Help for a dyslexic learner from an unlikely source: the study of Ancient Greek

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Abstract

This paper recounts the process by which a severely reading-disabled adult student taught himself to read and write Ancient Greek, and in so doing, improved his ability to read and write in English. Initially, Keith's reading and writing were slow, difficult and inaccurate, accompanied by visual disturbance. However, motivated by a strong interest in Ancient Greek literature and philosophical ideas, Keith enlisted me (his Faculty's academic skills adviser) to help him learn the language. Working on transliteration focused Keith's attention on the alphabetic principle separately from meaning, while practising translation focused on the formal markers of meaning. Relieved of the stress of performing under pressures of time and others' expectations, Keith made good progress with Greek and, after 6 months, found himself reading more fluently in English, without visual disturbance. This paper seeks to contribute to our knowledge of how adults learn to read, looking at the interplay of motivation, phonological awareness, knowledge of how form conveys meaning, and the learning environment. It both draws upon, and raises questions for, the neuroscientific study of dyslexia.

Key words: adult dyslexia, motivation, phonological awareness, visual disturbance

Introduction

Despite the success of 'compensated dyslexics', we know that the underlying syndrome persists into adulthood (see, e.g., Beaton et al., 1997; Morgan and Klein, 2000; Reid and Kirk, 2001; Rice and Brooks, 2004), making adult dyslexic learners' efforts to cope with written language slower, more difficult, more stressful and often less satisfactory than those of their non-dyslexic peers (Farmer et al., 2002, p. 224; Hunter-Carsch and Herrington, 2001; Preston et al., 1996; Singleton, 1999, pp. 2, 17–18, 29). Yet, we also know that some dyslexic adults learn to read quite fluently, in fields that interest them (Fink, 1995). What we do not know very much about is *how* dyslexic adults learn to read.

One reason for this is the uncertain state of knowledge about the physiological cause(s) of dyslexia (Rice and Brooks, 2004). Researchers have identified a weakness in phonological awareness, which inhibits acquisition and automaticity in using the graphemic code of written language (Snowling, 2000). They have tested the potential of training in phonics to help people with dyslexia to learn to read, with learners making promising gains in reading (e.g. Aylward et al., 2003; Shaywitz et al., 2004; Simos et al., 2002; Tallal, 2000; Temple et al., 2003). At the same time, it has been suggested that reading itself changes the way the brain works, to increase phonological awareness (Castro-Caldas and Reis, 2003; Rice and Brooks, 2004, p. 28). Determining the relations among auditory and visual processing, cognition and learning behaviours is very much a work in progress (e.g. Pammer and Vidyasagar, 2005).

A second reason for our patchy knowledge about dyslexic adults' learning is that advances in our theoretical understanding of dyslexia come largely from neuroscientists, while naturalistic observations of dyslexic learners reading are, to a large extent, made by the tutors who work with them, and there is little communication between scientists and tutors. I would like to offer the following case study, therefore, from my work as an academic skills adviser in the Faculty of Humanities and Social Sciences at an Australian university. It is an account of an adult student learning to read more fluently at a late stage in his education, by immersing himself in the study of a dead language. I will explain why he undertook this project, and describe how he went about it, and, while a single literacy narrative can only be suggestive, I think this student's experience may have implications for understanding the apparent plasticity of the brain that allows dyslexic adults to break through to reading.

Keith, now in his 40s, has struggled since childhood with severe difficulties in handling written language. Last year, however, he began learning Ancient Greek, with my assistance, and one result has been a noticeable improvement in his reading and writing in English. It seems clear that information about language has played a part in making the interface of written and spoken language more intelligible. This includes information about how grammatical form signals semantic meaning, as well as information about the derivation of English vocabulary from Greek antecedents. Grammar analysis has proved to be important, both for entering the target language and for improving Keith's literacy skills. It seems possible, too,

that the effort to learn another alphabet is changing the way that Keith 'sees' written English.

Keith's learning history

Although he has never been assessed by an educational psychologist, Keith's biography strongly suggests dyslexia. Unable to learn to read or write at school, he was abused by teachers who had, evidently, never heard of dyslexia.

> *"One teacher, in grade three, said I would never amount to anything, I'd just wind up cleaning out gutters. She said it in front of the class. In high school, . . . if I didn't behave myself, they'd make me stand up and read in front of the class."*

Like others who were poorly understood at school (e.g., Edwards, 1984; Herrington, 2001, p. 109; O'Shea, et al., 1994), Keith grew angry and alienated from schooling, and left as soon as he could. He got a second chance at education when a drug rehabilitation programme sent him to do clerical work for a local university. When staff there realised that Keith could not read, they guided him into an individual learning programme where, Keith said,

> *"They just forced me to keep on writing – anything, the first thing that came into my head – and they went over the words. At first, I could only write one point in a sentence, and then I had to do something else. But it took off from there . . . I still can't sound the words out, and I haven't had time to do all the sounds yet. It's a slow process . . . ".*

Having progressed to studying school certificate subjects in an adult education programme, Keith got his secondary certificate, and was accepted to my university where the Disabilities Liaison Office provided him with notetakers in lectures, library assistance and audiotapes of the core readings required for his subjects, and referred him to me for one-to-one consultations. I have no special training in learning disabilities, but Keith and I developed strategies that helped him to complete his assignments, even though his reading and writing remained unreliable throughout his degree.

While Keith had mastered some of the sound–symbol correspondences of written English, he did not have them all. Moreover, print wiggled when he looked at it – "like worms on the page", as he described it (for discussions of visual disturbance in dyslexia, see Evans, 2001; Herrington, 2001, pp. 111, 114–115; Mailey, 2001; Pammer and Vidyasagar, 2005). When he read aloud from his sources, he missed some words, got others wrong and substituted sensible alternatives for words on the page, without apparently knowing that he was not reading what was there. When he wrote, it was much the same. He left words out, transposed letters or syllables, omitted or repeated parts of words (omitting, especially, the endings of inflected words), and when he read his own work aloud, he often read a synonym rather than the word he had actually written on the page.

It was when Keith read his work aloud that I discovered the coherent meaning its appearance concealed and found the key to helping him edit his writing. Because I could make no sense of his drafts, but did not like to say so, I asked him to read them to me, and what he read was perfectly sensible, but was not on the page in front of us. For example, Keith once wrote "When a state execute one of it civitizen. It leave the execute to carried out by a few of its member hinding away society". When I asked him to read it, he read without hesitation, "When a state executes one of its citizens, it leaves the execution to be carried out by a few of its members, which hides it away from society". He was reading what he thought he had written, from a script in his head.

We developed a routine, therefore, in which Keith read whole sections of his draft aloud to me so I knew what they were supposed to say. Then, we went over these sentence by sentence and word by word, making repairs as necessary. Sometimes, Keith noticed missing words or misspellings as he came to them, but if not, I showed him where a correction was needed, and if necessary I covered syllables with my thumb in order to break the word down so he could see the part that was wrong. Occasionally, we made up time by Keith dictating a paragraph to me, which he would later copy from my transcription. While copying was slow, he thought the act of forming letters helped him to consolidate his learning, perhaps by adding a kinaesthetic element. Keith's tutors gave him flexible deadlines, allowing him to hand in written work when he was ready.

Keith completed his BA, but then he faced the problem that other dyslexic students also face: he had a degree, but not the skills that employers expect to go along with it. Frustrated by setbacks in his prospects of further studies or employment, Keith was becoming depressed, but after some months, he rang up and told me he would like to learn Ancient Greek.

Decision to learn Ancient Greek

This was unexpected, but not inconsistent with Keith's interests over the past several years. His initial decision to enrol at university had been triggered by a programme he had heard on public radio, in which someone had spoken inspiringly about his education in classical literature and philosophy. Once admitted to the BA, Keith had chosen subjects in English, Philosophy and even Sociology that drew on stories,

myths, and ideas from Ancient Greece. Now he thought that he would like to read Hesiod in the original, and wondered whether I could help him find a teacher. My efforts were unproductive, until it occurred to me that I could do it myself. I had studied Ancient Greek in high school, 38 years previously, and enjoyed it. I had not used it in the meantime and could not actually remember much, but I hoped it would come back to me, and I arranged with Keith to spend an hour each week with me and as much time in between as he could give to studying on his own.

This, then, was the path that brought Keith to the study of Ancient Greek. It is a very individual path, and I do not suggest that many people with dyslexia would want to attack it with 6 months of Ancient Greek. Nonetheless, there are features of the experience that I think may be of interest generally, which we will turn to now.

The process of learning

In order to learn Ancient Greek, Keith had to attend closely to the physical appearance of letters. He had to draw constantly on his understanding of the alphabetic principle and to extend that understanding, which had, thus far, been underdeveloped in English. He had, as well, to attend to the grammatical system of inflections in order to make sense of his reading. Unlike a living language, Ancient Greek did not offer alternative strategies for learning – e.g. by immersion in the language in everyday use – which meant that the work of cracking the phonic code was unavoidable. At the same time, unlike a living language, Ancient Greek did not demand speed in processing operations, nor automaticity. It could be approached as a puzzle first, and a means of communication later. Finally, nothing hinged on Keith's success or failure in this endeavour except his satisfaction in the work: his mistakes could not result in social humiliation or barriers to employment, and his achievements could not help but add to his intellectual resources. Let us look at these points now in more detail.

The first challenge to any student of Ancient Greek is to learn its alphabet. It has 24 symbols, some of which resemble the English letters that represent the same phoneme:

α like short "a" in English
τ like "t" in English
ο like short "o" in English
ι like short "i" in English

Others, however, resemble English letters that represent a quite different phoneme, which is tricky for a learner, who must unlearn the English association, or rather compartmentalise it, in order to replace it with the Greek one:

ρ like English "r", but looks like English "p"
ν like English "n", but looks like English "v"
χ like English "ch", but looks like English "x"
η like English long "a", but looks like English "n"

Other letters do not look like English at all, and perhaps their strangeness compelled Keith's attention:

π like English "p"
φ like English "ph"
ξ like English "x"
λ like English "l"

Keith plunged gamely into the unfamiliar alphabet, but did not memorise it before moving on in his textbook. I had envisaged that Keith would spend a good deal of time on mastering each letter, but instead he treated the alphabet page as a decoding tool for the words in the exercises that followed. When he made a wall chart of the alphabet for easy reference, the letters were easier to see, because he made them in large print, and the alphabetic principle was reinforced as, next to each Greek letter, he had the English symbol for the same phoneme. At the same time as learning the Greek letters, Keith was focusing on the sound–symbol correspondences of English letters, because he relied on these to check on the Greek ones. I think this may be a way of working intensively on the English alphabet without the feelings that, for some learners, accompany work on the ABCs – a distaste for work on something their peers would see as basic or childish. We have the saying, "As easy as ABC", but nobody thinks that "alpha beta gamma" is easy. In this connection, one of the motivating features of the textbook Keith was using was that the first exercise, in the first chapter, was to read a series of words that turned out, on decoding, to be familiar loan words in English – familiar, but also fancy, as many belong to the vocabulary of science and other academic pursuits:

> "αναλυcις *(analysis)*, αυτοματον *(automaton)*, γενεcις *genesis)*", "δογμα *(dogma)*, δραμα *(drama)*, κοcμοc *(cosmos)*, χαρακτηρ *(character)*".

Keith took the same approach to the inflections and the vocabulary he encountered as he took to the alphabet: he noted these, but he did not memorise them before proceeding, as one would normally do in learning a language from a textbook. As we encountered declensions and conjugations, Keith turned those into wall charts too so that they were available, again, as decoding devices. This probably hampered the

development of automaticity, but then it might have been discouraging for Keith to aim for automaticity as this develops slowly, incompletely and with great difficulty in people with dyslexia when they are learning to read and write in their first language. By not striving for automaticity, however, Keith did gain a different kind of benefit: he had to pay close attention to the symbolic representation of each morpheme each time he needed to use it.

This dependence on the visual representation of the language was increased, moreover, by the fact that it is a dead language. Keith had none of the alternative strategies offered by learning a living language: aural recognition of whole utterances, making sense of utterances by context, matching words to objects or actions, memorising the appearance of whole words in print when those words are already known in the mind. Although Keith's preferred learning style was aural, the information available to him for learning Greek consisted exclusively of the building blocks of grammar translation. To read the words on the page, there was no alternative to the alphabetic principle, for there were no pictures, and no context for the language. To write in Greek himself, he was also dependent on careful copying – recoding letter by letter – rather than letting some letters stand for a whole word as he often did in writing English.

The major thing Keith was learning, in addition to the sound–symbol correspondence of Greek letters, was the grammatical system of the language. Keith had not studied English grammar, but he would need to develop an understanding of grammatical principles in order to make sense of Greek, in which word order plays a much smaller role than in English, while inflections carry most of the grammatical information in the sentence. To introduce Keith to these ideas, and the terminology he would soon encounter, I walked him through the 'Iggly Priggles' on the first day. I was sitting at my desk in high school English the first time I saw this exercise, and I have been using it ever since.

Our eighth-grade teacher, Mr McMullen, wrote a sentence on the blackboard with nonsense words but English structure:

"The iggly priggles gogged stigly in the pog backet".

Then he asked us to tell him what happened in this sentence – we said that something gogged – and then who (or what) did it, was there one or more than one, what kind of priggles, how did they do it, where or when did they do it, and in what kind of backet? When we had answered each of these questions, he asked us how we knew, and we pointed to the endings that had furnished clues. When Mr. McMullen asked us how we knew that 'stigly' told us 'how' but 'iggly' said 'what kind of', we were stumped for a moment as they had the same ending. Then, we saw that we had got clues, as well, from where the word stood in the sentence. Mr. McMullen told us that our ability to answer his questions showed that we already knew all about the grammar of English; we just did not know how to talk about it, and he was going to teach us that. He then matched up the semantic functions we had identified with some of the terms for parts of speech:

What happens	verb
Who/what	noun
What kind of	adjective
How	adverb
Where (or when)	preposition

Obviously, there was more to know than this, and by the end of eighth grade, those of us who liked it knew it. But I retained the Iggly Priggles as an eye-opener to the structure of English and the nature of grammatical knowledge, and I shared it with Keith as he embarked on his study of Greek. I told him, at the same time, that where word order tells us many things in English – who is doing the action, to whom it is being done, which person or thing is described by which adjective – Greek relies much less on word order and uses endings instead. Then, as Keith met different declensions and conjugations in subsequent weeks, I explained their functions in signalling meaning. Some of these corresponded readily with forms and functions in English, but many did not, and this interested Keith. Each week, he brought in questions that had come to mind as he read the grammar sections in his textbook. He tried to make sense even of grammatical features that do not make much sense, such as the gender assigned to each particular noun in Greek. And, characteristically, he brought what he knew of classical culture to bear on trying to make sense of odd expressions (*Teach Yourself Greek* (Betts and Henry, 2001) includes, in its exercises, such utterances as "you are weeping on your stepmother's tomb"; "you are bringing an owl to Athens"; "you are pouring wine for frogs"; "Athens is the Greece of Greece"); or the use of the vocative with inanimate nouns ("Oh sea . . . Oh trees. . ."). For English speakers to address a tree directly is odd, outside of poetry, but for ancient Greeks to do so, Keith reasoned, was in keeping with the enchantment of their mental universe. In this way, grammar connected with Keith's interest in Greek culture, and it seems possible that it may also have appealed to him as a system, for in school, he had been good at Maths.

Thus, Keith elaborated his knowledge of the classical world and at the same time focused, visually, on word endings, which may have had an effect on his awareness of these in English. One of his characteristic spelling errors in English had been to leave inflected endings off the words he wrote, and I noticed, as his study of Greek progressed, that he wrote both more

legibly and more accurately in English, omitting fewer words, letters, syllables and endings.

I was able to track these changes because Keith adopted a routine of working out translations as he did the exercises. First, he copied the Greek words or sentences from his book onto paper. Then, he transcribed the Greek words into English script, on the line below. On the next line, he wrote the literal English translation of the words, and finally, under that, he turned this into a sensible English utterance. If the last step did not yield a plausible result, he looked up the answer in the back of the book. Because of the leeway that Keith was prepared to allow the ancient mind, some of the sentences he was willing to accept were rather odd, and in those cases I prompted him to check the vocabulary and grammar again. This gave us a chance to clarify points that he had misunderstood, such as the function of genitive, dative and vocative cases, and either produced a different translation or confirmed the translation he had prepared. The close focus on individual letters and on parts of words was reinforced when, after several weeks, he began to translate from English into Greek. In order to move from Greek to English, Keith had to recognise the inflections he read, but to move from English to Greek, he had to decide what inflection was needed, to locate it on his charts and to integrate it into the word as he wrote. Again, we talked about the reasons for his errors in these exercises, which were infrequent in comparison with the errors he had made in writing English throughout his degree.

Two excerpts from Keith's exercises show his method of working, and give an indication of his accuracy (I have omitted diacritical marks, owing to the constraints of my keyboard):

> ''ημειc μεν cε ουκ αδικουμεν, cυ δε ημαc [αδικειc]''
> ''Emeis men se ouk adikoumen, su de emas [adikeis]''
> ''We do not harm you, but you [harm] us''.

> ''τας δημοκρατιας μιcω τουc γαρ δημουc ου φιλω''
> ''Tas demokratias miso tous gar demous ou phlilo (sole error, ''l'' inserted after ''ph'')''.
> ''I hate democracy because I do not love the people''.

In addition to showing me his translations, Keith wanted to read the Greek aloud to me so that he could work on turning the symbols into sounds with greater fluency. At first, as he struggled to pronounce the sounds and syllables, I thought it was because of the unfamiliar alphabet, but when I questioned Keith about this, he told me he was reading from his English transcription below the words! While Keith lacks fluency in reading English words, his struggle was certainly more pronounced when reading what were, effectively, nonsense words in English, which highlighted the role that meaning and prediction, rather than decoding, play in his everyday reading. After a few weeks, however, Keith began to read directly from the Greek, and I helped him to focus by covering parts of a word with my thumb; helped him to combine sounds by saying each separately, then in succession, then run together; and helped him to get to the end of a word by repeating the part he had decoded so far, and then uncovering the rest. We talked about why some combinations were particularly difficult to read: some were digraphs that Keith had not yet mastered in English script, while others were combinations that are not found in English, such as 'euo'. Sometimes, a combination looked improbable, such as 'kn' or 'gn', but I would think of English words Keith knew, in which that spelling was found. Again, a by-product of the focus on Greek sounds and symbols was a closer focus on those of English. In particular, Keith's difficulty with Greek diphthongs highlighted the fact that he had never learned all the vowel combinations of written English, so I made him a chart of some of these with examples using familiar English words.

As time went on, some of the Greek words became more familiar, and Keith remembered chunks and relied less on decoding letter by letter. For each new word, however, he had the strategies needed to decode it. We started in March, and were making good progress by early June. Keith could sound out the Greek without consulting his transcription, and at the same time his writing in English was more legible, more complete and more accurate than it had been during his BA. It was a conversation about two books that Keith was reading at that time that prompted me to ask whether he had noticed any change in his reading in English. He was surprised to realise that he was reading more, reading faster and feeling less discomfort than he used to. I asked him whether the letters were still wiggling on the page, and he said, in fact, they were not.

What the changes may mean

I do not fully understand the way that learning Greek has affected Keith's ability to process written English, but some reasons for the improvement seem likely. In learning the Greek alphabet, Keith was focusing closely on the phonics of both Greek and English, and on the way that letters stand for sounds. In learning the grammar of Greek, he was focusing on the role of inflections in making meaning. And while these are basic operations in reading, he was doing them in the context of a project that could hardly be dismissed as elementary. The work was intellectually satisfying both in itself and in its capacity to keep him connected with the university, attending regularly and continuing to use the library.

Keith's experience supports observations elsewhere that motivation and interest are powerful weapons against dyslexia (e.g. Larkin and Ellis, 1998; Klein, 2001, p. 146). At the same time, Keith's success with

Greek may also suggest that knowledge about language has an important part to play. It is widely accepted that language is most effectively acquired through immersion rather than study, because analysing the grammar of an utterance inhibits fluency and the development of automaticity. It may be, as Krashen (1981) has argued, that knowledge *about* language inhibits acquisition *of* language, because the overuse of the 'monitor' – that is, attending to the correctness of one's language while uttering it – prevents the development of automaticity (but cf. Storch, 1995; Vance, 1995). While this may be true of spoken language to some extent, perhaps literacy requires an analytical approach (as the proponents of teaching phonics have been insisting for decades). Indeed, for people whose aural learning of language is underdeveloped with regard to distinguishing phonemes, analysis may be necessary for full learning of spoken language too. It is precisely because he is analysing the grammatical structure and the visual representation of Greek that Keith is focusing on aspects of both Greek and English that he needs to become aware of. For Keith's purposes, automaticity is not necessary, and his 'monitor' (Krashen, 1981) seems to have benefited from vigorous exercise.

Castro-Caldas and Reis (2003, p. 81) have argued that ''the knowledge of orthography is a revolution in the brain''. In studies with adults who have grown up illiterate for social, not physiological, reasons, they found that these adults were far less able than their literate peers to perform tasks requiring ''explicit phonological processing'' (Castro-Caldas and Reis, 2003, p. 82), a difference borne out by images of brain activation during task performance. They concluded that ''learning to read and write during childhood influences the functional organisation of the adult human brain'' (Castro-Caldas and Reis, 2003, p. 88) and that

> *''if one loses the opportunity to learn how oral language can be represented in a written form, the use of language in adulthood will reflect an inability to perform certain operations that require the awareness of phonology [owing to] . . . the absence of an organized neural network supporting the functions. This is not a simple functional absence, but instead has a measurable expression in certain anatomical regions like the corpus callosum''* (Castro-Caldas and Reis, 2003, pp. 90–91).

While, in the passage above, Castro-Caldas and Reis write in terms of lost opportunities, they also noted, earlier in the same article, evidence from studies showing a ''significant growing of the CC until late in life'' (p. 91), probably related to learning. It seems possible that Keith's efforts to learn Ancient Greek may be changing the morphology of his brain so that he not only reads better than, but also differently from, the way he did before. Brain-imaging technology enables neuroscientists to track functional changes in the brain during interventions to remediate dyslexia (e.g. Temple et al., 2003). Perhaps accounts by tutors and by learners themselves can add to our understanding by providing insights into how adults who are not involved in experimental situations undertake, and succeed in, learning to read.

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