Metacognitive Reading Strategy Use and EAP Reading Performance in a Greek University Context.

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Abstract

The present study investigates the metacognitive awareness and frequency of use of reading strategies for academic material as reported by Greek students in an English for Academic Purposes (EAP) context. It also explores the relationship between reading strategy use, and reading comprehension performance. The 381 participants answered the *Survey of Reading Strategies*-SORS (Mokhtari & Sheorey, 2002), a measurement of metacognitive awareness and reading strategy use. Students' reading comprehension performance was measured with the TOEFL ITP test.

Results indicate moderate overall frequency of use. Problem solving strategies are used more frequently, followed by global and support strategies. Regarding the relationship between reading strategy use and reading comprehension performance, statistically significant differences indicate that support strategies decline as students' level of competence increases while problem-solving strategies are used more frequently by upper-intermediate level students in comparison to lower-intermediate ones.

Keywords: metacognitive reading strategies, reading performance, English for academic purposes.

Introduction

Reading is the most important skill in the academic context and especially in EFL contexts where readers are expected to comprehend information from various sources in order to synthesize it into their L1 texts. Likewise, in the professional context, the reading of technical manuals or reports is a primary task for professionals.

However, a systematic study on the reading strategies used by Greek university students has not been reported to this day. Thus, an investigation of Greek university students' metacognitive awareness of reading strategies is of special significance. The most common instrument used for this purpose in international studies is the Survey of Reading Strategies (SORS), a questionnaire designed to measure metacognitive awareness of reading strategies of adult or adolescent students in an ESL or EFL academic context. Moreover, the use of the TOEFL ITP test for measuring students' level of proficiency and the mapping of the scores to the CEFR levels would reflect in a more precise way the relation between strategy use and reading performance level. This is significant as in a number of studies using SORS no standardized measures of

reading comprehension were used and, consequently, no classification of students was made in terms of levels of reading ability.

L2 Reading Strategy Research

Specific reading models introduced from L1 reading and compatible with L2 reading research have captured the complexity of reading processes and the way readers arrive at comprehension (Grabe & Stoller, 2019). The role of reading strategies in these models is prominent, as they allow readers to adjust their reading processes in case of reading difficulties and comprehension breakdown (Perfetti & Adlof, 2012, the Reading Systems Framework) or to intervene actively and constructively at points where automatic processes have failed to establish text coherence (Yeari and Van den Broek, 2011, Landscape Model). The Interactive Compensatory Model (Stanovich, 2000), which applies to L2 reading specifically, describes strategies as compensatory mechanisms, allowing readers to compensate for deficiencies in other areas, e.g. L1 reading ability or L2 language knowledge. Strategies constitute a basic component of L2 reading in this model and the strongest predictor of L2 reading for higher proficiency readers (McNeil, 2012).

From a review of the role of reading strategies in the above models and of the common elements in definitions of reading strategies by EFL researchers (Chen & Chen, 2015; Jiang & Grabe, 2011), it can be concluded that reading strategies are problem or goal-oriented, used intentionally and in a controlled manner by the readers. The types of strategies or "activities" characteristic of "constructively responsive" or skilled reading, include both bottom-up and top-down strategies as well as the metacognitive processes of monitoring and evaluating (Pressley & Afflerbach, 1995).

Through early studies on L2 reading strategies, information was derived about the type, variety and frequency of strategy use and its relation to reading performance (Purpura, 1998). Learners with higher language performance (Green & Oxford, 1995) or reading performance (Anderson, 1991; Phakiti, 2003) were found to report higher levels of overall strategy use as well as more frequent use of specific strategy categories. Frequency of strategy use has been contested as a reliable indicator of effective strategy use in favor of strategy orchestration (Anderson, 1991; Macaro, 2006; Oxford et al., 2004; Pinninti, 2016).

In the early studies of "good" readers, the main strategies that consistently emerged as characteristic of skilled reading not only in advanced proficiency groups (Carrell, 1989), but also within groups of less proficient readers (Block, 1986) were *global* reading strategies or, meaning-making/main meaning-line (Hosenfeld, 1977), meaning-centered (Devine, 1988) or general comprehension strategies (Block, 1986). On the contrary, strategies of a more local level of processing, or, word-level (Hosenfeld, 1977), word-centered (Devine, 1988) or local type of strategies (Block, 1986) were used by less successful readers. Global strategies involve top-down processing and the activation of long-term memory. Examples of important global strategies are use of prior knowledge, use of context and overviewing, which allow

readers to plan their reading and to construct a text model and a situation model (Grabe, 2009).

Other studies undermined the notion of a distinct set of "good" strategies for successful comprehension of different strategies being used by successful and less successful readers. For example, through the important findings in the Sarig (1987) study, the researcher concluded that it was the unique combination of "moves" (each one including a number of different "actions" or strategies) that distinguished good and poor readers (p. 117). Similarly, Anderson (1991) reached the conclusion that skilled readers did not use a distinct set of "good" strategies, since both high and low-scoring readers shared a certain number of processing strategies. It was the procedural knowledge of strategies, as well as the evaluation and orchestration of strategy use (also in Anderson, 2005, p. 757) that were more important than the simple choice of task-appropriate strategies. Through these studies the dichotomy between good and poor readers was challenged.

Another category of reading strategies are those activated during the *comprehension monitoring* process. More specifically, the contribution of both bottom-up and top-down strategies to comprehension for higher L2 proficiency students was acknowledged (Upton, 1997) and the fact that successful readers engaged in more effective comprehension monitoring (Block, 1992; Jiménez, García & Pearson, 1996). Comprehension monitoring has been defined as a state of constant awareness of the comprehension process, which does not always lead to strategic action (Baker & Brown, 1984). However, in case it does, competent readers use a variety of strategies to restore comprehension (Baker & Brown, 1984; Grabe, 2009;). It has also been found that both more proficient readers (Block, 1992) as well as those with a higher level of language proficiency (Yang, 2002) differ both in their application and effectiveness of comprehension monitoring. In the SORS, the instrument used in the present study, the two components of comprehension monitoring, the monitoring component and the fix-up component (Baker & Brown, 1984) are expressed through the wording in the *problem-solving strategy* subscale.

Finally, the third strategy category in the SORS, *support strategies*, includes more "observable" strategies (Baker, 1989), such as underlining, which are used to facilitate comprehension but also two unique to L2 processing strategies and, therefore, of high significance to L2 reading (Bernhardt, 2011): translation and thinking about information in both the L1 and the L2. According to Sarig (1987), technical aid moves, a category similar to that of support strategies in the SORS, depend on a number of conditions for their effective use, two of which are knowledge of a wide variety of moves for readers to select from as well as use of appropriate, task-specific strategies. In other words, support strategies depend largely on the specific context for their use (Zhang & Wu, 2009). According to Baker (1989), these more observable types of strategies do not differentiate between successful and unsuccessful readers while in Sarig (1987) they rank third among the four kinds of moves in their contribution to success in the reading task.

Metacognitive Awareness and Reading Performance

Metacognitive awareness is a term used more frequently in reading research instead of metacognition to indicate awareness of oneself as a reader, of the reading task and of strategies (Padeliadu, Botsas & Sideridis, 2002). This awareness guides readers' planning, their goal-setting decisions, as well as their processing of the tasks and comprehension monitoring (Grabe & Stoller, 2019). Being an essential element of the comprehension monitoring process, awareness involves readers' attentional resources (Grabe, 2009), through which they are alerted to comprehension difficulties and possible reasons for these and also triggers their decisions of whether or not to engage in specific strategic actions (Baker & Brown, 1984; Wenden, 1998). An increased state of awareness and the actual utilization of reading strategies characterizes a "strategic response to text" (Grabe, 2009, p. 51) and distinguishes skilled from unskilled readers (Mokhtari, Sheorey & Reichard, 2008). To the contrary, lower ability readers are less aware of the source of the problem or take any subsequent action (Block, 1992).

Studies using different types of data analyses have investigated the relationship between metacognitive knowledge or awareness and reading ability. Some of the significant findings include the following: a) more metacognitively aware readers, i.e. those able to articulate their strategies, display higher reading comprehension (Auerbach & Paxton, 1997; Baker, 1989; Block, 1992; Devine, 1993; Li & Munby, 1996); b) raised awareness as to the range of available strategies and student facilitation in exploring the effectiveness of new strategies as a means to improve their L2 reading (Auerbach & Paxton, 1997); c) higher metacognitive strategy use which differentiates the reading performance of highly successful readers from that of readers from other levels (Phakiti, 2003).

The above findings, which prove the relationship between metacognitive awareness and reading comprehension, are also confirmed by longitudinal studies aiming to predict the relative contribution of metacognitive knowledge compared to other language-specific components, such as vocabulary and grammar (Van Gelderen et al., 2007). Metacognitive knowledge has a significant contribution to L2 reading (Van Gelderen et al., 2004), constituting a separate, language-independent component with significant and continuous impact on L2 reading in all grades, and it also has an increasing importance for older students of higher proficiency levels (Schoonen et al., 1998; Van Gelderen et al., 2007).

Studies investigating EFL/ESL students' metacognitive awareness of reading strategies through SORS have demonstrated that students' awareness of reading strategies is related to their reading ability levels, with higher ability readers reporting more frequent strategy use (Sheorey & Mokhtari, 2001).

However, although the SORS has been used in a high number of studies, only a number of those have included measures of reading performance to investigate the relationship between metacognitive awareness and reading comprehension performance. Of the studies reviewed by Ghaith and El-Sanyoura (2019), eight studies did not include any measure of reading comprehension while among the

others only a few have used standardized measures of reading ability such as the TOEFL, the IELTS, and others. Moreover, most of the studies did not classify students into levels of reading ability and therefore do not report differentiation of strategy use according to levels of reading ability. In those that have used analysis of variance, the statistical technique which was used in the present study, a curvilinear yet not statistically significant relationship was found between strategy use and reading ability levels, with intermediate level students using the most strategies and advanced students the least (Hong-Nam & Page, 2014; Huang & Nisbet, 2014). In other studies investigating the relationship between levels of reading ability and strategy use, a linear relationship was found, with higher scoring students (Tavakoli, 2014), or students with higher self-reported reading ability (Sheorey & Mokhtari, 2008) reporting more strategies than those at lower proficiency levels.

Finally, in terms of specific strategy categories, the three levels of reading ability were found to differ significantly in global and problem-solving (Madhumathi & Ghosh, 2012), or only global strategies (Sheorey & Baboczky, 2008). These results were also confirmed through correlation studies which report a statistically significant positive correlation between overall strategy use and reading comprehension achievement (Kamran, 2013; Madhumathi & Gosh, 2012; Nisbet & Huang, 2015; Rastegar, Kermani & Khabir, 2017; Tavakoli, 2014) or between strategy use and self-reported / self-rated reading ability (Alhaqbani & Riazi, 2012; Anderson, 2004).

Purpose of the Study

Based on the findings that have emerged through literature review, i.e. the consistent preference of EFL or ESL students for problem-solving strategies, the contribution of problem-solving and global strategy categories to comprehension but, more importantly, taking into account the suggestions for less investigated areas, such as the relationship between strategy use and reading proficiency, the current study aims at investigating the frequency and pattern of strategy use by Greek university students in an EAP context and the relationship between strategy use and the reading performance of different reading ability levels.

The study will attempt to answer the following research questions:

1. What is the overall level of awareness of reading strategies as self-reported by Greek university students in an EAP university context?

2. What is the frequency and pattern of strategy use?

3. What is the relationship between metacognitive awareness of strategy use and the level of reading proficiency?

Method

Participants

381 EAP students from the departments of Accounting & Finance (N=149, 39.1%), Business Administration (N=102, 26.8%) and Economic Science (N=130, 34.1%) participated in this study. They were fairly equally distributed in relation to gender: male=45.7% and female=48.6% (5.8% did not indicate their gender). They were attending the 2nd (60.4%) or 4th (39.6%) semester of their studies. The EAP course is a compulsory component of their studies. Participants were informed about the research aim and that their data will be used anonymously and their participation on the present study was on a voluntary basis.

Instruments

a) The Survey of Reading Strategies-SORS (Mokhtari & Sheorey, 2002) was used in the present study to measure the frequency of students' metacognitive awareness of reading strategies use. The thirty items of the questionnaire are grouped into three strategy categories: the global (13 items), the problem-solving (8 items) and the support subscales (9 items). The SORS uses a Likert scale to indicate frequency of use of a specific strategy, ranging from 1 ("I never or almost never do this") to 5 ("I always or almost always do this"). Mean scores on the Likert scale indicate three levels of use for each of the subscales as well as for overall strategy use: ≥ 3.5 represents high use; 2.5-3.4 moderate or medium use, and ≤ 2.4 low use. The SORS was translated into Greek by expert EAP teachers and checked with the back translation method to cater for students of a lower level of English language competence. It was also piloted with 20 EAP students who were later excluded from the main study.

Overall reliability for the Greek SORS used in the present study was Cronbach *a*=.837. The internal consistency of the strategy categories was: Cronbach *a*=.746 for global, Cronbach *a*=.582 for problem-solving, Cronbach *a*=.640 for support. The reliability of the overall instrument was high, for the global category of strategies acceptable while for the problem-solving and the support categories questionable. However, similar results were also indicated in other studies (Αϊβάζογλου, 2013; Ghaith & El-Sanyoura, 2019; Zhang & Wu, 2009).

b) The TOEFL ITP test, a standardized measure of academic language ability, was used to assess the students' Academic English level of competence. This is divided into three sections: listening comprehension, structure and written expression, and reading comprehension. In the present study, only the students' scores on the reading comprehension section were used. These ranged from 31 to 67. They were converted into competence levels according to the Common European Framework of Reference for Languages-CEFR (Council of Europe, 2020): A2-elementary=31-47, B1-lower intermediate=48-55, B2-upper intermediate=56-62, C1-advanced=63-67.

Data analysis

Data were analysed using SPSS 23 software. Initially, means and standard deviations were calculated for each of the reading strategy items and then compound variables were computed on the basis of the original scales: global=items 1, 3, 4, 6, 8, 12, 15, 17, 20, 21, 23, 24, 27, problem-solving=items 7, 9, 11, 14, 16, 19, 25, 28 and support strategies=items 2, 5, 10, 13, 18, 22, 26, 29, 30 (Mokhtari, Sheorey & Reichard, 2008). The reliability of the scales was checked with the Cronbach alpha test of internal consistency. Then, analyses of variance were performed to check the effect of the strategies categories on the students' reading comprehension section of the TOEFL ITP test. Statistical significance was set at <0.05.

Results

The overall strategy use of the Greek university students is in the upper level of moderate use (M=3.53). They reported high frequency of use in problem-solving strategies (M=3.86), while moderate in global (M=3.47) and support (M=3.31) strategy categories.

In our study, the mean of individual strategy use ranged from a high of 4.47 **"When text becomes difficult, I re-read it to increase my understanding"** to a low of 2.36 "I ask myself questions I like to have answered in the text". More specifically, 17 of the 30 strategies fell in the high use group (Mean ≥ 3.5), 12 strategies in the moderate-use group (Mean score ranging between 3.49 and 2.49) while only one strategy was used at a low level (2.49 and below). In relation to the specific strategy categories, six problem-solving strategies were used at a high level while two at a moderate one, seven global strategies were highly used while six moderately and, finally, four support strategies were used at a high level, four at a moderate level while only one at a low level.

Reading Comprehension Performance

The analysis of variance with the individual strategy items, as dependent variables, and the students' score in the reading section of the TOEFL ITP, as independent, indicated statistically significant results in 14 items: five from the global category (items: 4, 8, 12, 17, 21) three from the problem-solving category (items: 7, 11, 28) and six from the support category (items: 2, 5, 10, 13, 18, 29). Table 1 presents the means, standard deviations and the *F* and *p* values for these items.

[TABLE 1 NEAR HERE]

The analysis of variance with the strategy categories, as dependent variables, and the students' score in the reading section of the TOEFL ITP, as independent, indicated statistically significant results in all three strategy categories. The Tukey HSD post hoc analyses indicated that there are statistically significant differences between A2 and B2 level reading performance in the global strategy category, and between B1 and B2 level reading performance in the problem-solving category.

In the support category, the C1 level performance indicated statistically significant results in relation to all other levels of reading performance. Additionally, in the support category, strategy use at the B2 level differs from that of the A2. Table 2 presents the means, standard deviations and the F and p values produced by the analysis in the strategy categories in relation to reading performance. The results indicate that support strategies decline as the level of competence increases, while problem-solving strategies differ significantly within very close level students, B1 compared to B2.

[TABLE 2 NEAR HERE]

Discussion

The current study investigated the level of metacognitive awareness of reading strategies of Greek university students in an EAP context. The study aimed at investigating the overall level of strategy use, the level of use for each of the three strategy categories and the pattern of strategy use. An additional research aim of the study was the investigation of the relationship between strategy use and the level of reading ability.

Overall Strategy Use

Regarding the first research question, the findings indicate moderate overall strategy use (M=3.53), in agreement with several studies conducted in an EFL context (Mahdavi & Mehrabi, 2014; Meniado, 2016; Nisbet & Huang, 2015; Sheorey and Babokzsky, 2008; Tavakoli, 2014; Zheng & Kang, 2014) or an ESP one (Jafari & Shokrpour, 2012). The strategy with the highest mean (M=4.47) was the problem-solving one: "When text becomes difficult, I re-read it to increase my understanding" (item 25) while the one with the lowest mean (2.36) was the support one "I ask myself questions I like to have answered in the text" (item 26). Moreover, regarding levels of strategy use: 17 of the 30 strategies fell in the *high* use level (M ≥ 3.5), 12 strategies in the *moderate* use level (M: 3.49 to 2.49) and 1 strategy at a *low* level (M ≤2.49).

Regarding the second research question, i.e. the frequency of use of specific strategy categories, one of the main findings of the study is the high level of use of problem-

solving strategies (M=3.86), making them the most preferred category for Greek EAP students. This fact is in agreement with that of a high number of studies using SORS (Alhaqbani & Riazi, 2012; Al-Sohbani, 2013); Chen & Chen, 2015); Ghaith & El-Sanyoura, 2019; Gönen, 2015; Hong-Nam & Page, 2014; Huang & Nisbet, 2014; Jafari & Shokrpour, 2012; Madhumathi & Gosh, 2012; Mahdavi & Mehrabi, 2014; Meniado (2016); Nisbet & Huang, 2015; Poole, 2005; Zhang & Wu, 2009). Therefore, the consistent preference for the more domain-general, problem-solving strategies by learners from different cultural contexts, which is reported in Ghaith and El-Sanyoura (2019), Meniado (2016) and Nisbet and Huang (2015), is also confirmed in our study for Greek university students. Although strategy use may vary by cultural group (Oxford, 1996), findings showing preference for problem-solving strategies are quite consistent across contexts (ESL or EFL) or settings (university vs. high school). A possible reason for high use of problem-solving strategies may be because problem-solving abilities are among the cognitive abilities that can be positively transferred from the L1 (Grabe & Stoller, 2019). Additionally, as reading purpose has an impact on strategy choice, reading for study purposes instead of reading for entertainment may result in the activation of more problem-solving than global or support strategies, as was the case in the Mokhtari and Reichard (2008) study.

In our study the other two strategy categories, i.e. global (M=3.47) and support (M=3.31), fell into a moderate level of use. However, the high use of such individual global strategy items as "I have a purpose in mind when I read"; "I think about what I know to help me understand what I read"; "I take an overall view of the text to see what it is about before reading it"; "I use tables, figures and pictures in text to increase my understanding", all of which are associated with the strategy of previewing (Prichard & Atkins, 2016) indicates the capacity of planning for reading (Zhang, 2009) while the strategy "I check my understanding when I come across new information" indicates students' effort to establish coherence and to arrive at a model of the text (item 21).

Regarding support strategies, the moderate or even low use in the present study of specific items within this category confirms the finding that support strategies, similarly to technical-aid moves, are used in a task-appropriate way (Sarig, 1987) and depend largely on the specific context for their use (Zhang & Wu, 2009).

Similar levels of use for all strategy categories (high for problem-solving strategies and moderate for global and support strategies) are also reported in several studies (Madhumathi & Gosh, 2012; Meniado, 2016; Ghaith & El-Sanyoura, 2019; Poole, 2005).

Strategy Use and Relationship with Level of Reading Proficiency

In the current study, the students' level of reading ability for comprehending academic texts was derived by their scores in the Reading Section of the TOEFL ITP test and thus it was objectively measured by a widely acknowledged test of academic competence. Regarding the third research question, the main findings of the study

concern on the one hand, the curvilinear relationship between global and problem-solving strategy use and reading ability levels and, on the other hand, the inverse relationship between support strategy use and the above levels.

More specifically, in the global strategy category, statistically significant differences were found between the A2 (elementary) and B2 (upper-intermediate) levels, i.e. higher use of global strategies by B2 students. This finding is important as these strategies contribute to success in comprehension (Sarig, 1987) and is also in agreement with findings in the Sheorey and Mokhtari (2008) and Sheorey and Babokzky (2008) studies as well as former studies (Block, 1986; Carrell, 1989; Devine, 1993) according to which, higher ability readers adopt a more global or meaning-making approach in reading in comparison to lower-ability ones.

However, even though strategy use increased from the A2 to the B2 level, it decreased at the C1 level, most probably indicating that global strategies become automatized by fluent readers (Grabe & Stoller, 2019; Oxford, 1999) and, therefore, students are not aware of using them. This does not preclude, however, the possibility of their resurfacing in the case of specific comprehension problems and demanding texts (Grabe & Stoller, 2019).

At the individual item level, it seems that more advanced readers (C1) make significantly less use of the previewing strategies (items 4, 8, 12). However, they use contextual clues (17) more than any other level, which highlights their awareness of the context and potential characteristics of the text. Moreover, C1 and B2 level readers "critically analyze and evaluate information presented in the text" (21), which presupposes their metacognitive capabilities of comprehension.

Regarding the problem-solving strategy category, statistically significant differences were noted within very close-level students, i.e. between the B1 and B2 levels, indicating high use of problem-solving strategies by more skilled readers, who exhibit a higher state of awareness of comprehension breakdown and activate specific strategies to redress it (Baker & Brown, 1984; Grabe, 2009; Zhang & Wu, 2009). As was the case with global strategies, frequency of problem-solving strategy use decreased at the C1 level, again an indication of automatization of strategy use for students at this level. Since levels of reading ability in different studies are not defined in the same way, our findings partly agree with those of Sheorey and Mokhtari (2008), in which students of high self-reported reading ability made significantly more frequent use of problem-solving strategies and Nisbet and Huang (2015), in which a positive relationship was noted between higher reading ability level and use of problem-solving strategies (p. 207).

At the *individual item level*, the statistically significant differences which were revealed in three items, highlight the difficulties of the elementary level readers (A2) to adjust their reading speed (11) and guess the meaning of unknown words from the context (28), probably because they have difficulties in understanding and thus read slowly and carefully (7) throughout the text.

A tentative conclusion for the low frequency of use of global and problem-solving strategies by elementary level readers (A2) is that the latter use their attentional

resources on word-level, decoding skills, tending to select mainly bottom-up strategies, while less frequently activating global strategies to plan for reading or problem-solving ones to monitor their comprehension.

The findings of the present study regarding the curvilinear relationship between global and problem-solving strategy use and different reading ability levels are similar to those in Huang and Nisbet (2014), according to which high intermediate learners used more strategies across all categories, advanced learners the least strategies while beginning and low intermediate learners used strategies at approximately the same rate.

Another important finding of the current study is the inverse relationship between use of support strategies and levels of reading ability, with significant differences between the C1 and all other levels (A2, B1, B2). These findings suggest that support strategies are used with higher frequency at each lower level of reading ability but their use steadily declines as the level of competence increases. The inverse relationship between support strategy use and reading proficiency is also reported in Nisbet and Huang (2015) and suggests, according to the researchers, that readers at higher proficiency levels are not in need of the scaffolding offered by support strategies. Our finding does not coincide, however, with that of Sheorey and Mokhtari (2008), in which high reading ability ESL students report a more frequent use of support strategies as well as Tavakoli (2014), in which a linear relationship between use of support strategies and proficiency levels was reported, with each higher level of proficiency using the specific strategies more frequently.

At the individual item level, the six support strategy items that produced statistically significant results showcase the learners' efforts for comprehension through taking notes (2), reading aloud (5), underlining information (10), using dictionaries (13), paraphrasing (18) and translating (29). However, the lower level readers make the most use of such strategies, which are admittedly time-consuming, and thus they may get tired and frustrated in the process of reading a long and complicated academic text.

Overall, the strong positive relations between strategy use and reading performance reported in other studies (Alhaqbani & Riazi, 2012; Al-Sohbani, 2013; Ghaith & El-Sanyoura, 2019; Kamran, 2011; Nisbet & Huang, 2015; Rastegar, Kermani & Khabir, 2017; Sheorey & Babokzky, 2008; Tavakoli, 2014) are confirmed in our study in a more precise way (through an objectively assessed test) as significant differences emerge between specific levels of reading ability and the three strategy categories in the SORS.

Theoretical and Pedagogical Implications

The specific findings derived through the study have important pedagogical and research implications. The SORS could be used for investigating strategic reading for varying purposes or text types. The drawback of the domain-general findings can be

overcome by the administration of the SORS with a specific reading task in order for the differences between perceived-general and perceived-specific strategy use to be compared across students. In this way, the degree of student overreliance on certain strategies, their use of far from optimum strategies and their approach to the task according to their internalized conceptualization of the reading process could also be assessed (Mokhtari, Sheorey & Reichard, 2008). Task-specific investigation of strategies will also illuminate whether the task context has an impact on strategy use, eliciting, for example, more and specific support strategies.

Apart from the investigation of student strategies, awareness raising regarding strategy use could be effected through reflective journals (Guo, 2018), student involvement in the awareness-raising process (Auerbach & Paxton, 1997) or through informed metacognitive strategy training that combines the elements of strategy training, self-regulation training and awareness raising (Carrell, 1989; Carrell, Gadjusek & Wise, 1998; Zhang & Wu, 2009) and has "a well-designed scope and sequence" (Ghaith & El-Sanyoura, 2019). Since specific strategies, for example, use of dictionary or translation, are applied in a far from optimum way by students, informed training would enable students to maximize the effectiveness of an already-used strategy through their acquisition of conditional knowledge about it, other alternative strategies, as well as about the use of strategies in combinations or clusters.

Furthermore, since different levels of reading ability make higher or lower use of strategies, strategy training should be differentiated and learners not be addressed in a uniform way, as effective strategy use by the already autonomous learners should be taken into account (Taillefer & Pugh, 1998). This means that students of a lower reading ability level should be trained a) to use all types of strategies and more importantly global and problem-solving ones b) to approach academic texts in a more top-down way, to accept ambiguity and to focus to a lesser degree on word decoding.

Moreover, identifying the characteristics of Greek university students' metacognitive awareness of reading strategies could contribute to designing relevant interventions, as raising learners' metacognitive awareness has been linked with: a) changes in perceived use of reading strategies (Zhang, 2008); b) higher frequency of use through explicit strategy instruction (Aghaie & Zhang, 2012; Carrell, 1989); c) the development of a wide repertoire of strategies that help students take control of their learning (Auerbach & Paxton, 1996) and d) gains in comprehension (Aghaie & Zhang, 2012; Auerbach & Paxton, 1996; Zhang, 2008).

Conclusion

The present study is the first one investigating the metacognitive awareness of reading strategies by Greek students in an EAP university context and thus provides valuable insights into a number of areas associated with the strategy use of the specific group of students. The main finding of the study is that Greek EAP students are active reading strategy users, reporting a wide variety of strategies at a high level when dealing with academic texts. In general, the present study confirms the importance of global and problem-solving strategies for reading comprehension. On the one hand,

the preference of Greek university students for problem-solving strategies is a finding which confirms similar ones about EFL university students of diverse cultural and linguistic backgrounds. On the other hand, despite the fact that Greek students are moderate global strategy users, they make high use of strategies associated with planning for reading academic texts and critical reading. Other important findings concern the relationship between different levels of reading ability and specific categories of strategy use.

The present study contributes to the literature by attesting the reading strategy use of Greek students, an educational context not yet researched in this domain, and by comparing the strategy use with clearly delineated levels of reading ability, which is again rarely recorded in the literature. However, the study acknowledges the limitations of self-report instruments as reliable indicators of effective strategy use. Moreover, the fact the SORS was administered in a domain-general manner rather than in relation to a specific task may differentiate from the results favoring context-free strategy use.

Strategy items	Mean A2 (N=122)	Mean B1 (N=148)	Mean B2 (N=84)	Mean C1 (N=26)	Total mean (N=380)	F (df 3,379)	p post hoc
1. I have a purpose in mind when I read.	3.98 (.85)	4.01 (.82)	4.15 (.75)	3.88 (.71)	4.02 (.81)	1.140	.333
2. I take notes while reading to help me understand what I read.	3.77 (1.11)	3.55 (1.12)	3.32 (1.27)	3.08 (1.23)	3.54 (1.17)	3.963	.008 A2>B2, A2>C1
3. I think about what I know to help me understand what I read.	4.07 (.82)	4.08 (.85)	4.26 (.64)	3.96 (.72)	4.11 (.79)	1.481	.219

4. I take an overall view of the text to see what it is about before reading it.	3.60 (1.11)	3.72 (1.12)	3.65 (1.11)	2.88 (1.30)	3.61 (1.14)	4.091	.007 C1<B2 <B1< A2
5. When text becomes difficult, I read aloud to help me understand what I read.	3.05 (1.31)	2.89 (1.40)	2.55 (1.24)	2.38 (1.32)	2.83 (1.34)	3.415	.018 A2>B2
6. I think about whether the content of the text fits my reading purpose.	3.29 (1.00)	3.32 (.94)	3.33 (.96)	3.31 (.92)	3.31 (.96)	.042	.988
7. I read slowly and carefully to make sure I understand what I am reading.	4.16 (.84)	4.06 (.88)	3.99 (.87)	3.42 (.98)	4.03 (.89)	5.233	.002 C1<B2 <B1< A2
8. I review the text first by noting its characteristics like length and organization.	2.91 (1.11)	2.93 (1.17)	3.36 (1.17)	2.58 (1.30)	2.99 (1.17)	4.192	.006 B2<B1 <A2< C1
9. I try to get back on track when I lose concentration.	4.36 (.73)	4.37 (.84)	4.61 (.60)	4.42 (.57)	4.42 (.74)	2.226	.085

10. I underline or circle information in the text to help me remember it.	4.11 (.98)	3.86 (1.21)	3.87 (1.20)	3.19 (1.35)	3.90 (1.17)	4.629	.003 C1<B2 <B1< A2
11. I adjust my reading speed according to what I am reading.	3.50 (1.04)	3.78 (.80)	4.01 (.76)	3.65 (.97)	3.73 (.91)	5.716	.001 A2>B1, A2>B2
12. When reading, I decide what to read closely and what to ignore.	3.21 (1.13)	3.28 (1.06)	3.39 (1.10)	2.69 (1.19)	3.24 (1.11)	2.746	.043 C1<B2, C1<B1
13. I use reference materials (e.g. a dictionary) to help me understand what I read.	3.28 (1.10)	3.04 (1.16)	2.95 (.89)	2.46 (.94)	3.06 (1.09)	4.665	.003 C1<A2, C1<B1
14. When text becomes difficult, I pay closer attention to what I am reading.	4.14 (.79)	4.14 (.83)	4.36 (.72)	4.15 (.78)	4.19 (.79)	1.661	.175
15. I use tables, figures, and pictures in text to increase my understanding.	3.55 (1.10)	3.50 (1.14)	3.80 (.99)	3.58 (1.23)	3.59 (1.10)	1.371	.251

16. I stop from time to time and think about what I am reading.	3.52 (1.03)	3.26 (1.06)	3.45 (.98)	3.35 (1.05)	3.39 (1.04)	1.449	.228
17. I use context clues to help me better understand what I am reading.	3.82 (.83)	4.07 (.86)	4.31 (.76)	4.35 (.74)	4.06 (.84)	7.079	.000 A2<B1 <B2< C1
18. I paraphrase (restate ideas in my own words) to better understand what I read.	3.50 (.99)	3.16 (1.18)	3.45 (1.09)	2.88 (1.07)	3.32 (1.10)	3.891	.009 C1<A2
19. I try to picture or visualize information to help remember what I read.	3.17 (1.21)	2.82 (1.30)	3.01 (1.24)	2.96 (1.24)	2.99 (1.26)	1.715	.163
20. I use typographical features like bold face and italics to identify key information.	2.94 (1.18)	2.94 (1.25)	3.04 (1.28)	2.69 (1.32)	2.94 (1.24)	.508	.677
21. I critically analyze and evaluate the information presented in the text.	3.31 (.97)	3.54 (.84)	3.94 (.97)	3.73 (.96)	3.57 (.94)	8.004	.000 B2>A2, B2>B1

22. I go back and forth in the text to find relationships among ideas in it.	3.75 (.96)	3.82 (.81)	4.01 (.97)	3.81 (1.09)	3.84 (.92)	1.353	.257
23. I check my understanding when I come across new information.	3.85 (.81)	3.91 (.82)	4.14 (.80)	4.08 (.62)	3.96 (.80)	2.527	.057
24. I try to guess what the content of the text is about when I read.	3.24 (1.17)	3.12 (1.16)	3.14 (1.06)	3.42 (1.02)	3.18 (1.13)	.658	.578
25. When text becomes difficult, I re-read it to increase my understanding.	4.52 (.65)	4.45 (.74)	4.49 (.70)	4.31 (.92)	4.47 (.72)	.672	.569
26. I ask myself questions I like to have answered in the text.	2.34 (1.00)	2.30 (1.05)	2.52 (1.17)	2.38 (1.20)	2.37 (1.07)	.834	.476
27. I check to see if my guesses about the text are right or wrong.	2.62 (1.02)	2.58 (1.14)	2.57 (1.13)	2.85 (1.25)	2.61 (1.10)	.464	.708

28. When I read, I guess the meaning of unknown words or phrases.	3.32 (.98)	3.68 (.99)	4.07 (.75)	3.77 (.86)	3.66 (.97)	10.9 24	.000 A2<B 1, A2<B 2
29. When reading, I translate from English into my native language.	3.97 (.94)	3.64 (1.15)	2.93 (1.23)	2.23 (1.24)	3.49 (1.22)	26.3 87	.000 C1<B 2 <B1< A2
30. When reading, I think about information in both English and my mother tongue.	3.53 (1.06)	3.62 (1.03)	3.45 (1.11)	3.00 (1.32)	3.51 (1.09)	2.52 5	.057

Table 1. Means and (SD) for SORS Items per Reading Performance Level.

	A2 N=122	B1 N=148	B2 N=84	C1 N=26	Total mean	F (3:379)	p	Post-hoc
Global	3.41* (.51)	3.46 (.52)	3.62* (.45)	3.38 (.49)	3.47 (.51)	3.263	.022	A2<B2
Problem-solving	3.83 (.44)	3.82* (.51)	3.99* (.37)	3.75 (.55)	3.86 (.47)	3.377	.018	B1<B2
Support	3.47* (.50)	3.32* (.60)	3.22* (.55)	2.82* (.54)	3.31 (.57)	10.813	.000	C1<A2, B1, B2

Table 2. Means and (SD) in the Strategy Categories in Relation to Reading Performance.

*indicates statistically significant differences

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