

*Researching pronunciation learning strategies:  
An overview and a critical look*

Miroslaw Pawlak

Adam Mickiewicz University, Kalisz, Poland

State University of Applied Sciences, Konin, Poland

[pawlakmi@amu.edu.pl](mailto:pawlakmi@amu.edu.pl)

Magdalena Szyszka

Opole University, Poland

[mszyszka@uni.opole.pl](mailto:mszyszka@uni.opole.pl)

Abstract

Disparate goals that learners might have in learning second or foreign language pronunciation and the scant classroom time that can be dedicated to teaching this target language subsystem dictate that learner autonomy is of vital importance in this case and adept use of pronunciation learning strategies (PLS) can be viewed as key to the development of this attribute. Surprisingly, research on these strategies is scarce, mainly focusing on the identification and classification of PLS, diverse instruments are used for data collection and the findings are inconclusive. The paper provides an overview of the available research on PLS with respect to their identification, learners' preferences concerning their use, factors mediating the application of PLS, and the effects of strategies-based instruction in this area. An attempt is also made to assess research of this kind and to suggest how it could be taken forward to provide insights that would be of value to practitioners.

*Keywords:* pronunciation learning; pronunciation learning strategies; strategies-based instruction

## 1. Introduction

As noted by Pawlak (2006a, 2006b, 2010a), learning pronunciation in a second or foreign language (L2) is a task that requires a certain degree of autonomy, defined as “the ability to take charge of one’s own learning” (Holec, 1981, p. 3) or “a capacity for detachment, critical reflection, decision making and independent action” (Little, 2000, p. 69). This is primarily because, whether the goal of pronunciation instruction is to enable near-native like proficiency in a target language (TL), as is the case with students majoring in a foreign language, or learners are merely expected to achieve what has been described as comfortable intelligibility (Kenworthy, 1987), the limited classroom time makes it difficult, if not impossible, to systematically focus on this TL subsystem. Consequently, students who wish to improve their pronunciation, whatever their individual goals might be, usually have to do this in their own time, which clearly calls for the ability to set realistic goals, choose appropriate ways of learning, engage in constant monitoring and conduct valid self-evaluation. Since adept use of language learning strategies (LLS) is seen by many specialists as a vital, or perhaps even indispensable condition for the development of autonomy in L2 learning (e.g., Griffiths, 2013; Oxford, 1990, 2011, 2017; Wenden, 1991), it can reasonably be argued that the same applies to learning TL pronunciation. In view of this, it is quite surprising that research into pronunciation learning strategies (PLS) has been visibly lagging behind the advances in other domains of empirical investigations of LLS and only in the last decade or so has this area begun to inspire more systematic research endeavors. The aim of this paper is to remedy this situation by providing an exhaustive overview of the existing studies of PLS, making an attempt to critically evaluate such research in terms of its focus and methodology, and suggesting ways in which this line of inquiry can be beneficially moved forward. With this in mind, at the outset, the definition and role of PLS will be considered, which will be followed by the discussion of key methodological issues and a narrative synthesis of the existing empirical evidence, separately for the identification of PLS, learners’ preferences regarding their application, factors influencing PLS use and attempts to conduct strategies-based instruction in this area. The paper will close with an assessment of what studies of PLS have been able to accomplish thus far and a consideration of future research directions in this area.

## 2. Definition and utility of PLS

Before embarking on an overview of research that has focused on different aspects of strategies for learning L2 pronunciation, it is crucial to define the construct and consider the ways in which such strategic devices can potentially contribute to

improved mastery of this subsystem. In what perhaps constitutes the first definition of PLS, coined for the sake of the first empirical study that specifically targeted this area, Peterson (2000) characterized such strategies as “steps taken by students to enhance their own pronunciation learning” (p. 7). This description clearly corresponds to the classic definition of LLS proposed by Oxford (1990), which emphasizes the involvement in the learning process of not only cognitive, but also physical, social and affective resources of learners. More recently, Pawlak (2010a) characterized PLS as “deliberate actions and thoughts that are consciously employed, often in a logical sequence, for learning and gaining greater control over the use of various aspects of pronunciation” (p. 191). This definition emphasizes some key aspects of the concept, namely: (1) the purposefulness of the use of PLS, (2) a certain level of awareness of this use, (3) the fact that PLS can be both observable (e.g., numerous repetitions of words that are difficult to pronounce) and unobservable (e.g., a mental plan of how to get around a persistent pronunciation problem), (4) the importance of combining PLS into clusters or chains for the benefit of achieving learning goals, and (5) the fact that PLS can be employed with the purpose of better understanding and remembering TL pronunciation patterns but also with a view to successfully employing various segmental and supra-segmental features in communication, or what could be related respectively to the development of explicit and implicit knowledge (cf. Ellis, 2009).

While it is the second definition that serves as a point of reference in the present overview, it is also warranted to extrapolate a definition of PLS from recent definitions of LLS proposed by two leading specialists in the field. First, adopting Oxford's (2017, p. 48) conceptualization, PLS can be characterized as teachable, dynamic thoughts and behaviors that learners consciously select and employ in specific contexts to improve their self-regulated, autonomous L2 pronunciation development for effective task performance and long-term proficiency (see also the definitions of strategies for learning grammar and vocabulary on p. 244). Oxford (2017) also makes a distinction between strategies for learning L2 phonology and strategies for learning L2 pronunciation, but the focus on both learning and use included in Pawlak's (2010a) definition somewhat obviates the need for such a differentiation and allows the use of PLS as an all-inclusive concept. Second, taking into account Griffith's (2018) latest definition of LLS, PLS can be described as actions, chosen by learners, for the purpose of learning TL pronunciation (but apparently not for using it effortlessly in communication). Although there are some clear differences between these two definitions and the one proposed by Pawlak (2010a), related, for example, to the element of choice, dependence on context, dynamism, teachability, reference to specific tasks or the issue of performance, there are also obvious similarities. Therefore, it can reasonably be argued that the selected definition, which is somewhat

more general and inclusive, is sufficient for an overview of a field that is still in its infancy. This does not mean obviously that other characterizations cannot provide important insights into directions for future research, which will be touched upon in the concluding section.

Although Moyer (2014) identified the use of carefully-selected self-regulated strategies as well as constant reflection on the effectiveness of these strategies as one of the key factors which contribute to the achievement of near native-like L2 pronunciation, it must be emphasized that this takes place only when learners recognize the need for improvement in this domain, which of course is not always the case. Assuming that learners are indeed concerned with greater mastery of TL pronunciation, be it on account of aspiring to become indistinguishable from native speakers or merely being able to articulate words in an intelligible manner, skillful PLS use can undoubtedly facilitate the accomplishment of this goal. Following Dörnyei's (2005) assumption that "the actual student response only becomes strategic if it matches the IF condition in the pursuit of a goal, that is, if it is appropriate for the particular purpose" (p. 165), it is fully warranted to assume that if a learner consciously and intentionally falls back upon strategic devices promoting improvement in pronunciation, the learning, storage, retrieval or use of different aspects of this TL subsystem is enhanced. To put it differently, appropriate application of PLS can potentially foster the awareness and learning of pronunciation features but also assist the application of these features in different types of learning tasks, both more controlled and more communicative. Thus it can contribute to the development of both explicit, declarative (e.g., being cognizant of the position of a specific vowel in a vowel chart) and implicit, procedural knowledge (e.g., actually producing that vowel in the right way in different linguistic contexts in spontaneous communication).

A separate issue concerns the extent to which different types of PLS can in fact contribute to enhanced mastery of pronunciation and even if such an approach runs counter the current recommendations to avoid squeezing LLS into fixed categories (e.g., Oxford, 2017), it is still very much the reality of strategy research and there appears to be a pressing need to impose order on a field that is still largely an uncharted territory. It stands to reason that metacognitive strategies, or, more broadly, different types of metastrategies (see Oxford, 2011, 2017) are bound to play an important role but they are not likely to be specific to learning pronunciation. On the other hand, cognitive, memory and compensation strategies can surely be geared to the distinctive challenges posed by L2 phonetics, although logic as well as the findings of previous research (see section 4 below) dictate that the first group may be the most relevant as it includes different types of practice or analyses. Memory strategies, such as representing sounds in memory or remembering their visual representations, may be useful

mainly at initial stages, while the role of compensation PLS, such as the use of proximal articulations may be even more limited, not least because they are difficult to fall back on in more communicative tasks where limited attentional resources have to be directed at other aspects of speech production. Affective and social strategies could potentially be extremely useful, since the former can help reduce anxiety and the latter can facilitate obtaining assistance from peers or the teacher, but reliance on them may hinge upon individual differences, particularly with respect to personality and learning styles, which could account for scant evidence for their use in available research findings (cf. Pawlak, 2006b, 2008, 2010a).

### 3. Methodological issues

Whatever the specific aims of studies of PLS, be it merely identification of strategic devices that L2 learners report using in general or in the performance of a particular task, determining the link between reported frequency of PLS use and attainment in pronunciation learning or an individual difference (ID) variable, or assessing the efficacy of strategies-based instruction (SBI) focused on PLS, there is always a need to collect data on strategy use. As is the case with LLS more generally, this can be done by means of different instruments and procedures, which can include, among others, questionnaires containing Likert-scale items, such as the *Strategy Inventory for Language Learning* (SILL, Oxford, 1990; see the paper by Amerstorfer in this special issue), surveys including open-ended queries, retrospective interviews, immediate reports, observations, diaries, logs and journals, including e-journals, as well as introspective methods, such as think-aloud protocols (see Cohen, 2011; Griffiths, 2018; Oxford, 2011; White, Schramm, & Chamot, 2007). Obviously, the different tools are afflicted by their own share of problems, they may be more or less suitable depending on the objectives of the study, and, in many cases, perhaps the best solution is using methodological triangulation by integrating data coming from several sources. For example, a carefully validated questionnaire may not be the best way to gather information on the use of strategies employed in a specific learning activity that students have just completed, immediate reports will yield little data on generalized strategy use, and changes in the application of LLS over time may best be captured by a combination of questionnaires, interviews and diaries completed at longer-time intervals.

Although, as will be shown in the following section, research into PLS has to some extent taken advantage of most of the data collection tools mentioned above, empirical investigations of this kind come with their own specificities, exigencies and requirements, with the effect that some instruments are more useful than others. First, perhaps one of the greatest limitations of such research

is that learners, particularly those who have little concern for pronunciation, may be less likely to fall back on strategies, in which case the use of questionnaires with items representing different strategic devices may produce highly unreliable data. While it could be argued that this problem applies in equal measure to all LLS research, it is particularly acute in the case of PLS since the learning goals in this case are remarkably diverse. Second, probably equally importantly, even when learners attach much importance to pronunciation, as the case may be with L2 majors, their awareness of the use of PLS may be diminished, particularly in more communicative tasks in which the need to convey the intended meanings will naturally direct the limited attentional resources to grammar, lexis or the ways in which obstacles to getting the intended meanings across can be overcome (i.e., communication strategies). While this problem is surely somewhat alleviated in more controlled activities dealing with pronunciation features, interviews or immediate reports may fail to produce data that would be sufficiently rich for detailed analysis. Third, reliance upon introspective procedures is severely limited to the preparation stages of communication tasks or to the performance of highly controlled exercises focusing on explicit knowledge (e.g., identifying similar sounds in a set of words or providing a phonetic transcription), because participants clearly cannot speak and talk about their mental processes at the same time. Fourth, similarly to research on other less researched TL subsystems (e.g., grammar, see the paper by Pawlak in this issue), the lack of classifications and questionnaires specifically designed to explore strategy use in particular areas results in the temptation to adopt existing categorizations and only slightly modify popular tools, most likely the SILL, which are intended to tap general use of LLS. Even though there is no denying that some valuable data can be obtained in this way, modified questionnaires are often too crude to give justice to the specificity of learning pronunciation, and interpretation of the data with reference to general frameworks may lead to major omissions and oversights. This clearly indicates that there is an urgent need to develop comprehensive classifications of PLS and construct new instruments, more suited to the study of strategies that can be employed to learn and use pronunciation features. All of this goes to show the importance of using mixed-methods designs and reliance on a combination of instruments in research into PLS, a point that will be elaborated upon at the end of the paper.

#### 4. Overview of existing research

The present section offers a synthesis of the available studies on pronunciation learning strategies in four areas, that is, identification and classification of PLS, investigation of learners' preferences for strategy use, examination of the link

between PLS use and achievement as well as ID factors, and investigation of the effectiveness of strategies-based instruction focused on PLS. While such a division is surely not without its shortcomings, one being that the discussion of some domains is evidently more extensive than others, it is related to the paucity of research in this domain, the somewhat natural focus on the description of PLS at such initial stages, or the fact that there is not enough research to justify the inclusion of separate categories (e.g., devoted to studies seeking to validate PLS inventories). At the same time, in the view of the authors, organizing the synthesis around the main foci makes more sense than doing so in terms of methodological paradigms (e.g., quantitative, qualitative or mixed-methods), as this will better reflect the main research directions and highlight the lines of inquiry that are in need of more attention. What should also be stressed is that although strategies for learning pronunciation were identified in the investigations of good language learners as well as research aiming to identify general LLS used by different groups of students (e.g., Drożdżał-Szelest, 1997; O'Malley, Chamot, Stewner-Manzanares, Russo, & Küpper, 1985; Rubin, 1975), the overview only focuses on studies that have dealt specifically with PLS.

#### 4.1. Identification and classification of PLS

Studies devoted to identification, description and classification of PLS drew at the outset mainly on qualitative approaches which allowed the researchers to detect some initial patterns in the use of strategies in pronunciation learning and only later did quantitative studies begin to appear (see Table 1, for a summary). In a pioneering empirical investigation dealing with PLS, Peterson (2000) used self-reports in the form of diaries and interviews to collect data from 11 adult learners of Spanish in the US, representing beginner, intermediate and advanced levels of proficiency. Taking as a point of reference Oxford's (1990) classification, the researcher identified 22 tactics (apparently understood as specific manifestations of LLS) already identified in earlier studies as well as new 21 ones that had not been previously documented. The 43 tactics were grouped into the following twelve PLS: representing sounds in memory, practicing naturalistically, formally practicing with sounds, analyzing the sound system, using proximal articulations, finding out about TL pronunciation, setting goals and objectives, planning for a language task, self-evaluating, using humor to lower anxiety, asking for help, and cooperating with peers. In another study seeking to identify strategies for learning pronunciation, Osburne (2003) collected data from 50 learners of English as a second language with the help of oral reports. The procedure involved conducting monitored interviews during which participants were requested to provide 10-minute long learning biographies, then replaying the interviews to them so that they

could repeat a line or two paying attention to their pronunciation, and, in the last stage, asking them to offer an account of the strategies that were supportive in helping them improve this TL subsystem. Eight strategies were detected during qualitative analysis, that is: global articulatory gesture, local articulatory gesture or single sound, individual syllables, clusters below syllable level, prosodic structure, individual words, paralinguistic, and memory or imitation. However, there were differences in the frequency with which the PLS were applied, the most popular including mimicking the speakers and focusing on paralinguistic (speed, volume and clarity), and the least common being those related to clusters below the syllable level and to syllable structure.

Table 1 Research on identification and classification of PLS

Author	Instrument(s)	Main results
Peterson (2000)	Self-reports in the form of diaries and interviews	Collected 43 pronunciation learning tactics grouped into twelve PLS
Osburne (2003)	Monitored interviews, followed by replaying the interviews, repetition of a selected fragment and providing an account of PLS	Collected eight PLS: global articulatory gesture, local articulatory gesture or single sound, individual syllables, clusters below syllable level, prosodic structure, individual words, paralinguistic, and memory or imitation
Pawlak (2006b)	A questionnaire with seven closed and one open-ended items	Preference for the cognitive strategies of repeating words and sentences as well as learning and applying pronunciation rules; most frequent PLS: self-evaluation and listening to one's own speech, and practicing in front of a mirror; higher awareness of PLS among university students
Pawlak (2008)	A questionnaire with closed and open-ended items	In-class most frequently reported PLS: repeating after the teacher or tape, listening to the model, and using transcription; out-of-class most frequently reported PLS: repetition after a model, seeking exposure, checking pronunciation in dictionaries, reading aloud, using transcription, self-recording; strategic learning conditioned by classroom experience
Pawlak (2010b)	The <i>Pronunciation Learning Strategy Survey</i> (PLSS); 60 Likert-scale statements, divided into metacognitive, cognitive, affective and social PLS, supplemented with open-ended items	The reliability of the instrument (measured with Cronbach alpha): .74 for metacognitive PLS, .64 for the cognitive PLS, .70 for the affective PLS, and .67 for the social PLS; overall reliability of .69; a positive and statistically significant correlation between the PLSS and the SILL ( $r=.45$ ; $p < .05$ )
Caika (2011)	A survey with an open-ended question followed by Likert-scale items	Prevalent use of cognitive strategies, such as practicing pronunciation by repeating, reading aloud, using media or speaking with foreigners and metacognitive strategies, such as paying attention to pronunciation when listening to others; reported frequency order of PLS: memory, cognitive, compensation, metacognitive strategies, affective, and social
Fang and Lin (2012)	PLS use in two distinct contexts: computer-assisted pronunciation	No statistically significant difference between groups; the students who benefitted from both types of training outperformed those in the CAPT condition; frequent use



	tion training (CAPT) and classroom-based pronunciation training (CBPT); questionnaire based on Osburne (2003)	of memory and imitation strategies, focusing more on prosodic features than segmental aspects of pronunciation
Akyol (2013)	A questionnaire containing 5-point Likert-scale items, adopted from Berkil (2008)	Social, memory and affective strategies used most frequently, while the compensation, metacognitive and cognitive PLS employed less often; pronunciation training participants report a more frequent use of: making up songs or rhymes in order to remember the pronunciation of words, making associations between English and Turkish pronunciation, recording their own voices, and reading reference materials about pronunciation
Szyska (2014)	Semi-structured interviews, diaries	Identified 36 orchestrated PLS chains; a prevalent pattern of strategy chains: a cognitive PLS followed by a memory PLS
Erbay, Kayaoglu and Öney (2016)	Problem-oriented vignettes for eliciting PLS	18 most frequently reported tactics, classified into the six categories of LLS (Oxford, 1990); high use of cognitive PLS and little reliance on affective, compensation and social PLS
Pawlak (2018)	Open-ended questionnaires filled out immediately on completing activities, and the <i>Learning Style Survey</i> (Cohen, Oxford, & Chi 2001)	Participants use a narrow range of PLS; similar across different phases of the activities as well as entire tasks; disparate nature of the activities necessitates different foci of attention: controlled task enables more focus on pronunciation

Another two research projects designed with the purpose of identifying PLS used by learners of different foreign languages were undertaken by Pawlak (2006b, 2008) in the Polish context. The first of them (Pawlak, 2006b) involved 176 young adults, 87 from senior high schools and 89 attending different programs at the university, who were participating in the first piloting of one of the Polish versions of the *European Language Portfolio* (ELP), developed for senior high school students and language learners in institutions of higher education (Bartczak, Lis, Marciniak, & Pawlak, 2005). The data were collected by means of a list comprising seven metacognitive and cognitive strategies that was included in one section of the ELP (e.g., “I learn pronunciation rules consciously,” or “I pay attention to word and sentence stress as well as intonation”) as well as one open-ended item inviting the participants to report their own ways of learning TL pronunciation. A combination of quantitative and qualitative analysis yielded a total of 572 PLS, with an average of 3.25 per respondent. Participants exhibited a marked preference for such cognitive strategies as repeating words and sentences as well as learning and applying pronunciation rules, whereas they were the least likely to draw upon the metacognitive strategy of self-evaluation, involving audio-recording and listening to one’s own speech, and the cognitive strategy of practicing in front of a mirror. Additionally, it was found that awareness of PLS was higher among university students, with English majors reporting

the most frequent use of strategies which were also the most varied, a finding that is hardly surprising. Inspired by such results, the second study carried out by Pawlak (2008) involved 106 first-year philology students, based on the assumption that, in view of their more ambitious goals in pronunciation learning, they would report numerous instances of PLS use. The data were collected through a questionnaire which included closed and open-ended items that tapped the participants' opinions about pronunciation learning as well as the strategies that they employed inside and outside the classroom. As far as in-class PLS are concerned, the most frequently reported ones were repeating after the teacher or a recording, listening to the model provided and using phonetic transcription. When it comes to pronunciation learning at home, the respondents indicated most frequent reliance on repetition after a recorded model, seeking exposure to English, looking up pronunciation in dictionaries, reading aloud, using transcription, and recording one's own pronunciation in order to pinpoint areas in need of improvement. On the whole, somewhat disappointingly, these English majors depended heavily on just a few cognitive PLS, with their strategic learning being to a large extent conditioned by their classroom experience.

In yet another attempt to identify and classify the PLS reported by 74 full-time and part-time teacher training college students of English, Całka (2011) integrated qualitative and quantitative methodologies. In order to collect the requisite data, she applied a survey which included an open-ended question ("How did you learn English pronunciation before entering the college?") which was followed by Likert-scale items developed on the basis of Oxford's (1990) SILL, intended to tap the frequency of PLS use. The analysis of the responses to the open-ended item revealed prevalent use of cognitive strategies (e.g., practicing pronunciation by repeating, reading aloud, using media or speaking with foreigners) and metacognitive strategies (e.g., paying attention to pronunciation when listening to people using English). With respect to the quantitative part of the investigation, the PLS were ordered in the following way in terms of their reported frequency: memory strategies (e.g., repeating a word several times, associating the pronunciation of a word or sound with a situation in which it was heard), cognitive strategies (e.g., repeating after native speakers, using resources, reading aloud), compensation strategies (e.g., using proximal articulation, guessing the pronunciation of new words), metacognitive strategies (e.g., paying attention to pronunciation, planning for a task, self-monitoring and organizing learning), affective strategies (e.g., having a sense of humor about one's mispronunciations), and social strategies (e.g., asking for help).

More recently, Szyszka (2014) carried out a study which went beyond mere identification of PLS by attempting to detect orchestrated sequences of these strategic devices, or strategy chains deployed for specific tasks in pronunciation

learning. The participants were 31 trainee teachers of English as a foreign language, 20 of whom were recorded during semi-structured interviews and 28, including 17 of those previously interviewed, were requested to keep diaries. Szyszka (2014) found PLS chains consisting of two or more strategies which the participants reported applying for such activities as preparing a presentation, learning the pronunciation of a new word, improving pronunciation through watching films on television, listening and reading. She also concluded that the prevalent pattern of strategy chains consisted of a cognitive PLS followed by a memory PLS. In another study, Erbay, Kayaoglu and Öney (2016) set out to identify the PLS employed by 56 English majors in Turkey. Also adopting a qualitative approach, the researchers used 11 problem-oriented vignettes in which hypothetical situations requiring the students' reactions were described with a view to eliciting PLS. The following problem areas were included: natural pronunciation, difficult and long words, self-confidence, misunderstanding, sounds that do not exist in Turkish, tone, sounds existing in Turkish and the TL, the knowledge of the International Phonetic Alphabet, and intonation. The analysis of the data yielded a list of 18 most frequently reported tactics that were classified into the six categories of LLS identified by Oxford (1990). The participants reported high frequency of use of cognitive strategies and low frequency of reliance on affective, compensation and social strategies. It was also found that cognitive and metacognitive strategies were likely to be often drawn on in the face of hypothetical problems in pronunciation.

Moving on to empirical investigations that were entirely quantitative in nature, the studies undertaken by Fang and Lin (2012), and Akyol (2013) need to be mentioned. The first one sought to compare the application of PLS in two distinct contexts, that is computer-assisted pronunciation training (CAPT) and classroom-based pronunciation training (CBPT). Participants were 120 college students attending pronunciation courses assigned to four different conditions, with 30 students in each: only CAPT, only CBPT, and two groups having the benefit of both types of instruction, but the responses concerning just one of the two conditions. Instruction in pronunciation lasted two semesters and involved two hours a week. The students receiving CAPT worked individually in a computer lab using *My English Tutor*, software featuring automatic speech recognition and speech analysis units, the CBPT students attended regular classes, and the remaining students had access to both types of training. The data were collected by means of a questionnaire that contained Likert-scale items based on the PLS identified by Osburne (2003) in the study described above. While no statistically significant difference was found in PLS use between the CAPT and CBPT groups, the students who benefitted from both types of training outperformed those in the CAPT condition, which indicates that the inclusion of different contexts provides more opportunities to engage in strategy use. Irrespective

of the learning condition, the students reported frequent use of memory and imitation strategies, focusing more on prosodic features than segmental aspects of pronunciation (e.g., local articulatory or single sound). Akyol (2013) explored the frequency of PLS use reported by 82 prospective teachers, paying particular attention to the differences in this respect between 46 students who attended a pronunciation training course and 36 who did not. A questionnaire containing 5-point Likert-scale items was used to collect the data, which was based on Oxford's (1990) classification of LLS, adopted from the study conducted by Berkil (2008) (see below) and characterized by a high level of internal consistency reliability (.73). The participants reported the most frequent application of social, memory and affective strategies, whereas the compensation, metacognitive and cognitive PLS were employed much less often. Additionally, statistically significant differences were observed between the two groups. More specifically, the students provided with formal training reported more frequent reliance on making up songs and rhymes, creating associations between English and Turkish pronunciation, recording themselves in order to hear their pronunciation, and reading reference materials, whereas those without instruction opted most often for the strategies of recalling the teacher's pronunciation or paying more attention to pronunciation if it was appreciated by others.

A rare attempt to construct a data collection tool specifically intended to tap the frequency of PLS use was made by Pawlak (2010b), who designed the *Pronunciation Learning Strategy Survey* (PLSS). The instrument includes 60 Likert-scale statements, divided into four groups referring to metacognitive, cognitive, affective and social PLS, and this quantitative part is supplemented with open-ended items inviting respondents to share their opinions on favorite approaches to studying segmental and suprasegmental features in the TL as well as problems they are confronted with. The PLSS was validated in a study involving 80 Polish university students majoring in English, enrolled in the second and third year of a three-year BA program. The reliability of the instrument was measured with Cronbach alpha coefficients which reached .74 for metacognitive PLS, .64 for the cognitive PLS, .70 for the affective PLS, and .67 for the social PLS, with the value for the entire instrument equaling .69. Moreover, a positive and statistically significant moderate correlation was found between the mean scores on the PLSS and the SILL ( $r = .45$ ;  $p < .05$ ). Despite such promising results, it has to be stressed that the instrument still represents work in progress, it needs to be validated in other contexts and, perhaps most importantly, it was constructed with English philology students in mind, which considerably reduces the range of situations in which it can be employed.

Pawlak (2018) has also spearheaded another important line of inquiry with respect to PLS by investigating their deployment in the completion of specific

learning activities, a form-focused and a meaning-focused one. The aim of the study, which involved 54 English majors in the last year of a three-year BA program was threefold: (1) to identify the PLS employed when preparing for, performing and after completing the two tasks, (2) to gauge the effect of task type on the PLS use, and (3) to shed light on the mediating effect of gender, proficiency and learning style on strategy use (the findings for the last one are discussed in section 4.3). Participants were requested to perform two activities based on the same text containing words, the pronunciation of which posed a major learning challenge for English majors in Poland. In both activities the students were provided with preparation time but while the first involved simply reading the text aloud, the second involved retelling the text in pairs, thereby calling for more spontaneous use of the TL. It was hoped that such a design would allow identification of PLS supporting the development of explicit and implicit knowledge of TL pronunciation (see section 2 above). The data were collected by means of open-ended questionnaires that participants filled out immediately on completing each of the two activities, as well as the *Learning Style Survey* (LSS, Cohen, Oxford, & Chi, 2001), which was administered towards end of data collection. Pawlak (2018) found that the participants drew on a narrow range of strategies that were similar across the different phases of the activities as well as entire tasks. At the stage of preparation, students attended to words which were difficult to pronounce, practiced pronunciation, fell back on resources, especially online ones, requested assistance and, much less frequently, tried to control their emotions. When performing the tasks, they attended to pronunciation features, made comparisons with their own production, and counted on the help of their peers. After performing the activities, the students, yet again, tried to compare their performance with that of other students, repeated difficult words or looked up their pronunciation. It was also revealed that the disparate nature of the activities necessitated different foci of attention, with the controlled task enabling more focus on pronunciation but the meaning-focused one still giving opportunities for a dual focus on meaning and pronunciation.

In a somewhat similar vein, Jiang and Cohen (2018) conducted a study in which they compared the perceived difficulties in the pronunciation of sounds in Mandarin Chinese and the LLS used to deal with them with the problems and the PLS actually employed in oral performance. The data were collected from 92 native speakers of English taking Chinese classes in a large university in the US with the help of a specifically designed survey, a read-aloud task and a stimulated-recall interview that took place immediately after the performance of the task. Quantitative and qualitative analysis showed that the difficulties and coping strategies the students reported in the survey did not always match the errors they made in reading and the PLS they drew upon, thereby emphasizing the need for contextualized strategy research.

Table 2 Research on learners' preferences concerning PLS

Author	Instrument(s)	Main results
Samaliev (2000)	Semi-structured interviews	Reported problems: length of words and familiarity with them, sound production, stress and rhythm, speed, familiarity with interlocutors, the relationship between pronunciation and spelling, perceptions of native pronunciation and L1 interference; better students are more cognizant of problems and use more metacognitive PLS; less proficient ones prefer teacher or peer correction
Vitanova and Miller (2002)	Answers to open-ended questions	Most students favor consciousness-raising pronunciation instruction at both segmental and suprasegmental levels; perceived positive contribution of metacognitive PLS; participants emphasize the importance of affective factors, such as self-confidence, in communication
Wrembel (2008)	A questionnaire comprising a quantitative and a qualitative part, measuring usefulness of PLS and the extent to which they are enjoyable	Most useful PLS: phonemic transcription, dialogue reading and performing; most enjoyable PLS: drama performance, relaxation and breathing exercises, dialogue reading and performing, eight PLS reported in open-ended part: listening to English radio/TV, using a pronunciation dictionary, talking with friends, talking to oneself, audiotaping, imitating/pretending to be native speakers, singing English songs, transforming American accent into RP, and reading aloud
Pawlak (2011a)	A diary with participants responding to five prompts	Most learners focused on issues discussed during pronunciation classes, did not have long-term plans in pronunciation learning, and concentrated on immediate problems and solutions; most frequently used PLS were cognitive: repetition, transcription and consulting a dictionary

#### 4.2. Learners' preferences concerning PLS

Another line of inquiry concerns studies that are mostly qualitative in nature and adopt a learner-centered perspective by placing students' opinions in the spotlight and exploring strategies they employ to overcome the difficulties encountered in learning TL pronunciation (see Table 2, for a summary). In one such research project, Samaliev (2000) used semi-structured interviews to examine problems that 21 university students experienced with learning English pronunciation and the PLS they deployed to deal with them. Participants reported difficulties pertaining to the length of words and familiarity with them, sound production, stress and rhythm, speed, familiarity with interlocutors, inconsistency of the relationship between pronunciation and spelling, perceptions of native pronunciation and L1 interference. The analysis yielded 29 types of strategies that were classified into cognitive, metacognitive and social, with the most frequently used PLS representing the first group and being related to increasing the amount of exposure through listening to records and watching television in the TL, and relying on repetition. It was also uncovered that the better students were

more cognizant of their pronunciation problems and used more metacognitive PLS, such as monitoring and self-correction, whereas the less proficient participants preferred teacher or peer correction. Learners' concerns and opinions related to pronunciation learning experience were also addressed in the study undertaken by Vitanova and Miller (2002), who obtained the data from an unspecified number of graduate students attending a pronunciation course, requested to reflect on their learning experience by answering questions such as: "Why do you wish to improve your pronunciation? What do you find most helpful in improving pronunciation?". The findings demonstrated that most of the students favored consciousness-raising pronunciation instruction at both segmental and suprasegmental levels and saw the positive contribution of metacognitive PLS, such as active listening or mirroring, which could be used autonomously in various contexts. The participants also emphasized the importance of affective factors in learning pronunciation, such as the role of self-confidence in communication.

Another two research projects being the focus of this section were carried out in the Polish context by Wrembel (2008) and Pawlak (2011a). Wrembel's (2008) investigation aimed to tap the opinions of 32 first-year English philology students concerning the usefulness of PLS used during a pronunciation course and the extent to which the participants enjoyed applying them, and to collect data on the application of strategies outside the classroom. The data collection tool was a questionnaire comprising a quantitative as well as a qualitative part. The first consisted of a list of 16 PLS which the students had to evaluate on a 5-point Likert scale both in terms of their perceived utility and the degree to which their employment was enjoyable, while the second asked the participants to enumerate PLS that they fell back upon in out-of-class learning. The analysis showed that the most useful PLS included phonemic transcription as well as dialogue reading and performing while the least useful was provision of kinesthetic feedback, believed to appeal to learners' senses and modalities. The most enjoyable PLS included drama performance, relaxation and breathing exercises, as well as dialogue reading and performing whereas the least enjoyable were recordings made at home and dialog memorization. With respect to learning pronunciation in their own time, the students reported reliance on eight strategies, that is: listening to English radio/TV, referring to a pronunciation dictionary, talking to friends in English, talking to oneself in the TL, audiotaping, imitating/pretending to be native speakers, singing English songs, changing American accent into RP, and reading aloud. Based on the findings, Wrembel (2008) proposed a classification of PLS adopting as a point of reference O'Malley and Chamot's (1990) more general division of LLS into metacognitive, cognitive and socioaffective.

Pawlak (2011a) conducted a study aimed to provide insights into the ways in which advanced L2 learners approach pronunciation learning, identify problems

they face while mastering phonetic aspects of L2 speech, and uncover ways in which such problems were surmounted. Also in this case the participants were first-year English majors, a total of 60 students, who were requested to keep diaries over the period of three months. In order to make their task easier, the students were given five prompts regarding their efforts to master English pronunciation, such as "What do you do to master various pronunciation features?" or "How do you evaluate your progress?". Qualitative analysis showed that most of the participants focused on issues covered during pronunciation classes, were preoccupied with the problems they faced and the solutions they had to find, and only a handful had far-reaching plans related to learning this TL subsystem. The students most frequently opted for rather traditional, cognitive PLS, such as, for example, repetition, transcription and reliance on dictionaries, and only a few reported a more varied repertoire of PLS, also emphasizing the need for more naturalistic practice. Some students as well pointed to the importance of metacognitive strategies, such as self-monitoring or self-evaluation, and offered evidence for the employment of strategy chains, but such participants were clearly in the minority.

#### 4.3. The link between PLS use, achievement and ID factors

Very few studies, typically quantitative in nature, have sought to investigate the extent to which the application of PLS can in fact translate into greater mastery of pronunciation features, and only a handful have attempted to determine the role of ID factors as mediators of strategy use in this domain (see Table 3, for a summary). Conducting such research usually involves designing inventories measuring reported frequency of PLS use or using existing ones, perhaps after some modifications, and, then, using statistical procedures (e.g., correlational analysis) to determine the connection with other variables (e.g., pronunciation performance or an ID factor). One research project falling into this category was carried out by Berkil (2008), who examined the relationship between the employment of PLS and pronunciation attainment in the case of 40 Turkish university students representing different levels of proficiency. The frequency of PLS use was determined by means of the *Strategy Inventory for Learning Pronunciation* (SILP), constituting a modified version of Oxford's (1990) SILL, whereas pronunciation ability was operationalized as reading a passage and performing a free response task, in which the participants expressed their opinions on one of five topics. Berkil (2008) failed to find a correlation between overall PLS use and attainment but revealed that three of the strategies included in the SILP were used statistically significantly differently between participants at different proficiency levels. More specifically, the students in the moderate pronunciation ability group reported more frequent reliance on purposeful listening to sounds



and listening to tapes, television, movies or music, but at the same time were the least likely to use the strategy of using phonetic symbols or personal codes in order to remember how to pronounce words.

Table 3 Research on the relationship among PLS use, achievement and ID factors

Author	Instrument(s)	Main results
Berkil (2008)	<i>Strategy Inventory for Learning Pronunciation</i> (SILP), passage reading and free-response task	No significant correlation between overall PLS use and attainment; three PLS used differently between participants at different proficiency levels: purposeful listening, watching/listening to tapes, television, movies or music and using phonetic symbols or own codes
Eckstein (2007)	<i>Strategic Pronunciation Learning Scale</i> (SPLS) and a standardized speaking Level Achievement Test (LAT)	Significant positive correlation between attainment and three PLS: noticing pronunciation mistakes, adjusting facial muscles while speaking and asking for help with pronunciation; significant negative correlation between attainment and two PLS: silent repetition of the English pronunciation model and modulation of speech volume
Campos (2015)	<i>Strategic Pronunciation Learning Scale</i> (SPLS, Eckstein, 2007) and pronunciation performance in semi-spontaneous speech	Positive relationship between PLS use and the duration of this use; no major correlations between the frequency and duration of PLS use and pronunciation performance; positive relationship for pronunciation intelligibility
Hişmanoğlu (2012)	Instrument comprising 42 5-point Likert scale items and pronunciation scores on final examination	More proficient students rely more often on metacognitive PLS and the affective strategy of using humor to reduce anxiety levels
Ro-koszewska (2012)	Całka's (2011) instrument; perception: listening tasks; production: vowels and diphthongs, reading minimal pairs and a text	Weak but statistically significant positive correlation between PLS use and production of English vowels and diphthongs; no significant correlation between PLS use and perception
Pawlak (2018)	Open-ended questionnaires filled out immediately on completing activities, and the <i>Learning Style Survey</i> (Cohen, Oxford, & Chi, 2001)	No evidence for the influence of proficiency level; females use more PLS than males in both tasks, manifesting more concern with accuracy; field-independent and analytic learners are more likely to pay attention to form and engage in practice
Szyszkka (2017)	<i>Pronunciation Learning Strategies Inventory</i> (PLSI), adapted from Berkil (2008), <i>Foreign Language Classroom Anxiety Scale</i> (Horwitz et al., 1986), <i>Input-Processing-Output Anxiety Scale</i> (MacIntyre & Gardner, 1994), oral presentations, semi-structured interviews and diary writing	Compensation and memory PLS used more frequently by anxious trainee teachers; higher input anxiety levels connected with less frequent use of social PLS; higher processing anxiety levels correlated with more frequent use of memory and compensation PLS; higher output anxiety linked with more frequent use of compensation PLS and less frequent use of affective strategies; anxious and non-anxious learners differ significantly in their use of a number of PLS
Yetkin (2017)	Eckstein's (2007) SPLS	A statistically significant difference in strategy use by males and females

Eckstein (2007) conducted a study among 183 international students at low-intermediate, intermediate and high-intermediate levels of proficiency with the purpose of correlating the use of PLS and spontaneous language performance. He

designed the *Strategic Pronunciation Learning Scale* (SPLS), which drew on Kolb's (1984) construct of learning cycle and included 28 PLS related to: *concrete experience* – input/practice, *reflection on observation* – noticing/feedback, *abstract conceptualization* – hypothesis forming, and *action based on new conceptualization* – hypothesis testing. Achievement was measured with a standardized speaking Level Achievement Test (LAT), aimed to elicit spontaneous speech in response to a set of prompts. The analysis revealed meaningful relationships for five PLS, with attainment being positively correlated with noticing pronunciation mistakes, adjusting facial muscles while speaking and asking for help with the pronunciation of new English words, and negatively correlated with silent repetition of the English pronunciation model and modulation of speech volume.

The SPLS was also applied by Campos (2015) in order to look into the relationship between the frequency of PLS use and pronunciation performance in semi-spontaneous speech in the case of 40 students of teacher education at a university in Chile. However, the instrument was modified, comprising 36 statements representing strategic devices and a 5-point Likert-scale was applied to tap into both the frequency and duration of PLS use. The mastery of pronunciation in semi-spontaneous speech was assessed by means of a test designed by the researcher, with performance being evaluated both holistically and analytically by two raters. One interesting finding of the study was that there was a positive connection between the frequency of use of PLS and the duration of this use, with cognitive strategies scoring highest on both criteria. However, no major correlations were found between the frequency and duration of the employment of PLS and pronunciation performance, but at the same time a positive relationship was disclosed in the case of the levels of pronunciation intelligibility.

Also worth mentioning in this section are the research projects conducted by Hişmanoğlu (2012), Rokoszewska (2012) and, yet again, Pawlak (2018). In a study involving 38 English majors, Hişmanoğlu (2012) set out to compare the use of PLS of successful and unsuccessful students. The instrument employed to tap PLS comprised 42 5-point Likert scale items divided into six groups in accordance with Oxford's (1990) classification, with the items having been developed drawing on previous research (e.g., Eckstein, 2007; Peterson, 2000). The division of participants into those that were successful and unsuccessful was made based on their pronunciation scores on the final examination. The main finding of the study was that the more proficient students tended to more often rely on metacognitive PLS, especially those involving self-evaluation, as well as the affective strategy of using humor to reduce anxiety levels. Rokoszewska (2012) investigated the relationship between PLS use, and the perception and production of TL vowels by 63 Polish university students majoring in English. The data concerning PLS were gathered by means of the tool constructed by Całka (2011)

in the study described in section 4.1., perception ability was assessed with the help of three listening tasks taken from Baker (2006), while production was evaluated through tasks requiring articulation of pure vowels and diphthongs, as well as reading both minimal pairs and a continuous text. The analysis demonstrated a weak but significant correlation between PLS and attainment in the case of production but not perception. Finally, in the study reported earlier, Pawlak (2018) found no evidence for the influence of proficiency PLS use in form-focused and meaning-focused tasks.

As mentioned at the beginning of this section, research targeting the relationship between PLS use and ID factors is extremely scant and, for that reason, only three studies can be mentioned here. Perhaps the most extensive empirical investigation in this area was undertaken by Szyszka (2017), who conducted a mixed-methods study among 94 trainee teachers of English as a foreign language at a Polish university to examine the interplay between the use of PLS and different levels of language anxiety. Qualitative data were collected by means of pre-prepared oral presentations, semi-structured interviews and diary writing, whereas quantitative data were gathered through the *Pronunciation Learning Strategies Inventory* (PLSI), adapted from Berkil (2008), aimed to tap frequency of PLS use, as well as the *Foreign Language Classroom Anxiety Scale* (FLCAS), developed by Horwitz, Horwitz and Cope (1986) and the *Input-Processing-Output Anxiety Scale*, created by MacIntyre and Gardner (1994), both of which were deployed to obtain data on anxiety levels. The findings can be summarized as follows: (1) compensation and memory PLS were employed more frequently by anxious trainee teachers, (2) higher input anxiety levels were connected with less frequent use of social PLS, (3) higher processing anxiety levels correlated with more frequent use of memory and compensation strategies, (4) higher output anxiety levels were accompanied by more frequent use of compensation PLS and less frequent affective strategies, and (5) anxious and non-anxious pronunciation learners differed significantly in their use of a number of pronunciation learning tactics. In another, much more limited, study, Yetkin (2017) investigated, among other things, the effect of gender on PLS among 27 English majors (21 females and 6 males) enrolled in a teacher education program in Turkey. The analysis of the data collected by means of Eckstein's (2007) SPLS yielded a statistically significant difference in strategy use by males and females, but the results have to be taken with circumspection, given the evident lack of balance in the size of the two groups. The impact of ID factors on task performance was also tackled by Pawlak (2018) in the study referred to above. In line with findings of previous research (see e.g., Pawlak, 2011b; Takeuchi, Griffiths, & Coyle, 2007), women were found to employ more PLS than men both in the form-focused and meaning-focused task, manifesting as well more concern with accuracy and avoidance of

errors. Using the LLS (Cohen et al., 2001), he also found some evidence for the impact of learning styles on PLS use, since field-independent and analytic learners were more likely to pay attention to form and engage in practice. By his own admission, however, "such evidence is tenuous, other ID variables, such as goals or beliefs, could have played a part, and the impact of ID factors was intricately intertwined with the nature of the task" (Pawlak, 2018, p. 202). This comment only goes to show how badly more research is needed in this domain.

#### 4.4. Instruction in the use of PLS

There is also a gradually growing body of research on strategies-based instruction in the area of PLS (see Table 4, for a summary), although it should be emphasized at the very outset that some of the studies suffer from design flaws, which casts doubt on the reliability of their findings. The weaknesses mirror to some extent those leveled at research on SBI with respect to LLS in general (cf. Plonsky, 2011) and are related, for example, to the determination of differences in strategy use before and after the intervention. However, what should be stressed at this juncture is that it is one thing to show an increase in PLS use and quite another to demonstrate that such increased frequency accounts for progress in learning pronunciation. This is surely a critical issue since, both with respect to PLS and strategies applied for learning other TL skills and subsystems, there should be evidence for tangible benefits of SBI lest it should begin to be regarded as art for art's sake. On the other hand, measuring pronunciation gains without simultaneously tapping changes in PLS use is also problematic since it is difficult to determine whether progress should be attributed to the intervention or some other variables.

Two relatively early research projects that aimed to gauge the effects of PLS training were carried out by Bukowski (2004) and Vasarin (2007). In the first one, which took place in the Polish context, a group of first-year English philology students received training in the use of indirect strategies of the metacognitive and socioaffective type in their regular pronunciation course for the period of three months, with diaries being used to elicit information on pronunciation learning processes. Bukowski (2004) reported visible changes in the students' approach to learning pronunciation, in particular with respect to enhanced autonomy, greater use of metalanguage related to phonetics, higher frequency of use of the targeted PLS and more positive attitudes toward TL pronunciation. One stage of an action research project conducted by Vasarin (2007) involved 20 Thai learners of English, children aged 8-10, and investigated the extent to which SBI focusing on PLS impacted participants' pronunciation performance as well as their speaking confidence. The intervention targeted metacognitive, cognitive, affective and social strategies, and data were obtained from observations, group discussions, field notes, reflective reports and tape recordings. The

analysis of the collected empirical evidence indicated that the training resulted in improved intelligibility of pronunciation as well as greater speaking confidence.

Table 4 Research on strategies-based instruction in PLS

Author	Instrument(s)	Main results
Bukowski (2004)	Intervention metacognitive and socio-affective PLS (three months); diaries on pronunciation learning processes	Changes in the approach to learning pronunciation, in particular with respect to enhanced autonomy, greater use of metalanguage related to phonetics, higher frequency of use of targeted PLS and more positive attitudes toward TL pronunciation
Vasarin (2007)	Intervention targeting metacognitive, cognitive, affective and social strategies; observations, group discussions, field notes, reflective reports and tape recordings	Improved intelligibility of pronunciation, greater speaking confidence
Haslam (2010)	Training in PLS use for 10 weeks; PLAB (Pimsleur, 1966[2003]), SPLS (Eckstein, 2007), a test measuring global foreign accent, comprehensibility and accuracy, and fluency	No interplay between aptitude and context, and gains in L2 pronunciation; positive, statistically significant relationship between PLS use and improvement in comprehensibility and accuracy of segmental features; no correlation between frequency of PLS use, global foreign accent and fluency
Ingels (2011)	Intervention in self-monitoring for 16 weeks; a pretest-posttest design; tests measuring suprasegmental accuracy, primary phase stress, intonation, vowel reduction in content and function words, linking, word stress, and multiword construction stress	Self-monitoring led to improved suprasegmental accuracy; participants most successful at improving accuracy in identifying message unit boundaries, linking and vowel reduction in function words, and less successful in primary phrase stress and intonation
Sardegna (2009)	Intervention in PLS for learning English stress placement for one semester; pre- and posttest consisting of five dialogs and 22 English words; self-report on PLS use	Positive gains in the students' ability to read English primary phase stress, construction and word stress (the gains retained over time)
Sardegna (2011)	Intervention in PLS for improving linking sounds within and across words for one semester; pre- and posttest consisting of read-aloud tests, self-report on PLS use	Significant short-term (immediately following the instruction) gains and noticeable long-term (a few months afterwards) improvement in linking
Sardegna (2012)	Intervention in PLS for improving linking and English stress; pre- and posttest consisting of read-aloud tests; self-report	Significant gains with respect to the targeted features, both immediately and over time; positive self-efficacy beliefs play a beneficial role
Sardegna and MacGregor (2013)	Intervention in PLS for 15 weeks; a pre- and a posttest, based on reading aloud, participants' self-assessments, reflections, descriptions of problems and reports of activities completed outside the classroom	Students supplied with pronunciation instruction (based on PSL empowerment and their needs) significantly improved their read-aloud accuracy, both on the whole and with respect to vowel reduction, linking, primary stress and intonation; intervention impacted participants' choice of activities for their out-of-class self-regulatory pronunciation practice

Somewhat more recently, Haslam (2010) investigated the link between PLS instruction and pronunciation gains, also taking into account language aptitude and learning context (i.e., English as a foreign language – EFL, and English as a second language – ESL – in intensive programs). The participants, who were 86 ESL learners in the US and 100 EFL learners in China benefitted from 10 weeks of intervention in using PLS. The data were collected by means of the *Pimsleur Language Aptitude Battery* (PLAB) (Pimsleur, 1966[2003]), the SPLS (Eckstein, 2007, see above), as well as a pronunciation proficiency test measuring global foreign accent, fluency, comprehensibility and accuracy, all of which were administered before and after the intervention. While there was no interplay between aptitude and context, and gains in L2 pronunciation, a positive, statistically significant relationship was detected between PLS use and improvement in comprehensibility and accuracy of segmental features. On the other hand, frequency of PLS use did not correlate with global foreign accent and fluency. Ingels (2011), in turn, explored the effects of instruction in the use of self-monitoring, entailing the PLS of critical listening, transcribing, marking corrections and rehearsing, on the pronunciation of selected suprasegmental features in English. Fifteen ESL learners, future international teaching assistants, participated in instruction focusing on self-monitoring for the period of 16 weeks, with a pretest-posttest design being used. Both tests had the same format and measured suprasegmental accuracy, operationalized in terms of message unit boundaries, primary phase stress, intonation, vowel reduction in content and function words, linking, word stress, and multiword construction stress. The employment of self-monitoring led to improved suprasegmental accuracy, with different types of PLS having differential effects. The gains, though, were differentiated depending on the specific aspect being measured, with the participants being most successful at improving accuracy in identifying message unit boundaries, linking and vowel reduction in function words, and less successful in primary phrase stress and intonation. One of the contributions of these studies to SBI research in the domain of PLS is the inclusion of nuanced measures of TL proficiency, an important lesson for future empirical investigations.

Of particular interest is a series of empirical investigations conducted by Sardegna and her collaborators, who were interested in the effectiveness of PLS training adopting as a point of reference the Covert Rehearsal Model (CRM) proposed by Dickerson (1994). The model specifies six stages for covert rehearsal that lead learners towards a self-directed modification of their pronunciation, which are as follows: (1) finding privacy to practice, (2) practicing aloud, (3) monitoring production for target features, (4) comparing production with models, (5) adjusting production to match the models, and (6) practicing the adjustment out loud until accurate and fluent. In the first research project, Sardegna (2009)

explored the effects of one-semester SBI on pronunciation improvement of 39 ESL students from different academic branches taking an English pronunciation course at an American university, both with respect to its overall contribution and the contribution of specific PLS. In this longitudinal investigation, adopting a pretest-posttest design, participants took part in pronunciation course for one semester, in which they were taught how to apply PLS to learning English stress placement. Their progress was evaluated on three posttests, which consisted of five dialogs and 22 English words, and information on PLS use was collected by means of a self-report survey including 5-point Likert scale items completed together with the last two posttests. It was found that intensive instruction augmented with PLS training positively affected the students' ability to read English primary phase stress, construction and word stress, with the gains being retained over time. A similar design was adopted in the following study, in which Sardegna (2011) investigated the long-term effects of equipping 38 international graduate-level students with PLS aimed to improve their ability to link sounds within as well as across words. The analysis of the data elicited through read-aloud tests and questionnaire revealed that the training had generated the desired effects, since the participants made significant short-term (immediately following the instruction) gains and exhibited noticeable long-term (a few months afterwards) improvement in linking. In yet another extension of the initial research project, again applying the same design, Sardegna (2012) looked at the efficacy of SBI focused on PLS in terms of the mastery of linking and English stress, and the mediating role of self-efficacy beliefs. Using some of the tools employed in previous studies, she managed to show that the intervention indeed led to gains with respect to the targeted pronunciation features, both immediately and over time, with positive self-efficacy beliefs playing a beneficial role. Finally, Sardegna and MacGregor (2013) examined the effects of scaffolded pronunciation teaching with embedded PLS on self-regulated efforts in pronunciation practice. Fifteen international ESL students from 10 different majors took part in an intervention that spanned 15 weeks and comprised carefully planned activities targeting such features as vowel reduction, linking, primary stress and intonation. The data included the scores on a pretest and a posttest, based on reading aloud a text as well as the participants' self-assessments, reflections, descriptions of problems and reports of activities completed outside the classroom to improve pronunciation. It was concluded that the students who had been supplied with pronunciation instruction based on PSL empowerment and their needs significantly improved their read-aloud accuracy, both on the whole and with respect to vowel reduction, linking, primary stress and intonation. It also turned out that the intervention impacted the participants' choice of activities for their out-of-class self-regulatory pronunciation practice.

## 5. Conclusions, reflections and directions for future research

Looking at the overview of research into pronunciation learning strategies provided in this paper, it immediately becomes clear that although some valuable insights are beginning to emerge, the findings are by and large contradictory and inconclusive, and some areas could be referred to as grey spots on the map of strategy research. When it comes to some emerging patterns, they could be summarized as follows:

1. Most studies have revealed that learners often have a penchant for relying on traditional cognitive and memory PLS in quest of improving their TL pronunciation at the expense of those involving different types of naturalistic practice; importantly, this also holds true for situations when strategy chains are applied; however, there is some evidence for frequent use of other groups of strategies, such as metacognitive, affective or social.
2. On the whole, learners have favorable opinions about the utility of PLS, but what is useful is not always considered enjoyable and there are evident differences when it comes to the application of specific PLS.
3. Attainment in pronunciation seems to be related to the application of specific PLS rather than high overall frequency of their employment, which may testify to the importance of the mediating effects of individual learner profiles; different outcomes can occur when it comes to different aspects of pronunciation competence (e.g., production vs. reception); there are evident differences in the PLS used by learners at different proficiency levels.
4. The use of PLS is related in intricate ways to anxiety levels; gender and learning styles may also play a part, but the available evidence is extremely tenuous.
5. Generally, instruction targeting PLS is effective but it can be assumed that much depends on the target of the pedagogic intervention, its duration, the ways in which strategy use is tapped and the tasks used to evaluate pronunciation gains; what the empirical evidence appears to demonstrate is that longer treatments are more efficacious and that measures of pronunciation gains should be more multifaceted and nuanced.

This said, it has to be emphasized that the above patterns are far from consistent, which is the corollary of the weaknesses that empirical investigations of PLS suffer from. First, different measures of PLS use are employed in different studies, some of which are not geared to capturing the specificity of learning this TL subsystem. This is a critical issue because when the employment of PLS is tapped in disparate ways, not only is it predictable that different studies will



generate different outcomes, but it also clearly has a bearing on the comparability of the results of research projects that focus on the relationship between PLS and other variables or aim to appraise the effectiveness of SBI in this respect. Second, there are differences as well in how pronunciation ability is measured, both in terms of the level of fine-tuning of the tests, the focus on production and reception, and the requirement for spontaneous production of TL speech, which, again, makes the comparisons between studies difficult, if not impossible. Third, correlational analysis, typically employed in studies of the link between PLS and other variables, cannot be used as a basis for making claims about cause-and-effect relationships, which, however, is a problem that pertains to the field of LLS research in its entirety. Fourth, a crucial issue in intervention studies is their design so that increased use of PLS can be related to pronunciation gains and vice versa, which clearly necessitates the use of pretest-posttest designs and the need to tap the variable in question at the same point. Fifth, in the case of the mediating effect of ID variables on PLS use, the empirical evidence is confined to just a few studies, which surely precludes making generalizations in this respect, and the same could be said about the employment of PLS in different types of learning activities. Sixth, the available research is limited both in terms of the TL, with almost an exclusive focus on English, as well as the contexts in which it is undertaken, with the predominance of Polish and Turkish learners. This is yet another reason to be circumspect about the generalizability of the available research on PLS.

These limitations provide an excellent point of departure for the considerations of future research directions in research on strategies for learning pronunciation. Perhaps the crucial task for researchers is to develop a comprehensive classification of PLS, which could serve as a basis for constructing an inventory that could be deployed in different studies, such as the still imperfect ones proposed by Pawlak (2010b). While Oxford's (2017) concerns about squeezing strategies into predetermined categories are salutary, some order is clearly indispensable in the case of an area in which research is still in its infancy. Another important challenge is further investigating the link between PLS and the mastery of different aspects of TL pronunciation, with the latter being tapped by tests that are adequately fine-tuned. Given the paucity of empirical evidence in this area, even more urgent is research addressing the relationship between PLS and a wide array of ID variables, such as motivation, anxiety, willing to communicate, aptitude, working memory, or learning styles. Crucially, in line with the tenets of dynamic systems theories (Larsen-Freeman & Cameron, 2008), such research needs to look not only into the role of isolated factors but also the contribution of different conglomerates of ID variables. More well-designed empirical investigations are needed as well when it comes to appraising the effects

of instruction in PLS, not least because such efforts bring the entire research endeavor closer to the needs of practitioners. Of paramount importance is also exploring the use of PLS with respect to specific tasks, as illustrated in the study by Pawlak (2018), because general insights into the employment of strategies surely do not translate into the gamut of tasks that learners have to face. Following the tendencies observed in other domains of research on ID factors, it would also be advisable to investigate the dynamics of PLS use, both over longer periods of time and in specific pronunciation classes and tasks (cf. Oxford, 2017). Finally, if insights emanating from the empirical investigations of PLS are ever to be generalized, researchers have to look more often at languages other than English, involve learners from a variety of national backgrounds and explore the role of context, be it foreign or second, or traditional or digital, as this may determine the quantity and quality of exposure to the TL. What should also be highlighted is the need for combining various methodological paradigms in the study of PLS as only adept combination of the macro- and micro-perspective (cf. Mystkowska-Wiertelak & Pawlak, 2017) can be expected to illuminate the ways in which PLS are deployed, factors impacting their use, the link to proficiency and the benefits of SBI. Although pronunciation may be seen by many specialists and practitioners as much less of a concern nowadays when English is regarded as a lingua franca (McKay, 2011) and native-like achievement in this area has been relegated to the sidelines of L2 pedagogy, it will likely remain a crucial goal for students majoring in a foreign language, not to mention the fact that intelligibility is inevitably a priority for all L2 learners. For this reason, further research on PLS is indispensable and it is the hope of the authors that this overview will serve as an inspiration for pushing it forward.

## References

- Akyol, T. (2012). A study on identifying pronunciation learning strategies of Turkish EFL learners. *Procedia-Social and Behavioral Sciences*, 70, 1456-1462.
- Baker, A. (2006). *Ship or sheep? An intermediate pronunciation course*. Cambridge: Cambridge University Press.
- Bartczak, E., Z., Lis, I., Marciniak, & Pawlak, M. (2005). *Europejskie portfolio językowe dla uczniów szkół ponadgimnazjalnych i studentów*. Warszawa: Centralny Ośrodek Doskonalenia Nauczycieli.
- Berkil, G. (2008). *A closer look at pronunciation learning strategies, L2 pronunciation proficiency and secondary variables influencing pronunciation ability*. MA thesis, Bilkent University, Ankara.
- Bukowski, D. (2004). On the training of metacognitive and socio-affective strategies – Some implications for teaching and learning English phonetics. In W. Sobkowiak & E. Waniek-Klimczak (Eds.), *Zeszyty Naukowe Państwowej Wyższej Szkoły Zawodowej w Koninie nr 1/2004* (pp. 20-27). Konin: Wydawnictwo Państwowej Wyższej Szkoły Zawodowej w Koninie.
- Całka, A. (2011). Pronunciation learning strategies – Identification and classification. In M. Pawlak, E. Waniek-Klimczak & J. Majer (Eds.), *Speaking and instructed foreign language acquisition* (pp. 149-168). Bristol: Multilingual Matters.
- Cohen, A. D. (2011). *Strategies in learning and using a second language*. London and New York: Routledge.
- Cohen, A. D., Oxford, R. L., & Chi, J. C. (2001). *Learning Style Survey*. Retrieved from [http://www.mrspela.com/uploads/2/1/8/7/21879712/\\_\\_\\_\\_learning\\_style\\_survey\\_all\\_students.pdf](http://www.mrspela.com/uploads/2/1/8/7/21879712/____learning_style_survey_all_students.pdf)
- Campos, M. E. V. (2015). *Pronunciation learning strategy use, aptitude, and their relationship with pronunciation performance of pre-service English language teachers in Chile*. Doctoral dissertation. The University of Exeter.
- Dickerson, W. B. (1994). Empowering students with predictive skills. In J. Morley (Ed.), *Pronunciation pedagogy and theory: New views, new directions* (pp. 17-33). Alexandria, VA: TESOL Publications.
- Dörnyei, Z. (2005). *The psychology of the language learner: Individual differences in second language acquisition*. New Jersey: Lawrence Erlbaum.
- Drożdźiał-Szelest, K. (1997). *Language learning strategies in the process of acquiring a foreign language*. Poznań: Motivex.
- Eckstein, G. T. (2007). *A correlation of pronunciation learning strategies with spontaneous English pronunciation of adult ESL learners*. MA thesis, Brigham Young University, Provo, UT.
- Ellis, R. (2009). Implicit and explicit learning, knowledge and instruction. In R. Ellis, S. Loewen, C. Elder, R. M. Erlam, J. Philp, & H. Reinders (Eds.), *Implicit*

- and explicit knowledge in second language learning, testing and teaching* (pp. 3-25). Bristol: Multilingual Matters.
- Erbay, S., Kayaoglu, M. N., & Önay, E. (2016). Understanding pronunciation learning strategy use: A vignette analysis. *Participatory Educational Research (PER), Special Issue, 1*, 48-56.
- Fang, T., & Lin, Ch. (2012). Taiwan EFL learners' pronunciation strategies in two learning contexts. *Journal of Language Teaching and Research, 3*(5), 888-897.
- Griffiths, C. (2013). *The strategy factor in successful language learning*. Bristol: Multilingual Matters.
- Griffiths, C. (2018). *The strategy factor in successful language learning: The tornado effect*. Bristol: Multilingual Matters.
- Haslam, N. (2010). *The relationship of three L2 learning factors with pronunciation proficiency: Language aptitude, strategy use, and learning context*. MA thesis, Brigham Young University, Provo, UT.
- Hişmanoğlu, M. (2012). An investigation of pronunciation learning strategies of advanced EFL learners. *Hacettepe University Journal of Education, 43*, 246-257.
- Holec, H. (1981). *Autonomy in foreign language learning*. Oxford: Pergamon.
- Horwitz, E. K., Horwitz, M. B., & Cope, J. A. (1986). Foreign language classroom anxiety. *Modern Language Journal, 70*, 125-132.
- Ingels, S. A. (2011). *The effects of self-monitoring strategy use on the pronunciation of learners of English*. Doctoral dissertation, University of Illinois at Urbana-Champaign.
- Jiang, X., & Cohen, A. D. (2018). Learner strategies for dealing with pronunciation issues in Mandarin. *System, 76*, 25-37.
- Kenworthy, J. (1987). *Teaching English pronunciation*. Harlow: Longman.
- Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development*. Englewood Cliffs, NJ: Prentice-Hall.
- Larsen-Freeman, D., & Cameron, L. (2008). *Complex systems and applied linguistics*. Oxford: Oxford University Press.
- Little, D. (2000). Autonomy and autonomous learners. In M. Byram (Ed.), *Routledge encyclopedia of language teaching and learning* (pp. 69-72). London: Routledge.
- MacIntyre, P. D., & Gardner, R. C. (1994). The subtle effects of language anxiety on cognitive processing in the second language. *Language Learning, 44*(2), 283-305.
- McKay, S. L. (2011). English as an international lingua franca pedagogy. In E. Hinkel. *Handbook of research in second language teaching and learning* (pp. 122-139). London and New York: Routledge.
- Moyer, A. (2014). Exceptional outcomes in L2 phonology: The critical factors of age, motivation, and instruction. *Applied Linguistics, 35*, 418-440.

- Mystkowska-Wiertelak, A., & Pawlak, M. (2017). *Willingness to communicate in instructed second language acquisition: Combining a macro- and micro-perspective*. Bristol: Multilingual Matters.
- O'Malley, J. M., & Chamot, A. U. (1990). *Learning strategies in second language acquisition*. Cambridge: Cambridge University Press.
- O'Malley, J. M., Chamot, A. U., Stewner-Manzanares, G., Russo, R. P., & Küpper, L. (1985). Learning strategy applications with students of English as a second language. *TESOL Quarterly*, 19, 285-296.
- Osborne, A. G. (2003). Pronunciation strategies of advanced ESOL learners. *International Review of Applied Linguistics in Language Teaching*, 41(2), 131-143.
- Oxford, R. L. (1990). *Language learning strategies: What every teacher should know*. Boston: Heinle & Heinle.
- Oxford, R. L. (2011). *Teaching and researching language learning strategies*. Harlow: Pearson Education.
- Oxford, R. L. (2017). *Teaching and researching language learning strategies: Self-regulation in context*. New York and London: Routledge.
- Pawlak, M. (2006a). The place of learner autonomy in pronunciation instruction. In W. Sobkowiak & Waniek-Klimczak (Eds.), *Dydaktyka fonetyki języka obcego. Zeszyty Naukowe Państwowej Wyższej Szkoły Zawodowej w Płocku. Neofilologia Tom VIII* (pp. 131-143). Płock: Wydawnictwo Państwowej Wyższej Szkoły Zawodowej w Płocku.
- Pawlak, M. (2006b). On the use of pronunciation learning strategies by Polish foreign language learners. In W. Sobkowiak & E. Waniek-Klimczak (Eds.), *Dydaktyka fonetyki języka obcego w Polsce* (pp. 121-135). Konin: Wydawnictwo Państwowej Wyższej Szkoły Zawodowej w Koninie.
- Pawlak, M. (2008). Another look at pronunciation learning strategies: An advanced learner's perspective. In E. Waniek-Klimczak (Ed.), *Issues in Accents of English* (pp. 304-322). Newcastle upon Tyne: Cambridge Scholars Publishing.
- Pawlak, M. (2010a). Teaching foreign language pronunciation: Issues in research focus and methodology. In E. Waniek-Klimczak (Ed.), *Issues in accents of English 2: Variability and norm* (pp. 169-183). Newcastle upon Tyne: Cambridge Scholars Publishing. 169-183.
- Pawlak, M. (2010b). Designing and piloting a tool for the measurement of the use of pronunciation learning strategies. *Research in Language*, 8, 189-202.
- Pawlak, M. (2011a). Students' successes and failures in learning foreign language pronunciation: Insights from diary data. In J. Arabski & A. Wojtaszek (Eds.), *The acquisition of L2 phonology* (pp. 165-182). Bristol: Multilingual Matters.
- Pawlak, M. (2011b). Research into language learning strategies: Taking stock and looking ahead. In J. Arabski & A. Wojtaszek (Eds.), *Individual differences in SLA* (pp. 17-37). Bristol: Multilingual Matters.

- Pawlak, M. (2018). The use of pronunciation learning strategies in form-focused and meaning-focused activities: The impact of contextual and individual difference variables. In R. L. Oxford & C. M. Amerstorfer (Eds.), *Language learning strategies and individual learner characteristics situating strategy use in diverse contexts* (pp. 187-206). London: Bloomsbury.
- Peterson, S. (2000). Pronunciation learning strategies: A first look. (ERIC Document Reproduction Service No. ED450599).
- Pimsleur, P. 1966 [2003]. *The Pimsleur language aptitude battery*. Bethesda, MD: Second Language Testing.
- Plonsky, L. (2011). The effectiveness of second language strategy instruction: A meta-analysis. *Language Learning*, 61(4), 993-1038.
- Rokoszewska, K. (2012). The influence of pronunciation learning strategies on mastering English vowels. *Studies in Second Language Learning and Teaching*, 2(3), 391-413.
- Rubin, J. (1975). What the "good language learner" can teach us. *TESOL Quarterly*, 9(1), 41-51.
- Sardegna, V. G. (2009). *Improving English stress through pronunciation learning strategies*. Doctoral dissertation, University of Illinois at Urbana-Champaign.
- Sardegna, V. G. (2011). Pronunciation learning strategies that improve ESL learners' linking. In J. Levis & K. LeVelle (Eds.), *Proceedings of the 2nd Pronunciation in Second Language Learning and Teaching Conference*, Sept. 2010. (pp. 105-121), Ames, IA: Iowa State University.
- Sardegna, V. G. (2012). Learner differences in strategy use, self-efficacy beliefs, and pronunciation improvement. In J. Levis & K. LeVelle (Eds.), *Proceedings of the 3rd Pronunciation in Second Language Learning and Teaching Conference* (pp. 39-53). Ames, IA: Iowa State University.
- Sardegna, V. G. & McGregor, A. (2013). Scaffolding students' self-regulated efforts for effective pronunciation practice. In J. Levis & K. LeVelle (Eds.), *Proceedings of the 4th Pronunciation in Second Language Learning and Teaching Conference* (pp. 182-193). Ames, IA: Iowa State University.
- Samaliev, M. (2000). Strategies in foreign language pronunciation: A qualitative investigation. *BETA-IATEFL. 01/01/2000*. Retrieved from <http://www.beta-iatefl.org/697/blog-publications/strategies-in-foreign-language-pronunciation-qualitative-investigation/>
- Szyszka, M. (2014). Pronunciation learning strategy chains: a qualitative approach. In D. Gabryś-Barker & A. Wojtaszek (Eds.), *Studying second language acquisition from a qualitative perspective* (pp. 35-47). Cham: Springer.
- Szyszka, M. (2017). *Pronunciation learning strategies and language anxiety: In search of an interplay*. Cham: Springer.

- Takeuchi, O., Griffiths, C., & Coyle, D. (2007). Applying strategies to context: The role of individual, situational, and group differences. In A. D. Cohen & E. Macaro (Eds.), *Language learner strategies: Thirty years of research and practice* (pp. 69-92). Oxford: Oxford University Press.
- Varasarin, P. (2007). *An action research study of pronunciation training, language learning strategies and speaking confidence*. Doctoral dissertation, Victoria University.
- Vitanova, G., & Miller, A. (2002). Reflective practice in pronunciation learning. *The Internet TESL Journal*, 8(1). Retrieved from <http://iteslj.org/Articles/Vitanova-Pronunciation.html>
- Wenden, A. (1991). *Learner strategies for learner autonomy. Planning and implementing learner training for language learners*. Englewood Cliffs, NJ: Prentice Hall.
- White, C, Schramm, K., & Chamot, A. U. (2007). Research methods in strategy research: Re-examining the toolbox. In A. D. Cohen & E. Macaro (Eds.), *Language learner strategies: Thirty years of research and practice* (pp. 93-116). Oxford: Oxford University Press.
- Wrembel, M. (2008). In search of effective strategies for L2 pronunciation teaching and learning. In M. Pawlak (Ed.), *Investigating English language learning and teaching* (pp. 179-194). Poznań-Kalisz: Wydawnictwo UAM.
- Yetkin, R. (2017). Research into pronunciation learning strategies of pre-service English teachers. *Eurasian Journal of Applied Linguistics*, 3(2), 287-295.