Strategy use and self-perception in L2 academic reading: Measuring English majors' reading strategy using the think-aloud protocol

Csenge Aradi [1]

University of Szeged, Faculty of Humanities and Social Sciences, IEAS-ELTEAL

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This article reports the main results of a think-aloud protocol study inquiring into reading strategy use and self-perception of first-year English studies and teacher trainee majors when reading academic texts in their L2. The verbal protocol was combined with a short follow-up interview and the SORS test to identify the findings and highlight any possible correlations between the three datasets. The results suggest that students have a general preference for metacognitive strategies, and the findings appear to show a certain degree of consistency across different types of data. The most frequently used and reported strategies included guessing from context, re-reading, use of external resources, and self-evaluation.

Keywords: L2 academic reading, reading strategies, metacognition, verbal protocol, SORS test

1. Introduction[2]

With the globalization of scientific research and the predominance of Anglo-American academic culture, the ability to efficiently read and compose academic texts in English has become a widespread expectation in higher education. It is not uncommon for English-language study programs in different disciplines to offer courses in academic reading and writing. At the University of Szeged, students enrolled in the English and American Studies and the Teacher Training programs must complete several courses focusing on the development of academic skills. One such course is the Reading Skills seminar, which is meant to equip first-year students with the principal skills and strategies they will need in their academic career. In fact, the recent redesigning of this course motivated the research project presented in the study.

Although academic reading in L2 English is a widely researched topic in international applied linguistic research, it has received relatively little attention in Hungarian higher education. The available data (Mónos, 2005; Szűcs, 2017) suggest that students entering tertiary education do not generally tend to have a well-developed repertoire of strategies when it comes to reading in their L2. Adopting a comparative approach, some recent studies have provided valuable information about students' strategy use and self-perception in both their L1 and L2

[1] Author's e-mail: acsenge@gmail.com; https://orcid.org/0000-0002-5275-7596

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(Tary & Molnár, 2022; Tary, 2023). The main objective of the project was to contribute to and expand the existing body of L2 English reading strategies used by speakers of L1 Hungarian by exploring EFL majors' strategy use and self-perception in the process of reading academic texts in English. The participants (n=12) were first-year BA and teacher-trainee students. The research design consisted of three major components: a semi-retrospective think-aloud protocol (TAP, also referred to as "verbal protocols" in the text), a structured follow-up interview ("interviews"), and the SORS questionnaire, a version of the MARSI survey adapted for L2 readers (Mokhtari & Sheorey, 2002).

2. Literature Review

2.1 A brief summary of research on reading ability

First, it is imperative to clarify that strategy research tends to adopt a process-oriented reading view. The question of whether reading should be conceptualized as a process or a product (i.e., the result of the reading process) constitutes a principal area of interest in the field to this day. Alderson (2001, pp. 3–7) defines process as the interaction between reader and text, which is essentially dynamic and, to a great extent, individual in nature. Yamashita provided a similar definition (2002, p. 272). As Alderson puts it, it is the *how* of the reading activity and not the end result that is in the focus of process-oriented approaches (Alderson, 2001, pp. 3–7). The reading-as-a-process perspective is supported by a growing body of findings in cognitive psychology, suggesting the interplay of various mental operations in the process of reading. A near-exhaustive list of the cognitive skills and systems that presumably shape and regulate the reading process is offered by Grabe and Yamashita (2022), who provide a comprehensive overview of the field from its beginning to its current state. These include implicit and explicit learning, automaticity, speed of information uptake, and the role of contextual processing in L2 reading (Grabe & Yamashita, 2022, p. 85). While all of these elements are essential for reading ability, the literature emphasizes the centrality of working memory (Lau & Chan, 2003; Grabe & Stoller, 2013; Grabe & Yamashita, 2022) and the simultaneous functioning of bottom-up and top-down processes during reading (An, 2013; Grabe & Yamashita, 2022). It has been suggested in the research that weaker readers tend to prefer bottom-up strategies, while more proficient readers employ top-down strategies to a substantially greater extent (see, for example, Block, 1986; Karbalaei, 2010). Theoretical work in the field has laid down the foundations for creating a systematic approach to studying L2 reading in a pedagogical context. The early categorizations of the components of reading ability in foreign languages include Davis (1968) and Munby (1978). While it seems that the discipline is becoming increasingly open to adopting a holistic attitude towards reading ability, as opposed to the conventional multidimensional view that promotes separating subskills along the lines of clear-cut categories (see Liu 2010), the practice of (partial) divisions still prevails. A not too recent yet still oft-cited categorization is found in Grabe (1991, p. 379), which comprises six subsets of skills that characterize good readers, quoted verbatim below.

(1) Automatic recognition skills;
(2) Vocabulary and structural knowledge;
(3) Formal discourse structure knowledge;

(4) Content/world background knowledge;
(5) Synthesis and evaluation skills/strategies;
(6) Metacognitive knowledge and skills monitoring.

These six areas of skills show considerable overlap with the relevant findings of cognitive psychology (see Grabe & Stoller, 2013; Grabe & Yamashita, 2022 above), and, as it will be evidenced in the following subsections, they have fundamentally structured mainstream classifications of reading strategy use.

2.2 Key concepts in language learning strategy research

The creation of systematic learner strategy definitions and taxonomies has been a priority both in education sciences and language pedagogy since the 1980s, with the unification of taxonomies being a major objective that still has not been completely realized (Doró, Habók & Magyar, 2018, p. 6). Some of the principal questions included strategy awareness, the nature of mental processes influencing strategy use, and the overall teachability of learning strategies (Doró, Habók & Magyar, 2018, p. 6). Rubin's 1975 work on the concept of "the good language learner" (GLL) is considered by many to mark the beginning of L2 strategy research scholarship (Rose et al. 2018, p. 151).

Rubin defined learning strategies as "the techniques or devices which a learner may use to acquire knowledge" (1975, p. 43). Another broad definition of learning strategies, formulated by Weinstein and Mayer is as follows: "[Learning strategies] affect the learner's motivational or affective state, or the way in which the learner selects, acquires, organizes, or integrates new knowledge" (1986, p. 315, as cited in O'Malley & Chamot, 1990, p. 43).

Gu (2012) considers the principal functions of learning strategies to include the facilitation and acceleration of learning processes through better processing and retention of information in the completion of specific learning-promotive tasks (Gu 2012, pp. 332–333). These definitions suggest that the primary function of learning strategies is to facilitate knowledge transfer and consolidation of knowledge (O'Malley & Chamot, 1990, p. 43).

Different strategies serve different learning purposes, which justifies the need for taxonomical division. In their foundational work on learning strategies, O'Malley and Chamot (1990, pp. 44–45) distinguish between three major categories, namely, metacognitive, cognitive and social/affective. Metacognitive learning strategies include "the planning, monitoring and evaluation of the learning activity" (O'Malley & Chamot, 1990, pp. 44–45), implying the existence of conscious effort on the part of the learner in the learning process. Research on the relationship between metacognition and learning goes back to Flavell (1979). Cognitive learning strategies manipulate new information directly. Social/affective strategies relate to negotiating meaning in instances of interpersonal communication or controlling one's emotional reactions in a given situation (Flavell, 1979).

Narrowing the scope of educational strategy research to foreign language pedagogy, Oxford (1990, p. 9) summarized the features of language learning strategies in a 12-item list. It is stated that these strategies should be "problem-oriented" and that they are considered "specific actions" that the learner takes to resolve the learning problem. Oxford's taxonomy of strategies can be broken down into two major categories, direct and indirect, with three groups of strategies in each. The direct category includes cognitive, memory and compensation

strategies, while the indirect category comprises metacognitive, social and affective strategies (Oxford, 1990, pp. 57–59; pp. 136–137). Oxford justifies the rationale for creating two main categories by attributing different functions to them in the learning process: while direct strategies are employed when "working with the language itself in a variety of specific tasks and situations" (Oxford 1990, p. 14), the general purpose of indirect strategies is to coordinate and control the learning situation (p. 15).

Detailed overviews of learning strategy research up to the early and the mid-2010s were provided by Gu (2012) and Hu (2016), respectively. In addition to providing a valuable synthesis of taxonomies, both authors draw attention to the apparent definitional issues in the field, which partly arise from the inherent impossibility of directly observing mental processes. One such issue concerns the difficulty of establishing clear-cut definitions for 'strategy' and 'skill' (see Afflerbach, Pearson & Paris, 2008).

Adopting a novel perspective on learner strategies, notable academic work on self-regulated learning has emphasized the role of the learner as a controller of their own learning process, thereby attributing a greater role to conscious decision-making and self-monitoring and redirecting the focus from pre-defined strategies to learner autonomy (Dörnyei, 2005, p. 191; see also Rose et al., 2018), which signals a potential shift in definitional scope. In her recent work, Oxford (2017; 2018) enquired into the possibilities of formulating a more comprehensive definition for strategies within the framework of self-regulated learning, and, following the in-depth analysis of existing definitions, provides the following definition (quoted verbatim):

> LLS [language learning strategies] are purposeful, conscious (or at least partially conscious), mental actions that the learner uses to meet one or more self-chosen goals, such as (a) overcoming a learning barrier, (b) accomplishing an L2 task, (c) enhancing long-term L2 proficiency, and (d) developing greater self-regulation (ability to guide one's own learning). Like most aspects of L2 learning, LLS occur in real contexts (specific settings), are complex (with multiple, interacting factors), and are dynamic (flexible, usable in different ways, and changeable along with learners' changing needs). LLS can be learned with help from a teacher, a friend, a book, or the internet, although many learners creatively and effectively generate their own LLS. (Oxford, 2018, p. 82)

The notion of self-regulation has challenged conventional strategy definitions and taxonomies. Rose et al. (2018) touch upon the different ways of replacing strategies with self-regulation (an idea also raised in Dörnyei, 2005) or of integrating the two approaches. Oxford's definition attempts to cover all aspects of self-regulated learning to the extent possible, focusing on the importance of learner autonomy in the process of learning a foreign language. While Oxford (2018) offers a fairly exhaustive definition with a potentially broad applicability in the field of language learning and teaching, the mainstream taxonomies of (L2) reading strategies tend to rely on the more conventional approaches to strategy research, as it shall be seen in section 2.3. below.

2.3 Taxonomies of reading strategies

Reading strategy classifications are based on general learning and language-learning strategy taxonomies, with the basic distinction between cognitive and metacognitive strategies; their respective working definitions are presented in 2.2. Despite the lack of unanimous consensus in the research community, cognitive strategies are often associated with automaticity or, in other terms, procedural knowledge, suggesting that good readers possess skills-level abilities (Grabe, 1991; Alderson, 2001), whereas metacognitive strategies are believed to involve a certain degree of conscious reflection and intentionality (Haukås, 2018), the top-down processes of planning, monitoring and (self-)evaluation are the central elements of this vast domain of thought processes (O'Malley & Chamot, 1990, pp. 44–45; Alderson, 2001, p. 13; Mokhtari & Reichard, 2002).

As stated above, reading strategy taxonomies – reading being one of the most widely studied skills in foreign language research – have relied on general language-learning strategy classifications in their development. While it can be stated that these widely overlap with one another, there is naturally variation arising from definitional inconsistency or differences in perspective. Moreover, of the two major strategy groups discussed in the literature, metacognitive strategies seem to have received considerably more attention.

Major strategy taxonomies for L2 reading include Block (1986), Grabe (1991; reiterated in Alderson, 2001, p.13) and Mokhtari and Reichard (2002). Semtin and Maniam (2015) provided a comprehensive overview of L2 reading strategy classifications used in various studies across the globe up to the mid-2010s. In her taxonomy, Block (1986) relied mainly on the distinction between top-down and bottom-up (or higher- and lower-level) processes. Grabe (1991) defined cognitive strategies as largely automatized, skill-level processes and regarded metacognitive strategies as essentially self-regulation processes. These include skimming, previewing, prioritizing important information, adjusting reading rate and monitoring progress, just to mention a few.

Focusing exclusively on the metacognitive aspects of reading, Mokhtari and Sheorey (2001) and Mokhtari and Reichard (2002) outlined a tripartite taxonomy for metacognitive strategies, which laid down the foundation of the MARSI (*Metacognitive Awareness of Reading Strategies Inventory*) and SORS (Survey of Reading Strategies) surveys measuring students' strategy use when reading in English in an academic context. The taxonomy comprises three major groups of strategies, which are: global strategies, referring to the reader's approach to the text as a whole (e.g., previewing, skimming, activating prior knowledge), problem-solving strategies employed to overcome obstacles that might arise during reading (e.g., re-reading, guessing the meaning, visualizing information), and support strategies (e.g., using external sources, taking notes, and paraphrasing). The same logic of classification emerges from the synthesis offered in Semtin and Maniam (2015). Grabe and Yamashita (2022) offered a state-of-the-art description of the most common reading strategies, drawing on decades of empirical evidence and relevant findings in cognitive psychology. While all the above taxonomies have been proven to be efficient instruments for measuring L2 reading strategy use, none of them have been claimed to present a comprehensive picture of reading strategies, which is partially due to their differences in focus and in the way they were adjusted to specific research goals. Given that the main objective of the present study is to provide a detailed description of reader strategies, it seems necessary to employ a combined approach that considers both cognitive and

metacognitive strategies. At the same time, as the SORS test is one of the main instruments of this research, it is the Mokhtari-Reichard taxonomy that constitutes the core of this ad hoc classification system, which, as it shall be seen, centres essentially on metacognitive strategies.

2.4 A summary of L2 reading research

The vast body of L2 reading research can traditionally be divided into two main trends: survey-based self-report studies and verbal protocol research, with a few examples of mixed-methods research.

2.4.1 Survey and mixed-methods studies

Quantitative research in the field is mostly based on the MARSI and SORS tests. Besides informing EFL educators about their students, these tests are convenient tools for raising student awareness and promoting the importance of self-reflection in learning processes (Mokhtari & Sheorey 2002, p. 8). In a more recent study, Mokhtari et al. (2018) presented a revised version of the MARSI scale named MARSI-R. The authors did not expect that the revisions would result in a significant improvement in terms of reliability but hoped to have created a version that can be used on a larger sample and still produce results that can be generalized to the broader population of readers. It is important to note that survey research studies measuring L2 reading strategy use tend to use a variety of independent variables to provide a nuanced analysis of the sample. This most often includes the inclusion of one or more of the following variables: age, gender, major (field of study), and level of proficiency. The population is often taken from a higher-education environment.

Indeed, relevant research in the Hungarian university context has mostly relied on the MARSI and SORS tests. A mixed methods study by Mónos (2005) showed that even though English majors (n=86) appear to be aware of the strategies they use when reading in the L2, they prove to be less successful in actual reading tasks than the survey results might have suggested. In another mixed-methods study employing a combination of the think-aloud protocol (TAP) and a questionnaire, Szűcs (2017) measured the metacognitive reading skills of Hungarian EFL majors. The results suggest that the participants (n=59) had overall poor metacognitive skills A large-scale study comparing L1 Hungarian and L2 reading strategies shows that teacher trainees use problem-solving strategies the most often in both their L1 and L2, with supporting and global strategies coming in the second and third places (Tary & Molnár, 2022). However, students tend to use more problem-solving and global strategies in the L1, and they have recourse to problem-solving and support strategies the most often when they read in the L2, and only then do they tend to employ global strategies (Tary & Molnár, 2022, p. 65). Related research suggests that while teachers are more likely to employ global and support strategies in their L1, there is no significant difference in the ratio of problem-solving strategies between the two languages (Tary, 2023).

International research has taken a broader view of the multivariate factors influencing reading strategy use. Among the research foci are the potential effects of cultural differences (Mokhtari & Reichard, 2004; Mokhtari, 2008; Karbalaei, 2010; Commander, Ashong & Zhao, 2016), gender differences (Phakiti, 2003; Mónos, 2005; Poole, 2005; 2009), academic background (Martínez, 2008; Dabaghi & Akvan, 2014; Chen, 2019; Čeljo, Bećirović &

Dubravac, 2021), and proficiency levels (Sheorey & Mokhtari, 2001; Lau & Chan, 2003; Zhang & Wu, 2009; Yoshikawa & Leung, 2020). Research findings in this particular sub-field of L2 reading survey studies seem to be in line with the major theoretical tenets of the reciprocal relationship between comprehension performance and/or linguistic proficiency and L2 strategy use (see Grabe & Stoller, 2013; Grabe & Yamashita, 2022). Based on the corpus of studies presented above, it is safe to say that strategy use can be used as a predictor of reading performance.

2.4.2 The role of verbal reports in reading research

Verbal protocols belong to a broad category of introspective methods that are based on participants' self-reflection (Dörnyei, 2007, p. 147). A basic distinction was made between concurrent and retrospective think-aloud protocols (TAP). In the case of concurrent TAP, the participants verbalized the information simultaneously to perform a task. Retrospective TAP works the other way around: participants report their thought processes after completion of the task (Ericsson & Simon, 1980, p. 219).

Among the earliest studies to measure L2 reading strategies through verbal protocols was Block's (1986) TAP research investigating the reading comprehension and strategy use of non-proficient English L2 readers in comparison with L1 readers. The results indicated that both L1 and L2 proficient readers employed global reading strategies and had a top-down approach to the text, whereas non-proficient L1 and L2 readers both preferred using bottom-up approaches to reading. A related case study examining proficient L2 readers' metacognitive strategy use (Li & Munby, 1996) concluded that readers of L2 academic texts tend to show a high level of strategy awareness and are capable of verbalizing their strategy use. Handayani and Widijantie (2021) measured Indonesian Business majors' strategy use when reading discipline-specific texts in English, focusing on pre-viewing strategies. Jincheng and Rahmat's comparative case study (2022) confirmed some of the earlier findings related to reading proficiency and strategy use, concluding that high-proficiency readers employed global (top-down) strategies considerably more often than less proficient participants. A final example is Krismayani and Menggo (2022), who used verbal protocols to identify the reading difficulties of English L2 undergraduates at a University in Bali.

Verbal protocols have generally proven to be effective data collection instruments in uncovering complex cognitive processes, knowledge structures and strategy use (Gass & Mackey, 2016, p. 25). Compared to surveys, they provide a considerably more detailed picture of specific language-related phenomena. However, because of the richness of data derived from verbal reports, sample sizes are normally small and the analysis is time-consuming (Gass & Mackey, 2016, pp. 16–17), which explains why verbal protocols tend to be less popular as a means of data collection than surveys.

2.4.3 Research questions

The previous sections have shed light on the importance and complexity of researching L2 reading skills in an academic context. Strategy use and awareness have indeed proven to be central to students becoming proficient readers in the foreign language. This study explored English majors' strategy use and self-perception as readers in an academic context. Employing a

TAP-based design complemented with the SORS survey measuring metacognitive reading strategies, the research sought to answer three principal questions:

(1) What reading strategies do participants employ in a controlled reading situation which attempts to imitate an actual academic reading situation to the fullest extent possible?

(2) How do participants perceive their own strategy use when reading in the L2, and how does it compare to the findings in verbal protocols?

Prior to the data analysis, it was hypothesized that there would be important differences between the data obtained from the protocols and follow-up interviews. At the same time, it was assumed that the general findings would be relatively consistent with each other; that is, self-perceptions would reflect the main tendencies of strategy use.

(3) To what extent are tendencies of strategy use and self-perception emerging in (1) and (2) are consistent with the SORS results in general?

Three different types of data collection were employed because the three research questions highlighted three distinct yet interrelated aspects of L2 English reading strategy use and self-perception.

3. Methodology

3.1 Participants

Participants of the research (n=12) were first-year students enrolled in the BA and teacher trainee programs at the Institute of English and American Studies, University of Szeged. All participants contributed on a voluntary basis following a general invitation to the research project.

3.2 Research materials

The main research material was a recent scientific article reporting the results of a worldwide study on the universal and culture-specific patterns of cooperation. The text was shortened and adapted to the needs of the data collection (see Appendix for full text). The other main instrument was the SORS test. The survey measures the three aforementioned groups of metacognitive strategies: global, problem-solving and support, with a variety of questions that refer to various sub-strategies. For example, Question 1: “I have a purpose in mind when I read” belongs to global categories, and can be labeled as the reader’s intention of “setting a purpose.” In comparison, Question 6 highlights the same process from a slightly different angle by focusing on the reader’s evaluative strategy: “I think about whether the content of the text fits my reading purpose.” In addition to ranking respondents’ preferences for the three strategy groups based on their responses to 30 statements on a 1-5 scale, the survey calculates an average to measure the level of general reading skills (Mokhtari & Sheorey, 2002).

3.3 Method of data collection

This research was preceded by a pilot study conducted in the spring semester of 2022. Based on the conclusions of the pilot study, the research design was revised and updated before the actual data collection one year later in the spring semester of 2023. The data collection consisted of three parts. Prior to starting the protocols, the participants were given a short training task to familiarize themselves with the method.

The first and major parts of the study consisted of semi-retrospective think-aloud protocols. The main text was divided into three sections, the end of each one marked with an asterisk. Students were instructed to stop reading after each asterisk and perform the following tasks: first, they had to summarize what they read in the given section; then they had to verbalize any thoughts that came into their minds while reading and any obstacles that occurred during the reading process, describing how they tried to overcome them. Essentially, they were invited to communicate everything they had experienced during reading. The final task was a five-sentence summary of the whole text, which was given at the beginning of the protocol in order to provide participants with a reason to do the reading. A major goal of the researcher was to imitate a real-life reading situation in an academic context to the extent possible within the limits of "laboratory" conditions.

The second part consisted of a semi-structured follow-up interview that included questions targeting participants' self-perceptions of their reading strategy use. The third and last part was the taking of the paper-based SORS test.

The think-aloud protocols and follow-up interviews were recorded with the consent of each participant. With the exception of one participant who opted for using English during the session, all participants provided data in Hungarian.

The data obtained from the semi-retrospective think-aloud protocols and the follow-up interviews comprise the bulk of the data and therefore constitute the focus of the discussion.

3.4 Data analysis procedure

Following the transcription of the recordings, the verbal protocols and the follow-up interviews were analyzed using MAXQDA. The observed instances of strategy use and mentions of strategies in the interviews were assigned codes. Initially, a deductive coding process was employed, using a set of 21 predefined codes based on the aforementioned taxonomies of reading strategies. These were later complemented by eight additional codes as a result of inductive coding based on the data. The methodological principles of the coding process were guided by Schreier (2013). Individual incidences of strategy use and mentions were added to receive a percentage distribution of the strategies across the data.

The data were then divided into two major datasets: one for the verbal protocols and the other for the follow-up interviews. For the latter, frequency was calculated based on the number of participants mentioning the strategy at least once, for the reasons described in section 4.3.

4. Results and discussion

4.1 General findings in the corpus

There were a total of 215 instances of strategy use or mentions observed in the data. The following table presents the distribution of the total broken down by strategy type and the number of occurrences across the data, in ascending order of frequency.

Table 1. Total instances of strategy use and mention across the data.

Strategy type	Frequency	Percentage
visualizing information	0	0.00
adjusting reading rate	0	0.00
final reading	1	0.46
taking a break	1	0.46
conscious focus	1	0.46
skipping (then returning)	1	0.46
compare expectations with content	1	0.46
summarizing	1	0.46
pre-viewing	1	0.46
pre-reading preparations	2	0.93
formulating questions	2	0.93
paraphrasing & translation	2	0.93
reading aloud	2	0.93
predicting	3	1.40
using supporting details	6	2.70
clarifying	6	2.70
note taking & highlighting	6	2.70
analyzing	7	3.20
inferencing	7	3.20
scanning	7	3.20
getting the gist of the text	8	3.72
skimming	8	3.72
using external resources	9	4.19
self-monitoring	13	6.05
activating prior knowledge	15	6.98
prioritizing information	18	8.37
guessing the meaning from context	26	10.28
re-reading	30	13.95
self-evaluation	31	14.41
Total	**215**	**(100.00)**

Percentages are rounded to two decimal places for transparency.

As can be seen from Table 1 above, 19 of the 21 strategies listed in the deductive coding process were present in the data to varying degrees. Two strategies, visualizing information and adjusting the reading rate, were neither employed nor mentioned in the verbal reports. From the complete list of 29 strategies, there were seven items which occurred once (accounting for 0.46% of the total, respectively). These were the following: final reading, taking a break, conscious focus, skipping (then returning), comparing expectations with content, summarizing and pre-viewing. Of the seven strategies, only the last two were included in the initial 21-item list, with the rest added later in the analysis. There were four items with two occurrences (0.93%) and one with three (1.40%). In the mid-range of the spectrum, we find nine strategies with an occurrence between 6 and 9 (2.70-4.19%, translated into percentages). With the exception of getting the gist of the text, all the items in this range are from the original 21-item list, which comprises some of the most commonly used strategies cited in the relevant literature. In the top tier are six strategies, namely: self-monitoring (6.05%), activating prior knowledge (6.98%), prioritizing information (8.37%), guessing the meaning from context (10.28%), re-reading (13.95%), and self-evaluation (14.41%). These numbers include all occurrences and mentions of strategy use, together with the verbal protocols and follow-up interviews.

4.2 Main findings of the verbal protocols

One initial assumption made prior to the data collection was that there would be salient differences between participants' performance on the verbal reports and their perception of strategy use in the self-reports. The separation of the data into two main sets confirmed this hypothesis. Table 2 below demonstrates the types and frequency of strategy use in the 12 verbal reports in ascending order of frequency.

Table 2. Types and frequency of strategy use in the verbal protocols

Strategy type	Frequency	Percentage
skimming	1	0.99
formulating questions	2	1.98
scanning	2	1.98
analyzing	3	2.97
getting the gist	3	2.97
inferencing	5	4.95
using supporting details	6	5.94
clarifying	6	5.94
prioritizing information	7	6.93
activating prior knowledge	8	7.92
self-monitoring	10	9.90
guessing the meaning	11	10.89
re-reading	13	12.87
self-evaluation	24	23.76
Total no. of occurrences	**101**	**100**

Altogether, 14 different types of strategies were observed in the semi-retrospective reports, with three strategies topping the list: guessing the meaning, re-reading for clarification and self-evaluation. The total number of strategies used in the protocols (101 out of 215) accounted for 47 % of the total. The top three strategies were guessing the meaning, re-reading and self-evaluation, the latter used in the sense of self-assessment of task-specific and general reading performance. In fact, participants were observed to both *employ* and *talk about* reading strategies during the protocols. The excerpts below will now present examples of the top three strategies. All excerpts were translated into English by the author of this study. For the sake of economy, interjections, hesitations and certain attitudinal markers were excluded from the translation.

Guessing the meaning

Mokhtari and Reichard (2002) categorize guessing the meaning as a problem-solving strategy, as it involves figuring out the meaning of unfamiliar lexical items from the context. Of the total number of strategies used in the verbal protocols, 11 (10.80%) pointed to participants employing this strategy in an effort to decipher meanings or show awareness of its importance in the process of reading. The following excerpts evidence successful and failed attempts to guessing the meaning.

(1) *For example, if I was presented the verb 'comply with' without context, I would not be able to guess the meaning, but here it was clear to me what it meant.* (Participant 3)

(2) *Here is the word "anthropological", and I should know what it means, but I still don't get it. I always try to guess from the context, and, as it stands together with "economic" and the two are connected with "and", I infer that it means something similar.* (Participant 7)

(3) *In the first paragraph of this part I encountered a couple of unknown words and phrases. For example, I had never seen the expression "Lamalera", and the same goes for the words 'large catch' and 'forager'. First I tried to work out the meaning from the context, but it did not help. Luckily though, I did not need them to understand the passage. I don't think they were important for comprehension.* (Participant 2)

(4) *I had not encountered the phrase "preference for compliance" prior to reading the text. Obviously, I know what "preference" means, but I have never seen "compliance" in this context, and I could not make out what it means. That gave me some thinking, but I still managed to understand the conclusion of the research.* (Participant 2)

Examples 1 and 2 show (at least partially) successful guesswork. Interestingly though, in none of the three cases do participants actually verbalize their solution, which might imply that they formulated an approximate idea of what the unknown word means and they were comfortable enough with that to move on reading. Excerpts 3 and 4, however, show two unsuccessful attempts by the same participant's trying to figure out unfamiliar words. At the same time, both participants reported being able to grasp the gist of the text without knowing these words, a remark worthy of attention, particularly in the case of 4, where it was one of the keywords in question. This strategy appears to follow similar patterns across the data: apart from the few

unsuccessful ones, most attempts resulted in participants' reporting having understood the meaning of the unfamiliar lexical item.

Re-reading

Re-reading is a fundamental strategy that has consistently figured among the major reading classifications, often listed along reading aloud and adjusting reading speed (see Block, 1986, Alderson, 2001, Mokhtari & Reichard, 2002, Grabe & Yamashita, 2022). Considered a problem-solving metacognitive strategy in the Mokhtari-Reichard taxonomy, re-reading is closely associated with the reader's effort to overcome comprehension obstacles, which usually concern larger units of texts. Let us now see some examples of this strategy in the dataset:

(5) *The first sentence was a bit too long, and I had to go through it like three times to understand it.* (Participant 3)

(6) *Maybe the very last sentence was a longer and more complex one, and I had to skim through it twice or three times. It was important to understand this final sentence, but the sentences at the beginning were easy to understand*. (Participant 4)

(7) *There weren't any difficult words, but I had to re-read some parts to make sure I remember them. For example, we had these examples from Indonesia and Tanzania, and I re-read them to get the idea, but, apart from that, it was comprehensible*. (Participant 8)

Reflections of re-reading follow a very similar pattern: the participant identifies the part or sentence that was difficult for them to understand upon first reading, and then reports going back and re-reading that specific part in the hope of figuring out the meaning. Excerpts 5 and 6 show instances of re-reading as a result of syntactic complexity, while in excerpt 7, the difficulty in comprehension springs from the abundance of supporting details in the passage.

One noteworthy detail regarding the sub-corpus on re-reading is the phenomenon of some participants' tendency to integrate bits of self-evaluation into retrospection. Below are two examples of this phenomenon:

(8) *I tend to first skim through the text, and I can't remember much after it, so I have to force myself to go through it again in detail.* (Participant 9)

(9*) I have noticed that I always overlook numbers. I don't really read them, but if I have to, I go back to them to see the exact number.* (Participant 6)

These excerpts seem to substantiate re-reading as a metacognitive strategy: participants report taking the conscious decision to re-read the sentence or passage in question to clarify meaning. This observation led us to discuss some peculiarities of self-evaluation of verbal protocols.

Self-evaluation

Unlike the other metacognitive strategies identified in the verbal reports, self-evaluation bears upon participants' perception of themselves as strategic readers instead of the information

content and organizational structure of the text. This strategy has by far exceeded all the others in terms of frequency of occurrence (23.53%). The excerpts presented below highlight different aspects of self-evaluation, which can be divided into two groups: self-assessments of text-specific performance and general strategy use.

(10) *I don't know why, but for some reason it took me longer to read this part. It's either because I have become tired or simply because it was harder for me to understand.* (Participant 8)

(11) *I think I'm generally a slow reader, because I often can't concentrate and I have to re-read the same sentence again and again.* (Participant 3)

(12) *I have noticed that sometimes I don't understand what's going on at the beginning of the paragraph, and, instead of re-reading, I decide to read on and hope that it will help me understand what was not clear before. This might be a bad strategy and I should re-read instead, but I usually opt for this solution due to lack of time.* (Participant 7)

Excerpt 10 is an instance of self-evaluation in which the participant focuses on a specific reading task. Excerpts 11 and 12, in contrast, exemplify participants' general observations of their reading practices, and they do so in two different ways. In excerpt 11, the participant reports concentration issues during reading and explains how she tries to overcome them by re-reading. In 12, we see a more complex explanation developed in the self-reflection: the participant identifies the problem (comprehension problems at the beginning of paragraphs), explains the strategy he usually employs in an attempt to overcome it (reading on), and then criticizes his own approach and offers a seemingly better solution (re-reading). To answer the question that would logically follow, he immediately adds that lack of time is the chief reason why he chooses to go with a "weaker" strategy. While the latter example proved to be exceptional in terms of the complexity of the explanation provided by the participant, it can be stated that participants generally had a critical view of their strategy use, showing the capacity to identify their strengths and weaknesses.

To summarize the findings relevant to the verbal protocols, it can be concluded that participants demonstrated varied strategy use, with metacognitive strategies topping the frequency list. Participants showed awareness of certain strategies, which is reflected in the observed instances of self-evaluation. It has to be added, however, that while in the larger part of the dataset it was possible to draw relatively clear-cut distinctions of strategy use, there were examples of participants' using multiple strategies simultaneously, occasionally blurring the division lines. These observations might be regarded as a potential justification for the aforementioned definitional uncertainties in the literature; however, owing to the constraints in the scope of the present study, this issue will not be further discussed. Instead, let us turn our attention to the data obtained from the follow-up interviews.

4.3 Main findings of the follow-up interviews

The second subsection of the data analysis presents the results of the follow-up interviews. The goal of this segment of analysis is twofold: on the one hand, it examines participants' self-perception of themselves as L2 readers in an academic context. The data presented herein will be used to provide a basis for comparison with the findings of the verbal protocols. Below are

the strategies mentioned or described in the self-reports. Frequency was calculated based on the number of participants mentioning the strategy at least once, as was the case on several occasions that participants' reports of using a strategy were redundant (i.e., there was no perceivable difference in the function(s) of the given strategy between its individual mentions), it appeared to be of no real practical value to count the individual occurrences in this set of the data. Table 3 below regroups strategies according to three bands of frequency of occurrence (i.e., how many of the 12 interviews they were mentioned).

Table 3. Strategies mentioned in the follow-up interviews regrouped in three bands

Frequency 1-3	Frequency 4-6	Frequency 7-11
inferencing	getting the gist	using external sources
pre-viewing	scanning	guessing the meaning
summarizing	prioritizing information	re-reading
taking mental notes	note-taking and highlighting	
comparing expectations with actual content	skimming	
	self-evaluation	
skip and return		
conscious focus		
taking a break		
reading aloud		
final reading		
predicting		
keywords		
using supporting details		
paraphrasing and translation		
background knowledge		
self-monitoring		
pre-reading preparations		
analyzing		

As shown in Table 3, the number of strategies evoked in the follow-up interviews far exceeded that of the verbal protocols, with 27 compared to 14. Except for clarifying and formulating questions, all strategies presented in the verbal protocol were mentioned in the interviews. The majority of them, however, had a frequency between 1 and 3, meaning they were mentioned between one and three participants. This frequency band contains 18 out of the 27 strategies, accounting for two-thirds (66.66%) of the total number. The frequency band of 4-6 mentions counts 6 strategies (22.22%), and the remaining three strategies (11.11%) belong to the 7-11 range. No strategy was mentioned by all of the participants. Similarly to the analysis of the verbal protocols, the discussion in this subsection focuses on participant perceptions of the top three strategies in the follow-up interviews, which are, in ascending order of frequency: using external resources (n=7), guessing the meaning (n=9), and re-reading (n=11).

The full list of follow-up questions is provided in the Appendix. The questions relevant to strategy use in L2 reading were the following (NB. the numbering is different from the original, see Appendix):

(1) In general, how do you approach the reading of an English text? Do you have any conscious strategies to it?

(2) What do you do when you get stuck while reading a text? Do you try to resolve the problem yourself, or do you seek external help?

(3) While and after reading a text, what do you do to understand and remember what you have read?

Using external resources

Having recourse to outside reference is among the most commonly employed support strategies (Alderson, 2001; Mokhtari & Reichard, 2002; Semtin & Maniam, 2015). Seven of the 12 participants reported using external resources in response to the question of how they overcome reading difficulties (Question 2). Below are some examples demonstrating this.

(13) *I often use the dictionary. First, if possible, I try to guess it from context. For example, we had the word "comply", and I wouldn't have looked it up in the dictionary anyway because its meaning is obvious. But when I'm really not sure about the meaning, I reach for the dictionary; this is what I would've done in the case of "ingrained".* (Participant 3)

(14) *First I try to resolve the problem myself by, let's say, guessing the meaning. If that doesn't work, then I need outside help.* (Participant 5)

(15) *It depends on the kind of text that I'm reading, and it depends also on the reason why I'm reading it. For example, if it's an academic task and I have to read it and I don't have much time on my hand, then I, I go for the easiest solution and I know it's not the best one because it's not.* (Participant 10)

(16) *It depends on the nature of the problem. I usually try to find the solution myself, but when I get stuck, when there's a word that I really can't figure out, I use the dictionary. Other than that, I don't use any outside sources.* (Participant 12)

The examples taken from four different participants suggest that using the dictionary is the most common external help they seek in the case of lexical-level comprehension difficulties. However, three of the four participants in the sample report reaching for the dictionary only after having tried to deduce the meaning from context. In excerpt 15, we see the participant naming lack of time as the primary reason she goes for "the easiest solution" despite acknowledging its shortcomings. In addition, one participant reported asking for help from fellow students or teachers when encountering comprehension problems in a classroom context.

Guessing the meaning

As it was just formulated in relation to the examples provided above, participants tended to use guessing from context as a means of deciphering unfamiliar vocabulary. In fact, 9 out of the 12 respondents mentioned using this strategy in their general reading practice. Below are two examples demonstrating the participants' preferences for this problem-solving strategy.

(17) *I usually try to resolve the problem on my own. I rarely use a dictionary, but I know that sometimes I should. What I usually do is read on and try to guess the meaning from context.* (Participant 8)

(18) *I usually prefer finding the solution myself even if I have to re-read the same part five times […] This, of course, depends on the text too, but I mostly try to resolve the problem on my own, I try to guess the meaning from context.* (Participant 11)

The relevant data in this subcorpus suggests a complementary relationship between using the dictionary and deducing meaning from context – or, on some occasions, from background knowledge of lexical elements belonging to the same word family as evidenced in the verbal protocols.

Re-reading

Similarly to guessing from context, re-reading figured in the top three strategies in both the verbal protocols and the follow-up interviews. A problem-solving strategy which involves scanning for specific passages or sentences within the text, re-reading appears to be a commonly and consciously applied strategy among participants. Below are some representative excerpts supporting this observation. This strategy was mentioned in participant answers to all three interview questions, that is, general participant approach to reading a text (excerpts 19 and 20), overcoming comprehension difficulties (excerpts 21 and 22), and remembering information from the text (excerpts 23 and 24).

(19) *First I read through the whole text, and while so doing, I make a note of the parts I have to go back to. I return to that part after the first read, and re-read it. Once I've understood it, I re-read the whole text once again.* (Participant 2)

(20) *First I always read the whole text, and if, let's say, there is a task accompanying it, and I find a word [connection?], I go back to the text and re-read that part.* (Participant 5)

(21) *I start re-reading the text a little bit later, because that helps me to move on without a problem.* (Participant 9)

(22) *I re-read the difficult part multiple times, hoping it will help.* (Participant 8)

(23) *I don't have any particular technique. If I can't remember what I'm reading, I go back and re-read it.* (Participant 5)

(24) *I make a note of the parts I have to go back to while reading. I return to that part after the first read.* (Participant 12)

In addition to highlighting participants' use of re-reading as a way to overcome comprehension problems, excerpts 19–24 suggest that re-reading can be effective in identifying important parts of a text when, for example, looking for answers to a question in a related task in excerpt 20. It is also used as a means to remember vital information in a text, as formulated in excerpts 23 and 24. As re-reading involves searching for specific information based on the data, it might not be

implausible that it constitutes a form of scanning, a strategy that was not included in the Mokhtari-Reichard taxonomy.

Despite the fact that the scope of the present analysis is limited to strategies with the highest frequencies of occurrence, it might be worth taking a quick look at strategies mentioned in the follow-up interviews but absent in the verbal protocols. These mostly belong to the low-frequency (1-3) band and include strategies that are not generally discussed in the literature, such as taking mental notes, skipping difficult parts and then later returning, comparing expectations with actual content or paraphrasing and translation. The only exception here is the strategy of using external resources, the absence of which in the protocols appears to be justified by the circumstances of the data collection, that is, participants were not allowed to use a dictionary or ask for help from the researcher. While most of the strategies listed above appear to be instances of individual strategies, upon closer examination, they might be relatable to some of the more common strategies. For instance, skipping and returning will obviously include re-reading, and comparing pre-reading anticipations to the actual information content of the text, together with predicting, involves activating background knowledge, a strategy generally regarded as essential in the pre-reading and pre-viewing phases (Oxford, 2017, pp. 275–276; Grabe & Yamashima, 2022, p. 302). It is possible that, in their answers, participants highlighted elements of "larger" strategies that they found important to mention.

4.4 Answering research questions (1) and (2)

The first two research questions aimed to explore strategy use and self-perception across participants. A summary of these findings is provided below.

RQ1: *What reading strategies do participants employ in a controlled reading situation which attempts to imitate an actual academic reading situation to the extent possible?*

Based on the frequency of occurrence, it can be stated that the three most commonly used strategies were guessing the meaning, re-reading and self-evaluation (with this latter one including reference to the use of other strategies). These are all categorized as metacognitive strategies, based on relevant taxonomies. Indeed, participants' apparent preference for metacognitive strategies seems to be further reinforced by the fact that places 4 to 6 in the list are also occupied by strategies of the same category, namely, self-monitoring, activating background knowledge and prioritizing information. Furthermore, participants tended to show awareness of their thought processes and demonstrated the capacity to view their performance critically.

RQ2: *How do participants perceive their own strategy use when reading in the L2, and how does it compare to the findings in verbal protocols?*

The relevant questions of the follow-up interviews highlighted a strategic mindset that appeared to be more diverse in nature than what could be revealed in the verbal protocols. The top three strategies were the use of external resources, guessing from context and re-reading, which, once again, belong to the metacognitive realm. A similar tendency is revealed in the mid-frequency band (4-6 occurrences), with strategies such as note-taking and highlighting, prioritizing

information and self-evaluation having a solid presence in the self-reports. The low-frequency band (1-3 occurrences) included a mixed list of cognitive and metacognitive strategies.

A comparison of the two datasets yielded similar results. First, two of the top three strategies are the same in the verbal protocols and the follow-up interviews, and there is noticeable overlap in the rest of the data despite the latter dataset being greater in variety. Second, both datasets showed a preference for metacognitive strategies. The main cognitive strategies include analyzing, inferencing, and clarification.

4.5 Results of the SORS test

The third research question of the study set out to explore potential correlations between the main findings of the interviews and the results of the SORS test. To briefly recap, the SORS measures L2 learners' metacognitive reading strategies along the three main dimensions of the Mokhtari-Reichard taxonomy, namely, global, problem-solving and support strategies.

The overall average of the 12 participants was 3.69, which falls into the lower range of the high band (from 3.5 upwards), indicating that participants generally have a high level of strategy use when it comes to reading in the L2. Individual averages varied between 3.03 (medium) and 4.30 (high). None of the participants scored in the low band (2.4 or lower). As for the specific groups of strategies, the results showed the following order of preference across participants: problem-solving, global and support strategies. Indeed, 8 out of 12 (67%) respondents scored highest on problem-solving strategies, and 4 out of 12 (33%) were found to use global strategies in the first place. Support strategies came in third place, 10 out of 12 times (83%). In light of these findings, let us now return to RQ3:

RQ3: *To what extent are tendencies of strategy use and self-perception emerging in (1) and (2) are consistent with the SORS results in general?*

The data obtained from the verbal protocols and the follow-up interviews suggested participant preference for metacognitive strategies in comparison with cognitive ones. While this tendency appears to be consistent across the two datasets, the overwhelming prevalence of metacognitive strategies might be partially explained in terms of them being considerably larger in number in the taxonomical systems and, therefore, in the set of codes applied to the data. The results of the protocols and the interviews suggest an overall preference for global and problem-solving strategies, with the exception of the support strategy of using external resources figuring in the top three strategies of the follow-up interviews. It can be thus stated that the broad comparison of the SORS results with the main findings suggests a certain degree of consistency between the numerical and the qualitatively assessed datasets.

5. Conclusion

The primary goal of this study was to investigate strategy use and reader self-perception among first-year English majors and teacher trainees. A combined research design of semi-retrospective verbal protocols, follow-up interviews, and the SORS test was used to map out potential patterns of strategy use. The results suggest that participants generally tend to show awareness of their strategy repertoire and they prove to be capable of viewing themselves as

readers from a critical angle. The comparison of the three sets of data shows a strong preference for metacognitive strategies, with problem-solving and global strategies being the most frequently used and mentioned ones. These results appear to be consistent with international research findings, indicating that proficient readers tend to use high-order strategies to a considerable extent. Future research directions could involve the expansion of the study to a wider population and possibly over longer periods of time. A longitudinal examination of the participants' L2 reading strategy use could provide a reliable picture of how their reading skills develop. A study of such a scale would, of course, require a research design embedded in the syllabus of the reading skills seminar, which would definitely have important pedagogical implications.

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Appendix: Self-developed research materials

A: Text used in the verbal protocols

Small acts of kindness are frequent and universal, study finds

Around the world, research reveals, people help each other about every 2 minutes

A new study by UCLA sociologist Giovanni Rossi and an international team of collaborators finds that people rely on each other for help constantly. In the study, published in *Scientific Reports*, a group of international authors explore the human capacity for cooperation. They found that people signal a need for assistance, such as asking someone to pass them a utensil, once every couple of minutes.

The research revealed that those requests for help do not go unanswered: Across cultures, people comply with these small requests far more often than they decline them. On the rare occasions when people do decline, they explain why. These human tendencies transcend cultural differences, suggesting that, deep down, people from all cultures have more similar cooperative behaviours than prior research has established.*

The new findings help solve a puzzle generated by prior anthropological and economic research, which has emphasized variation in rules and norms governing cooperation. For example, while whale hunters of Lamalera, Indonesia, follow established rules about how to share out a large catch, Hadza foragers of Tanzania share their food more out of a fear of generating negative gossip. "Cultural differences like these have created a puzzle for understanding cooperation and helping among humans," said Rossi, the paper's first author. "Are our decisions about sharing and helping shaped by the culture we grew up with? Or are humans generous and giving by nature?"

To answer those questions, the authors analyzed over 40 hours of video recordings of everyday life involving more than 350 people in geographically, linguistically and culturally diverse sites -- towns in England, Italy, Poland and Russia, and rural villages in Ecuador, Ghana, Laos and Aboriginal Australia.*

The analysis focused on sequences in which one person sent a signal for help, such as asking directly or visibly struggling with a task, and another person responded. The authors identified more than 1,000 such requests, occurring on average about once every two minutes. The situations involved "low-cost" decisions about sharing items for everyday use or assisting others with tasks around the house or village, for example. Such decisions are many orders more frequent than "high-cost" decisions such as sharing the spoils of a successful hunt, a type of decision that has been found to be significantly influenced by culture.

People complied with small requests seven times more often than they declined, and six times more often than they ignored them. People did sometimes reject or ignore small requests, but a lot less frequently than they complied. People helped without explanation, but when they declined, 74% of the time they gave an explicit reason. The average rates of rejection (10%) and ignoring (11%) were much lower than the average rate of compliance (79%).

The preference for compliance held across all cultures and was unaffected by whether the interaction was among family or non-family members. The findings suggest that being helpful is an ingrained reflex in the human species, Rossi said.*

B: Follow-up interview questions

1. On a scale of 1 to 5, how difficult did you find the text? (If you found it difficult: what do you think the reason was?)
2. In general, how do you approach the reading of an English text? Do you have any conscious strategies to it?
3. What do you do when you get stuck while reading a text? Do you try to resolve the problem yourself, or do you seek external help?
4. While and after reading a text, what do you do to understand and remember what you have read?
5. How often do you read scientific and non-scientific texts in Hungarian?
6. How often do you read scientific and non-scientific texts in English?
7. Besides English, what other language(s) do you speak? (If you speak another language: do you read in that language?)