Distribution of Prodrop Syntactic Properties in L2 English of Persian Speakers

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Abstract

This study set out to investigate the distribution of the syntactic properties associated with the prodrop parameter by Persian-speaking L2 learners of English in an attempt to examine the (un)attainability of native-like knowledge and (in)accessibility of UG in adult SLA. To do so, 92 participants were assigned into different levels of L2 knowledge based on their performances on the Oxford Placement Test (2001). A grammaticality judgment test and a translation test were developed and validated in this study. Analysis of the results indicated the following hierarchy of difficulty: referential subjects > expletives > verb-subject constraint > quasi subjects > *that*-trace constraint. Findings evidence that native-like attainment of unselected L2 syntactic features is unlikely at advanced stages, but it is logically possible that Persian-speaking L2 learners of English attain native-like knowledge of [-prodrop] at very advanced or near-native stages of L2 acquisition.

Keywords: Obligatory Subjects; Parameter Resetting; *That*-Trace Constraint; Verb-Subject Constraint

1. Introduction

Since the emergence of the parameterized model of language acquisition (Chomsky, 1981), many SLA researchers have investigated the status of linguistic parameters in L2 (see Hawkins, 2001; White, 1989, 2003, for a review). Among the recognized parameters, the prodrop has always been in the limelight of and an intensively studied area in SLA research carried out within this model of language acquisition (Alibabaee, Youhanaee, & Tavakoli, 2012; Ayoun, 2000; Belletti, Bennati & Sorace, 2007; Boe, 1996; Khalili Sabet, 2006; Liceras, 1989, 1999; Phinney, 1987; Platt, 1993; White, 1985). This parameter includes three seemingly disparate syntactic properties, namely null subjects, verb-subject inversion, and *that*-trace constraint. In other words, prodrop languages like Spanish, Italian, and French allow: (1) subject pronouns to be null, (2) subject-verb sequence to be inversed, and (3) a *wh*-subject to be extracted from the complement to a verb where there is an overt complementizer present, whereas such nonprodrop languages as English and French do not.

Regardless of an L2 learning situation in which L1 and L2 have the same parametric values with respect to the prodrop parameter, there remain two other conditions. The first is where a speaker of a nonprodrop L1 learns a prodrop L2 (e.g., an English speaker learning Spanish or Persian);the second is where a speaker of a prodrop L1 learns a nonprodrop L2 (e.g., a Spanish speaker or a Persian speaker learning English). As two prime examples, Liceras (1989) presents L2 data from English speakers learning Spanish (i.e., the first possibility) and White (1985) presents L2 data from Spanish speakers learning English (i.e., the second possibility). The findings of these two studies indicate that the null subject property is available from the early stages of L2 learning, whereas structures involving *that*-trace sequence and postverbal subjects are not equally easy to learn. Accordingly, White (1985) and Liceras (1989), being two prime representatives of attainability of native-like knowledge and availability of UG in adult SLA, argue for the possibility of resetting the prodrop parameter in SLA.

Tsimpli and Roussou (1991), being prime representatives of the unattainability of native-like knowledge and the nonavailability of UG in adult SLA, arrive at a different position in which they argue that although restructuring occurs in L2 grammar after an initial state, this restructuring does not involve parameter resetting; rather, learners misanalyze the L2 data they are exposed to and develop representations which conform as far as possible to the parametric values imposed by their L1.

These rather contradictory conclusions reflect the last-two-decade problem of possibility (Haznedar, 2007; Ionin & Wexler, 2002; Lardier, 1998; Liceras, et al., 2010; Rothman & Iverson, 2007; White, 1985, 2003; White & Genesee, 1996) or impossibility (Alibabaee, et al., 2012; Beck, 1998; Hawkins & Chan, 1997; Hawkins & Hattori, 2006; Isabelli, 2004; Jalilifar & Shooshtari, 2009; Smith & Tsimpli, 1995; Tsimpli, 2003; Tsimpli & Dimitrakopoulou, 2007; Tsimpli & Mastropavlou, 2007; Tsimpli & Roussou, 1991) of the native-like attainment of unselected L2 syntactic features which has not yet been resolved.

In fact, the accessibility or availability of UG in postchildhood SLA has been a topic of considerable debate from the earliest applications of the principle and parameter theory to the domain of SLA. The obtained findings seem to be so partial that one cannot take either side and decide whether parameter resetting is or is not possible and whether UG is or is not accessible in the L2 in general and specifically with regard to the prodrop parameter. In spite of the existence of an extensive number of informative studies dealing with the acquisition of prodrop associated syntactic properties and the rather sound positions that have been taken, there seems to be no clear picture of the developmental issues in the acquisition of prodrop associated syntactic properties. Moreover, those studies addressing developmental

accounts suffer from a number of methodological problems such as recruiting small numbers of participants (Hilles, 1986; Tsimpli & Roussou, 1991), including only one or two stages of language development (Belletti, Bennati, & Sorace, 2007; Gurel, 2006; Isabelli, 2004; Phinney, 1987; Rothman & Iverson, 2007; Tsimpli & Roussou, 1991), employing nonstandard methods in assigning the participants into different stages of L2 acquisition (Jalilifar & Shooshtari, 2009; Tsimpli & Roussou, 1991), including one or two recognized types of subject pronouns, failing to differentiate between quasi-argument and expletive subjects (Ayoun, 2000; Belletti, et al., 2007; Boe, 1996; Isabelli, 2004; Jalilifar & Shooshtari, 2009; Liceras, et al., 2010; Phinney, 1987; Platt, 1993; White, 1986), and using a single elicitation task (Phinney, 1987; Platt, 1993). Finally, previous studies are limited to very few languages including English, Spanish, French, Italian and Chinese. In fact, to the best of the researchers' knowledge, there has not been any developmental account of the acquisition of the prodrop parameter in cases where the L1 is Persian (a prodrop language) and the L2 is English (a nonprodrop language).

To contribute to the related literature, this study is an attempt to investigate the distribution of all the recognized syntactic properties subsumed under the prodrop parameter by adult native speakers of Persian learning English as an L2. More specifically, this was a cross-sectional study which tracks the learners through developmental stages, seeking to find out the extent to which adult Persian-speaking L2 learners of English, at different levels of L2 grammar knowledge, conform to English native speakers regarding their knowledge of prodrop syntactic properties. It also explored the possible prodrop parameter patterns in L2 learning across L2 learners with different levels of English grammar knowledge.

2. Linguistic Assumptions

2.1 Prodrop Parameter in Persian

Most of the standard analyses and investigations of the prodrop parameter adopt either Jaeggli and Safir's (1989) morphological uniformity principle (MUP) or Chomsky's (1981) description of the syntactic properties of this parameter. According to the MUP, languages allow null subjects only when they are morphologically uniform, that is, either where verbs uniformly and consistently inflect for all Number and Person features or in languages where verbs never inflect for Person and Number features. Spanish and Persian are examples of the former, and Japanese is of the latter. In contrast, English is not uniform: Only third person singular has a distinct morphological form. According to the MUP, because the verb does not inflect in a uniform fashion, null subjects are not allowed in English (Jaeggli & Safir, 1989).

Chomsky (1981), on the other hand, recognized that prodrop languages typically share a number of characteristics that differentiate them from nonprodrop

languages. Based on his description, three major and distinct syntactic properties are assumed to be associated with the prodrop parameter:

1. [+prodrop]: Languages allow null subjects but [-prodrop] languages do not.
2. [+prodrop]: Languages allow subject-verb inversion in declaratives but [-prodrop] languages do not.
3. [+prodrop]: Languages allow *that*-trace sequences but [-prodrop] languages do not.

Because Persian is a prodrop language (Karimi, 1999), it appears to allow (1) subject pronouns to be null, (2) subject-verb sequence to be inversed, and (3) a *wh*-subject to be extracted from the complement to a verb where there is an overt complementizer present. The followings are some examples for these three properties:

I. Null subjects in main and embedded clauses:
    <u>Main clause</u>

    1. *Dirooz ræftæm ketabkhoone.*
       "Yesterday went-I library."
    (Yesterday I went to the library.)

    <u>Embedded clause</u>

    2. *Ali yek hæfte daneshgah næyoomæd choon mæriz bood.*
       "Ali one week university didn't come because sick was."
    (All did not come to the university for one week because he was sick.)

Chomsky (1981) suggests that such sentences contain a phonetically empty, but structurally present, subject. In other words, these tensed sentences contain an empty pronominal element, referred to as *pro*. Prodrop languages also often permit inversion in declarative sentences, as in 3, where the subject follows the verb:

II. Subject-verb inversion

    3. *Bord team melli dirooz.*
    "Won the national team yesterday."
    (The national team won yesterday.)

In addition, prodrop languages permit an apparent violation of *that*-trace. This refers to the rule that nonprodrop languages prohibit clauses containing both the complementizer *that* and a *trace* in the subject position, where in prodrop languages like Persian the extraction of the subject from the lower clause does not require the absence of the complementizer, as in 4:

III. *That*-trace sequence

4. *Kio gofti ke kifo bærdasht?*

   "Who you said that the bag took?"
(Who did you say took the bag?)

Persian, as a prodrop language, is expected to lack quasi and expletive subjects. However, Persian appears to have optional expletive subjects in some constructions like (5) below, but there is no quasi subject pronoun in Persian:

5. (*Intor*) *be næzær miresæd ke ræveshe jædid moasser næbude æst*.

   "It seems that the method new effective not has been."
(*It* seems that the new method has not been effective.)

2.2 Prodrop Parameter in English

Beside verb-subject and *that*-trace constraints, three distinct types of obligatory subjects, related to the first prodrop property mentioned above, have been identified in [-prodrop] languages like English (Rizzi, 1982). Therefore, there appears to be five syntactic properties associated with [-prodrop]:

IV.   Obligatory referential subjects in main clauses and embedded clauses:
      Main clauses

   6. *He* couldn't take his wife with him.
   7. *Mary is very clever so can learn this lesson easily.

      Embedded clauses
   9.   Mary passed the math exam, although *she* had not studied hard the night before.
   10. *I wonder whether should stay home or go to the movies.

V.   Obligatory quasi subjects:

   11. When I arrived home, *it* was still raining.
   12. *Hurry up is getting late.

VI.   Obligatory expletive subjects *there* and *it*:
      There

   13. They believed *there* was a concert in the city Hall last Saturday night.
   14. *They say that is a party next week.

      It

   15. I can't speak English well and *it* is embarrassing for me to speak English in public.
   16. *John left the party early seems he didn't enjoy it.

VII.   Constrained inversion of subject and verb:

17. Last winter, an Iranian group climbed to the top of the Everest Mountain.
18. *Last winter climbed an Iranian group to the top of the Everest Mountain.

VIII.   Constrained sequence of *that*-trace:

19. Who do you imagine will attend the party?
20. *Who do you guess that will win the first prize?

Based on the theoretical foundations presented above and the linguistic assumptions regarding the description of the prodrop parameter in Persian and English, the present study addressed the following research question:

1. What is the distribution of prodrop syntactic properties by the EFL learners at different levels of L2 proficiency?

3. Method

3.1 Participants

The present study was a developmental study which elicited cross-sectional behavior of the participants who were adult Persian-speaking undergraduate and graduate learners of English as an L2 in the Iranian academic context. The undergraduates—aged between 18 and 23—included freshmen, sophomores, juniors, and seniors studying "English Language Teaching""English Literature and English Translation," and the graduates—aged between 23 and 27—were M.A. TEFL, M.A. Translation, and M.A. Literature students, either studying at Sheikhbahaee University or the University of Isfahan. The participants, totaling 152 in the first phase, were both male and female.

In order to assign the 152 participants into different levels of L2 grammar knowledge, the Oxford Placement Test (OPT), a 60 item test, was decided to serve the discriminatory purpose of this research. The OPT appears to be a satisfactory placement index and a typically practiced test in SLA studies implemented within the framework of universal grammar (UG; e.g., Hattori, 2004; Liszka, 2002).

Considering the OPT manual and excluding the scores which were close (-3 to +3) to the boundaries, the researchers assigned the participants into three distinct levels of English grammar knowledge, namely elementary, who scored between 20 and 28; intermediate, who scored between 34 and 43; and advanced, who scored between 50 and 55. The results indicated that 56 participants were ranked as elementary learners, 65 as intermediate learners, and 31 as advanced learners.

Because each participant was supposed to take three tests (including the OPT) in three separate sessions, some of them dropped from the group in one or two tests. As a result, the final number of L2 learners who took all the three tests was 33 in the elementary, 36 in the intermediate, and 23 in the advanced group comprising a total of 92 L2 learners.

Besides, functioning as a control group, six native English speakers participated in the study. They were both male ($N = 2$) and female ($N = 4$), aged between 21 and 50. They had different levels of education raging from Diploma to M.A. Their lengths of residence in an English-speaking community ranged between 21 and 41 years from birth. Therefore, the total number of participants was 98.

3.2 Instrumentation

3.2.1 Grammaticality Judgment Test

To assess the participants' sensitivity to the syntactic properties typically associated with the prodrop parameter and to get insight into the state of the learners' competence at various stages of acquisition, a grammaticality judgment test (GJT) comprising of 60 test items, was developed for this study.

The grammatical and ungrammatical sentences included in the test measured the participants' knowledge of (a) obligatory referential subjects in the main and embedded clauses, (b) obligatory quasi subjects, (c) obligatory expletive subjects *there* and *it*, (d) verb-subject constraints,(e) *that*-trace constraints.

Additionally, several grammatical and ungrammatical distracters which were irrelevant to the features under investigation were included in the test to hinder the participants' awareness of what is being tested.

The participants were supposed to judge the (un)grammaticality of the sentences. There were three alternatives for each test item. They were asked to choose "√" if they thought that the sentence was grammatically correct, choose "*" if they thought the sentence was grammatically incorrect, and choose "?" if they were not sure of the grammaticality or ungrammaticality of the sentence. They were also asked to correct the sentence if they judged it as ungrammatical.

To ascertain the validity of the test, the test was given to two experts, one specialist in the field of SLA and UG, and the other specialist in the field of testing, to judge the content of the test. The test was, then, given to two native English speakers to judge the(un)grammaticality of the individual test items based on their L1 intuition. Based on the experts' comments and the native speakers' judgments, the necessary modifications and adjustments were finally implemented in the test. A high level of reliability was maintained, and Cronbach's alpha was found to be .92.

3.2.2 Translation Test

To elicit the production data with respect to the syntactic properties under investigation, a 32-item translation test (TT) was developed for this study. It included grammatical Persian sentences to be translated into English. The 32 items represented prodrop syntactic properties which were also assessed in the GJT.

In order to ascertain the validity of the developed TT, the researchers first gave the test to the same experts who had assessed the GJT to judge the content of the test. The TT was, then, given to two native Persian speakers to judge the grammaticality of individual items based on their L1 intuition. The experts' comments and the native speakers' judgments were finally incorporated into the TT to remove its shortcomings. Upon the establishment of validity, Cronbach's alpha was also found to be .76.

3.2.3 Pilot Study

The two developed tests (i.e., the GJT and the TT) and the OPT were piloted to eight participants before being administered to the larger groups of participants. The purpose for implementing the pilot study was to assess the time required to administer the tests, the quality of the instructions, and the quality of the individual test items before they were administered to the larger groups.

Regarding the time required to administer the tests, the following results were obtained from the pilot study:

- 35 to 45 min for the GJT
- 40 to 50 min for the TT
- 40 min for the OPT

The results of the pilot study were also used to correct a few problems in vocabulary and spelling in the GJT and the TT, and to revise the lack of clarity regarding the instructions for the GJT. So, all the required modifications and adjustments were made to the developed tests before they were administered to all the participants.

3.3 Procedure

3.3.1 Data Collection

After being selected based on the results of the OPT, the participants took the two tests in two separate sessions, all within the time limits obtained by the pilot study. Therefore, the participants attended three sessions in the data collection procedures. Note that the native English speakers also took the OPT and the GJT. For each test, the participants were provided clear instructions both in Persian and in English. Four-week time intervals between each two sessions of data collection were determined to prevent the participants from becoming bored of taking the tests. The

L2 learners took all the tests in groups as they attended their regular and weekly-scheduled classes at their universities.

3.3.2 Data Analysis

3.3.2.1 Scoring and Coding

The elicited performance on the GJT and the TT was classified based on the participants' levels of L2 grammar knowledge. Then, each individual test item was scored by two raters. For each correct answer, 1 was considered; for each wrong answer, 0 was assigned. The correctness and incorrectness of the answers in the GJT were determined on the following bases:

- A participant's answer to a particular ungrammatical sentence was correct if he had marked "*" and also had corrected the intended ungrammatical point in the sentence. Otherwise, it was considered as an incorrect answer.
- A participant's answer to a particular grammatical sentence was correct if he had marked "√." Otherwise, it was considered as an incorrect answer.

Through performing Cronbach's Alpha, the interrater reliability was calculated and found to be 0.81. Regarding the TT, the correctness and incorrectness of the answers were determined on the following basis:

- A produced English sentence was correct if the intended syntactic feature had been properly supplied in the sentence. Otherwise, the sentence was incorrect.

Besides, in case of any disagreement between the raters' scoring of a particular test item, the two raters discussed the issue with one another and also with a specialist in the field. The interrater reliability was found to be 0.86, pointing to an acceptable consistency in scoring.

In the next stage, each test item was coded and then classified based on the specific syntactic property in which it was involved.

3.3.2.2 Statistical Procedure

The coded data were submitted to the Statistical Packages for the Social Sciences (SPSS). First, the mean percentage of each participant in each syntactic property and then the mean percentage of each group of participants in each syntactic property were calculated.

After that, because there were four groups of participants and one independent variable, a one-way ANOVA was performed to analyze the differences in the participants' performances across the groups.

4. Results

4.1 Distribution of the Participants' Performance on Prodrop Syntactic Properties

In order to explore the possible patterns in the acquisition of the prodrop associated syntactic properties, this section first presents the participants' overall performance on the GJT, followed by a detailed description of their performances on individual grammatical and ungrammatical items classified based on the prodrop syntactic property in which they were involved. This section, then, presents the participants' overall performance on the TT, followed by a detailed description of their performance on individual TT items classified based on the prodrop syntactic property they included.

4.1.1 Overall Picture of the Participants' Performance on the GJT

Classified based on the participants' levels of L2 grammar knowledge, the overall participants' performance on the GJT items and the ANOVA results are presented in Table 1:

Table 1. *Mean Accuracy Scores (%) and ANOVA Results of prodrop Syntactic Features in the GJT*

Test	Features	Elementary	Intermediate	Advanced	Natives	f	df	*Sig.*
GJT	Overall Mean	59	76	93	99	42.333	95	0.000
	Referential Subjects	60	73	94	98	24.368	95	0.000
	Quasi Subjects	55	77	90	100	21.666	95	0.000
	Expletive Subjects	56	78	96	96	32.285	95	0.000
	Verb-Subject Constraint	34	54	85	94	20.481	95	0.000
	that-Trace Sequence	53	73	75	100	14.241	95	0.000

According to Table 1 above, a rather steady progression is observable across the different levels in all prodrop syntactic features. Also, the elementary and intermediate groups' best performance was on the items assessing the knowledge of referential subjects (60%) and expletive subjects (78%), respectively. In addition,

these two groups of participants performed most poorly on the items assessing the knowledge of verb-subject constraints (the elementary, 34% and the intermediate, 64%). Furthermore, the advanced group's poorest performance was on the *that*-trace constraints (75%).

Regarding the ANOVA results, the differences among the participants' performances were statistically significant in all prodrop features, meaning that there occurred significant developments in the participants' interlanguage towards L2 norms. To be more precise in the conclusion and to locate where exactly the differences lay, the post-hoc Tamhane's T2 tests were run. As for the overall mean of the performances across the four groups, the results showed that all the groups performed statistically differently from each other. In other words, the L2 learners could not converge with the natives in terms of the knowledge of the prodrop parameter because there was a significant difference between the advanced and native groups.

As far as the participants' performance on obligatory referential subjects in the GJT items was concerned, the results of the post-hoc Tamhane's T2 test showed that the difference between the advanced and native groups was the only one not being statistically significant ($F = 1.291, p = .591$). This may mean that the advanced-level participants could attain native-like knowledge in terms of the obligatoriness of referential subjects in English. This seems to be the same case with the participants' performance on the two other syntactic properties of obligatory expletive subjects and verb-subject constraints.

The participants' performance on GJT *that*-trace constraint items showed that the difference between the intermediate and advanced groups was the only one not being statistically significant ($F = 7.291$, $p = .001$). In other words, even the performance of the advanced group was far from that of the natives. This indicated that the L2 learners did not conform to the natives regarding the knowledge of the *that*-trace constraint, though development in L2 grammar occurred across the elementary and intermediate groups as well as the elementary and advanced groups.

Regarding the performance on obligatory quasi subjects, the results showed that all the differences across the four groups were statistically significant, indicating that although development toward L2 norms occurred in the participants' interlanguage, their performance was still significantly lower than that of the native group. This provided evidence for the idea that the Persian-speaking L2 learners of English did not converge with the natives in terms of the obligatoriness of quasi subjects in English.

All in all, as far as the participants' performance on the GJT items was concerned, the advanced group had attained native-like knowledge regarding

obligatory referential subjects, obligatory expletive subjects, the verb-subject constraint, but none of the groups had attained native-like knowledge regarding obligatory quasi subjects, and the *that*-trace constraint.

However, it seems illuminating to look into the participants' performance on the GJT items further by differentiating between their performance on the grammatical and ungrammatical items.

4.1.2 Distribution of the Participants' Performance on the GJT Grammatical Items

This section describes the results of the analysis of the elicited performance on the GJT grammatical items classified based on the syntactic properties in which they were involved. Table 2 illustrates the mean percentages of the participants' performance on the GJT grammatical items:

Table 2. *Mean Accuracy Scores (%) and ANOVA Results for the Grammatical Items in the GJT*

GJT Items	Features	Proficiency Levels				*f*	*df*	*Sig.*
		Elem	Inter.	Adv.	Nat.			
Grammatical	Referential Subjects	98	99	100	100	0.599	95	0.617
	Quasi Subjects	85	94	98	100	1.974	95	0.123
	Expletive Subjects	86	94	100	100	6.348	95	0.001
	that-Trace Constraint	89	87	95	100	5.776	95	0.001

What is generally observable in Table 2 is that all the participants at different levels performed relatively well on the GJT grammatical items concerning obligatory referential subjects. Besides, the L2 learners' poorest performance seems to have been on the GJT grammatical items concerning *that*-trace sequences. However, in order to be in a sound position to describe the participants' performance in detail, a one-way ANOVA and post-hoc Tamhane's T2 test were conducted.

Regarding referential subjects, the difference in performance among the groups was not statistically significant (*F* = .599, *p* = .617), meaning that even the elementary L2 learners performed quite well (98%) on the grammatical structures involving obligatory referential subjects. In fact, the L2 learners had rejected the existence of referential subjects in the main and embedded clauses in very few cases. As to the performances on quasi subjects, the difference was insignificant (*F* = 1.974, *p* = .123). This means that the L2 learners did not reject the presence of quasi subjects wherever they were needed in the sentences. Nonetheless, in case of expletive subjects, as evidenced in Table 2, the difference in performance among the

groups was statistically significant ($F = 6.348$, $p = .001$). More specifically, according to the results of the post-hoc Tamhane's T2 test results, the elementary group performed differently from the advanced and native groups. The differences between the advanced group and the other two groups of L2 learners were also significant, but the difference between the advanced and native groups was not statistically significant. That is to say that the advanced L2 learners did not reject the existence of the obligatory expletive subjects *it* and *there* wherever they were needed in the structures, but this was not the case with the two other groups of L2 learners. In fact, the elementary and intermediate L2 learners rejected the suppliance of expletive subjects in the structures in which their presence was obligatory.

In case of the grammatical *that*-trace extractions items in the GJT, the difference was statistically significant ($F = 5.776$, $p = .001$) in that the elementary group performed statistically differently from the intermediate and native groups. The intermediate group also performed differently from the elementary and native groups. Therefore, the differences between the advanced group and the other two groups of L2 learners were not significant, but the difference between the advanced and native groups was statistically significant. Alternatively stated, the differences between each of the L2 learners' groups and the native group were all statistically significant, meaning that the L2 could not attain native-like knowledge regarding *that*-trace constraint. They, indeed, rejected subject/object extractions in cases where it is allowed in English.

After all, as far as the participants' performance on the GJT grammatical items were concerned, the following continuum was observed:

1. Obligatory referential subjects were the easiest of prodrop syntactic properties for the L2 learners to learn because all the learners at different levels had learned to recognize the grammaticality of the structures, including this type of subject.
2. *That*-trace was the most difficult prodrop syntactic property for the L2 learners to learn because none of the groups had learned to recognize the grammaticality of the structures, including the correct extraction of subjects and objects from an embedded clause to the main one.
3. Obligatory quasi subjects were nearer to the easy pole in the continuum because two groups of l2 learners, namely the intermediate and advanced, had learned to recognize the grammaticality of the structures including this type of subject.
4. Obligatory expletive subjects were farther from the easy pole than obligatory quasi subjects because just the advanced group had learned to recognize the grammaticality of the structures, including these two syntactic properties.

4.1.3 Distribution of the Participants' Performance on the GJT Ungrammatical Items

This section describes the results of the analysis of the elicited performance on the GJT ungrammatical items classified on the basis of the syntactic property in which they were involved. Table 3 shows the mean percentages of the participants' performance on the GJT ungrammatical items:

Table 3. *Mean Accuracy Scores (%) and ANOVA Results for the Ungrammatical Items in the GJT*

GJT Items	Features	Proficiency Levels				*f*	*df*	*Sig.*
		Elem	Inter.	Adv.	Nat.			
Ungrammatical Items	Referential Subjects	35	56	90	97	24.847	95	0.000
	Quasi Subjects	27	60	82	100	30.356	95	0.000
	Expletive Subjects	27	62	91	92	30.043	95	0.000
	that-Trace Constraint	34	64	85	94	20.481	95	0.000

In respect to the ungrammatical GJT items (see Table 3), the participants' performance on each syntactic property improved as their level of L2 grammar knowledge developed. Generally, it seems that *that*-trace constraint was the most difficult syntactic property for the L2 learners (the elementary, 8%; the intermediate, 38%; the advanced, 72%). In addition, the participants' best performance seems to have been on referential subjects (the elementary, 35%; the intermediate, 56%; the advanced, 90%). Regarding the latter, the difference in performance across the levels was statistically significant ($F = 24.847$, $p = .000$). Furthermore, according to the results of a post-*hoc* Tamhane's T2 test, the differences between the three groups of L2 learners were all statistically significant. The differences between the elemenatry and native as well as between the intermediate and native were also significant, but the difference between the advanced and native groups was not statistically significant. In other words, the L2 learners' progression across the levels was noticeable, and at the advanced level, they attained native-like knowledge in the obligatoriness of referential subjects in main and embedded clauses. In fact, the advanced L2 learners recognized the main and embedded clauses lacking referential subjects as ungrammatical.

Regarding obligatory quasi subjects as prodrop syntactic property, the results indicated that all the differences among the groups were statistically significant ($F = 30.356$, $p = .000$). This means that although the L2 learners' progression was considerable as their level of English grammar knowledge developed, they at last did not conform to the natives in the obligatoriness of quasi subjects in certain structures in English. Even the advanced learners accepted 18%

of the structures lacking obligatory sbjects as grammatical, whereas the native speakers rejected all these structures as ungrammatical and supplied quasi subjects to correct them.

Regarding obligatory expletive subjects ($F = 24.847$, $p = .000$) as the third prodrop syntactic property touched upon here, the results showed that the difference between the advanced and native groups was the only one which was not statistically significant. This evidences that the advanced Persian-speaking L2 learners of English converged with the natives in terms of the knowledge of obligatoriness of expletive subjects in certain structures and accordingly recognized the structures lacking obligatory expletive subjects as ungrammatical and supplied expletive subjects to correct them. As to the performances on verb-subject sequences, the intergroup difference was statistically significant ($F = 20.481$, $p = 0.000$), and the difference between the advanced and native groups was the only difference which was not statistically significant. This evidences that the Persian-speaking advanced learners of L2 English attained native-like knowledge regarding the disallowance of verb-subject sequences in English. In other words, these L2 learners recognized such sequences in English structures as ungrammatical and corrected them by supplying subject-verb sequences. The participants' performance on the GJT ungrammatical *that*-trace items showed that the difference in performance across the different groups of participants was statistically significant. Further, the differences among the groups were statistically significant. That is to say, that in spite of considerable progression across the groups, the L2 learners did not conform to the natives regarding the knowledge of *that*-trace constraints in English.

Finally, as far as the participants' performance on the GJT ungrammatical items was concerned, the following conclusions were reached:

1. The Persian-speaking advanced L2 English learners had achieved native-like knowledge in terms of the recognition of the ungrammaticality of the structures lacking obligatory referential subjects, obligatory expletive subjects, and obligatory PRO. They also had learned to recognize the ungrammaticality of the structures using verb-subject sequence.
2. All the L2 learners had not conformed to the natives in terms of the knowledge of recognizing the ungrammaticality of the structures lacking obligatory quasi subjects. They also had not learned the ungrammaticality of the structures using *that*-trace sequences.

4.1.4 Overall Picture of the Participants' Performance on the TT

In order to describe the participants' performance on the TT in detail, Table 4 presents the mean percentages of the participants' overall performance on the TT:

Table 4. *Mean Accuracy Scores (%) and ANOVA Results for prodrop Syntactic Features in the TT*

Test	Features	Elem.	Interm.	Adv.	*f*	*df*	*Sig.*
	Overall Mean	71	91	95	48.318	91	0.000
	Referential Subjects	84	99	100	9.676	91	0.000
TT	Quasi Subjects	52	78	99	19.351	91	0.000
	Expletive Subjects	84	96	100	8.721	91	0.000
	Verb-Subject Constraint	97	100	99	1.105	91	0.333
	that-Trace Sequence	44	75	82	25.951	91	0.000

As revealed in Table 4, the mean percentages of the participants' overall performance evidence an observable progression across the groups, especially between the elementary and intermediate. Besides, the difference in performance across the groups was statistically significant ($F = 48.318$, $p = .000$). Further, the differences between the elementary and intermediate and the difference between the elementary and advanced groups were statistically significant, but the difference between the intermediate and advanced groups was not. This may mean that, as far as the overall performance on the production test was concerned, the intermediate and advanced learners had learned the [-prodrop] syntactic properties. However, more detailed analyses through performing one-way ANOVAs and post-hoc Tamhane's T2 tests were needed to decide upon the participants' acquisition of individual prodrop syntactic properties.

The difference in performance on the referential subjects across the groups was statistically significant ($F = 9.676$, $p = .000$). In addition, the differences between the elementary and intermediate L2 learners and between the elementary and advanced L2 learners were statistically significant, but the difference between the intermediate and advanced groups was not, meaning that the intermediate and advanced L2 learners learned the obligatoriness of referential subjects in English main and embedded clauses, but the elementary l2 learners still had problems supplying obligatory referential subjects in English structures (considering the mean percentages: the elementary, 84%; the intermediate, 99%; the advanced, 100%).

Regarding the participants' performance on the TT obligatory quasi subjects, the difference in performance across the groups was statistically significant. Besides, the significant differences were between all the three groups of L2 learners, indicating a noticeable progress in performance across the levels. This may further mean that only the advanced L2 learners had no problem supplying the

obligatory quasi subjects in English structures (the elementary, 52%; the intermediate, 78%; the advanced, 99%). As indicated in Table 33, the difference between the participants' performances on expletive subjects was statistically significant ($F = 8.721$, $p = .000$). Further, performing a post-hoc Tamhane's T2 test revealed that the differences between the elementary and intermediate L2 learners and between the elementary and advanced L2 learners were statistically significant, but statistically insignificant difference was the one between the intermediate and advanced groups. With respect to the mean percentages (the elementary, 84%; the intermediate, 95%; and the advanced, 100%), this evidences that the intermediate and advanced L2 learners learned the obligatoriness of expletive subjects in certain English structures, but the elementary L2 learners had problems supplying expletives wherever necessary.

With regard to verb-subject constraint, the difference in performance across the groups was not statistically significant ($F = 1.105$, $p = .336$). This may show that all the L2 participants used subject-verb sequences in translating Persian sentences into English (with respect to the mean percentages: the elementary, 97%; the intermediate, 100%; the advanced, 100%).

As for the last and, seemingly, most difficult prodrop feature (i.e., *that*-trace constraint), the difference in performance was statistically significant ($F = 25.951$, $p = .000$). Further, the differences between the elementary and intermediate L2 learners and between the elementary and advanced L2 learners were statistically significant, but the difference between the intermediate and advanced groups was insignificant. With respect to the mean percentages (the elementary, 44%; the intermediate, 75%; and the advanced, 82%), a developmental route can be observed in the performance.

All in all, as far as the participants' performance on the TT items was concerned, the results supported the following conclusions:

1. Verb-subject constraint was the easiest prodrop syntactic property for the L2 learners to master because all the participants performed quite well on the TT verb-subject items.
2. *That*-trace was the most difficult prodrop syntactic property for the L2 learners to master because even the advanced learners performed well on 80% of the items.
3. Obligatory quasi subjects were nearer to the difficult pole in the continuum because just the advanced L2 learners performed well on the TT items and supplied them wherever obligatory.
4. Obligatory referential subjects, obligatory expletive subjects, and PRO were farther from the difficult pole than obligatory quasi subjects because two groups of participants (i.e., the intermediate and advanced) performed well

on the TT items and learned to supply them while translating from Persian into English.

With respect to the possible patterns this study sought to investigate, the results indicated that referential subject pronouns and expletives appeared first and seemed to be the easiest prodrop syntactic properties to learn, the *that*-trace constraint, as the most difficult prodrop syntactic property, did not appear at even advanced stages. The L2 learners performed poorly on quasi subjects and, therefore, did not converge with the natives, but their performance on quasi subjects was higher than on *that*-trace constraints. Accordingly, the following pattern may be presented based on the analyses of the elicited performance: referential subjects > expletives > verb-subject constraint > quasi subjects > *that*-trace constraint

All in all, the findings reveal that [-prodrop] has not been reset in the competencies of the Persian-speaking L2 English learners. However, it is logically possible that Persian-speaking near-native English learners reset [-prodrop], because no evidence of fossilization is observed in the L2 learners' performance, and remarkable progress is observed across the levels. This pattern of development can continue in near-native speakers of L2 acquisition resulting in the resetting of [-prodrop].

5. Discussion
As far as the two literature-based lines of arguments are concerned, the aquirability of the syntactic properties under investigation (Alibabaee, et al., 2012; Belletti, et al., 2007; Platt, 1993; White, 1985) is ruled out by the findings of this study. Furthermore, the hierarchy of difficulty of subject types was not confirmed by the results. Almost all the studies in the literature (Gurel, 2006; Phiney, 1987; Tsimpli & Roussou, 1991; White, 1985, 1986) found referential subjects as the simplest, expletives as the most difficult, and quasi subjects as a simple property appearing soon after referential subjects, not posing any difficulty for L2 learners. However, the current study found quasi arguments as the most difficult subject pronouns, even for those L2 learners who were in the advanced stages of L2 development.

In more detailed analyses, the statistically significant differences between the levels in almost all the analyses performed on the mean accuracy scores revealed the L2 learners' remarkable progression across different levels of L2 grammar knowledge. Also, the comparison between the levels, with respect to the mean accuracy scores of each type of obligatory subject, evidenced the gradual appearance of the three types of obligatory subjects in L2. Alternatively stated, in the process of L2 development, not all types of subject pronouns appear to be acquired at the same time. Therefore, the traditional idea of simultaneity and instantaneity in the

emergence of different syntactic properties associated with a single parameter is rejected (Phinny, 1987; Platt, 1993; White, 1985).

Regarding the findings related to the second property of the [-prodrop] parameter (verb-subject constraint), this study lends support to the general consensus in the literature that verb-subject constraint in declaratives may appear after null subjects. The results also confirmed the literature in that L2 learners of a nonprodrop language whose L1 has subject-verb inversions in declaratives do not recognize the ungrammaticality of this inversion at the beginning stages, recognize them slightly above chance at the intermediate stages, and continue to improve gradually throughout development till they conform to natives (Belletti, et al, 2007; Isabelli, 2004; Jalilifar & Shooshtari, 2009; Liceras, 1988, 1989; Tsimpli & Roussou, 1991; White, 1985, 1986).

Moreover, the empirical data in this study have shown that the native-like knowledge of *that*-trace constraint may not appear even at advanced stages of L2 learning (Smith & Tsimpli, 1995; Tsimpli & Roussou, 1991). In other words, L2 learners of a nonprodrop language whose L1 does not have *that*-trace restrictions on wh-subject extraction do not recognize the ungrammaticality of that-trace sequences at beginning levels. This may provide evidence for L1 transfer and gradual improvement across the L2 levels (Isabelli, 2004; Liceras, 1989). But even at advanced stages, they do not converge with the natives in terms of the knowledge of *that*-trace constraint (Jalilifar & Shooshtari, 2009).

The distribution of the Persian-speaking L2 learners' performance on prodrop syntactic properties according to their level of L2 grammar knowledge was another major concern in the analyses of the data. The results may lead us to formulate some generalizations in the acquisition of the prodrop parameter which, in turn, may result in further recognition of the possible patterns in SLA. The overall results demonstrated a rather sound pattern in the acquisition of the syntactic properties at hand. According to the findings, referential and expletive subjects appeared first, followed by the verb-subject constraint. The L2 learners, in spite of showing a developmental route across the levels, had not attained native-like knowledge of obligatory quasi subjects and *that*-trace constraint. So, the results proposed the following pattern in the acquisition of null-subject related syntactic properties: referential subjects > expletives > verb-subject constraint > quasi subjects > *that*-trace constraint. This proposed pattern may indeed find evidence for the implicational hierarchy of Liceras (1989): That is, null subjects would appear before inversion, and inversion would appear before *that*-trace in the grammars of learners. However, the pattern proposed by the findings of this study seems to be a refinement of Liceras' implicational hierarchy.

Liceras (1989) made no distinction between expletives and quasi arguments and, therefore, failed to find an independent place for quasi subjects in her hierarchy, whereas this study differentiated between the quasi argument *it* in *it is too hot in here* and the nonargument *there* in *there were few books in the library*. Taking expletive subjects to be typical nonarguments, the present study followed Hoekstra (1983) and Bennis (1986) and assumed that a quasi-argument, like an argument, must be assigned a theta-role, whereas an expletive subject may never be assigned a theta-role. With reference to this assumption, the acquisition of obligatory quasi subjects was examined independent from that of expletive. This distinction was ignored by many other SLA researchers (Ayoun, 2000; Belletti, et al., 2007; Boe, 1996; Isabelli, 2004; Jalilifar & Shooshtari, 2009; Liceras, et al., 2010; Phinney, 1987; Platt, 1993; White, 1986). The analysis of the L2 learners' performance evidenced this distinction and indicated that there were statistically significant differences between the acquisition of expletives and that of quasi subjects. As far as the participants' performance on the two developed tests is concerned, the advanced L2 learners had attained native-like knowledge of expletives, but had not of quasi subjects.

Liceras' (1989) implicational hierarchy is also different from the one the current study proposes in that *that*-trace constraint in Liceras' hierarchy appears last, but is still acquirable at advanced stages. This means that native-like knowledge of *that*-trace constraint can, indeed, be achievable for advanced L2 learners. But in this study, quasi subjects and *that*-trace constraint appeared last in the hierarchy, and were also unavailable to the advanced L2 learners at the native-like level. This unavailability of these two features to the advanced L2 learners, of course, does not strongly suggest the unacquirability of these two features because the participants' performance progressed significantly across the groups and indicated no sign of end-state grammar. This developmental route may possibly continue if the L2 learners at very advanced stages are tested on the syntactic features at hand. The advanced L2 learners performed well on more than 80% of the obligatory quasi subjects and 70% on *that*-trace constraint, but did differently from the native group. This performance may possibly improve and converge with that of the natives at near-native stages of L2 acquisition because L2 learners are on their way to progress—and not in their fossilized end-state stage.

The findings in this study corroborated that *transfer*, a commonly observed phenomenon in the processes involved in SLA, is consistently present in all stages of L2 acquisition, from elementary to advanced. Evidencing the presence of UG in adult SLA, the findings also accepted the possibility of the native-like attainment of [-prodrop] at very advanced stages of L2 acquisition.

6. Conclusion

This study mainly sought to investigate the distribution of prodrop syntactic properties in the L2 English of Persian speakers. Persian appears not to have any obligatory subjects, but allows emphatic referential subjects, and expletive subjects in a limited number of structures. Besides, Persian, unlike English, allows verb-subject and *that*-trace sequences. The results of the analyses of the L2 performance on obligatory subjects indicated that advanced Persian-speaking L2 learners of English could converge with the English native speakers only where they had the same syntactic structures in their native language (referential and expletive subjects), and not where their L1 lacks the property under study (quasi subjects). Regarding the other two features, the L2 learners attained native-like knowledge of the verb-subject constraint in English, but not that of the *that*-trace constraint. Moreover, the L2 performance on [-prodrop] as a whole showed that the L2 learners in this study could not reset the prodrop parameter.

In addition, the overall findings illustrated a rather sound pattern in the acquisition of the syntactic properties examined in the present study. They demonstrated that the various elements encapsulated in the term *prodrop* may be acquired by L2 learners in a particular developmental order. According to the recognized pattern, referential and expletive subjects appeared first, followed by the verb-subject constraint. Quasi subjects and *that*-trace constraint were the two properties that did not appear at a native level. So, the obtained results proposed the following hierarchy in the acquisition of the null-subject related syntactic properties: referential subjects > expletives > verb-subject constraint > quasi subjects > *that*-trace constraint

Overall, what was found based on using a GJT with Persian-speaking learners of English as well as a group of native speakers, and a TT with L2 learners are compatible with the idea that beyond a certain age, the acquisition, and even modification, of those functional features not encoded in the L1 do not occur even in the advanced stages of L2 acquisition (Hawkins & Chan, 1997; Jalilifar & Shooshtari, 2009; Smith & Tsimpli, 1995; Tsimpli & Dimitrakopoulou, 2007; Tsimpli & Mastropavlou, 2007; Tsimpli & Roussou, 1991; Tsimpli & Smith, 1991). However, the elicited performance makes it logically possible that Persian speakers who are near-native English learners may converge with native English speakers regarding the knowledge of [-prodrop].

Despite the interpretations made, we believe that the study suffers from a number of methodological restrictions. Further studies where desirable management of external and internal variables is achievable could bridge the existing gap to offer more generalizability. Some such laxities include but not restricted to the small sample of participants who cannot be claimed to be representative of the English

learners in a whole population. Another important restrictive point, which could have potentially affected the results, is the size of the sample of native English speakers. In spite of the great effort, the number of the English native speakers did not get to the same size as that of the L2 learners' groups. With this limited number of natives, one is necessarily compelled to be cautious in the interpretation of the results.

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