Differential Effects of FonF and FonFS on Learning English Lax Vowels in an EFL Context

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This study investigated the differential effects of focus-on-form (FonF: explicit instruction followed by focused tasks) and focus-on-forms (FonFS: explicit instruction followed by controlled exercises) on learning English lax vowels (i.e., /ɪ/, /ʊ/, /ʌ/) by Persian English as a foreign language (EFL) learners. To this end, 48 learners took a voluntary 6-hour course: the experimental group (n = 17) received FonF, the comparison group (n = 16) received FonFS, and the control group (n = 15) engaged in theme-based discussions with no focus on the target vowels. Learners’ pronunciations were elicited in controlled read-aloud and spontaneous picture description tasks and acoustically measured for phonetic accuracy based on tongue positions (i.e., formant 1 [F1] for the height and formant 2 [F2] for the backness of the tongue). Results revealed that whereas both instructional types significantly improved learners’ phonetic accuracy (i.e., adjusting F1/F2 values) in the controlled task, only the FonF methodology proved effective in the spontaneous task with large effects in the delayed posttest. The control group revealed no improvement in any tasks. Overall, the results show that FonF instruction may offer substantial benefits to EFL learners to have more accurate pronunciations in EFL speech. The paper concludes with the pedagogical implications of the findings.

Keywords: FonF, FonFS, focused task, formant, lax vowel, L2 pronunciation

Introduction

After witnessing years of neglect in communicative approaches to second/foreign language (L2) teaching, pronunciation instruction now occupies a more prominent role in intelligible L2 communication. Numerous studies have recently focused on different teaching techniques to teach pronunciation to L2 learners (e.g., Gooch, Saito, & Lyster, 2016; Hamada, 2018). Among these studies, explicit instruction has either been the main focus (e.g., Kissling, 2013; Saito, 2011a; Sugiura, 2016; Underwood & Wallace, 2012) or a part of the treatment process (e.g., Hua & Li, 2016; Gooch et al., 2016; Saito & Lyster, 2012; Tabandeh, Moinzadeh, & Barati, 2018).

DeKeyser (2015) defines explicit teaching as an instructional intervention in which L2 features and rules are directly explained to the learners. In teaching L2 pronunciation, explicit instruction has grown in popularity among L2 researchers and teachers because it helps learners develop an awareness of
phonological features (i.e., declarative knowledge) and notice the difference in their current and target-like pronunciation features. According to the underpinnings of skill acquisition theory, the declarative knowledge gained from explicit instruction could then lead to automatic implicit knowledge by extensive practice (DeKeyser, 2015).

In line with such an emphasis on the role of explicit pronunciation instruction to raise L2 learners’ phonological awareness, Saito (2012) states that most studies in L2 pronunciation instruction has followed either the behavioristic focus-on-forms (FonFS) tradition or meaning-oriented focus-on-form (FonF) procedure. Whereas in the former learners are only provided with controlled mechanical drills and repetition exercises, in the latter they engage in meaning-oriented communicative activities (e.g., tasks) in a way that they notice phonological forms while communicating (Ellis, 2016).

As shown by some research findings (e.g., Saito, 2011a), although learners who receive FonFS pronunciation instruction may perform well in controlled reading tasks, they falter in their performance in spontaneous contexts. This highlights the psycholinguistic advantage of FonF over FonFS in helping learners notice and produce problematic L2 features via ample meaning-oriented practice (Ellis, 2016). The current literature demonstrates that while many L2 pronunciation studies have investigated the common procedures of FonFS instruction (e.g., Kissling, 2013; Saito, 2011a; Sturm, 2013; Whipple, Cullen, Gardiner, & Savage, 2015), fewer have focused on FonF (e.g., McKinnon, 2017; Saito & Lyster, 2012). Moreover, most of the above-mentioned studies measured the short-term effects of instruction through the immediate posttest. Besides, as stated by Ellis (2016), very limited research has compared the two types of instructions in the same research design. To this end, the following quasi-experimental study set to compare the differential effects of FonF and FonFS instructions on learning English lax vowels by Persian EFL learners whose L1 Persian lacks any lax vowels in its phonological repertoire.

**Literature Review**

One of the central constructs in the field of instructed second language acquisition has been the concept of focus-on-form (FonF) instruction (Ellis, 2016). Originally, FonF was an approach in task-based language teaching to draw L2 learners’ attention to incidental problematic forms without any preplanned types of instruction (Long, 1988). It opposed the traditional focus-on-forms (FonFS) instruction wherein—based on behavioristic and structuralist tenets of language learning—there is a linear synthetic presentation of target features via explicit instruction and controlled decontextualized exercises (Nassaji, 2016).

The notion of FonF, however, has shapeshifted since its original appearance in L2 methodology (Ellis, 2016). Doughty and Williams (1998) stated that FonF could also include explicit instruction followed by activities that focus learners’ attention on form in the process of communication. Thus, they argued that the main distinction between the two approaches is that FonF includes a focus on formal features of language as well as meaning while FonFS is solely limited to the formal aspects. Later, some research drawing on skill acquisition theory (e.g., DeKeyser, 1998) found strong evidence in favor of FonF instruction as an approach that helps learners automatize their declarative knowledge (i.e., explicit knowledge) into a procedural state (i.e., implicit knowledge) by ample communicative practice (Anderson, 2017). As argued by Ellis (2003), one type of such activities is the focused task that elicits the use of preplanned specific L2 target features in meaning-oriented contexts.

The differential effects of FonF and FonFS instructions have been studied mostly in terms of grammar and vocabulary (Ellis, 2016). In terms of L2 pronunciation, Saito (2012) conducted a synthesis study and categorized L2 pronunciation instruction studies as either FonF or FonFS. In agreement with the developed notion of FonF (Doughty & Williams, 1998; Ellis, 2016), he defined the former as any treatment procedure that draws learners’ attention to phonological forms not only in controlled contexts (e.g., explicit instruction with controlled exercises) but also in communicative contexts (e.g., meaning-oriented tasks). His findings showed that most of the studies to that time (e.g., Saito, 2011a; Saito &
Lyster, 2012, on the pronunciation of /ɹ/ by Japanese ESL learners) voted in favor of the advantage of FonF over FonFS in controlled and spontaneous contexts.

The effects of FonFS and/or FonF instructions have also been highlighted in other L2 languages. As examples, the results of studies by Sturm (2013) and Kissling (2013) showed that FonFS instruction was effective to improve the segmental accuracy of L2 French learners and L2 Spanish learners, respectively. Likewise, focusing on the prosody features, McKinnon (2017) observed that FonF teaching of L2 Spanish intonational patterns was significantly more effective than the FonFS tradition.

Finally, in a comprehensive meta-analysis study, Lee, Jang, and Plonsky (2015) found large effects for FonF treatment, feedback, longer interventions, and controlled measurement tasks. Additionally, they asserted that scant research in their large sample included effect sizes in their reports (only 20 per cent), investigated the longevity of effects in delayed posttests (only 14 per cent), focused on phonetic, rather than phonological, characteristics of sound segments, and tested learners’ progress in communicative spontaneous contexts.

In total, previous studies have revealed that although FonFS instruction may prove effective in controlled contexts, it is not very effective in spontaneous ones. Moreover, studies have shown that FonF instruction is effective in improving L2 learners’ pronunciation accuracy in spontaneous contexts as gauged in the immediate posttest. What remains a question is that to what extent these two types of instruction differentially affect L2 learners’ long-term phonetic accuracy in both controlled and spontaneous contexts.

**Rational of the Study**

This study investigated the differential effects of FonF and FonFS instructions in teaching English lax vowels (i.e., /ɪ/, /ʊ/, /ʌ/) to the Persian learners of English as a foreign language (EFL). English lax vowels are very difficult for Persian learners because their L1 Persian has only six tense, relatively long, vowels in its phonological repertoire (Ansarin, 2006). That is why even the advanced EFL Persian learners mostly perceive and produce the nearest L1-existing tense, long vowels (i.e., /i:/, /u:/, /ɑ:/) in place of the English lax counterparts.

It has also been argued that spontaneous language production contexts require L2 learners to undergo a high communicative pressure as they have little preparation and monitoring time (Growther, Isaacs, Trofimovich, & Saito, 2015). In this respect, adding communicative practices to explicit instruction seems to provide learners with opportunities to produce explicitly learned features (i.e., declarative knowledge) in meaning-oriented contexts so that they can proceduralize and automatize this knowledge (Ellis, 2016; Dekyser, 2015). Furthermore, many L2 pronunciation instruction studies have measured learners’ improvements only in the immediate posttest (e.g., Gooch et al., 2016; McKinnon, 2017; Saito, 2011a; Sturm, 2013), in spite of the fact that delayed posttests are better indicators of lasting treatment effects in pronunciation instruction (Thomson & Derwing, 2015).

Thus, the current study hypothesizes that FonF instruction is more effective than FonFS in long-term improvement of Persian EFL learners’ phonetic accuracy in spontaneous EFL speech. In accordance with this hypothesis, the following research question guides the design of the study:

To what extent do FonF and FonFS instructions differentially affect learning English lax vowels by Persian EFL learners in controlled and spontaneous tasks?
Method

Participants

The EFL participants of the study were 48 Persian-speaking English majors at a private university in Tehran, Iran. All learners were in the third semester of university study and had not passed any courses in English phonology. The learners were selected out of 56 students attending CLT-based laboratory courses based on the following criteria: having the pre-intermediate level of general proficiency (based on Oxford placement test; Allen, 2004), being L1 Persian speakers, having no experience of living in an English L1/L2 country, and starting to learn English in adulthood (Table 1). The learners were then invited to do an extra voluntary 6-hour course: the experimental group (n = 17) received FonF, the comparison group (n = 16) received FonFS and the control group (n = 15) received no relevant pronunciation instruction but a theme-based discussion class with feedback on different pronunciation aspects but the target vowels of the study.

| TABLE 1 | Biographical and Proficiency Characteristics of the EFL Learners |
|-----------------|---------------------------------------------------------------|
| Number          | Gender (female/male) | Age (mean/SD) | OPT (mean/SD) |
| FonF group      | 17                  | 11 / 6        | 28.3 / 4.12   | 30.4 / 5.1  |
| FonFS group     | 16                  | 9 / 7         | 27.5 / 4.11   | 29.3 / 5.3  |
| Control group   | 15                  | 8 / 7         | 29.1 / 4.33   | 30.2 / 5.1  |

In addition, to establish a reference point of accuracy for the EFL learners’ pronunciations, five adult educated American English native speakers (ENSs) were recruited (3 males and 2 females, with the mean age of 26.7) and required to do the same type of tasks as did by the EFL participants. The ENS pronunciations and the relevant extracted formant values provided a reference point for the tongue positions. In order to rank American English vowels regarding their degree of difficulty and instructional importance, 35 Iranian TESOL instructors (21 females and 14 males with M.A. or Ph.D. degrees in TESOL and with the mean age of 33.3) also participated in the study.

Target Vowels of the Study

Ellis (2006) introduced two approaches to identify problematic L2 target features: (1) the remedial approach wherein researchers can refer back to the relevant previously conducted research (e.g., contrastive analysis findings) and (2) the expert judgment approach wherein researchers can refer to expert judgments’ opinions. Following Saito (2011b), both approaches were employed in this study.

Following the first approach, a look at the phonological repertoire of the standard Persian shows that there are six tense vowel phonemes (i.e., monophthongs) in this language: /i:/, /u:/, /ɑ:/ as relatively longer vowels (the diacritic symbol [:] marks them as long vowels) and /e/, /o/, and /æ/ as relatively shorter vowels. There is no tense/lax distinction in the Persian language and the length of the vowels is not a phonemically contrastive feature (Ansarin, 2006). American English, however, has the tense/lax distinction. According to Ladefoged and Johnson (2014), of nine main full vowels of the American English (i.e., /i:/, /ɪ/, /ɛ/, /æ/, /ɑ/, /ʌ/, /ɔ/, /ʊ/, /u:/), five are lax vowels (i.e., /ɪ/, /ɛ/, /æ/, /ɑ/, /ʌ/) and four (i.e., /i:/, /ɔ:/, /ə/, /u:/) are tense. The tense/lax distinction is mostly a matter of quality feature (i.e., different tongue positions regarding height and backness) and muscular tenseness in the production of these vowels (Ladefoged & Johnson, 2014). Similar to the Persian language, the length feature (i.e., quantity feature) of the vowels is not phonemic in modern English (Rogers, 2014), meaning that it is the tongue position rather than the length that distinguishes vowels from each other.

Following the second approach, a list of English vowels with example words was given to 35 Iranian EFL teachers to be rated based on pronunciation difficulty (from very easy to pronounce 1 to very
difficult to pronounce 9) and instructional importance (from not important to instruct 1 to very important to instruct 9). As shown in Table 2, the top-rated vowels were the three English lax vowels (i.e., /ɪ/, /ʊ/, and /ʌ/) that are absent in the Persian language and regarded as instructionally essential to Persian EFL learners. As such, these vowels were selected as the target vowels of the study.

**TABLE 2**

*American English Vowels Rated by Iranian EFL Teachers*

| Vowels | Difficult to pronounce (SD/mean) | Important to instruct (SD/mean) | Overall rating score (mean) |
|--------|----------------------------------|--------------------------------|-----------------------------|
| /ɪ/    | .74/7.5                          | .67/8.5                         | 8*                          |
| /ʊ/    | .65/7.4                          | .76/8.4                         | 7.9*                        |
| /ʌ/    | .71/7.6                          | .58/8                           | 7.8*                        |
| /ɔ/    | .62/2.4                          | .62/2.5                         | 2.4                         |
| /ɑ/    | .71/2.3                          | .64/2.3                         | 2.3                         |
| /æ/    | .63/2.2                          | .59/2                           | 2.1                         |
| /i/    | .75/2.3                          | .71/2.2                         | 2.2                         |
| /ɛ/    | .61/2.1                          | .73/2                           | 2                            |
| /u/    | .62/2.1                          | .66/2                           | 2                            |

* The most problematic vowels selected

**Instruments and Materials**

**Software for recordings and acoustic analysis**

The learners’ pronunciations were recorded by Praat software (Boersma & Weenink, 2016, version 6.0.14) via a unidirectional microphone at a sampling rate of 22,000 Hz. The recorded pronunciations were also acoustically analyzed by this software.

**Materials and instructional treatments**

The experimental group received FonF instruction by the researcher as their teacher for six 1-hour-long sessions (two hours for each target vowel). First, learners were explicitly taught the articulatory and perceptual characteristics of each vowel via the IPA chart, and the available authentic American pronunciation coursebooks and videos. Learners were required to listen carefully and pronounce vowels based on the instruction. This phase of explicit instruction took the first 20 minutes of the class time for each vowel. Afterward, learners practiced the learned vowel in a series of focused tasks for the rest of the class time (100 minutes). The researcher also provided explicit correction feedback whenever learners made pronunciation mistakes so that they would notice the target features while communicating (see Figure 1 for the summary of the overall treatment procedure).

Tasks were focused in that they were designed to elicit the production and perception of target vowels in the flow of communication (Ellis, 2003). The tasks were designed by the researcher based on the defining characteristics of tasks: a primary focus on meaning, involving real-world processes of language use, and having a clearly defined communicative outcome; Ellis, 2003). These tasks included information gap, picture-based storytelling, interview, role-plays, and picture description and recognition (see the appendix for a sample) and consisted of pre-task, task, and post-task phases. In the pre-task and post-task phases, learners engaged in individual, pair work, and group activities, but in the main task phase, they only engaged in pair work or group work communicative activities.
In line with the experimental group, the comparison group (i.e., FonFS) received six hours of instruction in six sessions. The first phase of instruction (20 minutes) was devoted to the explicit teaching of each vowel with the same procedure as the FonF group. After this explicit instruction, unlike the FonF group, the FonFS group had a series of controlled, decontextualized activities for the rest of the training session (100 minutes): individual and choral listen-and-repeat minimal-pair exercises, sentence read-aloud drills and passage reading activities. Whenever learners made pronunciation mistakes, the researcher corrected them by explicit correction feedback. The control group embarked on six 1-hour-long discussion classes centering on various themes. The themes were presented as stimuli in the form of passage readings and tasks including, among other language features, the target vowels of the study. After reading the passages and engaging in tasks, there was a free discussion about the theme of the readings and tasks. The learners in the control group received explicit correction feedback on various language features but the target vowels of the study.

**Measurement Tasks**

Learners’ pronunciations of the target vowels were elicited in two different types of measurement contexts based on the two opposite ends of production continuum. According to Lyster (2007), the controlled read-aloud task has the lowest cognitive processing load, and learners are only required to read the already-presented written stimuli. On the contrary, the timed spontaneous picture description task has a higher cognitive processing load because learners are to produce free language in a short time in a communicative meaning-oriented context. Accordingly, these two measurement contexts were employed in this study. In the former, two sentences for each target vowel were loaded with five words (6 sentences in total) in the word-internal positions. The reason for choosing word-internal position was twofold: (a) most of the minimal pairs including tense/lax vowel pairs have the relevant vowel in the internal position (e.g., fool vs. full), and (b) the word-internal position is the safest position for neutralizing the coarticulation effect of preceding and proceeding words in spontaneous tasks. In the latter task, learners saw one simple picture (i.e., three pictures in total) with three prompt words under (two target words and one distractor). Learners were required by the researcher to describe the pictures in a way the teacher could recognize which picture was being described among several other pictures. The same types of
sentences and pictures were used in the pretest and delayed posttest. Table 3 presents the list of words containing the target vowels of the study.

| Target Words of the Study |
|---------------------------|
| **Measurement tasks**     |
| Vowels                    | Read-aloud | Picture description |
| /ɪ/                       | still, hill, him, big, system | chick, ship |
| /ʊ/                       | pull, foot, full, put, book  | cook, look |
| /ʌ/                       | cut, cup, gun, hut, bun      | cut, bug |

**Procedure**

After assigning the learners to the three groups, they were called individually to an isolated classroom with the researcher for the pretest in which they were audio recorded describing three pictures and reading aloud six sentences. For the former task, each learner had only 15 seconds to look at each picture and prepare their description based on the prompt words. For the latter task, each learner had one minute to review the sentences before starting to read. Moreover, learners were also required to pronounce the very familiar word *father* (written on a piece of paper) for the normalization process. After the pretest, the instructional phase started and lasted six weeks in total (two 1-hour sessions for each target vowel). Two weeks after the instruction of each vowel was finished, the delayed posttest was administered.

The target vowels of the study in learners’ productions were analyzed by Praat software. To measure the tongue positions, the mean of formant 1 (F1) representing the height of the tongue and formant 2 (F2) representing the backness of the tongue were automatically extracted by Praat in hertz (Hz) at the midpoint range (about 500 milliseconds) of each vowel. To illustrate the point, Figure 2 presents the acoustic analysis of the word *cook* (F1: 432, F2: 1156) pronounced by one of the ENS participants, and Figure 3 presents the acoustic analysis of the word *cook* pronounced as /ku:k/ (F1: 348, F2: 940) by one of the Iranian EFL participants in the pretest. The reason to select the midpoint range (i.e., steady state) was to neutralize the coarticulation effect of the neighboring consonants (Han, Hwan, & Choi, 2013). Next, these raw F1 and F2 values were normalized. The raw F1 and F2 values were normalized because vowel formants are highly sensitive to gender (male/female) differences, mainly as a function of variations in the length of the speakers’ vocal tract (Ladefoged & Johnson, 2014). As there were male and female differences in each group, the Nordstrom and Lindblom’s model of normalization (1975; as cited in Han et al., 2013) was employed.

![Figure 2](image_url). The acoustic analysis of the word *cook*: the mean of formant frequencies of the vowel /ɪ/, pronounced by an ENS participant.
Accordingly, to normalize raw formants, the Persian EFL learners were asked to pronounce the very familiar word *father* in the pretest so that the low vowel /a/ with an F1 frequency of greater than 600 Hz could be used for the normalization purpose. Then, the F3 of this vowel was randomly measured across male and female participants across all groups. The mean of male participants was taken as the norm and was divided by the mean of the other groups. The results produced a uniform scale factor $K$. Finally, the $K$ scale was multiplied by the F1 and F2 values of the three target vowels in the other groups and produced normalized values (see also Han, Hwan, & Choi, 2013). After the normalized formant values were calculated in Hz (objective values), they were turned into the Mel scale (subjective pitch) to approximate the human’s auditory perception. In the end, the mean values of Mel formants were measured across different productions of vowels in measurement tasks for each learner and ENS participant.

**Data Analysis**

For the acoustic analysis of the tongue position, the mean of each vowel’s formants (F1 for height and F2 for backness of the tongue) in Mel scale was calculated and tabulated. Because the data met the assumptions of parametric statistical tests (i.e., continuous scale enjoying normal distribution), parametric tests were employed. Thus, one-way analysis of variance (ANOVA) was run to determine significant between-group differences in the pretest and in the delayed posttest. If overall significant differences were observed, Tukey post hoc test was employed to locate the pairwise between-group differences. Moreover, to probe significant pairwise within-group differences, dependent-samples t-test was run. Finally, Cohen’s $d$ was calculated to measure the effect sizes (.2 = small, .5 = medium, .8 = large; Plonsky & Oswald, 2014) for all significant pairwise differences.

In addition to the statistical analysis of formant values, the schematic representation of the tongue positions in the production of each target vowel (i.e., F1 and F2 values in Mel scale) are also presented in scatter plots. Scatter plots are helpful in showing the relative position and movement of the tongue based on F1/F2 formants. In each scatter plot, the ordinate (vertical) axis (F1) represents the height of the tongue and the abscissa (horizontal) axis (F2) represents the backness of the tongue.
Results

First, the three groups were compared in terms of the F1 and F2 values of each target vowel by one-way ANOVA in the pretest. As shown in Table 4, there were no significant differences among the three groups in the pretest.

TABLE 4
The Results of One-way ANOVA for Between-group Differences in the Pretest

|          | Read-aloud task | Picture description task |
|----------|-----------------|--------------------------|
|          | F1 (2, 42) p-value | F2 (2, 42) p-value | F1 (2, 42) p-value | F2 (2, 42) p-value |
| /ɪ/      | 1.124 .335       | 2.247 .118             | 2.54 .777         | 1.470 .242         |
| /ʊ/      | 2.021 .145       | .491 .615              | 1.579 .218        | 1.696 .196         |
| /ʌ/      | 2.379 .105       | 1.421 .253             | 1.899 .162        | 1.991 .149         |

(Significance level: p-value ≤ .05)

Nevertheless, the results of one-way ANOVA for the delayed posttest (Table 5) revealed statistically significant differences among the groups in both read-aloud and picture description tasks.

TABLE 5
The Results of One-way ANOVA for Between-group Differences in the Delayed Posttest

|          | Read-aloud task | Picture description task |
|----------|-----------------|--------------------------|
|          | F1 (2, 42) p-value | F2 (2, 42) p-value | F1 (2, 42) p-value | F2 (2, 42) p-value |
| /ɪ/      | 40.956 .001     | 5.176 .001             | 56.544 .001       | 8.970 .001         |
| /ʊ/      | 77.158 .001     | 51.912 .001            | 48.845 .001       | 69.168 .001        |
| /ʌ/      | 6.062 .005      | 64.849 .001            | 47.104 .001       | 52.523 .001        |

Next, to locate significant pairwise between-group differences in the delayed posttest, the Tukey post hoc test was run for F1 (Table 6) and F2 (Table 7) values. In addition, Cohen’s $d$ was also measured to determine the magnitude of the differences. As observed, both FonF and FonFS groups significantly outperformed the control group in the delayed posttest of controlled read-aloud tasks with large effects. In the spontaneous picture description tasks, however, the FonF group outperformed both the FonFS and control groups with large effects.

Finally, dependent-samples t-test was run to locate pairwise within-group significant differences. Moreover, Cohen’s $d$ was also measured to determine the magnitude of the differences. The results showed that FonF instruction significantly improved the F1 values (/ɪ/: $t(16) = -8.309, p = .000, d = 2.6$; /ʊ/: $t(16) = -8.781, p = .000, d = 2$; /ʌ/: $t(16) = 3.732, p = .001, d = 1.3$) and F2 values (/ɪ/: $t(16) = 2.834, p = .001, d = 1$; /ʊ/: $t(16) = -14.799, p = .000, d = 3.5$; /ʌ/: $t(16) = -12.818, p = .000, d = 3.3$) in the controlled task. It also significantly improved the F1 values (/ɪ/: $t(16) = -17.623, p = .000, d = 3$; /ʊ/: $t(16) = -13.008, p = .000, d = 4$; /ʌ/: $t(16) = 5.886, p = .000, d = 2$) and F2 values (/ɪ/: $t(16) = 6.034, p = .000, d = 1.5$; /ʊ/: $t(16) = -14.453, p = .000, d = 4$; /ʌ/: $t(16) = -13.008, p = .000, d = 4$) in the spontaneous task.
As for the FonFS instruction, learners significantly improved their F1 values (/i:/: $t(15) = -9.358, p = .000, d = 1$; /u:/: $t(15) = 9.799, p = .000, d = 3.5$; /ʌ/: $t(15) = 2.527, p = .02, d = 3.3$) and F2 values (/i/: $t(15) = 2.657, p = .01, d = 2.6$; /ʊ/: $t(15) = -10.732, p = .000, d = 2$; /ʌ/: $t(15) = -9.077, p = .000, d = 1.3$) in the controlled task. Nevertheless, this type of instruction did not yield significant improvements for F1 values (/i/: $t(15) = -2.087, p = .058$; /ʊ/: $t(15) = -1.282, p = .221$; /ʌ/: $t(15) = 2.078, p = .059$) and F2 values (/i/: $t(15) = .379, p = .717$; /ʊ/: $t(15) = -1.689, p = .113$; /ʌ/: $t(15) = -3.732, p = .089$) in the spontaneous task. The schematic representation of the F1/F2 values in scatter plots also shows the same pattern of change in the three groups. Figure 4 presents scatter plots for the control and ENS baseline groups.

As depicted in Figure 4, based on tongue positions, the control group kept producing Persian tense vowels (i.e., /i:/, /u:/, and /ʌ:/) in place of the English lax counterparts without any improvements. On the contrary, the FonF and FonFS groups adjusted tongue positions by increasing the F1 and lowering the F2 for /i:/, increasing the F1 and F2 for /ʊ:/, and lowering the F1 and increasing the F2 for /ʌ:/ in the controlled task in the delayed posttest (see Figure 5 for FonF group and Figure 6 for FonFS group).
Figure 4. Scatter plots of F1 and F2 values for target vowels by the control and ENS groups.

Figure 5. Scatter plots of F1 and F2 values for target vowels by the FonF and ENS groups.

The scatter plots reveal that both FonF and FonFS instructions were effective in teaching and helping EFL learners to adjust F1/F2 values in the controlled task. Yet, in the spontaneous picture description task,
it was only the FonF instruction that remained effective in adjusting F1/F2 values in the delayed posttest, with the FonFS group faltering in phonetic accuracy by approximating L1 vowels’ values considerably in the delayed posttest.

Figure 6. Scatter plots of F1 and F2 values for target vowels by the FonFS and ENS groups.

In total, acoustic analyses revealed that all the learners pronounced Persian-existing tense vowels as a substitute for English lax vowels in the pretest (i.e., /i:/ for /ɪ/, /u:/ for /ʊ/, and /ɑː:/ for /ʌ/). Both FonF and FonFS instructions resulted in significant, durable improvements in the phonetic accuracy of the target vowels in the controlled task. Nonetheless, the spontaneous task proved problematic for the FonFS group as, unlike the FonF group, they significantly weakened in their phonetic accuracy in the delayed posttest.

Discussion

This study set to explore the distinctive instructional effects of focus-on-form (FonF) and focus-on-forms (FonFS) on teaching English lax vowels (i.e., /ʌ/, /ɪ/, and /ʊ/) to Persian EFL learners whose L1 neither includes these vowels nor does it have any tense/lax distinction in its phonological repertoire. Learners’ pronunciations were measured based on the tongue position (i.e., F1/F2 values) in controlled and spontaneous tasks in the delayed posttest.

The acoustic pretest findings revealed that Persian EFL learners mostly substituted the target lax vowels with their nearest Persian-existing tense ones: /i:/ for /ɪ/, /u:/ for /ʊ/, and /ɑː:/ for /ʌ/. This finding is not surprising because the Persian language lacks these vowels; thus, EFL learners, via negative transfer, perceive and produce these unfamiliar segments as their closest L1 counterparts (Major, 2001).

In the post-instruction phase, the acoustic analysis of F1/F2 values revealed that both FonF and FonFS groups had significant improvements in the delayed posttest in the controlled task. This finding proves that explicit instruction followed by meaning-oriented focused tasks or by simple controlled exercises and drills can result in long lasting pronunciation accuracy in controlled contexts. Many previous studies have
also reported pronunciation improvements via FonFS procedures in controlled contexts (e.g., Kissling, 2013; Saito, 2011a; Sugiura, 2016; Tabandeh et al., 2018; Whipple et al., 2015). As shown by Ansarin (2006), if EFL learners are consciously aware of and at ease with the nature of output tasks and have adequate time to prepare for them (e.g., in controlled reading tasks), they may easily activate their explicit knowledge and monitor their pronunciation performance. Nevertheless, it is in spontaneous free-production tasks that learners receiving FonFS might falter in pronunciation accuracy because they have not had opportunities to proceduralize their declarative knowledge in such communicative contexts and reach to an automatic performance (DeKeyser, 2015).

The findings of the study in spontaneous tasks showed that FonF instruction was significantly more effective in the delayed posttest. This foregrounds the role of meaning-oriented practice and production while noticing the target forms. Taking the cognitive dimension of L2 learning into account, DeKeyser (1998) argues that FonF practice is necessary for learners to proceduralize their explicit knowledge and acquire an automatic language skill. In the same vein, Ellis (2003) emphasizes the psycholinguistic benefits of focused tasks in FonF methodology to help learners automatize already-learned knowledge. More recently, Ellis (2016) and Anderson (2017) have argued in favor of FonF procedures and communicative PPP model, respectively, which are the same in essence if practice and production stages are done communicatively, drawing learners’ attentions to the target features (Anderson, 2017).

The findings of this study are in agreement with the above-cited arguments about the psycholinguistic benefits of FonF instruction and the use of focused tasks to make EFL learners notice the target pronunciation features in communication. The results of previous findings (e.g., McKinnon, 2017) together with the current study prove that FonF instruction accompanied with feedback (explicit correction feedback in the case of this study) facilitates the noticing process in tasks (Ellis, 2003).

Apart from the nature of the instruction, it seems that the nature of the measurement task also plays a role and augments the benefits of FonF instruction. Whereas in controlled read-aloud tasks learners are under considerably less communicative pressure due to having more monitoring time, in spontaneous communicative tasks they are under high communicative pressure to interact and complete the task (Growther et al., 2015). This, in turn, makes them unable to monitor the phonological aspects of their productions and leads to a more accurate performance in controlled rather than in spontaneous contexts. Consequently, if the goal of L2 speech learning is to make learners have intelligible L2 speech in real-life contexts that demand spontaneity of speech (Saito & Lyster, 2012), FonF procedures have a considerable instructional advantage over the FonFS tradition.

**Limitations**

As any experimental study, the findings of the current research need to be treated with some caution. Primarily, EFL learners in this study had only two hours of instruction for each target vowel. Longer exposures to pronunciation treatments and remoter delayed posttests are a better indicator of enduring instructional effects (see Lee et al., 2015, on the effects of longer treatments) to see to what extent procedural knowledge “decays less with time” (DeKeyser, 2015, p. 96). Regarding the measurement task for spontaneous speech production, more real-life-like elicitation tasks (e.g., oral discourse completion task) rather than timed picture description tasks can present a more naturalistic elicitation context for spontaneous EFL speech.

**Conclusion and Implications**

Building on recent arguments in favor of focus-on-form (FonF) instruction in instructed SLA (Nassaji, 2016), this study investigated the long-term effects of FonF and focus-on-forms (FonFS) instructions on learning English lax vowels by Persian EFL learners. Results demonstrated that both instructions were
largely effective in the controlled task. Nevertheless, only the FonF instruction proved effective in the spontaneous task. Based on this finding, it can be argued that FonF instruction with its focus on explicit presentation and communicative practice is considerably effective in improving EFL learners’ phonetic accuracy in both controlled and spontaneous contexts. In fact, building on the underpinnings of skill acquisition theory, this type of instruction helps learners proceduralize their declarative explicit knowledge of phonetic features in spontaneous contexts and reach a more automatic performance in real-life extemporaneous contexts (Anderson, 2017; DeKeyser, 2015).

In conclusion, the findings in this study entail that EFL syllabus designers need to move away from the listen-and-repeat type of pronunciation instruction and include pronunciation tasks in their communicative syllabuses and coursebooks. Likewise, EFL teachers should rely on FonF procedures to help learners develop phonological awareness and practice segmental and suprasegmental features in communicative contexts to develop a more automatic, yet accurate, L2 pronunciation.

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Appendix

A Sample of Instructional Tasks for FonF Group

1. /i/ vs. /u/. Information gap/story telling. Adopted with revisions from Celce-Murcia et al. (2010).
Pre-task: Fill in names for the following by asking your partner questions. You see the answers at the bottom of the table. For example, ask your partner, “Who buys a lot of chicks?” Your partner will find the answer in the table and tells you. Next, your partner asks the questions and you answer. Write in the name that your partner tells.

|                        | buys a lot of chicks | sells ships | wants a sheep | searches for beans | has red cheeks | buys pills | stops the leak | discards the peel | is going to live | wants to eat |
|------------------------|----------------------|-------------|---------------|-------------------|----------------|------------|----------------|-------------------|----------------|-------------|
| Jean                   |                       |             |               |                   |                |            |                |                   |                |             |
| Jill                   |                       |             |               |                   |                |            |                |                   |                |             |
| Phil                   |                       |             |               |                   |                |            |                |                   |                |             |
| Mat                    |                       |             |               |                   |                |            |                |                   |                |             |
| Pat                    |                       |             |               |                   |                |            |                |                   |                |             |

| Jean | Jill | Phil | Mat   | Pat    |
|------|------|------|-------|--------|
| Wants a sheep | wants to eat | searches for beans | had red cheeks | buys pills |
| Reese | Chris | June | Ned | Arya |
| buys chicks | sells ships | is going to live | discards the peel | stops the leak |

Task: Select some of the underlined words from the list above (at least 5 words) and try to make a short story by them. After you are ready, tell your story to your partner. Your partner makes notes on your story.

Post-task: After writing notes, each partner says his/her partner’s story to the class. The class vote for the best and funniest story.