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Vowel reduction in English grammatical words by Macedonian EFL learners

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Research into L2 vowel reduction shows that learners find this phenomenon challenging to acquire, most likely due to their inability to differentiate between stressed and unstressed syllables. Consequently, their L2 speech is characterised by overuse of strong forms, which may be detrimental to intelligibility. This study explores vowel reduction in grammatical words by Macedonian learners of English ($N = 121$). Participants at B1, B2 and C1 proficiency levels completed 25 tasks which elicited target words in spontaneous speech. The results reveal that learners predominantly use strong forms. Moreover, weak form use is significantly associated with learners' proficiency level and formal pronunciation training, but not with word category. It was also observed that words with certain strong vowels are more frequently reduced.

Keywords: vowel reduction, strong forms, weak forms, grammatical words, language proficiency, pronunciation training

Introduction

A fundamental feature of English rhythm is the replacement of vowels in unstressed syllables with another phoneme – the substituting vowel primarily being the schwa vowel /ə/, and less often /ɪ/ or /ʊ/, or a syllabic consonant, e.g., *funnel* /'fʌnəl/. This phenomenon is known as vowel reduction or centralisation,¹ as vowels tend to change to schwa which is categorised as a central mid lax vowel (Collins & Mees, 2013). It particularly affects grammatical words (modals, auxiliaries, prepositions, conjunctions, pronouns), as they are not information carriers and serve as connectors of words with greater prominence. As a result, 35–45 of them have two or more

1. This phenomenon is also known as weakening, i.e., “vowels move to the centre of the vowel space” (García Lecumberri & Maidment, 2000, p. 19).

pronunciation variants known as strong and weak forms (Collins & Mees, 2013; García Lecumberri & Maidment, 2000; Roach, 2009). The strong forms contain strong vowels /i:/, /ɪ/, /e/, /æ/, /ʌ/, /ɑ:/, /ɒ/, /ɔ:/, /ʊ/, /u:/, /ɜ:/ or the diphthong /eə/. They are pronounced when the word is in isolation (i.e., its citation form) or in connected speech when the word is emphatically stressed. Weak forms containing the vowel /ə/ are found in unstressed positions only. This can be illustrated in the example sentences (1a) and (1b) where a contrast is introduced in (1b) thus requiring strong forms of the prepositions that are contrasted:

- (1) a. *This is for John.* /ðɪs ɪz fə'dʒɒn/
 b. *This is for John, not from John.* /ðɪs ɪz 'fɔ:'dʒɒn 'nɒt 'frɒm 'dʒɒn/.

The importance of the appropriate use of pronunciation variants in EFL is widely seen as a prerequisite not only to achieve native-like pronunciation, but also to understand the relationship between vowel reduction on the one hand, and English rhythm on the other (Collins & Mees, 2013; Roach, 2009; Rogerson-Revell, 2011; Underhill, 1994). However, contrasting views have also been expressed. For instance, the Lingua Franca core has listed weak forms of grammatical words as a non-essential feature in the English as an International Language (EIL) context, as they may be more detrimental to intelligibility than their strong forms (Jenkins, 2002). Nevertheless, Roach (2009) argues that non-native speech lacking weak forms affects intelligibility for native listeners in the same way that the presence of weak forms in native speech affects intelligibility for non-native listeners, especially if the latter are unaware of weak forms.

The consequences of the incorrect use of reduced vowels in grammatical words have been documented in L2 pronunciation literature. For instance, the absence of weak forms in non-native speech can seriously impair intelligibility in interactions between native and non-native speakers or in cases where there are no other media to accompany speech (e.g., gestures) (Ghazali & Boucchioua, 2003). While an undetected schwa may not make it impossible for a learner to decipher the meaning of individual words, it may interfere with their ability to deal with connected speech, where schwa is an indispensable element of unstressed syllables in both lexical and grammatical words (Poesová, 2015).

The rhythmic organisation of Macedonian does not have vowel reduction; stress placement is rule-governed and dependent on the number of syllables in a word (Koneski, 2004). Vowels do not undergo any change in connected speech and grammatical words have only one form. However, a point worth mentioning is that despite the Macedonian standard phonological inventory distinguishing only five vowels /a/, /e/, /i/, /o/, and /u/, schwa is not completely unfamiliar to Macedonians. It is part of the dialectal phonetic subsystem, therefore, it exists in: (a) certain Turkish loanwords, such as *с'клет* (trouble, angst); (b) when pronouncing

abbreviations, e.g., *MHT* (*Македонски народен театар* – *Macedonian National Theatre*); and (c) in words with the syllabic consonant /r/, e.g., *’рж* (rye). Thus, a typical Macedonian L2 learner would be able to perceive and produce schwa in different contexts, but if unfamiliar with the correct use of schwa in English grammatical words, they might find it challenging when acquiring English pronunciation (Kirkova-Naskova, 2012).

This also seems to be a problematic area for other EFL learners with L1s of Slavic origin, e.g., Croatian (Josipović Smojver, 2010), Czech (Poesová & Weingartová, 2018) and Polish (Gralińska-Brawata, 2015). Vowel reduction poses problems even for learners whose mother tongue has this phenomenon, e.g., Brazilian Portuguese learners, who find it much easier to perceive schwa as correct in the so-called “obligatory context”, i.e., in lexical words (e.g., *agree* as /ə’gri:/ and not /æ’gri/) rather than in “non-obligatory context”, i.e., in grammatical words (Silva Fragozo, 2015, p. 126).

Vowel reduction has not been explored in the Macedonian EFL context, although studies have shown that the speech of Macedonians lacks weak forms (Kirkova-Naskova, 2010). There might be several reasons for this. It is assumed that learners underestimate vowel reduction in grammatical words since it does not lead to changes on a lexical level, but more on a stylistic one (Gómez Lacabex & García Lecumberri, 2010) so they appear to acquire only one form (usually the strong one) which becomes part of their phonological repertoire. Another argument points to the influence of orthography prompting learners’ choice of a strong, instead of a weak vowel (Kirkova-Naskova, 2010; Poesová & Weingartová, 2018). Furthermore, research has revealed that pronunciation has a rather marginalised role in the classroom and receives considerably less attention than reading, listening, writing, or grammar (Boucchioua, 2017; Henderson et al., 2015). However, English teachers in Macedonia seem to place particular emphasis on “the economic and communicative relevance of English as a world language” (Henderson et al., 2015, p. 52). Considering that vowel reduction is a means for achieving correct English rhythm (Flege & Bohn, 1989), which is a vital element for intelligibility, this study primarily aims to contribute to the picture of Macedonian EFL learners’ speech, with regard to the presence and/or absence of weak forms. In this chapter we also follow-up on the results by suggesting teaching applications.

Previous research studies on vowel reduction

The growing interest in vowel reduction in both lexical and grammatical words has resulted in a number of studies that reveal the complexities behind this phenomenon, highlighting that it poses problems for L2 learners with different L1s. For instance, 87% and 92.5% of grammatical words in connected speech have been

recorded as produced with strong vowels among Czech and Tunisian EFL learners respectively (Ghazali & Boucchioua, 2003; Poesová & Weingartová, 2018). In the English spoken by Czech learners, the correct schwa realisations mainly included the weak forms of *a*, *the*, *her* and *were* (Poesová & Weingartová, 2018). In the English speech of 32 advanced Tunisian students majoring in English, Ghazali and Boucchioua (2003) found that grammatical words were still pronounced incorrectly, even after focused practice of the strong and weak forms. Moreover, in that study the 13 native English-speaking raters misunderstood the information in approximately 94% of the cases because of incorrect use of strong forms, which led to a sentence such as *She is going to fast* to be misinterpreted as *She is going too fast*.

The results from the latter study would seem to question the impact which language proficiency and training can have on vowel reduction in learner speech, yet other studies have yielded different results. For example, greater language proficiency appears to have a favourable effect on schwa perception by Brazilian Portuguese EFL speakers. Silva Fragozo (2015) reported that when performing an auditory test, the advanced language learners (88.57%) were more capable of judging what “the best pronunciation” was in sentences containing either strong or weak forms of grammatical words than the intermediate learners (77.14%).

Several studies have also examined the effects of perception and/or production training on learners’ acquisition of vowel reduction. Gómez Lacabex et al. (2005) tested the perception and production of vowel reduction by secondary school Spanish EFL learners. The participants were unable to discriminate or produce schwa in minimal syllable pairs contrasting strong vs. schwa vowel in unstressed syllables (e.g., *bypass* /'baɪpɑːs/ vs. *compass* /'kæmpəs/). Nevertheless, when they employed a similar technique on learners who had received either auditory or articulatory treatment, they found that both treatments had a positive effect on the acquisition of vowel reduction (Gómez Lacabex et al., 2009). An additional study further supported this, focusing solely on vowel reduction in the following different grammatical categories: auxiliaries (*have*, *has*, *can*, *was*), conjunction (*and*, *that*), preposition (*for*), pronoun (*them*) and existential *there* (Gómez Lacabex & García Lecumberri, 2010). The authors reported a modest improvement in the production of weak forms by two experimental groups which received different treatments for around 90 minutes during three sessions over three weeks. The gain scores for the perception-treated group were 10.46% and 11.11%, while the production-treated group scored 5.22% and 5.88% for the reading and imitation task respectively. The authors suggest that longer treatments might be more suitable to obtain better results.

Other studies have also confirmed the positive effects of treatment on the acquisition of vowel reduction. For example, Rojczyk and Porzuczek (2012) investigated the pronunciation of the preposition *to* by 13 Polish university students. When

compared to the duration of schwa in native speakers' productions, which was reduced as much as possible (in *to do*) or practically non-existent (in *to speak*), the elicited speech of Polish learners revealed a slight tendency to reduce the schwa after receiving pronunciation training. These findings show that vowel reduction may be challenging for Polish learners; yet, they can demonstrate reasonably good acquisition after training.

Poesová (2015) also highlighted the effectiveness of training for schwa perception, but for production the effects are less noticeable. The training given to 13-year-old Czech pupils included a five-minute slot dedicated to schwa in all English classes over three months and aimed to test the effect of training on the pupils' perceptual and productive skills. The results revealed that the experimental group improved their sensitivity to schwa in lexical words and weak forms of grammatical words; however, no productions of weak forms were documented in this study.

Nevertheless, Abe (2011) yielded positive results for vowel reduction in grammatical words after implementation of the Negotiation of Form (NoF) treatment "in which a linguistic error is made explicit and ongoing negotiation (or interaction) helps learners notice the error(s) and correct the error(s)" (p. 184). The participants, low to intermediate secondary school Japanese EFL learners, were divided into an experimental and a control group. While the former went through a detailed treatment of NoF, the latter only received a description of weak forms and listen-and-repeat exercises. The experimental group not only outperformed the control group in both post-tests for perception, but it also maintained a good retention rate of weak forms in post-test 2 for production.

The impact of incorrect strong and weak forms is evident in L2 speech and may affect intelligibility and comprehensibility.² In Boucchioua's (2017) study, the native English-speaking raters attributed less favourable intelligibility ratings to Tunisian learners' English speech as a function of strong and weak form use. In her experiment, she focused on the effect of three different treatments on the comprehensibility of 24 English major Tunisian students at the pre-intermediate level. The participants were divided into three groups: (1) an experimental group A received instruction in perception and production with focus on segmental features; (2) an experimental group B received instruction in perception and production with focus on suprasegmental features; and (3) a control group C only received technical phonetic descriptions with listen-and-repeat exercises. The experimental groups' production revealed great improvement in the post-test when tested for comprehensibility. For the intelligibility analysis, the raters were asked to transcribe

2. Derwing and Munro (2005) define *intelligibility* as "the extent to which the speaker's intended utterance is actually understood by a listener", while *comprehensibility* as "the listener's perception of the degree of difficulty encountered when trying to understand an utterance" (p. 385).

sentences from speakers of the three groups. While the raters provided correct transcriptions for only 10% and 11.4% of the pre-test sentences for groups A and B respectively, that number increased to 46% and 61% in the post-test. For Group C, the correct transcriptions between the two tests showed only a marginal improvement of roughly 3% (11.1% to 14%). Boucchioua (2017) points out that one of the most prominent reasons for such low intelligibility at the pre-test was the incorrect stress placement on grammatical words, e.g., the phrase *one to four* was wrongly perceived *one two four*. This study, therefore, shows the positive effect instruction can have on the acquisition of vowel reduction. Correspondingly, the need for adopting a more systematic approach towards vowel reduction in the pronunciation classroom has been identified by other studies. For example, Lepage and Busà (2014) reported that the intelligibility of Italian and Canadian French L2 English was seriously impaired due to the misplacement of vowel reduction in lexical words.

The current study

Research questions

In the present study, we aimed to explore the acquisition of L2 vowel reduction in English grammatical words by Macedonian learners of English. More specifically, a total of 25 words were included: auxiliary verbs (*am, is, are, was, were, has, had, do, does*), modal verbs (*can, could, will, would, shall, should, must*), pronouns (*your, his, him, her, them, us*), the quantifier *some*, the adverb *just* and the existential *there*. The following research questions were investigated:

- RQ1: To what extent do Macedonian EFL learners produce weak forms in spontaneous speech?
- RQ2: Does language proficiency influence vowel reduction in grammatical words?
- RQ3: Does training in vowel reduction influence use of weak forms?

The lack of weak forms in Macedonian-accented English speech has already been documented (Kirkova-Naskova, 2010). Thus, this study explores in greater detail the issue of whether strong forms prevail in the speech of EFL learners with different language proficiency levels, and to what extent vowel reduction is a problematic area for these learners.

Research methodology

Participants

A total of 121 Macedonian students ($M = 12$; $F = 109$) majoring in English language at Ss. Cyril and Methodius University in Skopje participated in the study: 30 first-year students, 27 second-year students, 32 third-year students, and 32 fourth-year students. Their mean age was 21 years. All of them had studied English as a foreign language in primary and secondary school prior to their undergraduate studies, and they all reported knowledge of at least one other foreign language at different levels.

The participants from the second, third, and fourth year had received formal instruction on vowel reduction and the pronunciation variants of the strong and weak forms as part of their phonetics and phonology courses before the experiment was conducted. The instruction involved discussion of pronunciation variants, perception and production exercises. The period between the received instruction and data collection was one to three months for the second-year students, 15 months for the third-year students, and 27 months for the fourth-year students. The first-year students, however, had received no training. In fact, they were not familiar with the course at all.

A test administered to determine their language proficiency level revealed that they were at B1 ($n = 16$), B2 ($n = 47$), and C1 ($n = 58$) according to the Common European Framework of Reference for Languages – CEFR (Council of Europe, 2001). The paper-based test, which was adapted from the Macedonian English Learner Corpus³ project, consisted of 46 multiple-choice questions and tested knowledge of grammar and vocabulary from A1 to C1 level. The test was administered before data collection and took 30 to 45 minutes to complete. Each participant completed the test independently.

The students' recordings were rated by five native Macedonian speakers. They were all experienced teachers of English who had been working as lecturers at the university for 4–13 years. They had all taken phonetics and phonology courses in their undergraduate studies, had knowledge of vowel reduction, and had experience in implementing various pronunciation teaching methods in the classroom.

3. The project was financed by the Ministry of Education and Science of the Republic of North Macedonia.

Stimuli

Many studies have used reading or imitation tasks as stimuli for eliciting L2 speech (Bogacka et al., 2006; Gonet et al., 2010; Gralińska-Brawata, 2015; Gómez Lacabex & García Lecumberri, 2010; Poesová & Weingartová, 2018; Rojczyk & Porzuczek, 2012). In our study reading tasks were deliberately avoided, given that reading aloud is not representative of a learner's actual speaking style (Sønning, 2014). Instead, we aimed for speech activities that would encourage more spontaneous production, because the phenomenon under investigation in this study is normally associated with more relaxed or less careful speech (Underhill, 1994).

Therefore, a total of 25 tasks were created: 16 for modals and auxiliaries, 6 for pronouns and one for *some*, *just* and *there*. Each task was designed to encourage participants to use the weak form of the target grammatical word spontaneously in a spoken utterance, e.g., the possessive determiner *his* rather than the possessive pronoun was tested. The tasks covered everyday topics and were based on the concept of read-think-respond (see Appendix A). This protocol resulted in semi-controlled speech being produced: the task guided the subjects towards a spoken production of a particular language structure, but they were at liberty to say whatever they felt appropriate. This was considered to be the most effective way for eliciting the target words and creating a corpus of recordings for analysis.

Procedure

The recordings were carried out in a language laboratory at the Faculty of Philology at Ss. Cyril and Methodius University, Skopje, at weekends, for three and a half months. The participants were recorded only once and completed all 25 tasks in one attempt. They did not know the rationale behind the tasks beforehand; they received instructions in both Macedonian and English so that their understanding of the task was ensured.

The participants' speech was recorded using the free, open-source audio recording software Audacity 2.0.6⁴ and a Dictaphone ZOOM H2n Handy recorder Portable Digital Audio Recorder with specification ZH2N. Each participant's original recording was edited into 25 separate sound files, one for each task, giving a total of 3025 files. However, in 16 of the tasks the participants did not mention any of the target words; more specifically, 11 auxiliaries, 3 modals, and 2 pronouns, and therefore, these recordings were eliminated. In total, 3009 audio files were analysed, each with an approximate duration of 3 seconds. All files were phonemically

4. <https://www.audacityteam.org/>

transcribed by the researcher using broad transcription. In the process, all correct and mispronounced variants were documented (e.g., [ðem], [ðəm], [əm] but also [dem] instead of [ðem] etc.). Finally, a list of all pronunciation variants for each target/grammatical word was created (see Appendix B) and later given to the raters to use as a checklist. The raters were also given a reference list of the grammatical words with their strong and weak forms (see Appendix C). Rater 1 (the researcher) manually evaluated the pronunciation of all target words in participants' speech. To avoid bias in the rating of the participants' production of the pronunciation variants, a portion of the data was randomly assigned to four other raters for analysis. They were instructed to choose the pronunciation variant they heard from the list provided by the researcher. A similar approach was employed by Ghazali and Bouchhioua (2003) when testing stressed syllables in English-French cognates and strong and weak forms of the grammatical words, where native English-speaking raters were asked to tick the meaning they understood on an already prepared paper with sentences. In this study, Rater 2 evaluated 1175 recordings from 47 participants (30 first-year, five second-year, six third-year, and six fourth-year students), Rater 3 evaluated 550 recordings from 22 second-year students, and Raters 4 and 5 each evaluated 650 recordings from 26 third-year and 26 fourth-year students, respectively. Their ratings were then compared to those of Rater 1; in cases where there was no overlap of selected answers, a mutual consensus was further reached between the two raters about the participant's pronunciation of the target word. What the raters used as a benchmark for a correct pronunciation variant was the one deemed as correct based on the particular position of the grammatical word in that particular utterance. However, these were only some isolated instances. In fact, on average, the evaluations made by Rater 1 overlapped with those from the other four raters in 84% of the cases (Rater 1 – Rater 2 = 81.5%; Rater 1 – Rater 3 = 86%; Rater 1 – Rater 4 = 89%; Rater 1 – Rater 5 = 81%).

Data analysis

Raters' evaluations for each target word were counted per word category and per language level and then summarised in tables. The quantitative analysis was conducted using SPSS 23 and a non-parametric test, the Chi-square statistic, was used. First, the data analysis focused on the frequency of weak form pronunciation by all participants, then a comparison between participants' language proficiency and word category was made. Finally, a comparison regarding the use of weak forms was drawn between the group that had received formal training and the group that had not.

Frequency of weak form use

The analysis of the results revealed that the strong forms dominated in the speech of Macedonian EFL learners. Out of 3009 elicitations, the target grammatical words were produced with a strong form (SF) in 2202 cases, with a weak form (WF) in 623, and 184 instances were mispronounced forms (MF), such as [ken] instead of [kæn] or [kən], or [dem] instead of [ðem] or [ðəm]. Table 12.1 shows the number of responses and relative frequencies of strong, weak and mispronounced forms for all participants. It is evident from the table that the weak forms comprised only a fifth of all the elicitations.

Table 12.1 Number of responses and relative frequencies of strong, weak, and mispronounced forms (*N* = 3009)

Elicited form	<i>n</i>	%
SF	2202	73.18
WF	623	20.71
MF	184	6.11

Note: Elicited forms (*N* = 3009)

Weak form use across proficiency levels

In terms of vowel reduction across proficiency levels, the strong forms were predominant in over 70% occurrences across all three levels. More weak form occurrences were present in the productions of C1-level participants, with 337 instances (23.37%), compared to 63 (15.83%) for B1 level participants, and 223 (19.08%) for B2 level participants. Table 12.2 shows the number of responses and relative frequencies of strong, weak, and mispronounced forms for all proficiency levels.

Table 12.2 Number of responses and relative frequencies of strong, weak, and mispronounced forms across language proficiency levels

Participants (N)	Level	Elicited forms						Total
		SF		WF		MF		
		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	
16	B1	309	77.64	63	15.83	26	6.53	398
47	B2	868	74.25	223	19.08	78	6.67	1169
58	C1	1025	71.08	337	23.37	80	5.55	1442
Total: 121		2202		623		184		3009

The results of the non-parametric test show that the association between the variables of language proficiency level and vowel reduction is statistically significant, i.e., higher language proficiency is significantly associated with correct use of weak forms ($\chi^2 = 14.6$, $df = 4$, $p = 0.006$).

Weak forms use across word categories

An additional analysis was carried out to compare the pronunciation variants across word categories. The results showed that the modal verbs were the grammatical word categories least frequently reduced to their weak forms (6.99%). The weak forms of the auxiliaries, pronouns, the quantifier *some*, and the existential *there* were slightly more present in the speech of all participants (approximately 20% each), while *just*, with 72.73% of weak form occurrences, was the only grammatical word most frequently reduced to its weak form. The participants also produced various mispronounced forms for some of the grammatical words, mainly *can*, *them*, *there* and, less often, *shall* and *your*. In *can* and *shall* /e/ was used, while in *them* and *there*, the interdental fricative /ð/ was replaced with the Macedonian dental plosive /d/. The strong vowel in *your* was also mispronounced with a diphthong-like element as [jɔə(r)]. Interestingly, these mispronounced forms were not restricted to only one or two proficiency levels; they were approximately equally distributed among the three levels. Table 12.3 shows the number of responses and relative frequencies of strong, weak, and mispronounced forms per word category.

Table 12.3 Number of responses and relative frequencies of strong, weak, and mispronounced forms per word category

Elicited form	Auxiliary verbs		Modal verbs		Pronouns		<i>Some</i>		<i>There</i>		<i>Just</i>	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
SF	825	76.53	712	84.36	471	65.1	94	77.69	67	55.37	33	27.27
WF	235	21.8	59	6.99	189	26.1	27	22.31	25	20.66	88	72.73
MF	18	1.67	73	8.65	64	8.8	0		29	23.97	0	

Additionally, the relationship between the use of weak forms only across the different word categories and proficiency levels was tested. Table 12.4 shows the number of responses and relative frequencies of weak forms in four groups: WF1 – auxiliaries, WF2 – modals; WF3 – pronouns, and WF4 – for *some*, *there* and *just* together.

Table 12.4 Weak forms across word categories and language proficiency levels

Participants (N)	Level	Form								
		WF1		WF2		WF3		WF4		Total
		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	
16	B1	26	41.27	3	4.75	16	25.40	18	28.57	63
47	B2	82	36.77	23	10.31	69	30.94	49	21.97	223
58	C1	127	37.69	33	9.79	104	30.86	73	21.66	337
Total: 121		235		59		189		140		623

It is evident from the table that there is no word category where the participants at C1 level greatly outperformed participants at the other two proficiency levels. In all of the grammatical words, the percentage generally differentiates by a small margin. The results from the non-parametric test show that the association between the variables of word category and vowel reduction is not statistically significant, indicating that the type of word category is not significantly associated with weak form use across the three proficiency levels ($\chi^2 = 3.67$, $df = 6$, $p = 0.72$).

Weak forms use across trained and untrained groups

The phonetic training received was another aspect that was further analysed. Since the first-year students were the only ones who had not undergone any formal training about vowel reduction, here we will look at differences in speech productions regarding weak forms between this group (i.e., the untrained group) and the second, third and fourth-year students (i.e., the trained group). Table 12.5 shows the number of responses and relative frequencies for strong, weak and mispronounced forms for the trained and untrained participants.

The results from the non-parametric test show that the association between the variables of formal training and vowel reduction is statistically significant i.e., the

Table 12.5 Number of responses and relative frequencies of strong, weak, and mispronounced forms by the trained and untrained group

Level	Participants (N)	Forms						Total
		SF		WF		MF		
		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	
Untrained	30	601	80.78	113	15.19	30	4.03	744
Trained	91	1593	70.33	513	22.65	159	7.02	2265
Total	121	2194		626		189		3009

presence of training is significantly associated with use of weak forms ($\chi^2 = 31.3$, $df = 2$, $p = 0.000$). The untrained group consisted of 30 participants only, while the trained group consisted of 91 (27 + 32 + 32), hence the vast difference in terms of weak form productions. Their language level profile is as follows: (a) the trained group: B1 ($n = 11$, 12%), B2 ($n = 36$, 40%), C ($n = 44$, 48%), and (b) the untrained group: B1 ($n = 5$, 17%), B2–37% ($n = 11$), C ($n = 14$, 46%). The trained group has a better average score for weak forms. However, for a group that had no treatment or knowledge of phonetics and phonology whatsoever, the first-year students still performed well. This can be attributed to the high language proficiency: nearly half of the participants in this group were at C1 level and less than a half at B2 level.

Frequency of weak forms use across strong vowels

Another aspect that was examined was the type of strong vowel in the target words. The analysis revealed that words with certain strong vowels are more easily reduced to their weak form. Figure 12.1 shows the relative distribution of vowel reduction per strong vowels.

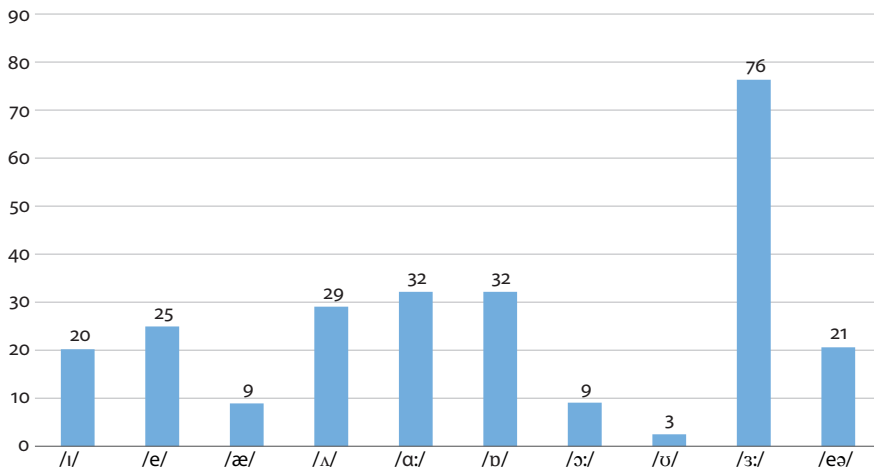


Figure 12.1 Frequency distribution of vowel reduction per strong vowels in target words

It is evident from the graph that the grammatical words with the strong vowel /ɜ:/ (*her* and *were*) were the most reduced to /ə/. The strong vowels /ɒ/ in *was*, /ɑ:/ in *are* and /ʌ/ in *does*, *must*, *us*, *some*, and *just* follow with a reduction rate at around 30%. The very few instances of reduction of /æ/, /ɔ:/ and /ʊ/ are noticeable by their absence, indicating that the words containing these strong vowels only rarely appeared in their weak form.

Discussion

The results of this study are in line with the findings in Kirkova-Naskova (2010), in that the vast majority of the target words occurred in their strong form (73.18%) and only a low percentage of weak forms (20.71%) were detected in the speech of Macedonian EFL learners. Our results thus concur with the conclusion reached in similar studies, that the pronunciation variants of grammatical words are a problematic area for L2 learners who tend to predominantly use the strong form (Ghazali & Boucchioua, 2003; Poesová & Weingartová, 2018).

Another aspect to be considered was the different degree of vowel reduction across three language proficiency levels. In this study, the C1 level participants (those with and without training) correctly reduced the grammatical words in 23.37% of the instances ($n = 337$), compared to 19.08% ($n = 223$) by B2 level participants and 15.83% ($n = 63$) by B1 level students. Other studies have also demonstrated that advanced to proficient EFL learners had a higher rate of correct schwa use in weak forms than intermediate to upper intermediate users (Gonet et al., 2010), which further supports the findings in this study that higher language proficiency can correlate with more consistent vowel reduction in grammatical words. However, Ghazali and Boucchioua (2003) pointed out that regular practice did not have a particularly positive effect on vowel reduction in advanced learners. It has also been accepted that advanced language proficiency does not necessarily entail good pronunciation skills and foreign accent can be retained despite developing proficiency in other L2 skills (Flege & Bohn, 1989; Little, 1995). Our results showed a significant association between the language proficiency level and schwa production ($p = 0.006$). Although 23.37% is not a high score, the fact that there were more schwa realisations at C1 level indicates that language proficiency might be a factor for successful vowel reduction. This has proved to be the case for perception of schwa in lexical and grammatical words (Silva Fragozo, 2015).

An interesting observation resulting from the analysis is that the type of word category was not significantly associated with schwa production in grammatical words ($p = 0.72$). To our best knowledge, there are no research studies that have investigated this variable, therefore we are unable to provide a comparable viewpoint.

Another aspect addressed in our study was the different vowel reduction rate between the group with and without training. Both groups shared relatively the same language proficiency profile (on average, 14.5% of the participants were at B1 level, 38.5% at B2, and 47% at C1 level). The results revealed that the trained group used reduced forms in approximately 7% more cases, which is in line with results from other studies (Abe, 2011; Gómez Lacabex & García Lecumberri, 2010; Rojczyk & Porzuczek, 2012). The data also showed that the association between the variables of training and vowel reduction in grammatical words is statistically

significant ($p < 0.001$); however, in order to corroborate whether training has a positive effect on vowel reduction in grammatical words, additional studies into acquisition of vowel reduction with a pre-test, controlled phonetic training, and a post-test are needed.

The results also indicated that the grammatical words containing strong vowels /ʌ/, /ɒ/, /ɑ:/ and /ɜ:/ were most easily reduced to their weak form. One explanation for the common reduction of the strong vowel in *does*, *us*, *some* and *just* can be attributed to the fact that /ʌ/ is a central open-mid vowel,⁵ and in rapid speech speakers tend to reduce it to schwa since it requires less articulatory effort (Van Bergem, 1991). Still, this does not account for the lack of reduction in auxiliary and modal verbs with the strong vowel /ɒ/ despite its classification as a back-central close-mid vowel, nor does it explain the common reduction of /ɒ/ as a back-open vowel⁶ in *was*. As for the strong vowels /ɑ:/ and /ɜ:/ in *are*, *were* and *her*, similar findings can be found in the study by Poesová and Weingartová (2018), who noticed that *were* and *her* were increasingly used with schwa. They believe the *-er* ending, which is often pronounced with a schwa, serves as a link between orthography and pronunciation. Orthography as a factor in vowel reduction has also been taken into consideration in other studies (Bogacka et al., 2006; Gómez Lacabex & García Lecumberri, 2010; Gonet et al., 2010; Silva Fragozo, 2015).

Pedagogical implications

The results of this study have highlighted the complexity of vowel reduction for Macedonian EFL learners. The moderate presence of some weak forms and the total absence of others clearly illustrate the need to use classroom activities to practice reduced forms. It seems that L2 learners lack awareness of vowel reduction processes and therefore teachers should facilitate learners' understanding of the importance of correct stress patterns in English.

Kenworthy (1987) identifies the need for learners to be introduced to the pronunciation variants of the grammatical words gradually. Offering them a list of strong and weak forms would not be effective in getting learners to produce them correctly. For that reason, very common examples such as *fish and chips* /fɪʃn'tʃɪps/, *salt and pepper* /sɒltn'pepə/, *cup of tea* /kʌpə'ti:/ can be brought to their attention. While learners have already heard them, they are rarely aware of the reason for such changes. After that, the pronunciation variants of other grammatical words

5. The classification of vowels is based on Collins and Mees (2013).

6. However, Roach (2009) classifies /ɒ/ as “not quite fully back” (p. 14), which leaves room for deliberating that /ɒ/ can shift more easily towards a schwa-like position when unstressed.

can be introduced through stages. At the same time, this approach can be extremely useful to revise auxiliary vs. main verb use, as illustrated in Examples (2a), (2b), (3a), and (3b):

- (2) a. *I have/aɪv/ always loved animals.*
(weak form of *have* when used as an auxiliary verb)
- b. *I have/hæv/ two dogs and a cat.*
(strong form of *have* when used as a main verb)
- (3) a. *Maria has /həz, z/ been reading.*
(weak form of *has* when used as an auxiliary verb)
- b. *Maria has /hæz/ a lot of books to read.*
(strong form of *has* when used as a main verb)

In this way, the learners will not only notice the difference between the different functions of the word in the sentence, i.e., grammatical vs. lexical, but their attention will also be directed to the different pronunciation variants of the grammatical word. Similarly, this can prove very effective when discriminating between possessive pronouns, possessive determiners, and object pronouns. A potentially useful activity would be to have learners compare examples like the ones in (4a), (4b), (5a), and (5b) and analyse differences in their pronunciation. Ideally, colour-code could be used to differentiate between strong and weak forms:

- (4) a. *It's his /ɪz/ problem, not mine.*
(weak form of *his* when used as a possessive determiner in sentence medial position)
- b. *I think it's his /hɪz/, you know.*
(strong form of *his* when used as a possessive pronoun)
- (5) a. *She visited her /hə/ friend.*
(weak form of *her* when used as a possessive determiner)
- b. *I have met her /ə/ before.*
(/h/-elided weak form of *her* when used as an object pronoun in sentence medial position)

The findings in this study revealed that the strong forms of modal verbs were predominant. The auxiliaries with the strong vowels /æ/ and /ʊ/ had considerably fewer weak form occurrences. A simple exercise alternating between a strong and weak form can prove useful, or a comparison can be made between words with the same strong vowel, as illustrated in Examples (6a) and (6b):

- (6) a. A: *She can /kən/ do it, but I can't.*
B: *No, you can /kən/ do it, too.*
A: *Can /kæn/ I?*

B: *Yes, you can* /kæn/.

- b. *Does* /dʌz/ *he* /i/ *know them* /ðəm/? vs. *What does* /dəz/ *he* /i/ *know?*
Must /mʌst/ *he* /i/ *do the* /ðə/ *chores?* vs. *What must* /məst/ *he* /i/ *do?*
Have /hæv/ *you* /jə/ *heard from* /frəm/ *him* /ɪm/? vs. *What have* /əv/ *you* /jə/ *heard?*

An alternative to this would be to represent the process of vowel reduction in auxiliary and modal verbs. An effective and practical approach would be to break down the reduction process, as shown in the Examples (7a)–(7e), and encourage learners first to practise pronunciation in isolation and then put that pronunciation into practice.

- | | | |
|--------|--|--|
| (7) a. | <i>am</i> /æm/ → /əm/ → /ɪm/ | <i>I'm</i> /aɪm/ <i>here.</i> |
| b. | <i>had</i> /hæd/ → /həd/ → /əd/ → /d/ | <i>They'd</i> /d/ <i>left by then.</i> |
| c. | <i>has</i> /hæz/ → /həz/ → /əz/ → /z/ | <i>He's</i> /z/ <i>just finished his homework.</i> |
| d. | <i>have</i> /hæv/ → /həv/ → /əv/ → /v/ | <i>We've</i> /v/ <i>been working all morning.</i> |
| e. | <i>would</i> /wʊd/ → /əd/ → /d/ | <i>She'd</i> /fɪd/ <i>be delighted.</i> |

With this approach, weak forms can be practised in isolation before using them as part of an utterance or sentence. This way, learners are able to notice how a weak form contributes to a natural English rhythm (Kelly, 2000). This task can be easily integrated into a lesson plan when grammatical tenses or conditionals are discussed. For example, while sentence (8a) illustrates the verb pattern for the formation of the third conditional, sentence (8b) focuses on the reduced pronunciation forms in the verb phrase:

- (8) a. *If you had* /hæd/ *told me, I would* /wʊd/ *have* /hæv/ *known what to say.*
 (focus on verb pattern with strong forms, emphatic pronunciation)
 b. *If you'd* /jəd/ *told me, I would've* /wʊdəv → ədəv/ *known what to say.*
 (focus on pronunciation with weak forms)

Including pronunciation instruction when discussing grammatical patterns can facilitate both perception and production. One reason why students are unable to produce reduced forms might lie in their inability to perceive them in colloquial speech in the first place (Pennington & Rogerson-Revell, 2019). A practical activity that can be useful for schwa discrimination is to adapt any text so that the schwa sound in the grammatical words is presented in phonemic transcription (Baker, 2006), as in Examples (9a) and (9b). Learners can be instructed to read aloud version (9a) and (9b), then find and circle the words in version (9a) that have been replaced with phonemic transcription in version (9b), and finally discuss their observations about strong vowel changes into schwa or other weak vowels, thus raising their awareness of connected speech processes.

- (9) a. John *was getting ready for bed when he heard a strange sound downstairs. His first instinct was to wake up his sister but he didn't want to look weak. After all, he was the older one.*
- b. John /wəz/ *getting ready* /fə/ *bed when* /i/ *heard* /ə/ *strange sound downstairs. /hɪz/ first instinct* /wəz tə/ *wake up* /ɪz/ *sister* /bət i/ *didn't want* /tə/ *look weak. After all, /hi wəz ði/ older one.*

Conclusion

This study reported on the use of vowel reduction among Macedonian EFL learners across a range of grammatical words and found that the strong forms were predominant. However, it also showed that the language proficiency level and formal training in vowel reduction affect the use of weak forms in grammatical words. One limitation that can be observed is that it did not take into account speech rate or segmental context, i.e., whether the following word begins with a vowel or consonant (Jurafsky et al., 1998). Researchers in their future investigations may consider exploring an individual's speech rate and compare the presence of weak forms across faster and slower speaking rates and provide evidence for the common assumption that weak forms are more commonly associated with less careful speech (Underhill, 1994).

The results of the current study demonstrate the need for re-examining the approach taken towards pronunciation teaching, more specifically the practice of reduced forms. A key step in the right direction would be to build awareness of how different pronunciation variants contribute to the natural English rhythm. It can be readily agreed that pronunciation has sat in the last row in the EFL classroom for so long; it is time it takes a more central role and receives the attention it deserves as it plays a crucial part in both speaking and listening.

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Appendix A. Stimulus materials and tasks for data collection

On this handout there are 25 imaginary situations. You are expected to say something related to each particular situation. Read each situation, think for a while and then produce an utterance or a question in direct speech with the appropriate intonation. You must use the underlined words. Please do not make a pause, that is, do not interrupt your thought (read silently, think, and respond out loud).

1. Your friend was at a concert last night and you want to know more about the concert. Use was in your question.
2. You want to know which band is John's favourite. Use his in your question.
3. You want to know what your friend did last night. Use were in your question.
4. You want to tell your friend that you have already called Philip. You have also told Philip about the exam results. Use him in your statement.
5. You have been taken to the police after a nightclub brawl and you have no idea why you are there. Use am in your question.
6. You want to know your friend's plan for the holidays. Use are going to in your question.
7. You want to know what the name of your friend's cat is. It's a female cat. Use her in your question.
8. You describe your favourite dessert which includes different fruits. Use some in your statement.
9. You want to know why your friend John is late. Use is in your question.
10. Your new roommate comes in the flat you're going to share and you show him/her the room. Use there is/ there are.
11. You tell your friends that you saw the exam results on the notice board. Use them in your statement.
12. You want to know how long your friend has studied German. Use been in your question and begin with *How long*.
13. You show your new smart phone to your friends and you boast about your application which gives you the correct pronunciation of words. Tell them about it and use can in your statement.
14. You tell your friend that it's the pencil you need, not the pen. Use just in your statement.
15. You need help with your books and you ask for help. Start your statement with *I was wondering* and use could in it.
16. You are presenting the project you have been working on. At the beginning of the presentation, you want to thank your teacher for her assistance. Use would in your statement.

17. You and your friends are deciding what to do on Friday night. Somebody suggests going to the cinema and you offer to be the driver. Use shall in your statement.
18. Your friend has difficulty passing the literature exam. You have already passed it and now he wants your advice. Use should in your advice.
19. You are angry because you've been waiting for your friend for half an hour. You call her and say to her to come at once or you'll leave. Use must in your statement.
20. Your friend arrives at the bus station and you tell him that the bus left just a minute ago. Use has in your statement.
21. You complain that your group coordinator didn't inform you about the new timetable. Use us in your statement.
22. You want to find out what your friend normally does at the weekends. Use do in your question.
23. You want to know what time the next lesson starts and you ask your friend about it. Use does in your question.
24. You want to know your friend's favourite film. Use your in your question.
25. Your guest wants a glass of water and you offer to bring him one. Use will in your statement.

Appendix B. Handout for raters to select the pronunciation variant they hear

Please select the pronunciation variant you hear Participant No _____ Year _____

1	WAS	/wɒz/	/wʌz/	/wəz/		
2	HIS	/hɪz/	/ɪz/			
3	WERE	/wɜ:(r)/	/wə(r)/	/we(r)/		
4	HIM	/hɪm/	/ɪm/			
5	AM	/æm/	/əm/	/aɪm/	/waɪm/	
6	ARE	/ɑ:(r)/	/ə(r)/	/r/		
7	HER	/hɜ:(r)/	/hə(r)/	/ə(r)/		
8	SOME	/sʌm/	/səm/			
9	IS	/waɪz/	/waɪz/	/ɪz/	/ɪts/	
10	THERE IS/ARE*	/ðerɪz/	/ðer ɑ:(r)/	/ðə(r) ɪz/	/ðə(r) ɑ:(r)/	/ðə(r) ə(r)/
11	THEM	/ðem/	/ðəm/	/dem/	/dəm/	
12	HAVE	/hæv/	/həv/			
13	CAN	/kæn/	/ken/	/kən/	/kn/	/kɪ/
14	JUST	/dʒʌst/	/dʒʌs/	/dʒəst/	/dʒəs/	
15	COULD	/kʊd/	/kəd/			
16	(I) WOULD	/wʊd/	/wəd/	/aɪd/		
17	SHALL	/ʃæl/	/ʃel/	/ʃəl/	/ʃl/	
18	SHOULD	/ʃʊd/	/ʃəd/	/ʃd/		
19	MUST	/mʌst/	/mʌs/	/məst/	/məs/	
20	HAS	/hæz/	/həz/	/əz/	/z/	

21	US	/ʌs/	/əs/		
22	DO	/du:/	/du/	/də/	/dju/
23	DOES	/dʌz/	/dəz/		
24	YOUR	/jɔ:(r)/	/jʊə(r)/	/jɔə(r)/	/jə(r)/
25	(I) WILL	/wɪl/	/əl/	/aɪl/	

Note.

* In case *there* is pronounced with /d/ instead of /ð/, add the consonant next to the chosen form.

Appendix C. Strong and weak forms of grammatical words used as target words

Grammatical word	Part of speech	Strong form	Weak form
<i>am</i>	auxiliary verb	/æm/	/əm, ɪ/
<i>are</i>	auxiliary verb	/ɑ:(r)/*	/ə(r), (ə)r/*
<i>can</i>	modal verb	/kæn/	/kən, kɪ/
<i>could</i>	modal verb	/kʊd/	/kəd/
<i>do</i>	auxiliary verb	/du:/	/dʊ, du/+V; /də/ +C
<i>does</i>	auxiliary verb	/dʌz/	/dəz/
<i>had</i>	auxiliary verb	/hæd/	/həd, əd, d, t/
<i>has</i>	auxiliary verb	/hæz/	/həz, əz, z, s/
<i>her</i>	pronoun	/hɜ:(r)/*	/hə(r), ə(r)/*
<i>him</i>	pronoun	/hɪm/	/ɪm/
<i>his</i>	pronoun	/hɪz/	/hɪz, ɪz/
<i>is</i>	auxiliary verb	/ɪz/	/ɪz, z, s/
<i>just</i>	adverb	/dʒʌst/	/dʒəst/
<i>must</i>	modal verb	/mʌst/	/məst, məs/
<i>shall</i>	modal verb	/ʃæl/	/ʃəl, ʃl/
<i>should</i>	modal verb	/ʃʊd/	/ʃəd/
<i>some</i>	quantifier	/sʌm/	/səm, sɪ/
<i>them</i>	pronoun	/ðem/	/ðəm/
<i>there</i>	existential there	/ðeə(r)/*	/ðə(r)/*
<i>us</i>	pronoun	/ʌs/	/əs/
<i>was</i>	auxiliary verb	/wɒz/	/wəz/
<i>were</i>	auxiliary verb	/wɜ:(r)/*	/wə(r)/*
<i>will</i>	modal verb	/wɪl/	/əl, l/
<i>would</i>	modal verb	/wʊd/	/wəd, əd, d/
<i>your</i>	pronoun	/jɔ:(r), jʊə(r)/*	/jə(r)/*

Note.

* (r) indicates optional pronunciation of /r/ as a link in intervocalic position

