

12 Reading as a Multi-layer Activity: Training Strategies at Text Level

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‘When I use a word,’ Humpty Dumpty said, in rather a scornful tone, ‘it means just what I choose it to mean – neither more nor less.’ ‘The question is,’ said Alice, ‘whether you can make words mean so many different things.’ ‘The question is,’ said Humpty Dumpty, ‘which is to be master – that’s all.’
Lewis Carroll, *Through the Looking Glass*, 1871

1 Background and Aim

In the science of reading, both theoretical and diagnostic/remedial applications usually – and often implicitly – refer to oral reading. The reading task is interpreted as the counterpart to the process of writing: the latter is based on the use of a system of visual marks, which enables the writer to encode the phonic sequence in such a way that the reader will be able to reproduce the intended words exactly. From this perspective, efficient writing systems are alphabetical, and the Greek alphabet can be considered the end point of a century-long historical evolution: integrating previous systems with vowel signs, it allowed for the accurate reconstruction of the phonic shape of the original message. The encoding and decoding process is at the heart of literacy, and therefore both teaching methods and classroom practice hinge on spelling and pronunciation rules and include dictation and oral reading exercises. Similarly, whenever struggling readers are examined for diagnostic purposes, reading tests consist of lists of words and passages that have to be read aloud. Subsequently, remedial work includes phonological awareness and training.

Rarely is silent reading taken into consideration, unless research or treatment focus on a reading comprehension task, which is usually investigated separately. Yet in adult life reading is in most contexts a

silent activity, aimed at different degrees of comprehension (and often to a certain level of memorization) of texts. The OECD (Organisation for Economic Co-operation and Development), in its 2018 PISA report, marks reading as a major domain, as literacy is not only essential for educational achievement but is also a prerequisite for successful participation in adult life. The rapid changes characterizing our contemporary world have imposed the need for new literacy skills, thus modifying the very concept of reading. Therefore:

The PISA framework for assessing the reading literacy of students towards the end of compulsory education must focus on reading literacy skills that include finding, selecting, interpreting, integrating and evaluating information from the full range of texts associated with situations that reach beyond the classroom.¹

Competent readers instinctively adapt their reading behaviour to their different goals (e.g. skimming a text for quick information, close reading, scanning for accurate analysis, etc.), and research has emphasized that successful comprehension occurs when the three main factors affecting the process – i.e. reader, text and task – meet (van den Broek & Kendeou, 2017). Starting from the assumption that reading is an actual everyday activity continually adapted to contextual constraints and needs, both its theoretical description and its practical training/rehabilitation can no longer rest on the local analysis of letters, words or even sentences. A global textual dimension has to be adopted instead.

Against this background, we have adapted to the Italian language context a training course, developed in the US and in the UK, called SuperReading, which promotes a strategic reading behaviour, dealing with different psychological and linguistic components. The aim of this chapter is to describe the main aspects of the course and to present the results of a research project that has involved a population of 260 course participants, both normotypical and dyslexic readers. In particular, we focused on the following research questions:

- (1) Does the SuperReading course actually promote improvement in reading speed and reading comprehension during a silent reading task, in a population of young adult students with a diagnosis of Specific Learning Disorders?
- (2) Which effects are produced on a population of normotypical readers in the same age bracket?
- (3) To what extent are the results obtained by the two groups comparable?

We first discuss some crucial aspects of silent reading, both from the theoretical perspective and by looking at disorder issues, with special attention to adulthood (section 2). We then illustrate the key components

of the SuperReading course and the method of research we adopted, based on an A–B design, with the administration of pre- and post-course reading tests (section 3). The data gathered and processed so far are then presented and commented on (section 4). Finally, we give some further evidence based on standardized reading tests and outline our prospects for the future development of the whole project (section 5).

2 Silent Reading

Most reading models do not include comprehension explicitly, and basically describe oral reading, which is the prevailing mode both in the classroom and in clinical contexts.

During the first stages of schooling, oral reading predominates, as it enables the teacher to test the development of reading abilities in his/her pupils, and to support them if needed. Also, in clinical assessment, tests are mostly based on oral reading tasks, while silent reading is usually adopted only for comprehension tests. The predominance of oral reading extends from research to school, from diagnosis to intervention. In all these contexts, the advantages of oral reading as an observable behaviour are widely exploited in monitoring, measurement and repair.

It is difficult to test and monitor silent reading, as it is not directly observable, and even innovative techniques (e.g. the eye-tracker that measures eye movement) do not allow for the gathering of information on the actual comprehension of the text. The difficulties in monitoring silent reading and the different indirect methods developed to test it are probably responsible for the variety of results obtained in research focused on this specific ability. Different answers, for example, have been given to the preliminary question depending on whether silent and oral reading have to be considered as a single construct or two separate constructs. Some researchers opt for the former hypothesis (Price *et al.*, 2016); others emphasize the similarities between the two modes, which, however, show some distinctive features. In particular, an investigation carried out by van den Boer *et al.* (2014) revealed that both oral and silent reading performances correlate with rapid denomination, phonological awareness and visual attention span. Yet rapid denomination is more important for oral reading, while visual attention span is crucial only in silent reading (Ciuffo *et al.*, 2017; van den Boer *et al.*, 2014).

The results concerning research on the relationship between reading and comprehension are also uneven. For example, Hale *et al.* (2007) found that oral reading led to better comprehension results. Differently, Juel and Holmes's model (Juel & Holmes, 1981) suggests that beginners and poor readers benefit from oral reading, while adult and expert readers perform better in silent reading tasks. This model has been corroborated by recent research carried out with

eye-tracking techniques (Vorstius *et al.*, 2014), which revealed that low comprehension levels combine with low flexibility. Poor readers prove unable to exploit the freedom permitted by silent reading; they do not adopt strategies and they tend to reproduce their oral reading behaviour. Expert readers, on the other hand, spend more time on complex and less frequent words, with a higher number of regressions, displaying a highly strategic approach. Struggling readers often move their lips and sub-vocalize during silent reading, thus showing that they do not change their oral reading habits (Gillam *et al.*, 2011). Expert readers, on the contrary, behave differently in oral and silent reading tasks, as shown by eye-tracker acquisitions (Krieger *et al.*, 2017).

As for the development of reading abilities, Ciuffo *et al.* (2017) have shown that silent reading speed increases constantly up to the end of MA courses and reaches an average of 12:38 syl/sec, while oral reading speed stabilizes at the beginning of university courses. This means that it is possible to improve silent reading performances in adulthood, and therefore this reading mode should be taken into consideration for both assessment and intervention. This research was carried out in Italy, using a silent-reading test developed by the authors, which is now included in a battery of tests for reading difficulties in adulthood (Ciuffo *et al.*, 2019).

Using the same testing material, Gagliano *et al.* (2015) investigated the silent reading performance of normotypical and dyslexic adults. All readers had lower reading times in silent mode, but the gap between oral and silent reading speed was different for the two groups, and lower for the dyslexic. This suggests that expert readers can improve their silent reading performance almost indefinitely, which is influenced more by the use of strategies and is not conditioned by articulatory speed. Vice versa, poor readers are unable to exploit the advantages of silent reading and limit themselves to reproducing the behaviour adopted for oral reading.

Considering that silent reading is more directly associated with a comprehension task, research on all the elements that influence comprehension can help us understand the specific difficulties of poor readers – the ability to decode anaphoric meaning and to trigger inference processes being among the most interesting points. Inferencing implies activation and integration of textual and contextual information (Mckoon & Ratcliff, 1992; Singer, 2013), and there are different forms and classifications of the process (Zwaan & Radvansky, 1998). Basic textual coherence can be pursued, or causality links can be exploited to figure out the meaning of the text as a whole. Each reader has his/her own coherence standard, which includes the level of comprehension to be obtained in relation to the reading situation (van den Broek *et al.*, 1993). Poor readers struggle to differentiate among different reading tasks and to change their behaviour according to the aims of reading (Rouet *et al.*, 2001); they are worse than good readers at adapting their coherence standard to the task (Cain, 1999; Linderholm & van

den Broek, 2002). They are also less proficient at monitoring their comprehension level, and this developmental difference persists to adulthood (Hacker, 1987).

Although research on silent reading is relatively scanty, the results obtained so far indicate that the character of this task has special implications and can pose specific difficulties. With the passing of time, silent reading gradually replaces oral reading, and becomes the dominant mode for competent readers (Kragler, 1995; Prior & Welling, 2001; van der Boer *et al.*, 2014). Its crucial role in adulthood requires attention and action on behalf of clinicians and teachers alike. Silent reading abilities can be developed and supported with both adequate teaching methods and specific forms of intervention. An approach focused on pure decoding is obviously insufficient and should be integrated with metacognition and memory training.

SuperReading, the course with which we have experimented in our university, is an attempt to combine different strategies and techniques, to help young adults in general – and struggling readers, in particular – develop their silent reading skills, focusing on both reading speed and text comprehension.

3 The SuperReading Course

The SuperReading course was developed in the US by Ron Cole, who, as a life coach, had realized the crucial role of reading and comprehension for the professional success of his clients. In the mid-1990s, determining that existing speed-reading programmes did not guarantee adequate comprehension levels, he experimented with new techniques and combined them in a course that he offered to his clients, mostly adult managers (Cole, 2009). The course relies on the fundamental principles of metacognition (Wray, 1994) and on the analysis of the different variables influencing comprehension (Ellis, 1993). At the same time, it emphasizes the emotional and motivational components, and includes a special reading practice, named *eye-hopping*.

Metacognitive abilities are considered to be crucial for academic success (Hacker *et al.*, 2009; Pressley, 2002; Pressley & Gaskins, 2006; Vanderswalmen *et al.*, 2010; Williams & Atkins, 2009), and research has shown that they can influence the performance of reading and comprehension tasks (Anderson & Armbruster, 1984; Baker & Beall, 2009; Hacker *et al.*, 1998; Roeschl-Heils *et al.*, 2003). Good readers have better metacognitive knowledge than poor readers (Baker & Beall, 2009; Brown, 1980). The adoption of metacognitive strategies allows for a more effective approach to texts: the reader activates background knowledge, anticipates difficulties, reflects on how to single out salient information and memorize it, and is able to self-evaluate his/her level of understanding. On the other hand, poor readers also have poor

metacognitive abilities (Butler, 1998; De Beni & Pazzaglia, 1997, 2003; Job & Klassen, 2012; Klassen, 2002, 2006), which makes it necessary to include metacognition in any comprehensive support programme.

Another important component of academic success is motivation, which is closely linked to other emotional aspects. Good students believe in their capabilities and have a high level of self-efficacy (VanderStoep *et al.*, 1996). As a consequence, they can manage anxiety more easily, and thus perform better (Kleijn *et al.*, 1994). Research shows that high levels of anxiety compromise performance, as anxiety influences the working memory and interferes with concentration and the capacity to find suitable strategies (McCraty, 2007; Ruffins, 2007). Vice versa, high levels of self-esteem can be of help in stressful situations (De Beni *et al.*, 2003). In their first school years, students with Specific Learning Disorders (SpLDs) soon become aware of their difficulties and realize that they need more time and effort to obtain results that are often poorer than those of their peers. This in turn can have negative consequences for their self-esteem and for their perceived self-efficacy (Martino *et al.*, 2011). The emotional components of SpLDs have often been under scrutiny, yet results are not always consistent (Novita, 2016). However, some of them suggest that in the academic context levels of anxiety and self-esteem in students with SpLDs are different from those of the normotypical population, while this is not the case in other domains (Frederickson & Jacobs, 2001; Hellendoorn & Ruijsenaar, 2000; Novita, 2016; Riddick *et al.*, 1999).

As mentioned, the SuperReading course works on both meta-cognition and emotional elements. The standard format comprises 6 sessions of from 2 hours 30 minutes to 3 hours each, over a period of 9 weeks. The course is led by a coach, whose task is to illustrate and comment on the different techniques used to motivate and support the participants, and to create a positive environment for learning and practice (Angel & Amar, 2005). The approach to the reading task is multifaceted (Cole, 2009; Cooper, 2009a, 2009b), emphasizing metacognitive skills, memorization techniques as well as self-empowerment. Yet, the distinguishing feature of SuperReading is eye-hopping, a training technique to be practised both during sessions and as homework. Reading texts are printed in close columns, each of them containing 2–5 words; readers must ‘hop’ with their eye from the middle of one column to the middle of the other, following the movement of their index finger. The practice starts with 2-word columns, moving to a higher level as soon as the exercise is performed at an acceptably high speed.

Cole administered reading tests during the course, which showed significant improvements in the reading abilities of participants. Moreover, he noticed that the participants with reading problems obtained higher rates of improvement compared with neurotypical

readers. A pilot study carried out in London (South Bank University, Language and Literacy Unit) with 15 dyslexic subjects supported this claim (Cooper, 2009a, 2009b). Further data gathered with a population of 91 adult dyslexic readers confirmed the previous results (Cooper, 2012). In 2012, IULM (International University of Languages and Media) signed an agreement with Cooper and Cole, which authorized them to translate and adapt the course materials for Italians (for a more detailed description of the translation procedures, see Santulli & Scagnelli, 2017). Since then, the course has been taught to 18 groups, 10 of them at IULM, where since 2016 it has become part of the curriculum. Four courses were held in other universities (Modena e Reggio, Venezia Ca' Foscari, Bocconi University), one in a high school in Brescia (Liceo Luzzago), and three in a centre for support to dyslexic children (Cooperativa Crescere, Reggio Emilia). As in the English version, reading tests are regularly administered during the course. Data have been gathered and processed, and partial results have already been published (Santulli & Scagnelli, 2017, 2018a, 2018b, 2018c; Scagnelli *et al.*, 2014).

4 The Research Project

4.1 Study design

The experimental design provides for the comparison of data collected at baseline and after the intervention. Performances at all selected parameters were recorded using reading tests, as described in section 4.3. The first test was administered at the beginning of the course, without any previous indication or comment on reading strategies; the last at the end of the course, when all techniques had been presented and practised. For each participant, the differences between the first and last test were considered for global analysis. The effects of the course were also measured separately for dyslexic and non-dyslexic participants, with a comparison of the performances of the two groups.

4.2 Population

In this chapter, we present the results obtained by testing a population of 260 participants ($M_{\text{age}} = 23;4$), 224 of whom are adults (>18;0) (118 with SpLDs and 106 normotypical), 36 adolescents (14;0–18;0) (25 with SpLDs and 11 normotypical). As for educational levels, 35 have a degree, 175 a high school diploma, 33 have a 'lower' diploma (which in Italy is normally obtained at 14;0, after eight grades); 17 subjects did not indicate their school qualifications. Normotypical readers numbered 117, while 143 had been diagnosed with SpLDs by experienced clinicians authorized by the National Health System (NHS),

Table 12.1 Correlation number of tests – results for all tested parameters

N = 212	Spearman's correlation	P
Variations T1 vs sessions	-0.115	0.063
Variations T2 vs sessions	-0.093	0.136
Variations TotT vs sessions	-0.102	0.100
Variations C1 vs sessions	-0.035	0.576
Variations C2 vs sessions	0.018	0.772
Variations RE1 vs sessions	0.009	0.882
Variations RE2 vs sessions	0.018	0.774
Variations CRE vs sessions	0.085	0.085

according to Italian legislation (Act 170/2010) and subsequent regional implementation protocols.

During the course, participants are administered six reading tests, which will be described in section 4.2. However, in the case of non-attendance at one or more sessions, the number of tests actually performed by a single subject is lower. In deciding whether it was also possible to consider analysis participants who had fewer tests, we carried out a statistical analysis (see section 4.3.) to investigate the possibility of including in our population subjects who had performed at least four tests. This specific analysis was carried out on a population of 212 subjects. The variation between first and last performance for all these subjects was taken into consideration for all the parameters included in the test (see section 4.2.). The relation between each variation and the number of tests was verified using the Spearman correlation coefficient (Spearman's rho). In no case were relations statistically significant (Table 12.1). Moreover, the results of the Kruskal–Wallis H test, nonparametric equivalent of ANOVA, show that there is no statistically significant difference in variation between the first and last performance among those who had four, five or six tests (Table 12.2). As a consequence, participants with at least four tests were included in the population.

Table 12.2 Kruskal-Wallis test in relation to number of tests

N = 212	Kruskal–Wallis test	chi square (gdl = 2)	P
Variations T1 vs sessions		3.223	0.200
Variations T2 vs sessions		1.961	0.375
Variations TotT vs sessions		4.303	0.116
Variations C1 vs sessions		1.311	0.519
Variations C2 vs sessions		0.400	0.819
Variations RE1 vs sessions		3.139	0.208
Variations RE2 vs sessions		0.294	0.863
Variations CRE vs sessions		1.861	0.394

4.3 Reading tests

Each reading test consists of a 400-word essay, to be read in silent mode, followed by ten comprehension questions. The tests were randomly distributed, so that participants took them in different orders. Readers were asked to read the text at normal speed to ensure comprehension, take note of the time, and then answer the questions without referring back to the text. They were then asked to review the text, note the time, and answer the same questions again, without referring back to the text or to the previous answers. Measures of time and comprehension (10 points for each question) were recorded for both first reading and review (T1 = Time at first reading, T2 = Time at review, C1 = Comprehension at first reading, C2 = Comprehension at review). Moreover, a synthetic index, named Reading Effectiveness (RE), combines the data concerning time and comprehension, giving a measure of the percentage of comprehension per minute:

$$RE = \frac{\text{Words} \cdot C/100}{T}$$

Reading Effectiveness is calculated separately for first reading (RE1) and review (RE2), as well as considering total reading time (Combined Reading Effectiveness or CRE).

This administration protocol belongs to the original version of the course. When translating into Italian, it was necessary to prepare new reading tests, which had exactly the same structure as the English ones. We first validated the Italian tests with a population of 150 university students. The distribution of comprehension scores and reading time was to a good approximation normal (with low SD), thus suggesting that the six tests have similar levels of difficulty.

4.4 Data analysis

The analysis of the data was carried out using the IBM SPSS software.² The differences between first and last test performances were analysed for the whole population, as well as separately for the two sub-groups using the Wilcoxon signed-rank test, for all the variables considered in the tests. Differences between the dyslexic and non-dyslexic population were analysed using the Mann–Whitney U test. Non-parametric tests were chosen, because the variables under investigation do not meet the assumptions of the corresponding parametric tests (paired *t*-test and ANOVA).

4.5 Results

Figure 12.1 shows the average measures of Total Reading Time at the first and last tests, both for dyslexic and normotypical readers.

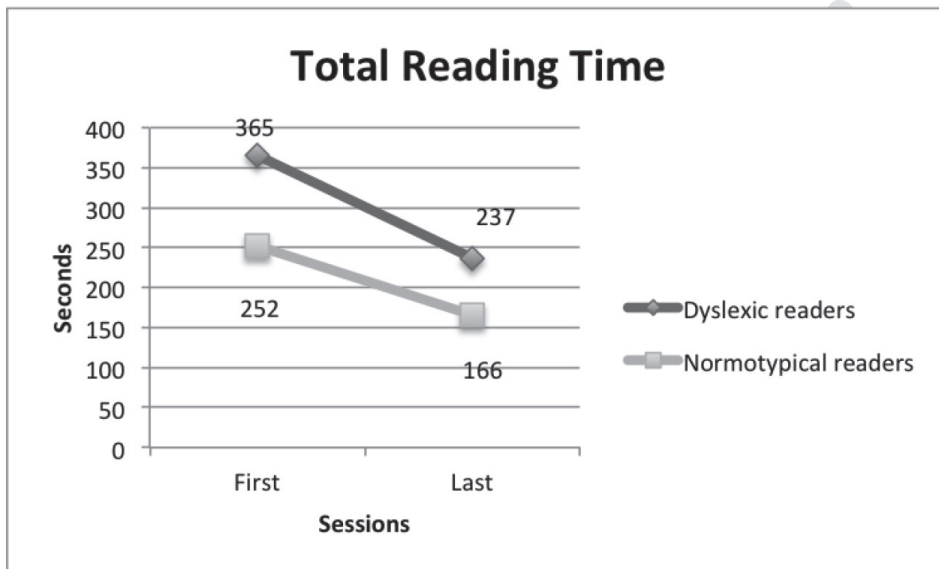


Figure 12.1 Average Total Reading Time at the first and last test

The decrease is evident for both groups, exhibiting a similar pattern: dyslexic readers reduce their reading time by 35%, normotypical readers by 34%. At the end of the course dyslexic readers perform better than normotypical readers at the beginning.

Figure 12.2 shows the average levels of comprehension at the second reading, at the first and last test for both sub-groups. When compared

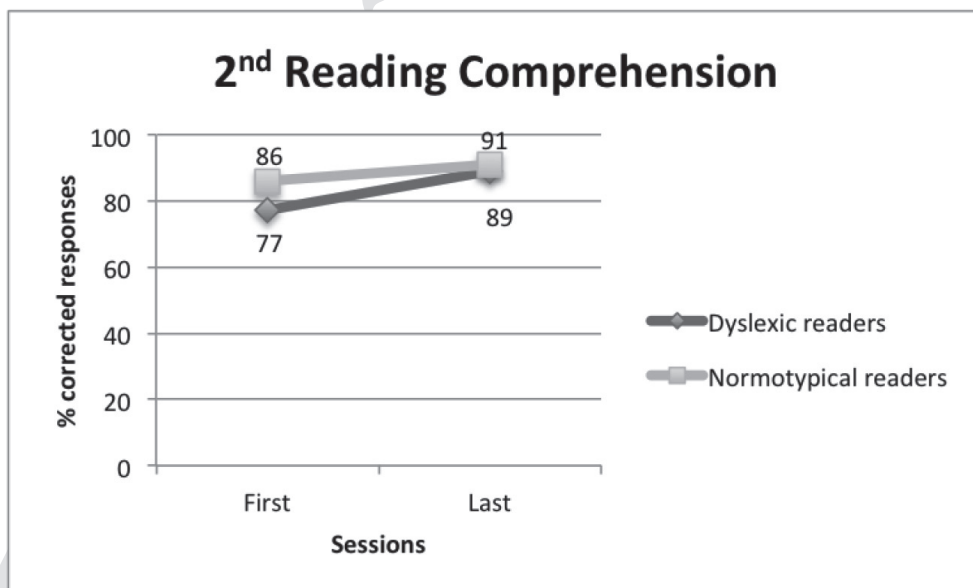


Figure 12.2 Average Comprehension at 2nd reading at the first and last test

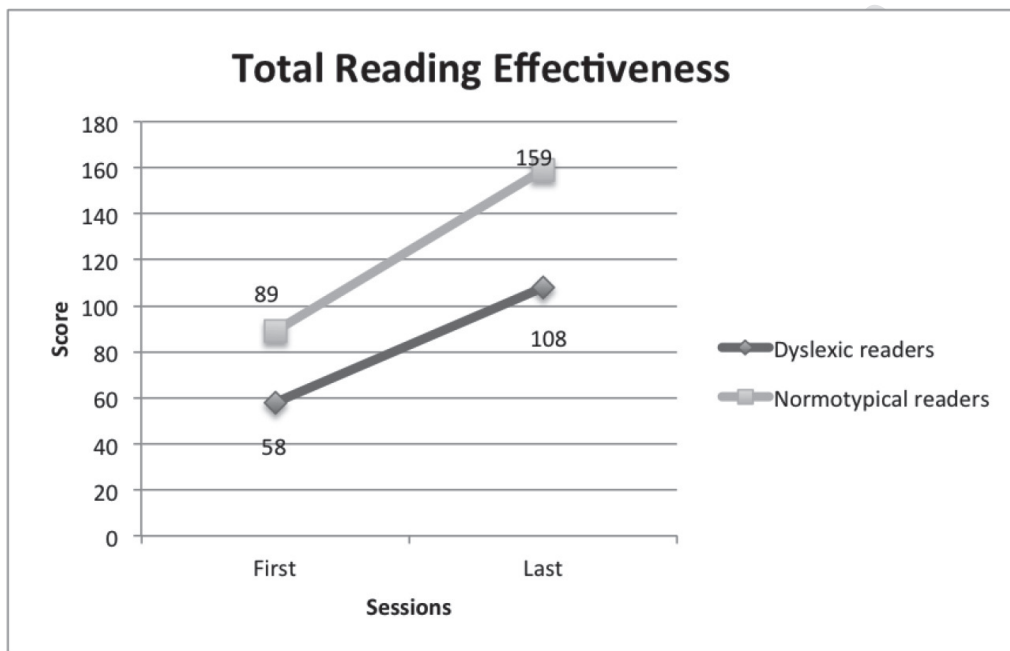


Figure 12.3 Average Combined Reading Effectiveness at the first and last test

with the reading time, the improvement is much lower, but it is to be considered that the measures of comprehension are influenced by a ceiling effect. In this case, normotypical readers show a modest increase (5.8%), while the dyslexic readers group has a 15.6% increase. This difference is presumably linked to the lower initial level of dyslexics, who, however, reach a final level of comprehension very close to that of their normotypical counterparts.

Figure 12.3 shows the average measure of Combined Reading Effectiveness (comprehension per minute, considering total time) at the first and last test, for the two sub-groups. Both dyslexic and normotypical readers significantly improve their global performance, the former by 86% and the latter by 78.7%. Also, for this global measure, dyslexic readers perform better at the end of the course than normotypical readers at the beginning.

Beyond descriptive analysis, all the data were processed to investigate their statistical significance. Table 12.3 shows the results of the Wilcoxon signed-rank test, the significance of the obtained measures, the effect size, and median values both at the first and last test. Table 12.3 refers to the whole population ($N = 260$) and considers all the parameters measured in the tests.

It can be noted that all the differences between pre-/post-course performances are statistically significant, though the effect size is more modest for measures of comprehension (*small*, according to Cohen's scale, for 1st Reading Comprehension).³

Table 12.3 First–last test differences for all parameters (total population)

N = 260	Wilcoxon	Significance	Effect size	Median first	Median last
1 st Reading Time	Z = -10.64	p < 0.0005	0.47	160.0	124.5
2 nd Reading Time	Z = -13.69	p < 0.0005	0.60	133.0	66.0
Total Reading Time	Z = -13.47	p < 0.0005	0.59	295.5	192.5
1 st Reading Comprehension	Z = -6.73	p < 0.0005	0.29	50.0	65.0
2 nd Reading Comprehension	Z = -7.61	p < 0.0005	0.33	85.0	90.0
1 st Reading Effectiveness	Z = -10.76	p < 0.0005	0.47	77.4	122.2
2 nd Reading Effectiveness	Z = -13.66	p < 0.0005	0.60	152.2	332.8
Combined Reading Effectiveness	Z = -13.63	p < 0.0005	0.60	68.7	117.7

Table 12.4 shows the results obtained for the normotypical population (N = 117). All the first-last differences are statistically significant. The effect size for both measures of comprehension is small, and lower than the value obtained for the total population.

Table 12.5 shows the results obtained for the dyslexic population (N = 143). All the first-last differences are statistically significant. If compared with measures of time and Reading Effectiveness, the effect size for both measures of comprehension is lower, but still medium according to Cohen's scale.

Table 12.6 shows the results of the Mann–Whitney U test, which was used to investigate the differences between the normotypical and the dyslexic population. The level of statistical significance is reached only

Table 12.4 First–last test differences for all parameters (normotypical population)

N = 117	Wilcoxon	Significance	Effect size	Median first	Median last
1 st Reading Time	Z = -7.25	p < 0.0005	0.47	133.0	105.0
2 nd Reading Time	Z = -9.16	p < 0.0005	0.60	114.0	60.0
Total Reading Time	Z = -9.10	p < 0.0005	0.60	248.0	164.0
1 st Reading Comprehension	Z = -4.08	p < 0.0005	0.27	55.0	70.0
2 nd Reading Comprehension	Z = -3.67	p < 0.0005	0.24	90.0	95.0
1 st Reading Effectiveness	Z = -7.38	p < 0.0005	0.48	106.7	150.0
2 nd Reading Effectiveness	Z = -9.18	p < 0.0005	0.60	180.9	372.4
Combined Reading Effectiveness	Z = -9.10	p < 0.0005	0.60	84.2	139.3

Table 12.5 First–last test differences for all parameters (SpLDs population)

N = 143	Wilcoxon	Significance	Effect size	Median first	Median Last
1 st Reading Time	Z = -7.80	p < 0.0005	0.46	185.0	148.0
2 nd Reading Time	Z = -10.21	p < 0.0005	0.60	153.0	79.0
Total Reading Time	Z = -9.97	p < 0.0005	0.59	342.0	225.0
1 st Reading Comprehension	Z = -5.35	p < 0.0005	0.32	50.0	65.0
2 nd Reading Comprehension	Z = -6.74	p < 0.0005	0.40	80.0	90.0
1 st Reading Effectiveness	Z = -7.90	p < 0.0005	0.47	62.3	100.0
2 nd Reading Effectiveness	Z = -10.13	p < 0.0005	0.60	120.7	276.9
Combined Reading Effectiveness	Z = -10.16	p < 0.0005	0.60	55.3	96.6

Table 12.6 Performance of SpLDs vs Normotypical population

	Mann–Whitney U test	Significance	Effect size
1 st Reading Time	U = 7448,0	p < 0.128	0.10
2 nd Reading Time	U = 5445,5	p < 0.0005	0.30
Total Reading Time	U = 5982,5	p < 0.0005	0.25
1 st Reading Comprehension	U = 7771,5	p < 0.324	0.06
2 nd Reading Comprehension	U = 6257,0	p < 0.0005	0.22
1 st Reading Effectiveness	U = 7123,0	p < 0.039	0.13
2 nd Reading Effectiveness	U = 7526,0	p < 0.164	0.09
Combined Reading Effectiveness	U = 7169,0	p < 0.047	0.12

for some parameters, namely: 2nd Reading Time, Total Reading Time, 2nd Reading Comprehension, 1st Reading Effectiveness, and Combined Reading Effectiveness. The effect size is, however, small.

4.6 Discussion

The results obtained so far consistently show that in only nine weeks participants in the SuperReading courses improve their reading performance from the point of view of both speed and comprehension. Moreover, the improvement applies to both normotypical and dyslexic readers. The course can therefore be considered an inclusive instrument to be offered to students and young adults, independent of their reading capacities.

The results of the two sub-groups show similar patterns, and both display statistical significance for all measured parameters. Some minor differences do occur, in particular for the measures of comprehension. As a matter of fact, the improvement of normotypical

readers in comprehension is lower, and less significant. This can easily be explained, considering that they are more efficient and start with higher levels of comprehension, that cannot be significantly improved. On the contrary, readers with SpLDs, apart from being slower at reading, initially have more comprehension difficulties, and therefore they can take more advantage of the strategies presented during the course.

The success of the course apparently stems from a combination of factors. As emphasized in its description (section 3), SuperReading comprises different approaches and trains different abilities, which are all crucial for reading, especially in adulthood. Adult competent readers are able to go beyond mere decoding: they exploit metacognitive strategies to evaluate their competences and manage both objective and subjective difficulties posed by text comprehension in relation to different tasks. Normotypical readers more easily develop these abilities spontaneously, although they obviously benefit from explicit teaching and training. Dyslexic readers, on the contrary, have specific difficulties deriving not only from their poorer decoding performances but also from their frequent metacognitive difficulties. Therefore, a multifaceted method – which takes into consideration both metacognitive and emotional aspects, and trains at the same time both memory and repetition strategies – is especially successful with this population.

The distinguishing feature of the course is, however, the eye-hopping exercise, which trains a global approach to reading and, according to the developer and first coach of SuperReading, fosters the ability to catch more words at a single glance, thus enormously improving reading speed without compromising comprehension. To test the relevance of the eye-hopping practice, we began a pilot project in cooperation with Martina Pucci, a student at Università Ca' Foscari in Venice. A small group of students (18 normotypical readers) practised eye-hopping daily for six weeks, in a controlled context. The subjects were informed of the aim of the project but were not given any further instruction, and they were administered weekly the six SuperReading reading tests. The results show a statistically significant improvement in all parameters, with more modest effect size for the measures of comprehension. In other words, they are similar to those obtained for the SuperReading population. We have compared them with those of the normotypical SuperReading group, using the Mann–Whitney U test. While, in absolute terms, the course participants perform better in all parameters (time, comprehension, and reading effectiveness), there is a statistically significant difference between the two groups in only three of the tests, namely 2nd Reading Time and 2nd and Combined Reading Effectiveness. This indicates that the eye-hopping practice itself is effective, giving results that are similar to those obtained with full attendance at the course. Only in reviewing speed (and in measures that include reviewing time) are the performances of course participants significantly better, as

metacognitive abilities and memorization strategies play a more relevant role at this stage of the comprehension process.

It is our intention to expand this part of the SuperReading project and replicate the research protocol on a larger group of young adults, which will also include dyslexic readers.

5 Further Evidence and Prospects

The excellent results obtained with the first SuperReading courses need to be analysed for further confirmation. On the one hand, the pilot project for testing the effectiveness of the eye-hopping practice is part of an effort aimed at evaluating the role of the different components of the course. On the other, we have decided to test the effects of SuperReading through an independent instrument of measure.

Thanks to the cooperation of Massimo Ciuffo (Messina), we have developed a protocol based on the administration of a battery of reading tests (BDA 16-30), which has been conceived for an adult population and includes a silent reading task (Ciuffo *et al.*, 2019; see also section 2 of this chapter). Adopting an A–B design (Cooper *et al.*, 2007), participants in SuperReading were tested one week before the beginning of the course and one week after its conclusion. So far, we have published data concerning a population of 30 subjects, compared with a control group of 22 subjects (Scagnelli *et al.*, 2018). The analysis has focused on the results obtained both in the oral and in the silent reading tasks included in the battery. The former consists of the reading aloud of a passage (suitable for age), while the latter is an innovative testing instrument (Ciuffo *et al.*, 2017). The subject must read silently a text containing simple instructions, and consequently perform simple gestures (tapping on the table, touching a colour, etc.); the examiner takes note of the intervals of time, thus monitoring the reading pace. With this instrument, it is possible to verify the actual comprehension of the text and measure silent reading speed.

We compared the pre-/post-course performances, carrying out a statistical analysis of the data (Wilcoxon signed-rank test). The test group improved significantly both in oral and silent reading ($z = -4.51$, $p < 0.0005$, effect size = 0.58; and $z = 4.78$, $p < 0.001$, effect size = 0.62, respectively). To evaluate the effect of possible interfering causes (recall), we compared the performance of the test group with that of controls, using the Mann–Whitney U test. The results show that the difference between the two groups is statistically significant both for oral ($U = 118.5$, $z = -3.92$, $p < 0.001$, effect size = 0.30) and for silent reading ($U = 74$, $z = -4.74$, $p < 0.0005$, effect size = 0.44). Median values of oral reading time decrease by 8.5 seconds for the test group and only 0.5 seconds for controls. The corresponding measures for silent reading are 30 seconds and 17.5 seconds, respectively.

These results indicate that attendance of the course has important consequences for the reading abilities of participants. When compared

with controls, SuperReaders perform significantly better not only in a silent reading task but also in oral reading. This is an interesting indication, considering that the course does not include any form of phonological training nor reading aloud practice. On the contrary, the emphasis is strictly on the ‘reading in the mind’ process, and participants are encouraged to try to ‘switch off’ sub-vocalization. These surprising results deserve further investigation. We have already tested 100 course participants and 31 controls and started the data processing. In our opinion, it is also worth investigating the performance of dyslexic and normotypical readers separately, and for this reason we intend to replicate the protocol on a wider balanced population.

To summarize, the research project hinging on SuperReading aims to evaluate the effectiveness of a course designed to improve reading strategies in late adolescence and adulthood. The combination of different components (metacognitive abilities, motivation and self-efficacy, memory, and visual training) turns out to be successful. The course makes reading faster and increases comprehension at the same time. Reflecting on the reading process, participants develop the ability to react to the reading task, adapting their effort to the context and to the aims of reading. The eye-hopping practice, on the other hand, enhances their visual-perceptual capacity, fostering an approach to reading that goes beyond mere letter or word decoding.

The effects of the course extend from the normotypical to the dyslexic population, thus making it an inclusive tool, which can be used successfully in educational contexts, especially at the beginning of university programmes. It is our intention to gather further evidence of its effectiveness through the independent measurement of reading performances and, at the same time, continue to investigate the role of its crucial components separately. However, the data analysed so far suggest that significant improvements can be reasonably expected for all participants, which makes the course an interesting form of intervention to support reading beyond early adolescence. As a matter of fact, while a wide choice of training and remedial work is offered to schoolchildren, little attention is given to the specific problems of adulthood. The special needs of this age bracket derive both from the individual evolution of the reading practice and from contextual constraints. Therefore, a special approach is needed that offers young adults a toolkit that can help them succeed during their study years and brings about a level of achievement that will benefit them throughout their life.

Notes

- (1) <https://www.oecd.org/pisa/data/PISA-2018-draft-frameworks.pdf> (last accessed 31.10.2018).
- (2) The analysis of data was carried out by Francesco Della Beffa.
- (3) We referred to Cohen (1988), thus considering a small effect if <0.3 , medium if between 0.3 and 0.5, large if >0.5 .

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