Investigating the immediate and delayed effects of multiple-reading strategy instruction in primary EFL classrooms

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A R T I C L E   I N F O

A B S T R A C T

The present study aimed at investigating the immediate and delayed effects of a multiple-strategy instruction on English as a Foreign Language (EFL) learners' reading performance. The sample of the study consisted of 99, 11—12 year old, Greek-speaking EFL learners. The study, quasi experimental in design, involved an experimental group that received a three-month strategy instruction set within the Direct Explanation framework and a control group that received no such training but participated in the pretest, immediate and delayed posttest measurements. The results of the study indicated that the students in the experimental group improved their reading performance both in the immediate and delayed posttest measurements as compared to the students in the control group. Empirical evidence is provided regarding the effectiveness of explicit multiple-strategy training in EFL contexts with young, school-aged students. Educational implications and recommendations for further research are also discussed.

1. Introduction

Since the late 1970s, research has shown that skilled readers are active readers, have clear goals in mind, are highly aware of a number of strategies and use them to monitor and facilitate comprehension (e.g., N. J. Anderson, 1991; Erler & Finkbeiner, 2007; Sheorey & Mokhtari, 2001; Zhang & Wu, 2009). A considerable amount of second language (L2)[1] reading research, drawing on the studies examining the strategies deployed by skilled and less-skilled readers while interacting with English as a Foreign Language (EFL) written texts, has also investigated the impact of conducting multiple-strategy instruction on students' performance in an attempt to help less proficient L2 readers improve comprehension (Grabe, 2009; Koda, 2005).

Although there is some empirical evidence for the effectiveness of multiple-strategy instruction on EFL readers' performance or strategy use, there is a dearth of studies exploring the maintenance of comprehension gains after intervention withdrawal; the assumption that the maintenance of comprehension gains should constitute one of the main aims of strategy instruction programmes is supported by researchers (Cohen, 1998; Oxford, 2011; Plonsky, 2011). Additionally, L2 researchers (e.g., Chamot, 2005; Macaro & Erler, 2008) accentuated the need for further intervention studies involving younger, school-

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[1] The researchers are aware of the difference between a FL and L2 (Oxford, 2003). In this paper, however, they adopt the terms L2 and EFL, as they are widely used in the literature.

aged students, as most studies involved older, university or college students. Meanwhile, there is a lack of focus on the reading comprehension skill in classrooms, which is often regarded as a tool for exposing learners to vocabulary (Dobson, 1998; Grenfell, 1992; Janzen, 2007; Manoli & Papadopoulou, 2013).

Regarding the Greek socio-educational context, which the present study focuses on, EFL teachers were found to use rather traditional and teacher-centered reading instruction patterns mainly focusing on readers' passive text interaction and word mastery (Manoli & Papadopoulou, 2013). Moreover, no study has ever focused on implementing multiple-reading strategy instruction, while a few studies have investigated the effectiveness of conducting individual reading strategy instruction providing positive results (Hatzitheodorou, 2005; Pappa, Zafiropoulou, & Metallidou, 2003; Rizouli, 2013). For these reasons, the present study investigated the immediate and delayed effects of implementing multiple-strategy training within the context of EFL primary classrooms in Greece.

2. Literature review

2.1. Language learning strategies, reading strategies and reading comprehension

Language learning strategies are considered complex cognitive procedures the learner consciously uses during learning to select, acquire, organize or integrate new knowledge (O'Malley & Chamot, 1990). They support that, since learning strategies are viewed as complex procedures that learners apply to tasks to facilitate learning, such as vocabulary learning or language comprehension and production, they can be taught through the cognitive, associative and autonomous stages of learning; like other procedural skills, learning strategies are intentionally used in the early stages of learning, the cognitive and associative stages, until they are applied automatically in the autonomous stage.

Based on the above cognitive framework, Chamot and O'Malley (1987, 1996) developed the Cognitive Academic Language Learning Approach (CALLA), an instructional model designed to foster students' achievement in English as a Second Language (ESL) by focusing on explicit language learning strategy instruction. It includes a five-phase instructional sequence: a) preparation, b) presentation, c) practice, d) evaluation, and e) expansion, where strategies in the form of declarative knowledge are explicitly taught, practised and evaluated to help turn this knowledge into procedural gradually. Concurrently, though there are a number of strategy classifications throughout the literature (e.g., Cohen, 1998; Oxford, 2011), O'Malley and Chamot (1990) classified strategies into: (i) cognitive, such as organization, inferencing, summarizing, and elaboration, which contribute to L2 processing input; (ii) metacognitive, such as monitoring or evaluating comprehension, which help learners organize, monitor, and assess their own learning; and (iii) social/affective strategies, such as working with peers, questioning for clarification or self-talking, which facilitate interaction with others and control of feelings in L2 learning.

Reading comprehension, particularly, is viewed as a complex multifaceted cognitive skill drawing on many knowledge sources and strategies ranging from decoding to integrating of text ideas with the reader's prior knowledge, which intricately interact to yield comprehension (Grabe, 2009; Koda, 2005). Reading strategies are considered to be "intentional actions chosen to facilitate reading at any level of processing" (Erler & Finkbeiner, 2007, p. 189).

L2 reading research indicated that proficient readers use more and different types of strategies depending on the nature of the task as compared to their poor counterparts who use either fewer strategies or strategies that are inappropriate for the task (N. J. Anderson, 1991; Geladari, Griva, & Mastrothanasis, 2010; Malcolm, 2009; Sheorey & Mokhtari, 2001; Zhang & Wu, 2009). This line of research has led to investigating the impact of strategy instruction on students' performance in an attempt to help less proficient L2 readers improve comprehension (Koda, 2005). More recent trends in L2 reading research focused on conducting multiple-strategy instruction rather than individual strategy instruction highlighting that strategic readers draw on a repertoire of strategies, perceive the nature of the problem, choose the appropriate strategies and orchestrate their use with other strategies according to the purpose of reading (Grabe, 2009).

2.2. Strategic reading instruction

Successful strategy use cannot be achieved simply as a result of reading but should be integrated in the reading instruction process through explicit teaching of the reasoning associated with strategy use (Dewitz, Jones, & Leahy, 2009). This requires long periods of time and extensive practice in various reading situations (Carrell, 1998). Explicit strategy teaching is intentional and involves a cycle of direct strategy explanation, modeling, guided and independent practice to raise students' metacognitive awareness of the reading process and help them become efficient and strategic readers (Duffy, 2002; Grabe, 2009; Oxford, 2011). Metacognitive awareness during the reading process refers to the readers' metacognitive knowledge of the nature and purpose of reading and the self-control mechanisms they use to control comprehension (Sheorey & Mokhtari, 2001). Metacognitive awareness of reading strategies comprises declarative knowledge (knowledge of what strategies are effective to enhance comprehension), procedural knowledge (knowledge of how strategies can be applied), and conditional knowledge (knowledge of why, when, and where each strategy should be applied to achieve the particular reading goal).

Good readers are metacognitively aware and strategic readers before, during and after the reading process (Pressley & Gaskins, 2006). Before reading they preview the text and form a plan about what to expect and how to read it. During the reading process, they monitor the process and adjust the reading speed by reading quickly or slowing and re-reading the difficult and/or important parts. They deliberately apply cognitive strategies, such as note taking or looking for the main ideas.

Finally, after reading they can evaluate the reading process by thinking about it, asking and answering questions, and re-reading sections that are not understood completely (Pressley & Gaskins, 2006).

In order to help learners consolidate strategy use and enhance metacognitive awareness of the reading process, reading instruction should include direct verbal explanation on behalf of the teachers aiming at communicating particular information about strategies, including declarative, procedural and conditional knowledge (Paris, Wasik, & Turner, 1991). Grabe (2009) highlighted that "choosing which strategies to use, how to use certain combinations of strategies, and when to use them or try other strategies is all part of a good reader's metacognitive awareness" (p. 53). There is agreement among researchers that children's declarative knowledge of strategies is not sufficient for high performance, without both procedural and conditional knowledge of strategy use (Weinstein, Husman, & Dierking, 2000).

2.3. Multiple-strategy instruction research

Drawing on first language (L1) reading research (e.g., Spörer, Brunstein, & Kieschke, 2009), a pool of EFL studies have highlighted the effectiveness of conducting multiple-strategy training that develops within students' metacognitive awareness. Most studies have dealt with adults or university students in a range of cultural and learning settings. For example, Salataci and Akyel (2002) investigated the effects of a four-week multiple-strategy instruction showing that the Turkish-speaking university EFL students increased strategy use in both languages after strategy instruction, which, in turn, improved EFL students' reading performance. Dreyer and Nel (2003) conducted a 13-week strategy training within a technology-enhanced learning environment involving 131 South African EFL college students. The results indicated that all students in the experimental group received significantly higher marks on three comprehension measures as compared to the students in the control group. Zhang (2008) when applying a two-month strategy instruction to 99 Chinese EFL university students revealed the effectiveness of the training on their reading performance. More recently, Aghaie and Zhang (2012) indicated the positive impact of a four-month strategy instruction on 80 Iranian high school EFL students' reading performance and strategy transfer. Akkakoson (2013) showed positive effects of a multiple-strategy instruction on enhancing 164 Thai EFL university students' reading achievement and strategy use. Dabarera, Renandya, and Zhang (2014) revealed that the multiple-strategy training improved 67 EFL secondary school students' reading achievement and metacognitive awareness.

3. Method

The present study, quasi-experimental in design, consisted of experimental and control groups and involved pretest, immediate and delayed posttest measurements administered in both groups. In particular, it included an experimental group, which, in addition to the regular EFL teachers' instruction, underwent a 12-week multiple-strategy training conducted by the first researcher, and a control group used as a comparison group that received no extra strategy sessions but attended the normal flow of the EFL teacher instruction. To examine the immediate and delayed effects of the teaching intervention on students' reading performance, quantitative data were collected from the experimental and control groups in three different measurements, before and after the training as well as three months after the intervention withdrawal.

In order to address the gaps identified in the literature review the study aimed at answering the following research questions:

➢ Can a multiple-strategy instruction involving metacognitive awareness raising improve EFL primary school students' reading performance?
➢ Can the comprehension gains from explicit multiple-strategy instruction be maintained in a subsequent non-treatment measurement?

3.1. The reading strategies included in the study

When choosing strategies for a targeted instruction, it is important to allow for the students' needs and traits, text demands, goals of the strategic reading instruction as well as the range of the strategic reading abilities reading should evoke (Janzen & Stoller, 1998). The reading strategies emphasized in the present study were the following ones: predicting text content and using semantic mapping before text reading, getting the gist (skimming), identifying specific information (scanning), and guessing the meaning of unfamiliar words from context.

The selection of these strategies concurred with the theoretical background of L2 learning that viewed reading comprehension as an active process during which the learner adopted a strategic approach to infer meaning, relate the new information to prior knowledge and, overall, construct text meaning (J. R. Anderson, 1985; O'Malley & Chamot, 1990). In the present study, reading is conceptualized as a strategic process during which the reader is required to predict text content, select key information, perceive text difficulties, and decide upon the most appropriate actions to overcome these difficulties depending on the purpose for text reading (Grabe, 2009). The specific strategies were also chosen in order to help the learners preview the text, activate their prior knowledge, form a plan about what to expect before reading, monitor the process and adjust the reading speed by reading quickly or slowing and re-reading the difficult and/or important parts during the reading

process (Pressley & Gaskins, 2006). Simultaneously, this set of strategies is consistent with the learners' needs, as the English Curriculum (2003) intended for the level at which the study was conducted explicitly refers to the objectives of getting the main idea of texts (skimming), locating specific information (scanning), and inferring the meaning of unfamiliar words from context. Moreover, the choice of the specific strategies concurs with the framework highlighted in the Common European Framework of Reference (CEFR, 2001), which aims to enhance foreign language students' ability to comprehend basic text information by approaching the text actively, quickly, and efficiently without interrupting the whole reading process.

3.2. The participants and educational context of the study

The initial sample consisted of 135 Greek-speaking EFL learners registered in the sixth grade of primary state schools in a provincial city of central Greece, Trikala. Only the sixth graders of four state primary schools — two classes per school one serving as the experimental and the other as the control group — that were attending EFL classes, A1-A2 level according to the levels of the CEFR (2001), participated in the study. The participants were approximately 11–12 years old. This particular age was chosen, as it was assumed that the students would already have had a cumulative EFL learning experience of at least four years at the time when the data were collected; it was also expected that students at this age would be more receptive to the strategy acquisition in relation to younger or older students, as many strategies develop between the ages of 7 and 13, though their spontaneous use materializes around the age of 10 or above (Kolić-Vehovec, Bajšanski, & Rončević-Zubković, 2010; Paris et al., 1991).

Nonetheless, not all of the 135 subjects completed all the reading comprehension measures; 36 subjects, who did not take all the tests because of absenteeism, were excluded from the statistical analyses. Thus, the final number of the subjects that participated in all comprehension measures was 99 students; 50 students (50.50%), 22 (44%) male and 28 (56%) female, belonged to the experimental group, while 49 students (49.50%), 24 (48.98%) male and 25 (51.02%) female, belonged to the control group. The choice of the experimental and control groups within each school was determined by convenience sample rather than random student assignment: the two intact classrooms of every school were used as experimental and control groups to avoid disruption of the normal flow of classes. It should be mentioned that the experimental and control groups showed no statistically significant difference in their reading proficiency on the pretest measurement. Additionally, neither the experimental nor the control group were familiar with the use of reading strategies, as both groups received rather traditional and teacher-centered reading instruction (Manoli & Papadopoulou, 2013).

Regarding the current educational context in Greece, EFL is taught as a compulsory subject from the third to the sixth grade of state primary schools — Greek primary education consists of six grades — three hours per week; each teaching hour lasts approximately 40 min. A trait of the Greek educational system is the emphasis put on EFL learning, which is, simultaneously, taught at state schools and private foreign language institutes; private tuition is another means of EFL teaching, particularly, for those who can afford it (Manoli, 2013). This happens because EFL teaching in the state sector is not directly linked to exam preparation (Tsagari & Sifakis, 2014).

3.3. Research instruments and procedure

Three research instruments were used for the purpose of the study: one standardized EFL reading ability test and two researcher-designed reading tests.

3.3.1. The standardized reading ability test

The reading section of a National foreign language exam system, which is a standardized, pen-and paper examination, was used to assess sixth graders' reading performance before and after the teaching intervention. It included cloze texts and short texts that were accompanied by 40 multiple-choice and 10 fill-in-the-gap questions. According to the instructions provided by the examination board, the scoring procedure of this section relies on a 50-point scale, 1 point per correct item. Though the time limit for the completion of the reading section was originally set to 1 h and 5 min, it was reduced and actually lasted for 40 min after the pilot study. Simultaneously, this measure was used to check the validity of the researcher-designed measures.

3.3.2. The researcher-designed reading tests

The tests were designed as activities that would assess the students' use of the reading strategies the teaching intervention focused on (see Appendix). Namely, the first activity was designed to assess student ability to spot specific information in the text (scanning), known as expeditious reading (Grabe, 2009; Koda, 2005); the next two activities refer to the strategies of activating student prior knowledge to help students assimilate the information of the new texts (Psaltou-Joycey, 2010) and predicting text content based on titles-subtitles, which provides an incentive for learners to be involved in text reading to confirm predictions (Ajideh, 2006); the third activity was designed to measure student ability to get the gist of the text through quick reading (skimming), because faster reading improves readers' level of concentration and facilitates text meaning (Grabe, 2009; Koda, 2005); the fourth activity refers to the strategy of guessing the meaning of unfamiliar words based on context, which helps readers be engaged in text reading without relying on teachers, glossaries, and dictionaries (Hamada, 2009; Hu & Nassagi, 2014).

Most of the texts were beyond the students' reading proficiency, because strategy use is problem-oriented, required when students face comprehension difficulties (Urquhart & Weir, 1998). The readability of the EFL reading materials used in the

researcher-designed reading measures was established using the Flesch Grade Level Readability Formula, a common measure of basic readability, which indicates how easy or difficult a text is (http://www.readabilityformulas.com/flesch-grade-level-readability-formula.php). More specifically, the texts of the first researcher-designed test entitled "TV Schedule" and "Ten Reasons to start Running" measured 78 (reading level: fairly easy, readers' age: 8—9, grade level: fourth-fifth) and 65 (reading level: average, readers' age: 12—14, grade level: seventh-eighth) respectively; the texts of the second researcher-designed test entitled "TV can be Good for Kids" and "London Museums" measured 62 (reading level: average, readers' age: 13—15, grade level: eighth-ninth) and 51 (reading level: fairly difficult, readers' age: 14—15, grade level: ninth-tenth) respectively. According to these readability scores, all the texts — except for the one entitled "TV Schedule" — can be regarded as fairly challenging when compared to the students' reading proficiency and grade.

The researcher-designed tests were also scored on a 50-point scale in accordance with the scale used in the reading section of the standardized test. Moreover, both tests were designed to be completed within a teaching hour, that is, no more than 40 min, to avoid disruptions of the normal flow of classes. The time limit of the tasks designed to measure the use of skimming and scanning was rather tight, which may have caused additional difficulties, especially to poor readers; however, since both skimming and scanning are selective types of reading conducted at a high speed (Carver, 1992; Grabe, 2009), their application in this way was one of the aims of the teaching intervention.

One week before the intervention the standardized reading ability test and the first researcher-designed test were administered to the experimental and control groups (pretest measurement); one week after the intervention the same comprehension measures as the ones used in the pretest measurement were administered to both groups to explore the immediate effect of the treatment on students' reading performance (posttest measurement). Three months after the intervention withdrawal the same researcher-designed reading test as the one used as a pretest and posttest measure as well as the second — similar to the first one — were given to both groups to: (a) investigate the delayed effects of the teaching intervention on students' reading performance, (b) cross-check the results of the first comprehension measure, (c) eliminate any effects of students' familiarization with the first one, and (d) check the transfer of reading strategies to new but similar reading situations (follow-up measurement). All the research instruments were given to the experimental and control groups by the first researcher so that she could control the testing procedure, that is, the provision of the appropriate guidelines, the preservation of the time limit, and the avoidance of possible interference on behalf of their EFL teachers. Simultaneously, all the research instruments were used in a pilot study, which consisted of 23 sixth graders attending EFL lessons at a state primary school in Trikala, to establish difficulties or ambiguities with the test items and the exact time students would need to complete them (Manoli, 2013).

All reading tests were independently scored by two judges, the first researcher and another colleague; the inter-rater agreement was found to be quite satisfactory (92%). Acceptable responses were determined at the outset of the scoring procedure. Possible discrepancies were resolved through meetings and discussions between the two scorers. Concurrently, a combination of multiple-choice and short answer questions was sought, which demand no judgment on behalf of the scorer and render the whole scoring process more objective enhancing reliability, as one of the main concerns was to write items that would permit reliable scoring (Hughes, 2003). Regarding the internal consistency, Cronbach's alphas were satisfactory — above the .7 acceptance level ($\alpha = .86$ for the first researcher-designed test and $\alpha = .84$ for the second one). In order to ensure content validity of the test, a specification of the skills it was meant to cover and a subsequent comparison of this specification with the designed activities in the test occurred (Hughes, 2003). Regarding the criterion-related validity, significant Pearson correlations were found between the results of the reading section of the standardized test and the first ($r = .54$, $p < .01$) and second researcher-designed tests ($r = .61$, $p < .01$) respectively.

3.4. Strategy training in the experimental group

The strategy training, which was conducted by the first researcher in the experimental group, lasted for approximately three months and included 12 instructional sessions, one per week. The instructional approach adopted in this study was Direct Explanation; it consisted of a cycle of strategy explanation, modeling and extensive practice aiming at raising students' metacognitive awareness of the reading process and familiarizing them with the strategy use (Duke & Pearson, 2002; Pearson & Gallagher, 1983).

In detail, during the first two instructional sessions the researcher was involved in direct strategy explanation and modeling where she initiated a discussion about what reading strategies were, why their learning was significant, and when they could be used in order to raise students' awareness of strategy use. Then, she presented the specific set of reading strategies to the whole class to communicate not only declarative knowledge but also procedural and conditional knowledge (Paris et al., 1991). After direct explanation of each strategy, the researcher modeled, applied and coordinated all the strategies in one text by "thinking aloud", i.e., commenting on the cognitive processes taking place during each strategy application. This would help turn the covert comprehension processes into overt ones (Dewitz et al., 2009; Duke & Pearson, 2002). Relevant notes and the text that was used for the strategy modeling were distributed to the students.

On subsequent days, the students were given chances to put the new strategies into guided practice, during which the researcher and the students worked together. In this context, the students were asked to work on various texts and activities applying a combination of strategies to each text. The researcher's assistance was gradually removed leading to more independent practice (Pearson & Dole, 1987; Pearson & Gallagher, 1983) to help students "find their own pathways to success" (Cohen, 1998, p. 67). The participants were constantly encouraged to reflect upon their own strategy use; before and after

each activity completion, they were asked to talk about the strategy they would use and the reason why they would choose the particular strategy to enhance their ability to monitor the reading comprehension process. Answers were checked in class and corrective feedback was provided, where necessary. In the last instructional session, the researcher provided learners with the opportunity to co-ordinate all the strategies they had been taught in a new text without interfering in the whole learning process. This was intended to help students transfer the taught strategies to new but similar reading situations (J. R. Anderson, 1985; Cohen, 1998; Pearson & Dole, 1987).

3.4.1. The control group

Since the focus of the study was to examine the immediate and delayed effects of the strategy training on students' reading improvement, the researcher did not deliberately teach the control group how to use the reading strategies, which were systematically taught in the experimental group. In this way, the control group received only EFL teachers' instructional patterns. More specifically, EFL teachers' reading instruction patterns consisted of a high incidence of reading a text aloud through mainly the Round Robin Reading (RRR) technique, text translation, vocabulary instruction, oral comprehension questions and activity completion following text reading (Manoli & Papadopoulou, 2013), which can be regarded as rather traditional and teacher-centered (Kelly, 1995; Opitz & Rasinski, 2008). Furthermore, there was no evidence that these EFL teachers taught students to deploy the various comprehension strategies validated by research, while interacting with written texts, to help them construct text meaning and facilitate reading comprehension. Therefore, it can be alleged that the teaching intervention conducted in the experimental group diverged from the rather traditional way of approaching EFL reading comprehension in the Greek primary classes in that it aimed at familiarizing students with a set of reading strategies, providing them with opportunities to practise these strategies during text interaction and raising students' metacognitive awareness of the reading process.

3.5. Selected reading materials

The reading materials used in the teaching intervention were tentatively chosen to promote the practice of particular reading strategies. Concurrently, the researchers attempted to expose students to various texts, such as narrative, expository, argumentative, and descriptive (Koda, 2005). Most of them were mainly drawn from educational internet sites, as the researchers' aim was to use authentic texts to attract students' attention and activate their prior knowledge. These types of texts bring learners closer to the target language classroom, since they constitute genuine representations of the target language and the texts readers eventually have to deal with as participants in the L2 culture, thus, making learning more enjoyable and motivating (Little, Devitt, & Singleton, 1989; Nuttall, 1996). If learners feel familiar with the topic and content of the text, they feel motivated to deal with it and activate their prior knowledge through, for example, the strategy of predicting (Janzen & Stoller, 1998). Thus, the selected texts covered various topics ranging from pen pals, museum maps, mobile phones to Disneyland Park and horror stories allowing for students' interests and preferences, which were investigated through a questionnaire before the teaching intervention; according to Nuttall (1996), students' interests is the most important selection criterion.

Moreover, though students' reading proficiency was taken into consideration, most of the texts used in the treatment were of a higher reading ability level than students' actual level, because, as noted earlier, strategy use is particularly necessary when students face comprehension difficulties (Urquhart & Weir, 1998). Thus, texts that were fairly challenging but not overwhelmingly difficult were chosen for the teaching intervention (Janzen & Stoller, 1998). Concerning the activities accompanying the texts, a variety of multiple choice, matching, true/false/not given, and short-answer questions were specifically designed to practise the reading strategies taught in the intervention sessions.

4. Results

The study involved three sets of data: a) the pre-intervention data (pretest) b) the immediate post-intervention data (posttest) and c) the delayed post-intervention or follow-up data. For the statistical analyses of the data, the Statistical Package for Social Sciences (SPSS) version 20.0 was used. In accordance with the aims of the study, the statistical analyses of Repeated Measures of ANOVA, One-Way ANOVA, Scheffé Pairwise Comparisons, and Paired T-Test were computed. The level of significance was set at .05. To determine whether parametric analyses could be applied to the data, measures of Skewness and Kurtosis were applied to all the dependent variables. All the values of Skewness and Kurtosis were below 2 (more specifically, Skewness ranged from −.507 to −1.458 and Kurtosis from −.334 to 1.761), which are considered to be normally distributed (see Kline, 1998).

4.1. Difference in reading proficiency between experimental and control groups prior to the teaching intervention

Analyses of Variance (ANOVA) were computed to investigate whether the two groups (experimental and control) differed significantly in their reading ability level before the teaching intervention, which would help us answer the research questions; in case the two groups had similar levels of reading proficiency before the teaching intervention, future reading improvement could be attributed to the teaching intervention. Regarding the first researcher-designed test and the standardized reading ability test, no statistically significant difference in the reading proficiency was found between the

experimental and the control groups before the training, $F(1, 98) = 1.22$, $p > .05$, and $F(1, 98) = .83$, $p > .05$ respectively. The respective mean scores and standard deviations for the experimental group were: $M = 19.67$, $SD = 12.20$ in the first researcher-designed test and $M = 37.98$, $SD = 7.74$ in the standardized reading ability test, while for the control group were $M = 17.12$, $SD = 10.72$ in the first researcher-designed test and $M = 36.41$, $SD = 9.33$ in the standardized reading ability test (see also Table 1). Therefore, the results showed that the two groups had similar levels of reading proficiency before the teaching intervention.

4.2. Immediate and delayed effects of the teaching intervention on students' reading performance on the standardized reading ability test

To examine the immediate effects of the intervention on EFL students' reading performance on the standardized reading ability test, a Repeated Measures ANOVA was conducted with the scores of the standardized reading ability test in the two measurement times (before and after the intervention) as within subject variable and the group (experimental vs control) as between subject variable. The results showed that the main effect of time was statistically significant, $F(1, 97) = 27.95$, $p < .001$, $\eta^2 = .22$, as well as the interaction between time and group factors, $F(1, 97) = 5.89$, $p < .05$, $\eta^2 = .06$. Further univariate analyses of variance indicated that the difference between the two groups was statistically significant only after the intervention in favor of the experimental group, $F(1, 98) = 6.31$, $p < .05$, $\eta^2 = .06$, (standardized reading test-posttest measurement). The respective mean scores were: $M = 37.98$ and $M = 42.44$ for the experimental group before and after the intervention respectively and $M = 36.41$ and $M = 38.06$ for the control group before and after the intervention (see also Table 1). Simultaneously, the application of Paired T-Test demonstrated that only the difference in comprehension scores for the experimental group was statistically significant between the pretest and posttest measurement, $t(49) = -7.12$, $p < .001$.

4.3. Immediate and delayed effects of the teaching intervention on students' reading performance on the researcher-designed reading tests

At a next step, a Repeated Measures ANOVA design was performed using the group (experimental-control) as the between subjects independent variable, the time of measurement (pretest, posttest, and follow-up) as a within subjects variable, and the scores of all reading comprehension tests in the three different measurements as the dependent variables. Regarding the first researcher-designed reading test, the results indicated that the main effects of group, $F(1, 97) = 24.08$, $p < .001$, $\eta^2 = .20$, and time, $F(2, 194) = 130.43$, $p < .001$, $\eta^2 = .57$, were statistically significant, as well as the interaction between time − group factors, $F(2, 194) = 24.60$, $p < .001$, $\eta^2 = .20$. Further Univariate Analysis of Variance with group as the independent variable has showed that the difference in the first researcher-designed test between the two groups was statistically significant only after the intervention in favor of the experimental group, $F(1, 98) = 1.22$, $p > .05$ $\eta^2 = .01$ (pretest measurement), $F(1, 98) = 58.66$, $p < .001$, $\eta^2 = .38$ (posttest measurement), and, $F(1, 98) = 18.30$, $p < .001$, $\eta^2 = .16$ (follow-up measurement). The respective mean scores for the experimental group were: $M = 19.67$ before the intervention, $M = 39.73$ after the intervention and $M = 36.57$ in the follow-up measurement. The respective means for the control group were: $M = 17.12$ before the intervention, $M = 23.71$ after the intervention and $M = 27.27$ in the follow-up measurement (see also Table 1). Furthermore, the application of Paired T-Test showed that the difference in comprehension scores in the experimental group was significant between the pretest and the posttest measurement, $t(49) = -12.67$, $p < .001$, between the pretest and the follow-up measurement, $t(49) = -11.55$, $p < .001$, and between the posttest and the follow-up measurement, $t(49) = 3.68$, $p < .001$.

Even though there was a loss from the posttest to the follow-up measurement, the difference in performance between the pretest and the follow-up measurement was still statistically significant in favor of the follow-up measurement. The above results confirmed both the immediate effect of the intervention on students' reading performance after the intervention (posttest measurement) and the delayed effect in a subsequent non-treatment measurement (follow-up measurement).

Concurrently, to further probe into the maintenance effects of the teaching intervention on students' EFL reading performance, One-Way ANOVA was conducted using the group (experimental-control) as the independent variable and the scores of the second researcher-designed reading test given only in the follow-up measurement as the dependent variable.

Table 1
Means and SD of the performance scores of the experimental and control groups in the three different measurements.

Group		Pretest		Posttest		Follow-up	
		SRAT1	RTA1	SRAT2	RTA2	RTA3	RTB3
Experimental (n = 50)	Mean	37.98	19.67	42.44	39.73	36.57	31.55
	SD	7.74	12.20	7.47	8.86	9.77	7.42
Control (n = 49)	Mean	36.41	17.12	38.06	23.71	27.27	20.34
	SD	9.33	10.72	9.74	11.77	11.77	8.67

Note. SRAT1 = the score in the Standardized Reading Ability Test in the pretest measurement, SRAT2 = the score in the Standardized Reading Ability Test in the posttest measurement, while RTA1 = the score in the first Researcher-designed Reading Test in the pretest measurement, RTA2 = the score in the first Researcher-designed Reading Text in the posttest measurement, RTA3 = the score in the first Researcher-designed Reading Text in the follow-up measurement, and RTB3 = the score in the second Researcher-designed Reading Text in the follow-up measurement.

The results indicated that the main effect of group was significant, $F(1, 98) = 47.88$, $p < .001$, $\eta^2 = .33$. Namely, the difference between the two groups in the second researcher-designed test was also statistically significant in favor of the experimental group, thus, verifying the delayed effects of the strategy instruction on students' reading performance in the follow-up measurement ($M = 31.55$ for the experimental group and $M = 20.34$ for the control group in the follow-up measurement, see also Table 1). The above finding provides additional support for the maintenance of comprehension gains after treatment withdrawal.

Overall, the results of the study revealed that, though the two groups were at the same reading ability level before the teaching intervention (pretest measurement), the experimental group outperformed the control on all EFL reading comprehension measures in the immediate and delayed posttest measurements.

5. Discussion

The aim of the present study was to examine the impact of a multiple-strategy instruction involving metacognitive awareness raising on Greek primary EFL school students' reading performance in an immediate and delayed posttest measurement. It was assumed that the experimental group would improve reading performance both in an immediate and delayed posttest measurement as compared to the control group that received no such training. The research data confirmed the above hypotheses.

5.1. Immediate effects of the strategy training on students' reading performance

Although the experimental and control groups started at the same reading ability level according to their performance on the standardized reading ability test and the researcher-designed reading test before the teaching intervention, the experimental group outperformed the control group on both comprehension measures after almost a three-month strategy instruction. Of course, it can be claimed that the duration of the three-month treatment is rather long and, thus, some factors other than the strategy instruction, such as the participants' self-study and home education after class, the curriculum of other subjects at school or the EFL teaching occurring in the private sector, which is exam-oriented, may have influenced the students' reading performance. However, the fact that both groups shared the same learning environment (e.g., same EFL teacher and school) and were randomly distributed to experimental and control classes minimized the possibility that out-of-class learning might have influenced the score. Though the control group improved reading performance in the posttest, which, in fact, was expected due to the passage of time, this improvement was not statistically significant. This shows that the significant comprehension gains of the experimental group in the posttest measurement can most likely be attributed to the strategy instruction.

This finding is particularly important, as it accentuates and verifies the contribution of strategy use and instruction to the cognitive enterprise of reading comprehension, in which readers have particular goals to attain, each of which requires a distinct mode of text-information processing (N. J. Anderson, 1991; Erler & Finkbeiner, 2007; Grabe, 2009). The specific finding concurs with previous EFL studies, which also indicated positive effects of applying multiple-strategy instruction mainly to university students (Akkakoson, 2013; Dreyer & Nel, 2003; Salataci & Akyel, 2002; Zhang, 2008), high school students (Aghaie & Zhang, 2012) or secondary students (Dabarera et al., 2014).

In this way, it can be alleged that the study corroborated and extended the findings of previous EFL research to younger, school-aged students, which is very important, as rapid progress in foreign language learning occurs at around the age of 11 (Dobson, 1998). Moreover, students at this age are more receptive to the acquisition of strategies in relation to younger or older students, as many strategies develop between the ages of 7 and 13, though their spontaneous use materializes around the age of 10 or above (Kolić-Vehovec, Bajšanski, & RončevićZubković, 2010; Paris et al., 1991). Thus, strategy instruction and use from an early age could enhance learners' confidence and help them aim at higher levels of proficiency without facing great difficulties considering that positive emotions and attitudes play a crucial role in L2 learning (Oxford & Burry-Stock, 1995).

When combining the above results with research evidence showing that reading comprehension skills in classroom are often neglected and regarded as simply a tool for exposing learners to vocabulary (Dobson, 1998; Grenfell, 1992; Janzen, 2007; Manoli & Papadopoulou, 2013), the findings of the present study address the gap identified in the relevant literature and point to the importance of developing strategic readers from an early age. In fact, teaching young learners how to develop reading strategies is crucial, as reading in a L2 can place even greater demands allowing for dual language involvement, language deficiencies, and inappropriate use of strategies, which render reading less efficient (Koda, 2005).

5.2. Delayed effects of the strategy training on students' reading performance

The present research data provided strong support not only for the immediate effects of the teaching intervention but also for the maintenance of comprehension gains after treatment withdrawal. It was shown that the students who received metacognitive multiple-reading strategy instruction maintained treatment gains in a subsequent measurement and outperformed the control group on both comprehension measures. In particular, the high scores obtained by the experimental group in the second designed reading test administered in the delayed posttest measurement indicated that the students

were able to apply the specific strategies to new reading situations three months after the intervention withdrawal based on similarities between the tasks, which concur with Anderson's theory (1985).

It can be alleged that the students of the experimental group significantly improved their reading performance in relation to the control group, allowing for the differences in the reading practices that were used in these Greek primary EFL classes during text interaction (Manoli & Papadopoulou, 2013) and those emphasized during the strategy training sessions. Namely, the practices of reading the text aloud through mainly the RRR technique, text translation, vocabulary instruction and oral comprehension questions that were emphasized in the Greek EFL primary classes come in sharp contrast with the rationale developed during the strategy training. The former approach can be regarded as rather traditional and teacher-centered focusing on readers' passive text interaction and word mastering, as the extensive use of RRR technique is seen as an instance of ineffective and pedagogically obsolete oral reading practice (Kelly, 1995; Opitz & Rasinski, 2008); on the contrary, the latter approach emphasizes a strategic, active and selective type of reading according to the goals of reading. Thus, it would have been very difficult for these EFL learners that used to stick to word-for-word text translation to adopt a strategic and selective type of reading if they had not been taught strategies, such as guessing unknown words from context and searching for the gist or specific information by reading quickly and omitting large parts of the text, during the teaching intervention.

Given that the maintenance of comprehension gains after treatment withdrawal has not been investigated thoroughly in the EFL reading research, though the value of strategy instruction draws on whether its impact lasts over time (Cohen, 1998; Oxford, 2011; Plonsky, 2011), the delayed gains found in the subsequent non-treatment measurement contribute to this line of research. Concurrently, the findings of the study strengthen the theoretical belief that explicit multiple-strategy instruction involving metacognitive awareness raising could be a valuable instructional tool for the improvement of EFL reading comprehension (Carrell, 1998; Pressley & Gaskins, 2006).

5.3. Effectiveness of the instructional approach adopted in the study

The results of the study corroborated the effectiveness of the instructional choices adopted by the researchers that were consistent with the overall theoretical framework of L2 learning strategies. According to this framework, strategies are described as procedural knowledge performed consciously in the cognitive and associative stages of learning until they are automatized in the autonomous stage (J. R. Anderson, 1985; O'Malley & Chamot, 1990). In particular, the high scores obtained by the experimental group in the second researcher-designed test administered in the delayed measurement provided additional support for the effectiveness of the training. The success in such multiple-strategy instructions seems to be related to the combination of several strategies, the instructional approach adopted and the constant feedback on strategy use provided throughout the training and not to the features of the strategies themselves. In other words, when choosing strategies for targeted instruction, it is important to allow for students' needs and traits, the demands of the texts used, the goals of the strategic reading instruction as well as the range of the strategic reading abilities reading should evoke (Janzen & Stoller, 1998).

Simultaneously, the Direct Explanation approach involving strategy explanation, modeling, and extensive practice resulted in significant comprehension gains in an immediate and delayed measurement and confirmed the researchers' instructional choices. Furthermore, the emphasis on the three types of metacognitive knowledge (declarative, procedural, and conditional) proved to be really effective in helping students internalize strategy instruction and acquire metacognitive awareness of the reading process; these three types of metacognitive knowledge are viewed as necessary components of a strategic behavior, as declarative knowledge of strategies is not sufficient for high performance (Duke & Pearson, 2002; Paris et al., 1991; Weinstein et al., 2000). Moreover, the duration of the treatment, which lasted for three months including 12 instructional sessions, seemed to have been conducive to the positive results yielded. Drawing on the relevant literature, developing students' strategic reading behavior is a long-term educational process, which requires teachers' constant support, explanations, modeling, and feedback throughout a strategy training (Carrell, 1998; Grabe, 2009; Janzen & Stoller, 1998; Koda, 2005).

5.4. Limitations of the study and recommendations for future research

The present study has a couple of limitations that could be further considered in future research. In particular, the students' non-random division in the experimental and control groups could be a limitation. However, the students' non-random division in the experimental and control groups can be offset by: a) the fact that the experimental and control groups did not exhibit any statistically significant difference in reading proficiency before the teaching intervention and b) the fact that the participants of the study had already been divided in classes randomly according to the initial letter of their surname.

Another limitation of the study is the lack of qualitative data measuring the participants' metacognitive awareness and strategy use before and after the teaching intervention. Though qualitative data have their own value, we chose to focus on collecting quantitative data from three different measurements to show the effectiveness of strategy instruction on the participants' reading performance in an immediate and delayed posttest measurement. Despite the above limitations, the results of the study confirmed the immediate and, most importantly, the delayed effects of the multiple-strategy instruction in Greek-speaking primary EFL learners.

Drawing on the literature review and the limitations highlighted above, further research needs to be conducted on applying multiple-strategy instruction of long duration to young students to extend the findings of the present study (Chamot, 2005; Macaro & Erler, 2008). Moreover, future studies should include a combination of qualitative and quantitative data to triangulate student strategic behavior.

6. Implications and conclusions

The findings of the study support the effectiveness of explicit instruction in a set of reading strategies suggesting, thus, that a similar instructional approach and the same or a different set of strategies depending on student needs could be implemented in EFL classes (Janzen & Stoller, 1998). Simultaneously, the results suggest that Greek teachers of EFL classes need to be aware of the important role of reading strategy use and instruction, which can benefit students and teachers in a number of ways; teachers can assess how well students understand what they read, while students become actively involved in texts in an ongoing way, get to know how to monitor the reading comprehension process and take a strategic action when comprehension fails (Pappa et al., 2003). Indeed, a number of students cannot use reading strategies efficiently, lagging behind in their academic tasks. Therefore, teaching students *how* to approach EFL texts by developing a repertoire of strategies should constitute the main focus in the various instructional sessions; explicit multiple-strategy training involving strategy explanation, modeling, and practice seems to be a promising instructional approach and could be paving the way to the future. EFL educators, then, need to be informed of the contemporary research findings of comprehension practices through pre-service and in-service teacher education courses (Celani, 2006) with a special focus on strategy instruction to select the strategies and methods that suit them best and make the whole EFL learning process more interesting, strategic, and self-regulated.

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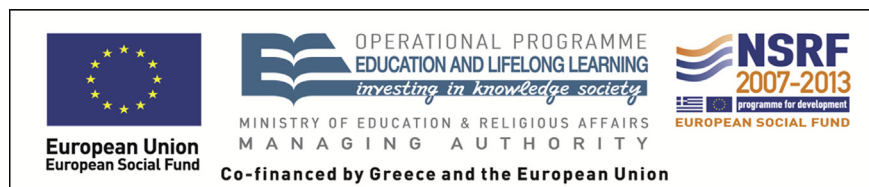
Appendix. Sample of the items of the first researcher-designed reading test

1) **Answer the following questions based on the text entitled:** *TV schedule* **(write only the title of the TV programme — one title next to each question):**
   1. You are thinking about traveling to the USA for vacations. Which show should you watch?
   2. You like Tom Cruise. Which film should you watch?
   3. You like modern art. Which documentary should you watch?
1) **Write the first five words-phrases that come to your mind when looking at the text title:** *10 Reasons to Start Running*:
2) **Looking both at the title of the text** *10 Reasons to Start Running* **and its subtitle** *Runners Experience Many Benefits* **can you guess the main idea discussed in it (circle only one answer)?**
   1) This text:
      a) describes ways of keeping fit and healthy
      b) talks about people who start running as a hobby
      c) explains the benefits that people can have if they start running
      d) informs us that running can help us lose weight
3) **Read the text quickly and answer the following questions: (circle only one answer to each question):**
   1) This text
      a) gives us information about a sport
      b) explains the benefits of running
      c) gives us information about losing weight

2) The main aim of this text is to inform us
   a) of the reasons why people start running
   b) of a hobby that people often start
   c) that running can help us lose weight
4) **Find only <u>one word</u> into the text with similar meaning to the following words**:
   a) energetic (2nd paragraph)
   b) loneliness (4th paragraph)

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