/främmande språk)*. As two of the databases, Københavns bibliotek and Nasjonalbiblioteket NORART, consist of primarily Scandinavian research, these were only searched using single-word searches.

As these searches were conducted in several different databases, each article was identified more than once. This created an added level of security in the inclusion of all relevant articles: As each article was likely to be revealed through more than one search term, they were also included in or excluded from the review several times. Thus, searching several databases separately increased the chances of identifying and including all relevant articles, limiting the possibility of errors from the researcher.

These searches resulted in over 6,500 hits, 683 of which were considered relevant for the review (for a complete breakdown of which databases contained most hits, and how many were included, see Appendix 1). In order to be considered relevant, the title needed to include at least one inclusion criteria, and none of the exclusion criteria. These 683 hits lead to over 290 individual articles, considered relevant after these searches and the related title sift had been conducted.

5.3.2 Google search

As not all relevant research will have been published in journals contained in the researched databases, the database search was supplemented by a search in Google Scholar. In addition to aiming to discover other relevant published sources, this search particularly aimed for discovering so-called "grey literature", materials not published in commerical journals (Booth et al., 2012). This was done to avoid poblication bias (Booth et al., 2012).

The search in Google Scholar was conducted after having deleted all previous search history on the computer, as well as all cookies. This was done due to the fact that Google uses previously stored information to customize the shown results. As precautions were taken, this search should be replicable for other researchers. The searches consisted of the same Boolean logic phrases from the database searches, as well as the Scandinavian single word searches. A further 39 relevant articles were identified, previously undiscovered through the database search.

5.3.3 Journal search

In addition to supplying relevant databases for search, NTNU's search engine also contain a list of relevant journals. As some of these journals were not searchable through previously

searched databases, they were searched individually. Where a standard search engine was available, this was utilized, using the same Boolean phrases as previous searches. Where no such search was possible, the available editions of the journals were hand-searched, looking for relevant titles.

5.3.4 Citation search

All research identified as relevant after the full text sift described below, was also submitted to a citation search. This search phase consisted of researching the cited sources of included research. Research published in books where other relevant researsh was found was also searched for relevance. This search was conducted in the same manner as described above. All research found in these citations that was deemed valid for the review was then searched, until no further sources could be identified.

5.3.5 Search limitations

All searches were finalized during March of 2014. Any resources becoming available after this month have therefore not been considered for inclusion in this paper, and must be considered separately from this review.

In addition to conducting the described searches, the reviewer attempted to come in contact with experts on English didactics at several Norwegian universities. However, these attempts where either rebuffed, or went unanswered. Materials not available through regular searching have therefore not been considered for inclusion. This especially limits the availability of unpublished materials, making the review suceptible to publication bias.

5.4 Selecting relevant articles

As mentioned in section 4.3, all research was submitted to a title sift at the time the search for relevant materials was conducted. After this, research that had passed the title sift were subjected to an abstract sift and a full-text sift, before becoming included in the study.

5.4.1 Abstract sift

When conducting an abstract sift, a research paper is judged for inclusion based on its abstract. It is measured according to the relevant criteria for inclusion and exclusion, and treated accordingly (Booth et al., 2012). The papers still considered relevant are kept for further analysis.

All texts identified as relevant during any of the search phases were submitted to an abstract sift. Where no abstract was available, the text was considered to have passed the abstract sift,

and was included. The presence of any exclusion criteria in the abstract ensured the removal of the article from the pool of relevant materials. It was also required for the abstract to contain all inclusion criteria in order for the article to be included further.

The abstract sift excluded the majority of the articles considered relevant during the title sift (for full list of articles excluded at this stage, including the reason for exclusion, see Appendix 2). This was expected, as the demands set for inclusions during the title sift were intentionally low. The excluded research most commonly did not contain a mention of dyslexia, or lacked any applicable interventions. Several of the excluded texts also failed to meet more than one of the aforementioned criteria for inclusion.

5.4.2 Full text sift

The final stage of consideration was a full text sift. All research still considered relevant was skimmed, searching for evidence of all inclusion criteria, and the absence of any exclusion criteria (for documentation of excluded articles and reasons for their exclusion at this stage, see Appendix 3). Out of sixty articles, twelve were considered sufficiently relevant to be included for further analysis.

5.5 Analysis of included research

All included research was analyzed according to several criteria. The research questions were considered, as were several factors of the participants in these studies – language experience, age, gender and L1. The findings of the studies were documented, and systematized according to themes emerging over several of the included studies. The results that emerged from this analysis will be documented in section 6.

5.6 Sources of bias and generalizability issues

This review aims to be neutral, focused and generalizable to a Norwegian school context. However, there are several sources of potential bias and issues of generalizability. This section will mention some of these, urging the reader to critically consider the results of the review in light of its limits.

One important source of bias in systematic reviews in general, is publication bias. This is usually negated through use of grey literature, as described above. However, the present review relies heavily on online availability. There are several unpublished studies that could have been relevant for the review that are unavailable, especially in the case of unpublished

MA thesises. The main sources of materials for this review have been found through Norwegian libraries, online bookstores, databases, and journals, and therefore tend towards published research. Though the review includes some grey literature, it is therefore liable to publication bias.

The review is also biased towards research published in specific languages. The language knowledge deficits of the reviewer necessitate the exclusion of much research that could have been included, and thus creates a possibility for bias. The inclusion of studies in more languages could have changed the outcome of the review.

As mentioned in section 4.2.9, research done in languages with widely differing orthographies was included in the study. This presents with an issue of generalizeability. It is uncertain whether the same methodologies will produce the same results in different orthographies, and this present one possible flaw with the review. As far as possible, results from different levels of orthography will be differentiated. Results of methods dealing explicitly with one specific language (e.g., differences in grammar from source language to English) will also be excluded from analysis.

A last, important source of bias is found in the preconceptions and beliefs of the reviewer. As no control of the selection of materials was possible, all selections have been subject to the judgement of one reviewer. This reviewer may be influenced by her own conviction of what constitutes good classroom practice, or which methods she herself would like to implement in future teaching endeavors. The reviewer has strained for objectivity, but recognices that true objectivity may be impossible to attain. The reviewer therefore begs the reader to recall these limitations.

6. Results

Whereas the previous section presented the means of finding research, this section will present the analysis of the included research. It will discuss differences between the included papers, identify biases within these papers, and finally thematically analyse the findings in the included papers.

6.1 Differences among included papers

The extensive search methods described in the previous section yilded a total of twelve papers or book chapters eligible for inclusion in the review. Two of these papers were written on different aspects of one study. Both papers on Hungarian students therefore use data generated during the same collection phase, albeit in very different ways.

The papers included have been utilizing both qualitative and quantitative methods of research. Quantitative methods are rare, and most often used in concurrence with qualitative research, such as through the combination of questionnaires and in-depth interviews.

The included papers used studies that conducted data collection in a variety of ways. Direct study in the form of observations, interventions or research on own practice were in the minority, whereas more indirect forms of study, such as interviews and questionnaires, were utilized in more than half of the included studies. Despite this, quantitative results also need to be taken into consideration. Therefore, results will be analyzed thematically.

While the majority of the included papers (9 out of 12) used data from studies conducted using one method of data collection, three of the included papers used research found with mixed methods. All these three utilized interviews, in combination with either questionnaires, observation, or teaching practice. This is reflected in Figure 3, below.

The papers using theory generalized findings from other contexts to an EFL setting, suggesting interventions for language learning. Where interventions were used, several different types of interventions are presented, documented, and analyzed.

Seven of the included studies focused on teachers and students. A total of 173 teachers and 59 students with learning disabilities are represented by the combined data of the included studies. Two studies focused solely on students, two focused solely on teachers, while three studies included both teacher and student perspectives.

	Cronemark, S.	Csizér, K., et al.	Ganschow, L., et al.	Gyarmathy, E. et al.	Ilan, S.	Johansson, D. R.	Kormos, J. et al.	Miller, S. et al.	Nijakowska, J.	Rontou, M.	Schiff, R. et al.	Teitelbaum, G. T.
Interview	x	x				x	x		x	x		
Questionnaire				x					x			
Theory			x		x			x				
Intervention											x	x
Observation										x		
Teacher practice	x											s

Figure 2. Methods used in each study

6.2 Bias within and across reported studies

There are several possible sources of potential bias in the selected studies. One is inherent in the selection process itself: As all search, inclusion and exclusion has been conducted by the same reviewer, the selection process is suspect to the biases of this person. As an English teacher at heart, the reviewer is potentially biased toward any research that may fit within her own teaching style, and subconciously be more inclined to include any papers reporting favorably on such research. Steps have been taken to avoid this bias (as outlined in section 4), but the subjective judgement of the reviewer cannot be completely eradicated from the review process.

There are also several potential sources of bias within the studies themselves. The three papers that report theory-generated teaching methods are untested, and are therefore biased by the views of their authors. The robustness of the conclusions of these studies must therefore be viewed accordingly.

The two papers that report on interventions are also subject to bias, as they do not utilize control groups. The use of control groups in such experiments can be seen as ethically questionable, and it is therefore understandable that the studies are conducted on only one group. However, the bias inherent in such reporting must be kept in mind thoughout this review.

The objectivity of the authors of the included papers must also be questioned. One paper reports on the author's own teaching practice, making objective conclusions practically

impossible to reach. The interventions described are all implemented due to the authors, and it is only natural for them to wish the interventions to succeed. The reported outcomes must be trusted, but the authors' own interpretation of their meaning must be reconsidered.

6.3 Thematic analysis of findings

Five major themes were identified in the analysis of the included papers. An overview of how these themes were distributed between the different studies can be found in Figure 4. The following section will present the results for each of the found themes.

	Cronemark, S.	Csizér, K., et al.	Ganschow, L., et al.	Gyarmathy, E. et al.	Ilan, S.	Johansson, D. R.	Kormos, J. et al.	Miller, S. et al.	Nijakowska, J.	Rontou, M.	Schiff, R. et al.	Teitelbaum, G. T.
Teacher knowledge	x			x		x			x	x		
Student experiences				x			x			x		
Methods and teaching tools	x		x	x	x	x	x	x	x		x	x
Affective variables	x	x				x	x		x		x	
Exemption	x		x			x						

Figure 3. Themes in different studies

6.3.1 Teacher knowledge

Five of the included articles include research on teacher knowledge of dyslexia as a disorder, and their awareness of possibilities for adaptations. Out of these, only Johansson (2013) conclude that teachers have sufficient knowledge of dyslexia. This study is also one of the smallest in terms of interview subjects, as seen in Figure 5.

	Cizér et al.	Cronemark	Gyarmathy et.al.	Johansson	Kormos et al.	Nijakowska	Rontou	Teitelbaum
Teachers	0	4	123	6	0	38	2	0
Students	15	5	0	0	15	11	4	24

Figure 4. Number of interview subjects by study

Rontou (2012), Nijakowska (2000), Cronemark (2001), and Gyarmathy, Mahlerbe, Pichel, Stoyanov, and Tartari (2009) conclude that teachers do not have sufficient knowledge of dyslexia or available adaptations, but that they acquire more methods for teaching the more

experience they have with students with dyslexia. Nijakowska (2000) found that only 39,5 % of the interviewed teachers had been familiarized with dyslexia during their study, and that only 20 % were familiar with multisensory teaching methods.

6.3.2 Student experiences

Three of the twelve articles discuss student experiences of learning English as a foreign language with the additional burden of dyslexia. Rontou (2012) found that students with dyslexia want to be given extra time to complete all tasks, not just tests and exams, but that this wish is rarely granted.

Gyarmathy et al. (2009) found that the degree of impairment from dyslexia was immaterial to student experiences. The greatest difficulty in learning English was found to be learning new words and pronounciation, as well as reading and writing. Teachers believed students with dyslexia struggled more with grammar. Students with dyslexia preferred learning through personal contact, and were also positive to e-learning.

Kormos, Csizér, and Sarkadi (2009) reports that students with dyslexia prefer to work in smaller groups, with others on the same language level. Most of the interviewed students preferred a private tutor over group sessions. Students were sensitive to teacher attitudes, and were less likely to enjoy learning when their teacher was negative to adapting their teaching. Students were split on being exempted from grades in English: While some saw the benefits, others commented on receiving negative remarks from their friends.

6.3.3 Methods and teaching tools

The vast majority of the included articles focus on differentiation in methods and teaching tools for students with dyslexia; ten out of twelve included articles has this as an area of interest. Focus is primarily on phonics teaching and instruction styles.

Miller and Bussman Gilis (2000) claim that teachers should focus on phonological awareness, sound-symbol association, as well as syllable instruction, morphology, syntax and semantics. Teitelbaum (1997) suggests that the focus of teaching should be phonics and vocabulary, utilizing simpler versions of texts and reading techniques to achieve this end. However, this is contradicted by Ilan (2000), who claims that the focus should be on larger grain sizes, and not focus on phonics teachings. Kormos et al. (2009) suggest that spelling should be taken out of consideration when assessing texts written by students with dyslexia.

Two of the included articles suggest a multisensory approach to spelling and writing for students with dyslexia. Teitelbaum (1997) suggests a gradual introduction of each individual letter, utilizing all senses, such as taste and smell, to enable learning. Miller et al. (2000) also claim that simultaneous, multisensory instruction is beneficial.

Five other articles also suggest concrete methods of instruction for students with dyslexia. Gyarmathy et al. (2009) suggest using personal contact, CDs and e-learning, as these are the most efficient teaching tools. Johansson (2013) supports the claim that computers are a valuable teaching tool, and claims that focusing on content rather than grammar or spelling is beneficial for learning. Ilan (2000) suggests limiting words and pictures per page, in order to enable reading, and also claims that focusing on entire sentences makes the reading process easier. Schiff and Calif (2004) suggests teaching individually or in small groups of 2-3 students, focusing on general reading techniques, language-specific differences, and teaching grammar as it is encountered in texts. Nijakowska (2000) claims that students with dyslexia need extra time, especially when learning new vocabulary.

Finally, Cronemark (2001) and Ganschow, Schneider, and Evers (2000) claims that all needs are individual for each students, and that teaching methods must be adapted to reflect this diversity of student needs, also in the case of students with disabilities.

6.3.4 Affective variables

Six articles include research on affective variables for students with dyslexia in learning English as a foreign language. Cronemark (2001) found that the class environment was important for increased motivation for learning, as well as a focus on oral English. Schiff et al. (2004) claim that their academic intervention leads to a higher sense of accomplishment, and thus to increased motivation.

Nijakowska (2000) found that most students enjoyed learning English, but that some hated it. None of the interviewed students were indifferent. The longer the students had been studying English, the less likely they were to be motivated for further learning. Nijakowska attributes this to lack of achievement in the language.

Johansson (2013) found that teachers believe students with dyslexia have low self-esteem in the language classroom as a result of the disorder. Kormos et al. (2009) found that students believed that a good teacher, who was attentive, supportive, and strict, increased their

motivation for learning. Motivation also increased when classes were interesting, progression slow, and the lesson was thoroughly explained.

Csizér, Kormos, and Sarkadi (2010), based on the same study as Kormos et al. (2009), found that students with dyslexia were more likely to have extrinsic motivation, such as passing an exam, as compared to their more intrinsically motivated non-dyslexic peers. The international status of English was seen as both motivating and daunting, thus decreasing motivation. The primary cause of negative affect was dyslexia. Interestingly, most of the interviewed students were more motivated to learn their L3, when this had a more transparent orthography. Language teachers were found to have large influence on the motivation of their students.

6.3.5 Exemption

Three of the included studies, Johansson (2013), Ganshow (2000), and Cronemark (2001), suggest that those who are most impaired by their dyslexia should be exempt from learning English as a foreign language. They suggest that this school time would be better spent focusing on more successful reading and writing in the native language.

7. Discussion

The research included in this review center around five major themes; teacher knowledge, student experiences, methods and teaching tools, affective variables, and exemption from EFL. These findings will be discussed in light of the previously reviewed theory. Limitations of the current review will also be discussed in detail.

7.1 Limitations of the current review

7.1.1 Limitations of included articles

The scope of the review is limited by the number of articles included in it. The twelve included studies cannot touch upon all areas of interest for the desired context, though they were the only studies found to be sufficiently related to this context to be generalizeable. Current knowledge on didactic adaptations for students learning English as a foreign language with the additional burden of dyslexia is too limited to reach any substantial conclusions.The review should therefore be seen as a starting point for further research, rather than primarily summing up current research.

However, it is worth noting that several practical guidelines to practical foreign language teaching exist, that have fallen outside the scope of this review due to lack of focus on English as a target language (eg. Schneider and Crombie, 2003). The works that have been removed from the review due to lack of English as a target language may still provide beneficial, though general, language teaching help.

Another limitation of the current review is the size of the included studies. Most of the included studies are small, and the conclusions they present may be overturned by other, larger studies. However, as most of the included studies reach the same comclusion, this limitation is considered neglible.

There are also some inconsistencies among the conclusions of the included papers that need to be considered. Johansson (2013) found that the teachers in her research were familiar with dyslexia, while all other included research in the area found that teacher knowledge in this area was insufficient. This discrepancy can be explained by several factors. Johansson (2013) has a very small sample size, using interviews of four teachers. It is possible that these teachers are not representable for teachers in general. It is also possible that Johansson (2013) has lower standards for what constitutes familiarization with dyslexia than the other included studies, as she does not include her definition of this. In light of the differences between

different theories of the origins of dyslexia, as well as different focal points on the manifestations of the disorder, this does not seem unlikely.

Another inconsistency that should be considered is the recommendation of removing focus from phonics teaching put forth in Ilan (2000). This goes against both other recommendations in the included literature and accepted theory in the area, as the phonoligical deficit is seen as central to the disorder (see section 1, above). As this research is only backed by theory, and not actual interventions, it has to be weighted less than other research done in the same area. However, it provides interesting opportunities for further research.

7.1.2 Limitations of generalizability

As discussed in section 4.2.9, papers based on studies in orthographies different from the Norwegian one were originally excluded from the review. The inclusion of these orthographies presents a challenge of generalizability of the review to the desired context. Interventions and teaching methods that are successful in one othography may prove insufficient in another. As this is untested, it presents a limitation on the current review. Replication of the included studies in the desired context may provide further information on this subject.

7.2 The didactic consequences of dyslexia

7.2.1 Teacher knowledge

The lack of techer knowledge found in the reviewed literature is alarming. Lack of knowledge of a disorder leads to a lack of ability to adapt teaching to people with this disorder. This will severely impact the learning possibilities of these students, as they will not be taught in a way thay fits their needs. It also hinders Norwegian teachers from fulfilling their legal obligations, as found in Norwegian law (Opplæringslova, 1998).

It is also reasonable to assume that this lack of knowledge may negatively impact the attitudes of teachers. Not knowing how to adapt their teaching may lead to unconfortable situations, and, in turn, to avoidance. As teacher attitides to adaption influences student motivation, this could lead to a lack of interest in the taught subject. Vice versa, improved teacher attitudes should lead to improved interest. Thus, increased knowledge of dyslexia could lead to increased student motivation for language learning. As motivation increases learning (as outlined in section 4.3), this would be a highly desirable outcome.

It is reasonable to believe that this lack of knowledge also exists in Norway. Universities that have programmes leading to teaching certification, include little to no curriculum based on disorders in general or on dyslexia in particular (eg. Norwegian University of Science and Technology, 2013; University of Bergen, 2013a; University of Bergen, 2013b; University of Oslo, 2013a; University of Oslo, 2013bUniversity of Bergen, 2013). This situation needs to be rectified as soon as possible, as dyslexia is a very common disorder. If 5 % of the population has the disorder, which is a conservative estimate, there will in general be one student per class who is afflicted. Teachers need to know how to adapt their teaching to any disorder that is this prevalent.

The reviewed literature also shows that teachers learn techniques for classroom adaptation through experience. However, this also means that beginning teachers do not have these techniques, and that the students of these teachers are at risk for not being taught properly. Increased focus on the didactic consequences of different disorders in teaching in general would improve this situation, as it would lessen the amount of trial and error necessary to reach proper teaching methods. Over time, this could significantly impact odds of student success, and therefore increasing learning and motivation. This, in turn, could lead to further increased learning, leading students with dyslexia into a positive spiral of learning, achievement and motivation.

An increased focus on disorder didactics would also increase teacher knowledge of adapting classes for students with more than one disorder, as comorbidities are frequent. Special education teachers have this knowledge, but they generally lack the necessary linguistic knowledge to adapt the teaching of vocabulary and phonetics. If a general inclusion of disorder didactics is not possible, a separate specialisation for teachers, and specifically language teachers, should be made available. This could also increase the odds of diagnosing students with disorders that present atypically, perhaps especially in lessening the gender differences described in section 2.3.

7.2.2 Student experiences

Lack of teacher knowledge is also reflected in the expressed student experiences in the reviewed literature. Students find different areas of language learning challenging then teachers expect them to, and areas that teachers view as problematic are seen as less challenging. This leads to a lack of adaptation in the areas where students need it most. This underlines the importance of a knowledgable teacher seeking to connect to the individual

student. For such a connection to be profitable, the teacher needs to have background knowledge of the disorder in question, as it may enble swifter and deeper understanding. This strengthens the claim of a need for larger focus on disorder didactics in teacher certification courses. Increased understanding of the deficits associated with dyslexia among teachers could therefore lead to better student experiences.

It is worth mentioning that it is possible that students find different areas then expected challenging because teachers adapt successfully. However, lack of teacher knowledge makes this interpretation of the results less than likely. It is more likely a result of lack of knowledge than a result of perfect instruction.

Another important finding is the student preference for working in smaller groups, instead of being part of a regular class. Students prefer achievement to inclusion, in contrast to the currently recommended inclusion strategy in Norwegian schools. This should impact the way school is structured for students with dyslexia, taking personal preferences into consideration.

7.2.3 Methods and teaching tools

The focus on e-learning and computer resources in Gyarmathy et al. (2009) is ecchoed in compensatory resources made available to Norwegian students with dyslexia. Spelling and reading-programmes calibrated towards people with dyslexia in both Norwegian and EFL spelling and reading are regularly made available to people with a dyslexia diagnosis (Stenbakk, J.E., personal communication, April 3, 2014). These programmes can also read text aloud, enabling the student to listen to the text while reading. Though spell checking may not teach proper spelling, effortless implementation of multisensory imput in language classes may increase language learning. The findings of this review support the continuation of this intervention. It may be hoped that proper implementation of such programs may lead to increased exposure to reading and writing, increasing the possibilities for compensation, as outlined in section 2.6.

The increased presence of personal computers among all learners in Norwegian schools, especially in high school, may be a factor thay also contributes to the usefullness of such programmes. Though students prefer to work in smaller groups, using a less conspicuous method of adaptation may lead to less stigma for peope with disorder, enabling them to utilize these adaptations without it affecting motivation or social inclusion.

Other suggested teaching tools are also enabled by an increased use of computers. It is easier to modify the amount of words or pictures on a computer document as opposed to in a printed document. The use of computers could also enable students to modify these documents to their own preferences, leading to more involvement in their own learning process. A lessening in focus on spelling may be unnecessary if students learn to use the proper computer tools, where spelling is controlled with users with dyslexia in mind. Computers can also be used to strengthen the symbol-sound phonemic bond without explicit teacher instruction. Thus, increased computer usage may enable other adaptations and teaching tools, making it easier to adapt teaching to students with dyslexia. However, this requires increased computer literacy on the part of some teachers, as they cannot teach what they do not know.

The suggestion of using multisensory approaches to teaching students with dyslexia is not surprising. This review also supports conservative uses of multisensory instruction, such as in the computer programs described above. However, the methods described in the included research are more controversial, focusing on including tactile, olfactory, and gustatory senses. These methods may be difficult to implement in larger classes, as the described methods require a high degree of teacher focus on each student.

The implementation of such methods may also become more difficult in higher grades, as the gap between students with dyslexia and other students become wider. The use of these controversial multisensory methods may therefore be more effective if used in smaller groups. As this aligns with student wishes, as well as enables teachers to increase their personal contact with each student, the reviewed evidence supports an increased use of specialized, small group teaching. Such group teaching may also benefit from teacher specialization in the form of disorder didactics.

7.2.4 Affective variables

The findings in the reviewed studies on the affective variables connected to students with dyslexia are not surprising. Increased motivation leads to increased learning, and learning breeds a desire to learn more. Students with dyslexia are motivated by achievement, and class environment is important to their motivation and learning. This is in line with general pedagogical thinking (eg. Skaalvik & Skaalvik, 2007). The general knowledge of affective variables, motivation, and learning also hold true for students with dyslexia.

However, there are some general differences between the types of motivation found in students with and without dyslexia. Where students without dyslexia are intrinsically

motivated, such as by a desire to travel, students with dyslexia are more likely to be extrinsically motivated, such as by a desire to pass an exam. As extrincit motivation is transient by nature, the teacher should attempt to change the motivation type of the student. Setting attainable goals and increasing the sense of achievement these students feel should therefore be a priority, as it is generally accepted as important for motivation (eg. Belmerchi & Hummel, 1998; Szaszkiewicz, 2013).

The prevalence of extrinsic motivation in students with dyslexia should also affect the way teachers adapt testing of these students. As a desire to pass a test or to improve their grade is an important part of the language learning motivation of these students, it may not be a suitable adaptation to remove grades on tests. It may be more suitable to employ a different matrix for grading, where spelling is not taken into account. This may be a more profitable way of utilizing the extrinsic motivation of language learners with dyslexia.

The reviewed literature also claims that English language learners with dyslexia either love or hate this learning. It seems logical to link these emotions to motivation and achievement, as well as foreign language anxiety as described by Horwitz (2001). Such a link would further emphasise the importance of increased teacher knowledge, as suitable teacher adaptations may increase achievement, and thus increase affection for language learning. Decreasing language anxiety should also be an area of focus, though research on how to do this remains limited. As students acknowledge the importance of good teachers, and their knowledge, making disorder didactics a possible area of study for those focused on becoming teachers should be made a priority.

7.2.5 Exemption

At first glance, the discussion of exemption from English classes for students with severe dyslexia seem irrelevant to this review. The policy of inclusion in Norway, taken with the established view of the importance of English as a global language, clearly shows that policy makers wish that all students learn English. An argument for exemption therefore seems to lack relevance in the desired context.

However, it is disheartening to be presented with such opinions in research.Teachers holding such opinions may be less likely to adapt their teaching to the needs of these severely disabled students, as they believe the students should be excluded from the subject. Such attitudes to teaching are also likely to be visible to the students, as discussed in section 6.2.1, which showed that negative teacher attitudes negatively impacts motivation. Teacher attitudes that

hinder adaptation of teaching and negatively impact the motivation of their students will also severely hinder the creation of an optimal learning environment, further limiting the EFL learning possiblities of students with severe dyslexia.

A conviction that exemption from foreign languages is best for students with severe dyslexia may also negatively influence the possibilities of future research into didactic adaptations for these groups. Researchers holding this conviction will be less likely to conduct research for the betterment of teaching tools and methods for this group, making it less likely that people with severe dyslexia will be successful English learners. This further limits research, as lack of proficient English learners with severe dyslexia leads to a lack of possible research candidates. Thus, the belief that people with severe dyslexia should be exempt from EFL classes may lead to a reason for this exemption.

7.3 Teaching methods and current research

As mentioned in section 4.1, this review also aims to find how current didactic research relates to current linguistic research on the consequences of dyslexia. In general, it seems as though more established linguistic knowledge, such as the phonological deficit, is better researched in didactics. More current linguistic research, such as deficits in the phonological loop or the temporal deficit, does not seem to penetrate the didactic field. This will be discussed in more detail below.

The well-established focus on phonology in linguistic research is echoed in the research included in this review. The remediation of phonological deficits, including the resulting difficulties with reading, writing, and spelling, is a focal point in the included research. With the exception of Ilan (2000), all remediation of reading focuses on strengthening of phonological understanding, most often through multi-sensory teaching.

Ilan (2000) presents the same findings as those reported by Snowling (2000); reading may be easier for people with dyslexia if the focus is placed on larger structures, such as the sentence, instead of smaller structures, such as phoneme-grapheme relations. As not much didactic research is conducted in this area, it should be an area of future focus. Increased knowledge of teaching reading on the sentence-level may increase the reading competence of people with dyslexia, and thus their performance in school in general.

The included research also shows that students with dyslexia experience larger difficulties in vocabulary learning than their non-impaired peers. This underlines the linguistic research on

impairments on the phonological loop, and shows that this impairment has practical difficulties for language learning. Increased teacher awareness on this aspect of dyslexia can therefore be seen as very important, as vocabulary learning is a vital aspect of language acquisition. Increased didactic research in this area is therefore desirable.

The included research does not include any focus on the comorbidities of dyslexia, or on different didactic adaptation for people with dyslexia with different genders. This may be mostly related to the criteria for inclusion and exclusion, as the emphasis was placed on dyslexia and didactics. However, it may also point to a lack of focus on the comorbid aspects of different disorders and lack of knowledge on different presentation of symptoms in different genders, underlining a need for a specialization in disorder didactics.

This lack of focus is also found on the remedial uses of music. Several linguistic studies have been conducted on this, as discussed in section 1.4.3, but this focus has seemingly not been transferred to didactic research. As musical interventions may be hugely beneficial while also being cost-effective and enjoyable, it is highly recommended that more research is conducted on the didactical benefits of music for the language learning of students with dyslexia.

7.4 Suggestions for further research

Perhaps the most important finding of this review is the lack of research done in contexts that are relevant and generalizable to a Norwegian context. Though some research has been uncovered and analyzed, the lack of appropriate research, especially into concrete teaching methods, is palpable. Some areas of possible future reasearch have already been suggested. However, the most important suggestion this review can make, is to increase research in areas directly related to adaptations of English language learners for students with dyslexia. This section will suggest possible areas and methods of research, in order to remedy this lack of knowledge.

Though there is a severe lack of research done in contexts that are relevant for Norwegian classroom teaching, much research has been done in contexts that are tangentially related. French and American studies on bilingual English learners with dyslexia cannot be directly transferred to Norwegian schools, but the tests used in these studies can form the basis of future Norwegian projects. Such research has the double benefit of both increasing knowledge of Norwegian EFL learners with dyslexia, as well as testing the generalizeability of similar

studies – if Norwegian studies find similar results as American or French studies, it is possible that other French or American research can be generalized to a Norwegian context.

Similar benefits can be found in replicating research on general EFL learning. Using the same tests on learners with dyslexia would show how these students differ from neurotypical learners, as well as increase knowledge of language learning with dyslexia as an additional burden. Such studies could also reveal how students with and without dyslexia react to the same teaching stimuli, and thus form a basis for how and how much students with dyslexia should be included in regular language classrooms.

As there is a large amount of available research on both English language learning with dyslexia in ungeneralizeable contexts, as well as research done on neurotypical English language learning in generalizeable contexts, there is also a vast, untapped area for potential research. Existing studies can function as control groups, resourses for relevant tests, and sources of further inspiration. Large knowledge gains in this area can be made through testing the relevant population, and comparing it to results in existing research. Increased funding, focus, and the attention of an interested researcher could therefore vastly increase knowledge of English language learning with the additional burden of dyslexia without comparatively large amounts of effort.

8. Conclusion

This review set out to synthezise didactic research on English language learning with the additional burden of dyslexia that is generalizeable to the Norwegian classroom setting. Though few articles were identified as eligible for inclusion in the review, the included articles all underline the importance for adapting teaching for students with dyslexia. However, the articles differ in their opinion of how this adaptation should be undertaken. Teaching how to read and write is seen as important, but the manner in which this teaching should be conducted is a topic of debate. While most researchers agree that students with dyslexia should be able to learn English in school, some claim that severely afflicted students may find extra instruction in their L1 more beneficial.

These disagreements underline the importance of further research in the didactics of disorders, including dyslexia. More specific knowledge on how to adapt teaching for students with dyslexia would enable teachers to conduct their lessons as effectively as possible. Clear guidelines on adaptation would also lighten the work load of individual teachers, making implementation of adapted teaching more likely.

The review further underlines the importance of teacher knowledge. As research on disorder didactics is lacking, teacher knowledge may be difficult to increase. However, there is enough available knowledge to enable universities and colleges to include focus on disorder didactics in their teacher training programmes. It is the strong recommendation of this review that such a focus be implemented as soon as possible.

The benefits of such a focus would be two-fold. Teachers will be more able to adapt their teaching to students with disabilities, enabling the learning of these students. As teachers have increased knowledge of disorders, they do not have to spend their time learning how to adapt their teaching, freeing resources for adapting teaching for other students in their class. Thus, all members of each class would benefit from an increased focus on disorder didactics.

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Appendix 1. Number of found and included articles

This appendix describes the number of hits each search phrase generated, and how many of these hits were included for further review. The first number describes the number of hits in each database, while the second number describes the number of articles included for further review. Note that some of these numbers describe duplicate articles.

Term number	Search term
1	Dyslexia AND “second language acquisition”
2	“reading disability” AND “second language acquisition”
3	“specific language impairment” AND “second language acquisition”
4	Dyslexia AND “second language learning”
5	“reading disability” AND “second language learning”
6	“specific language impairment” AND “second language learning”
7	Dyslexia AND “foreign language learning”
8	“reading disability” AND “foreign language learning”
9	“specific language impairment” AND “foreign language learning”
10	Dyslexia AND “foreign language acquisition”
11	“reading disability” AND “foreign language acquisition”
12	“specific language disorder” AND “foreign language acquisition”
13	Dysleksi/dyslexi
14	Andrespråk/andresprog/andraspråk
15	Fremmedspråk/fremmedsprog/främmande språk

Search phrase	JSTOR	Taylor & Francis Online	Oxford Journals	PubMed	Wiley Online Library	Idunn	Scopus	Ingenta-Connect	ProQuest	EBSCO Host	Københanvns Biblioteker	NORART	Total
1	125/23	71/6	17/3	3/0	197/45	X	362/56	2/1	240/30	8/1	X	X	1,025/165
2	45/10	2/0	5/1	0/0	132/32	X	189/28	1/0	30/0	4/1	X	X	408/72
3	0/0	0//0	0/0	0/0	0/0	X	0/0	0/0	0/0	0/0	X	X	0/0
4	105/6	47/3	7/0	4/2	189/42	X	13/4	3/0	279/52	8/2	X	X	655/111
5	57/6	3/1	1157/36	0/0	141/28	X	0/0	1/0	86/15	2/0	X	X	1,447/86
6	0/0	2/1	0/0	0/0	0/0	X	0/0	0/0	0/0	0/0	X	X	2/1
7	68/18	37/6	5/0	8/7	166/47	X	11/5	2/2	167/21	6/5	X	X	470/111
8	20/6	1/1	424/5	0/0	112/34	X	0/0	0/0	42/6	1/0	X	X	600/52
9	0/0	0/0	0/0	0/0	0/0	X	0/0	0/0	0/0	0/0	X	X	0/0
10	11/4	5/1	0/0	0/0	33/16	X	0/0	0/0	24/7	0/0	X	X	73/28
11	2/2	3/0	0/0	0/0	5/2	X	0/0	0/0	9/5	0/0	X	X	19/9
12	0/0	0/0	0/0	0/0	0/0	X	0/0	0/0	0/0	0/0	X	X	0/0
13	5/0	11/0	11/0	1/0	13/2	21/0	2/1	0/0	0/0	0/0	65/5	215/19	344/27
14	0/0	3/1	1/0	0/0	0/0	51/0	0/0	0/0	41/0	0/0	1/0	84/1	181/2
15	5/0	55/0	97/0	3/0	3/0	91/0	0/0	0/0	43/1	1/0	932/13	305/5	1,535/19
total	443/75	240/20	1,724/45	19/9	991/248	163/0	577/94	9/3	961/137	30/9	998/18	604/25	6,759/683

Appendix 2. Excluded Articles – Abstract Sift

Description of columns

Inclusion

Describes missing inclusion criteria.

Number	Criterion
1	Dyslexia
2	Intervention
3	English as the target language
4	Second or Foreign Language Learning

Exclusion

Describes present exclusion criteria.

Number	Criterion
1	Not relevant setting
2	Different cultural setting
3	Logographic L1
4	Unknown language

Found

Describes search phase

Number	Phase
1	Database search
2	Citation search
3	Google Search

Author	Year published	Title	Published in	Inclusion	exclusion	Found
Abedi, J. and Gándara, P.	2006	Performance of English Language Learners as a Subgroup in Large-Scale Assessment: Interaction of Research and Policy	Educational Measurement, Issues and Practice	1, 2		1
Abrahamsson, N. and Hyltenstam, K.	2009	Age of Onset and Nativelikeness in a Second Language: Listener Perception Versus Linguistic Scrutiny	Language Learning	1, 2, 3	1	1
Abrams, Z.	2008	Alternative Second Language Curricula for Learners With Disabilities: Two Case Studies	The Modern Language Journal	3		1
Abu-Raiba, S. and Lanir, L.	2010	Case studies of learning disabled students with deficient syntactis control in English as a foreign language	Journal of Research in Special Education Needs	2		1
Adams, H. and Nicolson, M.	2014	Feeling the difference in the languages classroom: explorations of teacher understanding of diversity	The Language Learning Journal	1, 3		1
af Sandeberg, S.	2010	Engelskundervsiningens betydelse för elever med dysleksi	Digitale Vitenskaplige Arkivet/Unpublished	2		3
Alrø, H.	1986	TV & video i fremmedsprogsundervisningen	Serie om fremmedsprog	1		1
Andreau, G.	2012	Phonological and Spelling Mistakes among Dyslexic and Non-Dyslexic Children learning Two Different Languages: Greek vs English	Psychology	2		1
Arries, J. F.	1999	Distortion and Omission in LD Studies: What Foreign Language Educators and Special Edication Researchers Need to Know about Myth	The Modern Language Journal	3, 2		1
Austin, T.	2011	Language learner-teachers: Evolving insights	International Journal of the Sociology of Language	1, 2, 3		1
Axtelius, M and Lindwall, E.	2006	Lärares kunnskaper om dyskexi	Digitale Vitenskaplige Arkivet/Unpublished	2		3
Babayiğit, S.	in print/early view	The role of oral language skills in reading and listening comprehension of text: a comparison of monolingual (L1) and bilingual (L2) speakers of English language	Journal of Research in Reading	1, 2, 3, 4		1
Bahous, R., Bacha, N. N. and Nabhani, M.	2011	Multilingual educational trends and practices in Lebanon: A case study	International Review of Education	1, 2, 3		1
Barnitz, J. G.	1986	Toward Understanding the Effects of Cross-Cultural Schemata and Discourse Structure on Second Language Reading Comprehension	Journal of Literacy Research	1, 2		3
Ben-Yehudah, G, Sackettm E., Malchi-Ginzberg, L. et. Al.	2001	Impaired temporal contrast sensitivity in dyslexics is specific to retain-and-compare paradigms	Brain	2, 3, 4		1
Besson, M., Schön, D., Moreno, S., et. Al.	2007	Influence of musical expertice and musical training on pitch processing in music and language	Restorative Neurology and Neuroscience	3, 2	1	1
Biakystok, E.	1985	The Compatibility of Teaching and Learning Strategies	Applied Linguistics	1, 2, 3		1
Birketveit, A.	2011	Engelsk i kroppsøving og kroppsøving på engelsk: to eksempler på bruk av skolens omgivelser som ressurs i opplæringen innenfor engelsk og kropsøving	Kroppsøving	1		1
Bonn, S.	2006	Om kompenserande datorhjälpmedel för elever med läs- och skrivsvårigheter: Erfarenheter	Digitale Vitenskaplige	2, 3, 4		3

		från ett grundskoleprojekt	Arkivet/Unpublished			
Brenneman, M. H., Morris, R. D., and Israelian, M.	2007	Language preference and its relationship with reading skills in English and Spanis	Psychology in the Schools	2, 3	2	1
Brown, H., Tarone, E., Swan, M. et. Al.	2007	Forty years of language teaching	Language Teaching	1, 2		1
Brøyn, T.	2010	Engelsk: språkfaget som ikke prioriterer språk	Bedre skole	1, 2		1
Borodkin, K., and Faust, M.	2014	Native language phonological skills in low-proficiency second language learners	Language Learning	2		1
Bønnerup, K. H., Schmidt, M. W. and Pedersen, A. L.	2012	Hvilke test skelner bedst mellem studerende med dysleksi og studerende uden dysleksi	Dansk Audiologopaedi	2, 3, 4		1
Caglar-Ryeng, Ö.	2010	Morphological awareness skills of Norwegian adolescent dyslexics acquiring English as a second language	Munin/unpublished	2		3
Caldas, S. J.	2007	Changing Bilingual Self-Perceptions from Early Adolescence to Early Adulthood: Empirical Evidence from a Mixed-Methods Case Study	Applied Linguistics	2	1, 2	1
Calderón, M, Slavin, R., and Sánchez, M.	2011	Effective Instruction for English Learners	The Future of Children	1	2	1
Chang, Y-F.	2006	On the use of the immediate recall task as a measure of second language reading comprehension	Language Testing	1, 2, 3, 4	3	1
Castro, O. and Peck, V.	2005	Learning Styles and Foreign Language Learning Difficulties	Foreign Language Annals	1, 3		1
Chen, T-Y., and Chang, G. B. Y.	2004	The Relationship between Foreign Language Anxiety and Learning Difficulties	Foreign Language Annals	1, 2		1
Chesterfield, R. and Chesterfield, K. B,	1985	Natural Order in Children's Use of Second Language Learning Strategies	Applied Linguistics	1, 2, 3	1	1
Chiang, H-Y. and Liu, C-H.	2011	Evaluation of the Benefits of Assistive Reading Software:Perceptions of High School Students With Learning Disabilities	Assistive Technology		3	1
Cochran, J. L., and McCallum, R. S.	2010	Three A's: How Do Attributions, Attitudes, and Aptitude Contribute to Foreign Language Learning?	Foreign Language Annals	1, 2, 3		1
Commisarie, E., Duncan, L. G., and Casalis, S.	2011	Cross-language transfer of orthographic processing skills: a study of French children who learn English at school	Journal of Research in Reading	1		1
Comeau, L, Cormier, R., Grandmaison, E., et. Al.	1999	A longitudinal study of phonological processing in children learning to read in a second language	Journal of Educational Psychology	2, 3		3
Cook, V.	1997	L2 Users and English Spelling	Journal of Multilingual and Multicultural Development	1, 2		1
Cook Moats, L.	1994	The missing foundation in teacher education: Knowledge of the structure of spoken and written language	Annals of Dyslexia	1, 3, 4		2
Copland, F., Garton,	in	Challenges in Teaching English to Young Learners: Global Perspectives and Local	TESOL Quarterly	1		1

S. and Burns, A.	print/early view	Realities				
Coutsocostas, G-G-., and Alborz, A.	2010	Greek mainstream secondary school teachers' perceptions of inclusive education and of having pupils with complex learning disabilities in the classroom/school	European Journal of Special Needs Education	1, 3, 4		2
Crombie, M. A.	2000	Dyslexia and the learning of a foreign language in school: where are we going?	Dyslexia	3		1
Crombie, M. A.	1997	The Effect of Specific Learning Difficulties (Dyslexia) on the Learning of a Foreign Language in School	Dyslexia	2, 3		1
Cruz de Quiros, A. M	2008	Structured story reading and retell elated to listening comprehension and vocabulary acquisition among English language learners	MLA International Bibliography	1		1
Cummins, J.	1983	Language Proficiency, Biliteracy and French Immersion	Canadian Journal of Education	1, 2, 3	2	1
Dalton-Puffer, C. and Nikula, T.	2006	Pragmatics of Content-based Instruction: Teacher and Student Directives in Finnish and Austrian Classrooms	Applied Linguistics	1		1
Dam, L.	1995	Undervisningsdifferentiering i fremmedsprog	Book	1		1
Davidsson, Å.	1998	Datorbaserade hjälpmedel för dyslektiker	GUPEA	3, 4		3
Davis, R. D.	2006	Den begavede dyslektiker	Book	3, 4		1
De Ramírez, R. D. and Shapiro, E. S.	2007	Cross-language relationship between Spanish and English oral reading fluency among Spanish-speaking English language learners in bilingual classrooms	Psychology in the Schools	2		1
Denman, J., Tanner, R. and de Graaf, R.	2013	CLIL in junior vocational secondary education: challenges and opportunities for teaching and learning.	Journal of Bilingual Education	1		1
Dich, N. L.	2011	Cross-linguistic study of spelling in English as a foreign language: The role of first language orthography in EFL spelling	UMI Dissertations Publishing	1, 2		1
DiFino, S. M. and Lombardino, L. J.	2004	Language Learning Disabilities: The Ultimate Foreign Language Challenge	Foreign Language Annals	2		1
Dobbins, N., Draper Rodríguez, C.	2013	Providing Support for English Language Learners with Behavioral Needs	Intervention in School and Clinic	1, 2		1
Downey, D. M, Snyder, L. E., and Hill, B.	2000	College students with dyslexia: persistent linguistic defects and foreign language learning	Dyslexia	2	1	1
Drucker, M. J.	2003	What reading teachers should know about ESL learners	The Reading Teacher	1		1
Dufva, M., and Voeten, M. J. M.	1999	Native language literacy and phonological memory as prerequisites for learning English as a foreign language	Applied Psycholinguistics	2		2
Durgunoğlu, A. Y., Nagy, W. E. and Hancin-Bhatt, B. J.	1993	Cross-language transfer of phonological awareness	Journal of Educational Psychology	1, 2		3
Durkin, C.	2000	Dyslexia and bilingual children - does recent research assist identification?	Dyslexia	3	1	1
Edwards, W. and Scott, S.	2012	Teaching students with disabilities: Addressing the needs of adjunct and temporary faculty	NECTFL Review	2, 3		3
Elbro, C.	1991	Differences in reading strategies reflect differences in linguistic abilities	International Journal of Applied Linguistics	1, 2, 3, 4		1

Elbro, C., Daugaard, H. and Gellert, A.	2012	Dyslexia in a second language? - a dynamic test of reading acquisition may provide a fair ansver	Annals of Dyslexia	2, 3	1	1
Ellis, N. C.	1997	Vocabulary acquisition: Word structure, collocation, word-class, and meaning	Vocabulary: description, acquisition anf pedagogy		2	3
Ellis, N. C.	1996	Working Memory in the Acquisition of Vocabulary and Syntax: Putting Language in Good Order	The Quarterly Journal of Experimental Psychology	1, 2, 3		3
Eng, L. S., Mohamed, A. R. and Javed, M.	2013	Analysis of students' competency in listening comprehension of the english language at Pakistani secondary school level	Middle East Journal of Scientific Research	1, 2		1
Englund, A. and Ljung Jonsson, M.	2007	En intervjustudie om lärares arbete med läs- och skrivsvårigheter och dyslexi	Digitale Vitenskaplige Arkiv/unpublished	2, 3, 4		3
Erkintalo, P.	2008	Learning Disabilities and the Textbook: How Differentiated English Textboks Support Students with Developmental Language Disorders	Book		4	3
Erten, T. H. and Burden, R. L.	2014	The relationship between academic self-concept, attributions, and L2 achievement	System	1, 2		1
Farnia, F. and Geva, E.	2013	Growth and predictors of change in English language learners' reading comprehension	Journal of Research in Reading	1, 2	2	1
Fawcett, A. J. and Lynch, L.	2000	Systematic Identification and Intervention for Reading Difficulty: Case Studies of Children with EAL	Dyslexia	2		1
Fender, M.	2003	English word recognition and word integration skills of native Arabic- and Japanese-speaking learners of English as a second language	Applied Psycholinguistics	1		1
Ferenz, O.	2005	EFL writers' social networks: Impact on advanced academic literacy development	Journal of English for Academic Purposes	1		1
Ferrari, M. and Palladino, P.	2012	A Longitudinal Study of English as Foreign Language Learning: L1 predictors in Italian Students	Applied Cognitive Psychology	1, 2		1
Fink, R.	1998	Literacy development in succsessful men and women with dyslexia	Annals of Dyslexia	2, 3, 4		1
Forsman, L.	2010	EFL education in the new millennium: Focus on the promotion of awareness of difference and diversity	Scandinavian Journal of Educational Research	1		1
Foster, P.	1998	A Classroom Perspective on the Negotiation of Meaning	Applied Linguistics	1		1
Foster, P. and Ohta, A. M.	2005	Negotiation for Meaning and Peer Assistance in Second Language Classrooms	Applied Linguistics	1, 3		1
Friis, K.	2002	Dysleksi - fra evaluering til undervisning	Book	3, 4		1
Frost, R., Siegelman, N, Narkiss, A. et. Al.	2013	What Predicts Successful Literacy Acquisition in a Second Language?	Psychological Science	1, 2, 3		1
Færch, C. and Kasper, G.	1986	The Role of Comprehension in Second-language Learning	Applied Linguistics	1, 2, 3	1	1
Ganschow, L., and Sparks, R. L.	2000	Reflections on foreign language study for students with language learning problems: research, issues, and challenges	Dyslexia	1, 2, 3		1
Ganschow, L. and Sparks, R.	1996	Anxiety about Foreign Language Learning among High School Women	The Modern Language Journal	3		1

Ganschow, L., Sparks, R. and Schneider, E.	1998	Commentary on "Facing the challenges of learning English as a foreign language in Israel: in response to Ganchow, Sparks and Schneider"	Dyslexia	1, 2		1
Gathercole, S. E., Pickering, S. J., Knight, C., et. Al.	2004	Working memory skills and educational attainment: evidence from national curriculum assassments at 7 and 14 years of age	Applied Cognitive Psychology	1, 2		1
Geist, U.	1996	Imitation, skrivepædagogik og fremmedsprog	Sprogforum	1		1
Gersten, R., Baker. S., Haager, D., et. Al.	2005	Exploring The Role of Teacher Quality in Predicting Reading Outcomes for First-Grade English Learners: An Observational Study	Remedial and Special Education	1, 2		1
Geva, E.	2000	Issues in the assessment of reading disabilities in L2 children - beliefs and research evidence	Dyslexia	2		1
Ghonsooly, B. and Javadian, M.	2010	An Examination of Developmental Dyslexia among Iranian EFL Second Graders	International Journal of Language Studies	2		3
Giambo, D. A. and McKinney, J. D.	2004	The Effects of a Phonological Awareness Intervention on the Oral English Proficiency of Spanish-Speaking Kindergarten Children	TESOL Quarterly		2	1
Gibbs, D. A.	1989	Second Language Acquisition of the English Modal Auxiliaries *can, could, may, and might*	Applied Linguistics	1, 2		1
Goatley, V.J., Brock, C. H. and Raphael, T. E.	1995	Diverse learners participating in regular education "Book Clubs"	Reading Research Quarterly	1, 3, 4	2	1
Goral, M.	2013	Language Disorders in Multilingual and Multicultural Populations	Annual Review of Applied Linguistics	2, 3, 4	1, 2	1
Gottardo, A. and Mueller, J.	2009	Are First- and Second-Language Factors Related in Predicting Second-Language Reading Comprehension? A Study of Spanish-Speaking Children Acquiring English as a Second Language from First to Second Grade	Journal of Educational Psychology	1, 2	2	1
Goldfus, C.	2012	Knowledge foundations for beginning reading teachers in EFL	Annals of Dyslexia	2		3
Gorman, B. K.	2009	Cross-linguistic universals in reading acquisitions to english-language learners with reading disabilities	Seminars in speech and language	2	2	1
Grant, A., Gottardo, A., and Greva, E.	2011	Reading in English as a First or Second Language: The Case of Grade 3 Spanish, Portugese, and English Speakers	Learning Disabilities Research & Practice	1	2	1
Greene, C. N.	2006	Computer-Assisted Language Learning (CALL) for dyslexic students	Computers Helping People With Special Needs	3, 4		1
Gunderson, L. and Siegel, L. S.	2001	The evils of the use of IQ tests to define learning disabilities in first- and second-language learners	The Reading Teacher	2		1
Guriérrez-Clellen, V. F. and Simon-Cereijdo,G.	2012	Using Nonword Repetition Tasks for the Identification of Language Impairment in Spanish-English-Speaking Children: Does the Language of Assessment Matter?	Learning Disabilities Research & Practice		2	1
Hall, G.	2003	Poetry, Pleasure, and Second Language Learning Classrooms	Applied Linguistics	1, 2, 3	2	1
Hamanda, M., and Koda, K.	2008	Influence of First Language Orthographic Experience on Second Language Decoding and Word Learning	Language Learning		3	1
Hanhauer, D. I.	2001	The Task of Poetry Reading and Second Language Learning	Applied Linguistics	1, 3		1

Hanulíková, A., Dediu, D., Fang, Z. et. Al.	2012	Individual Differences in the Acquisition of a Complex L2 Phonology: A Training Study	Language Learning	1, 3		1
Hasselgård, H.	2012	Den norske måten å skrive engelsk på	Bedre skole	1		1
Harrison, G. L. and Krol, L.	2007	Relationship between L1 and L2 word-level reading and phonological processin in adults learning English as a second language	Journal of Research in Reading	1, 2	3	1
Hedley, C.N, and Ellsworth, N. J.	2006	What's New in Software? Computers and Educational Futures	Reading and Writing Quarterly	1, 2, 3, 4		1
Heiman, T. and Kariv, D.	2004	Coping experience among students in higher education	Educational Studies	2, 3, 4		1
Helland, T. and Kaasa, R.	2005	Dyslexia in English as a second language	Dyslexia	2		1
Hellermann, J. and Cole, E.	2008	Practices for Social Interaction in the Language-Learning Classroom: Disengagements from Dyadic Task Interaction	Applied Linguistics	1, 2		1
Hirano, E.	2009	Learning difficulty and learner identity: a symbiotic relationship	ELT Journal	1, 2		1
Howes, N. L., Bigler, E. D., Lawson, J. S. et. Al.	1999	Reading Disability Subtypes and the Test of Memory and Learning	Archives of Clinical Neuropsychology	2, 3, 4	1	1
Hu, C-F.	2012	Fast-Mapping and Deliberate Word-Learning by EFL Children	The Modern Language Journal	1		1
Hu, C-F.	2008	Rate of Acquiring and Processing L2 Color Words in Relation to L1 Phonological Awareness	The Modern Language Journal	1, 2		1
Hu, C-F.	2008	Use orthography in L2 auditory word learning: Who benefits?	Reading and Writing	1	3	1
Hu, C-F.	2003	Phonological Memory, Phonological Awareness, and Foreign Language Word Learning	Language Learning	1	3	1
Hu, C-F. and Schuele, C. M.	2005	Learning nonnative names: The effect of poor native phonological awareness	Applied Psycholinguistics	2	3	1
Hutchinson, J. M.	2004	The Early Identification of Dyslexia: Children with English as an Additional Language	Dyslexia	2	2	1
Hughes, C.A and Smith, J. O.	1990	Cognitive and Academic Performance of College Students with Learning Disabilityes: A Synthesis of the Literature	Learning Disability Quarterly	2, 3, 4		1
Hummel, K. M.	2009	Aptitude, phonological memory, and second language procifiency in nonnovice adult learners	Applied Psycholinguistics	1, 2		1
Hummel, K. M. and French, L. M.	2010	Phonologival memory and implications for the second language classroom	Language Learning	1, 3		1
Jessner, U.	2006	Linguistic Awareness in Multilinguals, chapter 1: Multilingualism with English	The South Florida Journal of Linguistics	1, 2		1
Johansson, B. B.	2006	Cultural and linguistic influence on brain organization for language and possible consequences for dyslexia: A review	Annals of Dyslexia	2, 3		3
Johansson, H.	2012	Texten og talet: En intervjustudie om talboksanvändande hos studenter med dyslexi	Digitale Vitenskaplige Arkivet/Unpublished	3, 4		3
Jung, U. O. H.	1985	Contrastive Patholinguistics: The Acquisition of English Grammatical Morphemes by	Papers and Studies in	2		1

		German Dyslexics in a Foreign-Language Teaching Context	Contrastive linguistics			
Jung, U. O. H.	1981	The Grammatical Abilities of German Dyslexics in English as a Foreign Language	System	2		1
Juujärvi, M.	2009	Skriftlige engelskferdigheter hos dyslektiske elever. Sammenlignende studie av elever i Norge og Ungarn	BORA - UiB	2		3
Kahn-Horwitz, J., Shimron, J. and Sparks, R. L.	2006	Weak and strong novice readers of english as a foreign language: Effects of first language and socioeconomic status	Annals of Dyslexia	1, 2		1
Karimi, M. N.	2913	Enhancing L2 Students' Listening Transcription Ability Through a Focus on Morphological Awareness	Journal of Psycholinguistic Research	1		1
Kita, B.	2003	Teaching English as a Foreign Language to Learning Disabled Students who have been integrated into Regular Classes	Issues in Special Education and Rehabilitation		4	1
Krug, K., Shafer, T. Dardick, W. et. Al.	2002	A test of foreign language acquisition: Paired-association learning	Applied Cognitive Psychology	1, 2, 3		1
Kormos, J.	2012	The role of individual differences in L2 writing	Journal of Second Language Writing	1, 2, 3		1
Kormos, J. and Csiźer, K.	in print/early view	The Interaction of Motivation, Self-Regulatory Strategies, and Autonomous Learning Behavior in Different Learner Groups	TESOL Quarterly	1, 2		1
Kormos, J. and Csiźer, K.	2010	A comparison of the foreign language learning motivation of Hungarian dyslexic and non-dyslexic students	International Journal of Applied Linguistics	2		1
Kormos, J. and Sáfár, S.	2008	Phonological short-term memory, working memory and foreign language performance in intensive language training	Bilingualism: Language and Cognition	1, 2		1
Kuo, I-C (V).	2006	Addressing the issue of teaching English as a lingua franca	ELT Journal	1, 2		1
Lacey, F.	2012	Investigating motivational factors in the Second Language Classroom	Sproglæreren	1, 2		1
Larsen, A. B.	2012	Å skrive i engelsk og fremmedspråk	Norsk pedagogisk tidsskrift	1		1
Laufer, B.	1998	The Development of Passive and Active Vocabulary in a Second Language: Same or Different?	Applied Linguistics	1, 2		1
Laufer, B. and Girsai, N.	2008	Form-Focused Instruction in Second Language Vocabulary Learning: A Case for Contrastive Analysis and Translation	Applied Linguistics	1		1
Ledstrup, M.	2013	Udfordringer for elever med særlige forudsætninger for fremmedsprog	Sproglærerem	1, 2		1
Lesaux, N. K. and Siegel, L. S.	2003	The Development of Reading in Children Who Speak English as a Second Language	Developmental Psychology	1, 2		1
Leonard, C. M. and Eckert, M. A.	2008	Asymmetry and Dyslexia	Developmental Neuropsychology	1, 2, 3, 4		1
Leveridge, A. N. and Yang, J. C.	2013	Testing learner reliance on caption supports in second language listening comprehension multimedia environments	ReCALL: the Journal of EUROCALL	1		1
Lewis, L. E.	2010	Music Education and Language Arts	Design for Arts in Education	1, 2, 3, 4		1
Little, D.	1999	Hvordan man får mest muligt ud af elevernes forudsætninger i	Sprogforum	1		1

		fremmedsprogsundervisningen				
Littlemore, J. and Low, G.	2006	Metaphoric Competence, Second Language Learning, and Communicative Language Ability	Applied Linguistics	1, 2, 3		1
Linan-Thompson, S. and Ortiz, A. A.	2009	Response to intervention and English-language learners: Instructional and assessment considerations	Seminars in speech and language	1		1
Lindemann, B.	2013	Fagundervisning på fremmedspråk	Sprogforum	1		1
Lindstromberg, S. and Boers, F.	2008	The Mnemonic Effect of Noticing Alliteration in Lexical Chunks	Applied Linguistics	1		1
Lipka, O. and Siegelm L. S.	2007	The Development of Reading Skills in Children with English as a Second Language	Scientific Studies of Reading	1, 2	2	1
Long, M. H. and Doughty, C. H.	2011	Chapter 25: Learning to Read in New Writing Systems	The Handbook of Language Teaching	1		1
Lucht, M. and Heidig, S.	2013	Applying HOPSCOTCH as an exer-learning game in English lessons: two exploratory studies	Educational Technology, Research and Development	1		1
Lum, J. A. G, Ullman, M. T, and Conti-Ramsden, G.	2013	Procedural learning is impaired in dyslexia: Evidence from a meta-analysis of serial reaction time studies	Research in developmental disabilities	2, 3, 4		1
Lundberg, I.	2002	Second language learning and reading with the additional load of dyslexia	Annals of Dyslexia	3, 4	2	3
Mabbott, A. S.	1995	Arguing for Multiple Perspectives on the Issue of Learning Disabilities and Foreign Language Acquisition: A Response to Sparks, Ganschow, and Javorsky	Foreign Language Annals	2, 3		1
Mabbott, A. S.	1994	An Exploratrion of Reading Comprehension, Oral Reading Errors, and Written Errors by Subjects Labled Learning Disbaled	Foreign Language Annals	3		1
MacIntyre, P. D.	1995	How Does Anxiety Affect Second Language Learning? A Reply to Sparks and Ganschow	The Modern Language Journal	2, 3		1
MacKey, A.	2006	Feedback, Noticing and Instructed Second Language Learning	Applied Linguistics	1, 2, 3		1
Marinova-Todd, S. H. and Hall, E. K.	2013	Predictors of English spelling in bilingual and monolingual children in Grade 1: The case of Cantonese and Tagalog	Educational Psychology	1, 2	1, 3	1
Margona, V.	2013	Dyslexia and Foreign Language Learning	Università Ca'Foscari Venezia/ unpublished	2		3
Martínez-Mones, E., Hernández-Pérez, H., Chobert, J. et. Al.	2013	Musical expertise and foreign speech perception	Frontiers in systems neuroscience	1, 2, 3		1
Matsumoto, K.	2013	Kanji Recognition by Second Language Learners: Exploring Effects of First Language Writing Systems and Second Language Exposure	The Modern Language Journal	1, 2, 3	3	1
McCardle, P., Mele-McCarthy, J., and Leos, K.	2005	English Language Learners and Learning Disabilities: Research Agenda and Implications for Practice	Learning Disabilities Research & Practice	2		1
McElvan, C. M.	2010	Transactional literature circles and the reading comprehension of English in the mainstream classroom	Journal of Research in Reading	1	2	1
Meara, P.	1985	Hidden Reading Problems in ESL Learners	TESL Canada Journal	2		1

Meyer, B.	2003	Virtuelle læringsrum - fremmedsprog på internettet	Københavns biblioteker	1		1
Milovanov, R., Tervaniemi, M. and Gustafsson, M.	2004	The Impact of Musikal Aptitude in Foreign Language Acquisition	ICMPC8	1, 2		3
Minati, M.	2013	Students with special educational needs and foreign language instruction	N/A	1, 3, 4		3
Moreno, S.	2009	Can Music Influence Language and Cognition?	Contemporary Music review	1, 3, 4		1
Moreno, S., Marques, C., Santos, S. et. Al.	2009	Musikal Training Influences Linguistic Abilities in 8-Year-Old Children: More Evidence for Brain Plasticity	Cerebral Cortex	1, 3, 4		1
Morfidi, E., van der Leij, A., de Jong, P. F. et. Al.	2007	Reading in two orthographies: A cross-linguistic study of Dutch average and poor readers who learn English as a second language	Reading and Writing	1, 2		3
Morgan, C.	2003	Musikal Aptitude and Secong-Language Phonetics Learning: Implications for Teaching Methodology	N/A	1, 3		3
Morgan-Short, K, Faretta-Stutenberg, M., Brill-Schuetz, K. A. et. Al.	2014	Declarative and procedural memory as individual differences in second language acquisition	Bilingualism: Language and Cognition	1, 3		1
Nassaji, H.	2014	The role and importance of lower-level processes in second language reading	Language Teaching	1, 3		1
Nassaji, H. and Geva, E.	1999	The contribution of phonological and orthographic processing skills to adult ESL reading: Evidence from native speakers of Farsi	Applied Psycholinguistics	1, 2		1
Nenopoulou, S.	2005	Dyslexia versys English-as-as-additional language: literacy and phonological skills	N/A	2		3
Nergis, A.	2011	To what extent does neurolinguistics embody ELF teaching methods?	International Journal of Applied Linguistics	1		1
Nielsen, D. C.	2002	The Benefit of Assessment-Based Language and Reading Instruction: Perspectives From a Case Study	Journal of Deaf Studies and Deaf Education	1, 2, 3, 4		1
Nikolaki, G. Z. and Masterson, J.	2012	Transfer effects in spelling from transparent Greek to opaque English in seven-to-ten-year-old children	Bilingualism: Language and Cognition	2		1
Nikolov, M. and Mihaljević Djigunović	2011	All shades of every color: An overview of early teaching and learning of foreign languages	Annual Review of Applied Linguistics	1		1
Nourier, I-L.	2013	10 gode grunde til at bruge iPad i sprogundervisningen	Københavns biblioteker	1		1
Olagboyega, K. W.	2008	The effects of dyslexia on language acquisition and development	N/A		3, 4	3
Oller, J. W.	2005	Common Ground between Form and Content: The Pragmatic Solution to the Bootstrapping Problem	The Modern Language Journal	1, 3		1
Oxford, R., Crookall, D, Cohen, A., et. Al.	1990	Strategy Training for Language Learners: Six Situational Case Studies and a Training Model	Foreign Language Annals	1		1
Palladino, P, Bellagamba, I, Ferrari, M, et. Al.	2013	Italian children with dyslexia are also poor in reading English words, but accurate in reading English pseudowords	Dyslexia	2	1	1

Palladino, P., and Ferrari, M.	2008	Phonological sensitivity and memory in children with a foreign language learning difficulty	Scopus	2		1
Paradis, J, Emmerzael, K, and Duncanm T. S.	2010	Assessment of English Language Learners: Using parent report on first language development	Scopus	2	1	1
Pawlak, M.	2011	Anxiety as a Factor Influencing the Use of Language Learning Strategies	Extending the Boundaries of Research on L2 Learning and Teaching	1, 2, 3, 4		3
Petersen, J. and Hetmar, G.	1995	Dysleksi set fra praksis	Psokolog nyt	2, 3, 4		1
Petitto, L-A.	2009	New Discoveries From the Bilingual Brain and Mind Across the Life Span: Implications for Education	Mind, Brain and Education	1, 3		1
Pettersson, M.	2008	Läs-och skrivundervisning: En studie om lärares undervisningsmetoder och tilvägagångssätt	Digitale Vitenskaplige Arkivet	3, 4		3
Piechurska-Kuciel, E.	2006	Foreign Language Anxiety in Polish Dyslexic Secondary School Students	UPRT 2006: Empirical studies in English applied linguistics	2		3
Proctor, C. P., August, D., Carlo, M. S., et. Al.	2006	The intriguing role of Spanish language vocabulary knowledge in predicting English reading comprehension	Journal of Educational Psychology	1, 2	2	3
Ramus,F. and Szenkovits, G.	2008	What phonological deficit?	The Quarterly Journal of Experimental Psychology	2, 3, 4	1	3
Rasmussen, T.	2012	Sproglærere går nye veje	Gymnasieskolen	1		1
Reid, G	2009	Ch. 16, Inclusion in Secondary Education: Assessing the Curriculum	Dyslexia: A Practitioner's Handbook	3, 4		1
Rezaei, A. and Hashim, F.	2013	Impact of awareness raising about listening micro-skills on the listening comprehension enhancement: An exploration of the listening micro-skills in english as a foreign language (EFL) classes	Australian Journal of Teacher Education	1		1
Richard, W. K. S.	2006	Enhancing English among second language learners: the pre-school years	Early Years		4	1
Rivera, M.O., Moughamian, A. C., Lesaux, N.K., et. Al.	2008	Language and reading interventions for English language learners and English language learners with disabilities	Center on Instruction		2	3
Ripens, J. K and De Bree, E. H.	2014	Past tense productivity in Dutch children with and without SLI: The role of morphophonology and frequency	Journal of child language	2, 3, 4		1
Romonath, R, Wahn, C. and Gregg, N.	2005	Phonological and orthographic processes of reading and spelling in young adolecents and adults with and without dyslexia in German and English: impact on fofreign language learning	Folia Phoniatricia et Logopaedica	2	1	1
Rose, J.	2009	Identifying and Teaching Children and Young People with Dyslexia and Literacy Difficulties	Department for Children, Schools and Families (UK)	3, 4		2
Rothweiler, M., Chilla, S. and Clahsen, H.	2012	Subject-verb agreement in Specific Language Impairment: A study of monolingual and bilingual German-speaking children	Bilingualism: Language and Cognition	2, 3, 4	1	1

Rubin, J.	1994	A Review of Second Language Listening Comprehension Research	The Modern Language Journal	1, 2, 3		1
Russak, S. and Kahn-Horwitz, J.	2013	English as a foreign language spelling: comparisons between good and poor spellers	Journal of Research in Reading	1		1
Sáfár, A. and Komos, J.	2008	Revisiting problems with foreign language aptitude	International Review of Applied Linguistics in Language Teaching	2		1
Salcedo, C. S.	2010	The Effects Of Songs In The Foreign Language Classroom On Text Recall, Delayed Text Recall And Involuntary Mental Rehersal	Journal of College Teaching and Reading	1, 3		1
Samuda, V. and Bygate, M.	2008	Tasks in Second Language Learning	Book	1		1
Sanner, E.	2011	Datoranvänding i specialundervisningen: en diskursanalytisk studie av speciallärares/-pedagogers resonemang kring användandet av datorer i specialundervisningen	Digitale Vitenskaplige Arkivet	1, 3, 4		3
Saxena, A.	2002	Some advantages of using corpora in teaching	Digitale Vitenskaplige Arkivet	1, 2		1
Schmidt, K. R.	1981	Utdanningen i fremmedsprog	Uddanning	1		1
Schneider, E. and Evers, T.	2009	Linguistic Intervention Techniques for At-Risk English Language Learners	Foreign Language Annals		2	1
Schneider, E. and Ganschow, L.	2000	Dynamic Assessment and Instructional Strategies for Learners Who Struggle to Learn a Foreign Language	Dyslexia	2		1
Scott, K. W., Bell, S. M. and McCallum, R. S.	2009	Relation of Native-Language Reading and Spelling Abilities to Attitudes Toward Learning a Second Language	Preventing School Failure	1, 2, 3		1
Siegel, L. S.	2008	Morphological Awareness Skills of English Language Learners and Children with Dyslexia	Topics in Language Disorders	2		1
Simon, J. R., Howard jr., J. H. and Howard, D. V.	2011	Age Differences in Implicit Learning of Probabilistic Unstructured Sequences	The Journals of Gerontology Series B	1, 2, 3, 4		1
Skallist, H. I.	2011	På kryss og tvers mellom språk: morsmålets betydning for leseforståelse på andrespråket	DUO	3		3
Smemoe, W. B. and Haslam, N.	2012	The Effect of Language Learning Aptitude, Strategy Use and Learning Context on L2 Pronounciation Learning	Applied Linguistics	1, 2		1
Smith, C.	2011	Narrative writing in native English and ESL learners: Developmental trajectories and predictions	MLA International Bibliography	1, 2		1
Söderqvist Karlsson, J. and Wikholm, M	2010	Elever med läs- och skrivsvårigheter: En studie om inkluderande arbeitssätt	Digitale Vitenskaplige Arkivet	1, 2, 3, 4		3
Solvang, P.	1998	Velferdsstatens problemlogikk i lys av en debatt om dysleksi	Sociologisk forskning	2, 3, 4		1
Soroli, E., Szenkovits, G. and Ramus, F.	2012	Exploring dyslexics' phonological deficit III: foreign speech perception and production	Dyslexia	2, 3	1	1
Sparks, R. L.	2012	Foreign-Language Teaching for Students with Language-Learning Problems	The Encyclopedia of Applied Linguistics	2, 3		1

Sparks, R. L.	2012	Individual Differences in L2 Learning and Long-Term L1-L2 Relationships	Language Learning	2	2	1
Sparks, R.	2009	If you don't know where you're going, you'll wind up somewhere else: the case of "foreign language learning disability"	Foreign Language Annals	1, 2, 3		1
Sparks, R. L.	2006	Is There a "Disability" for Learning a Foreign Language?	Jounal of Learning Disabilities	2, 3		1
Sparks, R. L.	2006	Learning Styles - Making Too Many "Wrong Mistakes": A Response to Castro and Peck	Foreign Language Annals	1, 2, 3		1
Sparks, R. L.	1991	Use of an Orton-Gillingham Approach to Teach a Foreign Language to Dyslexic/Learning-Disabled Students: Explicit Teaching of Phonology in a Second Language	Annals of Dyslexia	3		1
Sparks, R. L., Artzer, M., Ganschow, L. et. Al.	1996	Differences in native-language skills, foreign-language aptitude, and foreign-language grades among high-, average-, and low-proficiency language learners: two studies	Language Testing	1, 2, 3		1
Sparks, R. L., Artzer, M., Javorsky, J. et. Al.	1998	Students classified as learning disabled and non-learning disabled: two comparison studies of native language skill, foreign language aptitude, and foreign language proficiency	Foreign Language Annals	1, 2, 3		1
Sparks, R. L. and Ganschow, L.	2008	Evidence-based Accomodation Decition Making at the Postsecondary Level: Review of the Evidence for Foreign Language Learning	Learning Disabilities Research & Practice	2, 3		1
Sparks, R and Ganschow, L.	2007	Is the foreign language classroom anxiety scale measuring anxiety or language skills?	Foreign Language Annals	1, 3		1
Sparks, R. L., and Ganschow, L.	2001	Aptitude for learning a foreign language	Annual Review of Applied Linguistics	1, 2, 3		1
Sparks, R., and Ganschow, L.	1996	Teachers' Perceptions of Students' Foreign Language Academic Skills and Affective Characteristics	The Journal of Language Research	1, 2, 3		1
Sparks, R. and Ganschow, L.	1995	A Strong Inference Approach to Causal Factors in Foreign Language Learning: A Response to MacIntyre	The Modern Language Journal	2, 3		1
Sparks, R. and Ganschow, L.	1993	The effects of multisensory structured language instruction on native language and foreign language aptitude skills of at-risk high school foreign language learners: A replication and follow-up study	Annals of Dyslexia	3		1
Sparks, R. and Ganschow, L.	1993	The Impact of Native Language Learning Problems on Foreign Language Learning: Case Study Illustrations of the Linguistic Coding Deficit Hypothesis	The Modern Language Journal	1, 2, 3		1
Sparks, R. L. and Ganschow, L.	1993	Searching for the Cognitive Locus of Foreign Language Learning Difficulties: Linking First and Second Language Learning	The Modern Language Journal	2, 3		1
Sparks, R. L. and Ganschow, L.	1991	Foreign Language Learning Differences: Affective or Native Language Aptitude Differences?	The Modern Language Journal	2, 3	1	1
Sparks, R. L., Ganschow, L., Artzer, M., et. Al.	2004	Foreign Language Teachers' Perceptions of Students' Academic Skills, Affective Characterisics, and Proficiency: Replication and Follow-up Studies	Foreign Language Annals	1, 2, 3		1
Sparks, R., Ganschow, L., and Pohlman, J.	1989	Linuistic coding deficits in foreign language learners	Annals of Dyslexia	1, 2, 3, 4		1
Sparks, R., Ganschow, L., Pohlman, J., et. Al.	1992	The effects of multisensory structured language instruction on native language and foreign language aptitude skills of at-risk high school foreign language learners	Annals of Dyslexia	3		1

Sparks, R., Ganschow, L., and Javorsky, J.	1993	Perceptions of Low and High Risk Students and Students with Learning Disabilities About High School Foreign Language Courses	Foreign Language Annals	2, 3		1
Sparks, R., Ganschow, L., Javorsky, J. et. Al.	1992	Identifying Native language Deficits in High - and Low-Risk Foreign Language Learners in High School	Foreign Language Annals	3		1
Sparks, R., Ganschow, L., Javorsky, J. et. Al.	1992	Test Comparisons among Students Identified as High-Risk, Low-Risk, and Learning Disabled in High School Foreign Language Courses	The Modern Language Journal	1, 3		1
Sparks,, R. L. and Javorsky, J.	1999	A Response to Arries: "learning Disabilities and Foreign Languages: A Curriculum Approach To The Design of Inclusive Courses"	The Modern Language Journal	2, 3		1
Sparks, R. L., Javorsky, J., and Ganschow, L.	2005	Should the Modern Language Aptitude Test Be Used to Determine Course Substitutions for anf Waivers of the Foreign Language Requirement?	Foreign Language Annals	2, 3		1
Sparks, R. L., and Miller, K. S.	2000	Teaching a foreign language using multisensory structured language techniques to at-risk learners: a review	Dyslexia	1		1
Sparks, R. and Patton, J.	2013	Relationship of L1 Skills and L2 Aptitude to L2 Anxiety on the Foreign Language Classroom Anxiety Scale	Language Learning	1, 2, 3		1
Sparks, R. L., Patton, J., Ganschow, L. et. Al.	2012	Do L1 Reading Achievement and L1 Print Exposure Contribute to the Preduction of L2 Proficiency?	Language Learning	1, 2, 3		1
Sparks, R. L., Patton, J., Ganschow, L. et. Al.	2012	Relationships among L1 print exposure and early L1 literacy skills, L2 aptitude, and L2 proficiency	Reading and Writing	1, 2, 3		1
Sparks, R., Patton, J., Ganschow, L. et. Al.	2011	Subcomponents of Second-Language Aptitude and Second.Language Proficiency	The Modern Language Journal	1, 2		1
Sparks, R., Patton, J., Ganschow, L. et. Al.	2009	Long-Term Crosslinguistic Transfer of Skills from L1 to L2	Language Learning	1, 2, 3		1
Sparks, R., Patton, J., Ganschow, L. et. Al.	2009	Long-term relationships among early first language skills, second language aptitude, second language affect, and later second language proficiency	Applied Psycholinguistics	1, 2		1
Sparks, R. L., Patton, J., Ganschow, L. et. Al.	2008	Early First-Language Reading and Spelling Skills Predict Later Second-Language Reading and Spelling Skills	Journal of Educational Psychology	1, 2	1	1
Sparks, R. L., Phillips, L. G. and Javorsky, J.	2003	College Students Classified as Having Learning Disabilities and Attention Deficit Hyperactivity Disorder and the Foreign Language Requirement	Foreign Language Annals	2, 3		1
Sparks, R. L., Phillips, L. G. and Javorsky, J.	2002	Students classified as LD who received course substitutions for the college foreign language requirement: A replication study	Journal of Learning Disabilities	1, 2, 3		1
Spinelli, C. G.	2008	Addressing the issue of cultural and linguistic diversity and assessment: informal evaluation measures for english language learners	Reading and Writing Quarterly	1	2	1
Squires, K. E., Lugo-	2014	Story retelling by bilingual children with language impairments and typically developing	International Journal of	1, 2, 3		1

Neris, M. J., Peña, E. D. et. Al.		controls	Language and Communication Disorders			
Steinel, M. P., Hulstijn, J. H. and Steinel, W.	2007	Second language idiom learning in a paired-associate paradigm: Effects of direction of testing, idiom imageability, and idiom transparency	Studies in Second Language	1		1
Stenlev, J.	2010	Cooperative learning i fremmedsprogsundervisningen	Sprogforum	1		1
Suchodoletz, W.	2007	Dyslexia in Different Languages and the Effect of Dyslexia on Foreign Language Learning	Sprache - Stimme - Gehor	3	2	1
Svalberg, A. M-L.	2007	Language awareness and language learning	Language Teaching	1, 2, 3		1
Swain, M. and Lapkin, S.	1995	Problems in Output and the Cognitive Processes They Generate: A Step Towards Second Language Learning	Applied Linguistics	1, 2, 3		1
Szaszkiewicz, M	2013	The experiences of Norwegian students with dyslexia learning English as a foreign language	DUO	2		3
Tainturier, M., Roberts, J. and Leek, E. C.	2011	Do reading processes differ in transparent versus opaque orthographies? A study of aquired dyslexia in Welsh/English bilinguals	Applied Psycholinguistics	2	2	1
Tong, F., Irby, B.J., Lara-Alecio, R., et. Al.	2010	Hispanic english learners' responses to longitudinal english instructional intervention and the effect of gender: A multilevel analysis	The Elementary School Journal	1	2	1
Toth, P. D., Wagner, E., and Moranski, K.	2012	"Co-constructing" Explicit L2 Knowledge with High School Spanish Learners through Guided Intervention	Language Learning and Technology	1, 2		1
Tseng, W-T, Dörnyel, Z., and Schmitt, N.	2006	A New Approach to Assessing Strategic Learning: The Case of Self-Regulation in Vocabulary Acquisition	Applied Linguistics	1, 3		1
Ullman, M. T. and Pierpont, E. I.	2005	Specific language impairment is not specific to language: The procedural deficit hypothesis	Cortex	2, 3, 4	1	1
Vale, A. P.	2011	Orthographic context sensitivity in vowel decoding by Portuguese monolingual and Portuguese-English bilingual children	Journal of Research in Reading	1, 2, 3		1
Van Berkel, A. J.	2006	Serious Spelling Problems and Foreign Language Learning: a weak link in the training of teachers	European Journal of Teacher Education	1		1
van der Leij, A. and Morfidi, Eleni.	2006	Core Deficits and Variable Differences in Dutch Poor Readers Learning English	Journal of Learning Disabilities	2		1
Verhoeven, L. and Vermeer, A.	2006	Literacy achievement of children with intellectual disabilities and differing linguistic backgrounds	Journal of Intellectual Disability Research	2, 3		1
Vogel, S. A. and Holt, J. K.	2003	A comparative study of adults with and without self-reported learning disabilities in six English-speaking populations: What have we learned?	Dyslexia	2, 3, 4		1
Vokic, G.	2011	When alphabets collide: alphabetic first-language speakers' approach to speech production in an alphabetic second language	Second Language Research	1, 2		1
Wade-Woolley, L.	1999	First Language Influences on Second Language Word Reading: All Roads Lead to Rome	Language Learning	1, 2	1	1
Wade-Woolley, L. and Siegel, L. S.	1997	The spelling performance of ESL and native speakers of English as a function of reading skill	Spelling	1, 2		3

Walter, C.	2008	Phonology in Second Language Reading: Not an Optional Extra	TESOL Quarterly	1, 2		1
Waring, H. Z.	2012	Doing Being Playful in the Second Language Classroom	Applied Linguistics	1		1
Wenden, A. L.	1986	What do Second-Language Learners Know about their Language Learning? A Second Look at Retrospective Accounts	Applied Linguistics	1, 2		1
Wiesen, B.	2000	Content-Based Unit Learning in English for Academic Purposes Courses in Teachers' Colleges	TESOL Quarterly	1		1
Wilbert, J.	2012	A Dissociation of Implicit and Explicit Spatial Sequence Learning in a Group of Students With Learning Disabilities	Journal of Cognitive Education and Psychology	1, 2, 3, 4		1
Witt, A., Puspitawati, I., and Vinterm A.	2013	How Explicit and Implicit Test Instructions in an Implicit Task Affect Performance	PLoS One	1, 3		1
Wolf, M.	2005	Dikotisk lytning og dysleksi	Specialpædagogik	2, 3, 4		1
Yamanda, Y.	2004	Implications of Articulatory Awareness in Learning Literacy in English as a Second Language	Dyslexia	2	3	1
Zhonggen, Y., Swee Heng, C., Nadximah Abdullah, A., et. Al.	2011	English language skills attrition in speed and in-depth reading comprehension among EFL learners	Pertanika Journal of Social Science & Humanities	1, 2	3	1
Zýdková, Zdeňka	2006	Teaching English to children with specific learning difficulties in EFL heterogenous classes	N/A		4	3

Appendix 3. Excluded Articles – Full text sift

Author	Title	Year published	Published in	Inclusion	Exclusion
Aronin, L., and Spolsky, B.	Research in English language teaching and learning in Israel	2010	Language Teaching	1, 2, 3, 4	2
Arries, J. F.	Learning Disabilities and Foreign Languages: A Curriculum Approach to the Design of Inclusive Courses	1999	The Modern Language Journal	2, 3, 4,	
Björn, P. M., and Leppänen, P. H. T.	Acceleratind decoding-related skills in poor readers learning a foreign language: a computer-based intervention	2013	Educational Psychology	1, 3, 4	
Bradlow, A. R., Kraus, N., and Hayes, E.	Speaking Clearly for Children With Learning Disabilities: Sentence Perception in Noise	2003	Journal of Speech, Language, and Hearing Research	2, 4	
Brøyn, T.	En spesialskole for dyslektikere	2000	Spesialpedagogikk	1, 2, 3, 4	1
Dal, M.	Dyslexia and Foreign Language Learning	2008	The SAGE Handbook of Dyslexia	1, 2, 3	
Depino, R., Landon, J., and Reid, G.	Dyslexia and Bilingualism - Implications for Assessment, Teaching and Learning	2000	Multilingualism, Literacy and Dyslexia	2, 4	
DiFino, S. M., Johnson, B. W., and Lombardino, L. J.	The Role of the SLP in Assessing College Students With Dyslexia in Fulfilling Foreign Language Requirements: A Case Study	2008	Contemporary Issues in Communication Science and Disorders	2, 3	
Elvemo, J.	Dr. Tomatis og hans syn på dysleksi	2000	Spesialpedagogikk	2, 4	1
Festino, C. G.	Rewriting the Foreign Literature Syllabus from the Perspective of Critical Literacy	2008	Critical Literacy: Theories and Practices	1	
Fielding-Barnsley, R., and Murray, S.	ESL + Specific Reading Disability: Diagnosis and Intervention	2002	Special Education Perspectives	1, 2, 3, 4	2
Fukkink, R. G., Hulstijn, J., and Simis, A.	Does Training in Second-Language Word Recognition Skills Affect Reading Comprehension? An Experimental Study	2005	The Modern Language Journal	1, 3, 4	
Ganschow, L., Sparks, R. L., Anderson, R., et. Al.	Differences in Language Performance among High-, Average-, and Low-Anxious College Foreign Language Learners	1994	The Modern Language Journal	2, 3	
García, S. B., and Tyler, B-J.	Meeting the Needs of English Language Learners With Learning Disabilities in the General Curriculum	2010	Theory Into Practice	1, 3, 4	2
Gerber, M. and Durgunoglu, A. Y.	Reading Risk and Intervention for Young English Learners: Evidence from Longitudinal Intervention Research	2004	Learning Disabilities Research & Practice	1, 3	2
Geva, E., Yaghoub-Zadeh, Z., and Schuster, B.	Understanding Individual Differences in Word Recognition Skills of ESL Children	2000	Annals of Dyslexia	1, 2, 3, 4	2
Griva, E., and Anastasiou, D.	Morphological strategies training: The effectiveness and feasibility of morphological strategies training for students of English as a foreign language with and without spelling difficulties	2009	Journal of Writing Research	1, 3, 4	
Hafstad, J. E.	Kan en dyslektiker lese som en prest?	1997	Spesialpedagogikk	2	
Hall Haley, M., and Porter, M. H.	Rethinking Teacher Training Programmes for Linguistically Diverse Students with Dyslexia	2000	Multilingualism, Literacy and Dyslexia	1, 2, 3, 4	2

Hutchins, M. and Engels, A.	Foreign Language Instruction for Students with Learning Difficulties: Rethinking the Setting and Structure of Classes Using the Natural Approach	2005	Modern Language Studies	2, 3,	
Kahn-Horwitz, J., Roffman, N., and Teitelbaum, T. G.	Facing the Challenges of Learning English as a Foreign Language in Israel: in Response to Ganschow, Sparks and Schneider	1998	Dyslexia	1, 3, 4	
Leons, E., Herbert, C., and Gobbo, K.	Students With Learning Disabilities and AD/HD in the Foreign Language Classroom: Supporting Students and Instructors	2009	Foreign Language Annals	2, 3	1
Løchen, I.	Engelsk som obligatorisk andrespråk fører til total omskolering: i kjølvannet av fløyelsrevolusjonen i Tsjekkoslovakia	1991	Skoleforum	1, 3, 4	1
Manyak, P. C.	A Framework for Robust Literacy Instruction for English Learners	2007	The Reading Teacher		2
Mathisen, B. R.	Rim og regler mot dysleksi	1999	Norsk førskolelærerblad	2, 4	
Miller Guron, L.	Multilingualism and Literacy in Sweden - Multiple Sources of Reading Difficulty	2000	Multilingualism, Literacy and Dyslexia	2, 3, 4	
Monroe, B. W., and Troia, G. A.	Teaching Writing Strategies to Middle School Students With Disabilities	2006	Journal of Educational Research	4	2
Morfidi, E., and Reason, R.	The Effects of Literacy Hour and Phonics Teaching on Poor Readers' Phonological and Literacy Skills: Case Studies of Children with English as an Additional Language	2000	Multilingualism, Literacy and Dyslexia	2, 3, 4	2
Mourtaga, K. R.	Some Reading Problems of Arab EFL Students	2006	Journal of Al-Aqsa University	1, 3, 4	2
Nag-Arulmani, S., Reddy, V., and Buckley, S.	Targeting phonological representations can help in the early tages of reaing in a non-dominant language	2003	Journal of Research in Reading	1, 3, 4	2
Schiff, R., and Calif, S.	An academic intervention program for EFL university students with reading disabilities	2004	Journal of Adolecent & Adult Literacy	1, 2, 3, 4	2
Schneider, E.	Teaching Foreign Languages to At-Risk Learners	1996	ERIC	3, 4	
Scully, M.	Using the Internet as a Multimedia Method of Teaching a Modern Foreign Language to People with Dyslexia	2000	Multilingualism, Literacy and Dyslexia	2, 3, 4	
Secemski, S., Deutch, R., and Adoram, C.	Structured Multisensory Teaching for Second Language Learning in Israel	2000	Multilingualism, Literacy and Dyslexia	1, 3, 4	
Sener, U., and Phillip, J. B.	Mnemonics Strategy Development: Improving Alphabetic Understanding in Turkish Students, At Risk for Failure in EFL Settings	2005	Journal of Behavioral Education	1, 3, 4	
Shaw, R. A.	The Case for Course Substitutions as a Reasonable Accommodation for Students with Foreign Language Learning Difficulties	1999	Journal of Learning Disabilities	3, 4	
Shore, J. R., and Sabati, J.	English Language Learners With Reading Disabilities: A Review of the Literature and the Foundation for a Research Agenda	2009	ETS/unpublished	3, 4	2
Simon, C. S.	Dyslexia and Learning a Foreign Language: A Personal Experience	2000	Annals of Dyslexia	2, 3, 4	
Simonsen, B.	Kan Mozart lære deg å lese bedre?	2009	Norsk Homøpatisk Tidsskrift	2, 4	
Sparks, R. L.	At-Risk Second Language Learners: Problems, Solutions, and Challenges	2009	Foreign Language Annals	1, 3	2
Stamboltzis, A., and Pumfrey, P.	Text Genre, Miscue Analysis, Bilingualism and Dyslexia: Teaching Strategies with Junior Pupils	2000	Multilingualism, Literacy and Dyslexia	1, 2	2

Tyler, B-J. and García, S. B.	Meeting the Educational Needs of English Language Learners with Learning Disabilities	N/A	N/A		2
Unsworth, S., Persson, L., Pins, T., et. Al.	An investigation of factors affecting early foreign language learning in the Netherlands	2014	Applied Linguistics	1, 3, 4	
Venkatagiri, H. S.	Speech Recognition Technology Applications in Communication Disorders	2002	American Journal of Speech-Language Pathology	4	
Veuillet, E., Magnan, A., Ecalle, J. et. Al.	Auditory processing disorder in children with reading disabilities: effect of audiovisual training	2007	Brain	2, 4	
Wagner, R., Francis, D. J., and Morris, R. D.	Identifying English Language Learners with Learning Disabilities: Key Challenges and Posible Approaches	2005	Learning Disabilities Research & Practice	1, 3, 4	2
Woolley, G.	Issues in the identification and ongoing assessment of ESL students with reading difficulties for reading intervention	2010	Australian Journal of Learning Difficulties	1, 2, 3, 4	2