# Task-Specific Artifacts of Parametric Properties in English as a Second Language Acquired by Persian-Speaking Learners

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## Abstract

This experimental study investigated the learners' integrative acquisition of obligatory overt subjects and subject-verb clause agreement in English as an L2. In L1 acquisition research, correlations between superficially unrelated linguistic phenomena are analyzed in terms of integrative effects. For instance, in English L1 acquisition, there is evidence for an integrative appearance of subject-verb clause agreement and the decrease of incorrect null subjects. The developmental connection between these two specifications in L1 acquisition has been interpreted as setting the syntactic properties of the same cluster. Vainikka and Young-Scholten (1994, 2013) have claimed that the acquisition of subject-verb agreement and non-pro-drop in adult L2 learners developmentally coincide in the same way as it does in child L1 learners. This is taken to indicate that UG parameters are fully accessible to adult L2 learners. Thus, the present research reported on Reaction-Time (RT) experiments investigating subject-verb clause agreement and obligatory subjects in 30 Persian learners of English in three proficiency levels, each level consisting of five early starters and five late starters. Our main finding was that the two phenomena do not covary in the Persian learners of English as L2 indicating that specifications of subject-verb clause agreement and obligatory subjects are acquired separately from one another, rather than through integrative resetting. Finally, it is suggested that L2 learners should be explicitly exposed to all parametric features and individual evidence of a syntactic cluster in the second language context.

Keywords: L2 acquisition, Parametric properties, Integrative effects, reaction-time experiment

## 1. Introduction

The idea that adult L2 acquisition might be similar in nature to child L1 development was one of the starting points for the systematic investigation of L2 acquisition in the 1980s. At that time, a number of researchers (Dulay et al, 1982) observed that L2 learners systematically pass through developmental stages, similarly to what had been found for children acquiring their mother tongue (Brown, 2007). It was, therefore, concluded that L1 and L2 acquisition are parallel in major ways; the extent of the parallelism, however, was controversial.

In the meantime, the comparative study of L1 and L2 development has generated more complex hypotheses, involving finer and more precise conceptual distinctions (White, 1989, 2011). The progress that has been made in recent years is, to a large extent, due to various attempts to connect the empirical investigation of language acquisition with

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concepts and notions from theoretical linguistics, particularly with Chomskyan logical problem. In simple terms, the logical problem of language acquisition refers to the way the learners fully cluster the grammatical system of the language in spite of their limited exposure to the language input around them (White, 1989, pp. 4-5). Controversially distinct from L2 development, a native speaker's knowledge is characterized by devising grammars that account for the abstract system which has been internalized in the speaker's mind; whereas the way the knowledge is acquired is characterized by specifying the processes involved in language acquisition.

The structure of human languages is so complex and abstract that it is logically impossible for the child to learn a language solely on the basis of individual evidence from the input to which he/she is exposed (Lidz, J. & Waxman, S., 2004).

Several L2 acquisition researchers have taken the stance that adult L2 learners access clustering acquisition of the syntactic systems in much the same way as children learners of L1 do (Ozcelik, 2009). But, despite the accumulation of new data and models in recent years, it has proved difficult to resolve this question. So, concerning wholestic acquisition of L2 syntax, two approaches are discussed most extensively in the current research studies:

1. The pure integrative view: In L2 acquisition, there are developmental correlations between superficially unrelated linguistic phenomena which are analyzed in terms of clustering effects.

2. The moderate integrative view: In L2 acquisition, the syntactic properties are acquired separately from one another, rather than through clustering appearance.

The two approaches make different predictions for acquiring L2 grammatical phenomena that fall under UG parameters, and one way of empirically testing them involves three requirements. First, two grammatical phenomena (A and B) which are connected in a UG parameter must be investigated where A is the trigger for the clustering acquisition of B. secondly, L1 acquisition research has demonstrated that A and B developmentally covary, which can be explained in terms of developmental integration. Thirdly, to rule out transfer effects from L1, it seems necessary to find a group of adult L2 learners which do not have A and B in their native language. If, under the above-mentioned conditions, one would demonstrate that the two grammatical phenomena in L2 (A and B) developmentally coincide in that group, parallel to what has been found for child L1 learners, then this parallelism would indicate that the process of clustering effects is operative both in L1 and in adult L2 acquisition, thus supporting the pure clustering view as mentioned above. If, however, the acquisition of A and B in that group does not co-occur under the three conditions discussed above, then we have reason to argue that L2 learners acquire A and B separately from one another and that integrative appearance is not functioning in L2 learners in the same way as in child L1 learners (Clahsen and Hong, 1995).

The present article is structured as follows. We will first formulate the research questions and hypotheses. We, then, summarize results and findings from the previous related research studies. We will next describe the method of the present study dealing

with participants, materials and procedure. Finally, the data and results will be analyzed and the finding would be discussed to pave the way for conclusion and implications.

## 1. Research Questions and Hypotheses

RQ 1. Does the integrative acquisition of superficially unrelated linguistic phenomena such as non-pro-drop and agreement coincide in learning a second language in the same way as they do in L1 acquisition?

RH 1. In adult second language learning, non-pro-dropping property developmentally covaries with the acquisition of subject-verb clause agreement.

RQ 2. What is the role of learners' proficiency level in L2 in clustering acquisition of syntactic properties of L2?

RH 2. The learners who are at lower levels of L2 proficiency, say at pre-intermediate and intermediate levels, would pattern like native speakers with respect to integrative acquisition of obligatory subjects and agreement, rather than those at advanced levels.

RQ 3. What is the relationship between the start age of L2 acquisition and integrative effects of syntactic properties, say obligatory subjects and agreement.

RH 3. Those learners who start to acquire L2 at an early age, say about 7, would significantly outperform those who start L2 acquisition at a late age, say about 12, in terms of integrative acquisition of obligatory subjects and agreement.

In order to test the above hypotheses two series of statistical analyses carried out. In the first place a number of correlational analyses were calculated to determine the covariance coefficient of the two linguistic phenomena under investigation in this study, that is obligatory subjects and agreement, in the main proficiency groups and start-age subgroups. In the second phase, a number of t-tests are calculated with respect to the Reaction-Time (RTs) for both grammatical and ungrammatical structures to determine the clustering difference between the two start-age subgroups of three main levels. The level of significance was set at .05.

## 3. Review of the Related Literature

Several sets of L2 data have been analyzed from the perspective of integrative appearance, e.g. backwards versus forwards anaphora (Flynn, 1987), binding of reflexives and anaphora (Lee, 2008), word order (duPlessis *et al*. 1987), negation (Schwartz and Tomaselli, 1990), etc. The phenomenon of null subjects has also received considerable attention among L2 acquisition researchers working within the 'principles and parameters' model, for example, by White (2011), Hilles (1991), Lakshmanan (1991), Meisel (1991) and Platt (1993). In most of the above-mentioned studies it was found that only some of the properties associated with the null-subject parameter co-

occur developmentally in L2 learners and that the claim that a parametrically related set of properties associated with null subjects emerges at a certain point of L2 development was not borne out by the evidence presented in these studies.

In English L1 acquisition research, Cinque, G. & Rizzi, L. (2008) argue they found evidence for an integrative realization of subject-verb clause agreement and the decrease of incorrect null subjects (p. 5). Hawkins and Hattori (2006) carried out a study on Japanese native speakers acquiring English Wh-questions finding evidence to hypothesize that L2 learners show flexibility in the acquisition of parametric properties of the new language. Meisel (1991) compared frequency counts for subject omissions and correct use of subject-verb-agreement affixes over a period of approximately two years for each learner. He observed that the frequencies for both phenomena fluctuate and do not covary, neither across nor within subjects. Meisel (p. 264) concluded that "… the emergence of subjects in the speech of L2 learners is a phenomenon totally independent of the development of agreement markings on the verb.

Evidence from English L1 acquisition indicates that there is an initial stage at which subjects are optional and inflection is omitted (Valian, 1991; Thamas, C. & Baker, C. I. 2013). With the acquisition of present and past-tense inflections, subjects become obligatory (Bloom *et al*. 1975). Hilles (1991) investigated the developmental relationship between verbal inflection and the use of pronominal subjects in three groups of Spanish learners of English: two children (4 and 5 years old), two adolescents (10 and 12 years old) and two adults (25 and 33 years old). She found statistically significant correlations between the use of inflectional suffixes (tense and/or agreement markings) and the increase of overt pronominal subjects, but only for the two children and one adolescent; for one of the adolescents and the two adult learners, there was no indication of improvement with respect to either phenomenon, and, therefore, no evidence of any developmental integration between verbal inflection and the use of overt pronominal subjects.

The instruction utilized in the present study was designed based on the conceptualization of the modality structure. The rationale is that the current instructional curricula and pedagogical practices still rely on translation and prescriptive grammar rules. Even though the concept of modality exists in most languages, word-by-word translation and grammatical rules can neither efficiently inform the learners of the common ground nor highlight the distinction between the languages .

The aim of the study was to teach English modality in the CBI approach, through the medium of conceptual metaphor theory. The results of a pilot study by the researcher on the students´ knowledge about the concepts of modal verbs, their performance on modal-verb tests and learners´ level of appropriate use of modal verbs in communication showed that the students' misuse of modal verbs was duly affected by mis- or non-conceptualization of English modality. As mentioned earlier, one of the thorniest grammatical concepts for EFL language learners is modality. Whereas, in traditional methods, English modality is mostly taught as a unified concept, in CBI, there is a tendency to utilize the concept formation possibilities in educational settings. This can assist the learners to be able to find a complete orientation toward the concept of modality .

Thus, the current study considered the learning and teaching of English modality as a conceptual category to be internalized by students through organized tool-oriented concept-based teaching. It was assumed that when the modality was presented to the Persian-Speaking English learners in a coherent and systematic manner through the lens of conceptual metaphor, it would result in enhanced and efficient learning. To achieve this goal, applicable conceptual metaphors were first carefully selected and thoroughly inspected from linguistic, communicative and pedagogical perspectives and then adapted to  CBI principles, and then presented in an easily comprehensible and accessible form to EFL learners. The conceptual metaphors exploited as mediational tools in this study were mainly selected from Macmillan English Dictionary which introduces 'metaphor boxes' covering the most salient Lakoffian metaphors in English and Nourmohammadi and ZareBehtash´s (2015) book about everyday metaphors.

## 4. Method

In the present study, the researcher will experimentally test Vainikka and Young-Scholten's results (1994, 2013) by using Reaction-Time (RT) experiments to investigate the developmental relationship between properties of obligatory subjects (non-pro-drop) and subject-verb clause agreement in L2 acquisition. In RT experiments, subjects react to a stimulus in a choice reaction context, and the time it takes for subjects to react to the stimulus is measured. The specific RT instrument in the present research is based on Sternberg's conceptual model (2013) and earlier work by Freedman & Forster's (1985), as well as Chambers and Forster (1975). Based on the previous RT experiments with native speakers of English, we can strongly claim that ungrammatical English sentences take significantly more RTs to process than grammatical sentences. So, on the one hand, the main prediction for RT experiments with Persian L2 learners of English is that if adult L2 acquisition is not fundamentally different from child L1 (English) development and is guided by UG parameters, then we would expect to find that those learners who pattern like native speakers in the obligatory subject condition also pattern like natives in agreement condition; and that those L2 learners who differ from native speakers in the obligatory subjects condition also differ from native speakers in the agreement condition with respect to their judgment and RTs. This would support the view that clustering effects are at work in adult L2 acquisition. Before turning to the results, it seems necessary to deal with the participants, materials, and the experimental procedure.

### 4.1. Participants:

The samples of the study include a total of 30 university freshman students who are majoring in Persian literature, social sciences, Arabic, psychology and law in Guilan University (14 males and 16 females aging erom from 19 to 27). They were randomly selected based on the results of a quick Oxford Placement test (Version 2, 2001) administered to the population of the freshman students in the Faculty of Humanities in Guilan University exceeding 150 taking General English course. In the meantime, a questionnaire was used to specify the start age of the subjects (to examine whether the start age of L2 acquisition can bring about any significant difference with respect to

clustering appearance of linguistic phenomena). According to the results, the population could be divided into three proficiency levels of either early or late starters, that is, pre-intermediate, intermediate and advanced levels. So, the sample also representing the population is divided into three proficiency levels so that each group may include 10 learners. Moreover, based on the questionnaire, half of the members in each group consists of early starters to learn English, aging about 7 years old, the other half consists of late starters to learn English, aging about 13 years old. The questionnaire also helps eradicate possible intervening variables such as bilingualism. In order to familiarize the subjects with the lexical items used in the experiment they were provided with a word list of all the items used in the experiment, at least three days before the actual experiments were carried out.

## 4.2. Materials
The main items of the experiment are grammatical and ungrammatical English constructions containing observance/violations of obligatory subjects and subject-verb clause agreement properties. The overall ratio of grammatical and ungrammatical items is set at one to one. Table 1 below illustrates the ratio of the experimental items.

## 4.2.1. Obligatory Subjects
Eight grammatical sentences were constructed for each possible combination of various types of English obligatory subjects including obligatory referential subjects in main/embedded clauses, quasi subject, expletive subject, that-trace constraint (for both subject and object), and verb-subject constraint. Considering the ungrammatical counterpart for each of the above-mentioned structures (8 sentences without subjects) there would be a total of 16 items with respect to the first syntactic property, namely obligatory subjects. To minimize the effect of lexical idiosyncracy the length of the sentences was controlled in terms of number of words and syllables as illustrated by the following sentence pair:

1. (G): They suggest that we take another exam.

* (U): Do you have much time to continue or is to late?

## 4.2.2. Subject-Verb Clause Agreement
Recall that verb clause complements in English are non-finite structures without obligatory or inflected subjects. This is in contrast to verb clauses in Persian which are finite structures with overt or inflected subjects. So, eight grammatical English sentences were constructed containing non-finite verb clauses as well as eight ungrammatical counterpart sentences as illustrated by the following sentence pair:

1. (G): They told John to invite his classmates.

- (U): They want that I change my job.

4.2.3. Filler Items
Two kinds of filler items including irrelevant grammatical and ungrammatical sentences were used as distracters to make sure that the participants would not concentrate on the main points under investigation. These filler items were not included in the data analyses.
Table 1 presents a summary showing the total number of the various types of items used in our experiments.

Table 1. Categorical items used in the RT experiment

| Constituents | Grammatical Items | Ungrammatical Items |
|---|---|---|
| Obligatory Subjects | 8 | 8 |
| Verb-Clause Complements | 8 | 8 |
| Fillers | 4 | 4 |
| Total | 20 | 20 |

4.3. Procedure
 The task of the participants was to judge as rapidly and precisely as possible whether the constructions which appeared on a PC screen were grammatical or not. After the subjects started by pressing any key on the keyboard, the first sentence would appear on the screen with three options as Grammatical, Ungrammatical and Not Sure. The subjects were required to click on one of them and next click the 'Confirm' box. Before clicking the 'Confirm' box, the subject could change their answer, but after they confirmed their choice, the next item would appear on the screen automatically. Each subject's responses and RTs were recorded by a computer program named Reaction Time. In the meantime, each subject was given a number code which is available both for the subject and the researcher for further data analyses. Before the experiment began, the subjects were provided with a detailed oral introduction which was accompanied by a short practice to familiarize them with their task. The experiments were carried out at the Faculty of Humanities in Guilan University where 5 personal computers were available. The subjects were tested in several groups on separate days.

## 5. Results and Data Analysis

The main goals of the RT experiments were to determine the learners' RTs differences on judging grammatical and ungrammatical constructions correctly as well as to examine the potential correlation between obligatory subjects and subject-verb clause agreement in acquisition of English as L2. The secondary goals refer to determining the relationship between the proficiency levels and start age of L2 learning, on the one hand, with integrative acquisition of obligatory subjects and agreement, on the other.

To accomplish the above goals, we must first determine which of the experimental groups developmentally clustered both agreement and the correct properties of obligatory subjects in English, which learners acquired just one of these grammatical properties and which ones acquired neither of them. For this purpose, we will rely on the results of the previous SM experiments. Recall from Forster's experiments (1985) that correct subject-verb agreement and correct overt subjects lead to a facilitating effect in the Sentence Matching (SM) task, that is, sentences without errors yielded significantly shorter RTs than corresponding ungrammatical sentences. We expect the same facilitating effect for those L2 learners who, like native speakers, developmentally integrated agreement and the correct properties of obligatory subjects in English. On the other hand, those L2 learners who have not yet integrated (acquired) these two properties of English should not produce significant RT differences between grammatical and ungrammatical sentences. The data were used to compute a series of statistical analyses for each experimental group. In the first place, we computed the mean scores for general and specific attainment of each main group with respect to obligatory subjects and subject-verb clause agreement. In the second phase, the correlational coefficient was computed to determine the correlation of the two grammatical properties in each group. Finally, some t-tests were computed to find out both the differences between RTs on grammatical and ungrammatical items and the effect of the start age of L2 acquisition with respect to clustering appearance of grammatical properties. The results are as follows:

5.1. Pre-Intermediate Group

Table 2. Mean Scores and Correlational Coefficient between Grammatical and Ungrammatical Structures for PI level

| | |
|---|---|
| General Mean Score | 6.12 |
| Mean Score for the Grammatical Structures | 3.43 |
| Mean Score for the Ungrammatical Structures | 2.68 |
| Correlational Coefficient between the Two Variables | 0.86 |

*Note.* The general mean value is calculated out of 20.

Table 3. Mean Differences between the Early and Late Starters of PI level

| | |
|---|---|
| Mean Score of Early-Starters | 6.87 |
| Standard Deviation of the Early-Starters | 1.82 |
| Mean Score of Late-Starters | 5.37 |
| Standard Deviation of the Late-starters | 1.04 |
| df. | 8 |
| Level of Significance | .05 |
| T- Critical ( One-Tailed) | 1.86 |
| T-Observed | 1.61 |

*Note*. Mean values are calculated out of 20.

As a preliminary result we conclude that the pre-intermediate group didn't acquire the correct subject-verb clause complement agreement paradigm of English and the properties of obligatory subjects in English. As there was no acquisition of obligatory subjects and agreement, we didn't compute the correlational coefficient of the RTs for grammatical and ungrammatical constructions in order to examine the clustering effects between the two variables. In the meantime, the high correlational coefficient between the two variables (0.86) indicates that the learners have almost the same degree of knowledge about English obligatory subjects, on the one hand, and agreement, on the other hand. From the second table we can conclude that the early-starters gained higher scores than the late-starters. Although there is a good difference between the two groups, the t-observed is not significant to reject the third null hypothesis of the study.

## 5.2. Intermediate Group:

Table 4. Mean scores and Correlational Coefficient between Grammatical and Ungrammatical Structures for I level

| | |
|---|---|
| General mean Score | 13.12 |
| Mean Score of the Grammatical Structures | 6.31 |
| Mean score of the Ungrammatical Structures | 6.81 |
| Correlational Coefficient between the Two Variables | 0.91 |

*Note*. The general Mean value is calculated out of 20.

Table 5. Mean Differences between RTs on Grammatical and Ungrammatical Structure for I level

| | |
|---|---|
| Mean Score of RTs on Grammatical Sentences (Correct Judgment) | 24.16 |
| Standard Deviation of RTs on Grammatical sentences | 0.28 |
| Mean Score of RTs on Ungrammatical Sentences (Correct Judgment) | 27.01 |
| Standard Deviation of RTs on Ungrammatical Sentences | 0.17 |
| df. | 18 |
| Level of Significance | 0.05 |
| T-Critical (One-Tailed) | 1.73 |
| T-Observe | -11.3 |

| | |
|---|---|

*Note.* The time criterion is in seconds.

Table 6. Mean Differences between the early and late-Starters of I level

| | |
|---|---|
| Mean Score of Early-Starters | 11.87 |
| Standard Deviation of Early-starters | 0.76 |
| Mean Score of Late-Starters | 14.37 |
| Standard deviation of Late-Starters | 1.39 |
| Df. | 18 |
| Level of Significance | .05 |
| T-Critical (One-Tailed) | 1.86 |
| T-Observed | -3.57 |

*Note.* Mean values are calculated out of 20.

Data gained from the second group in Table 4 indicates that intermediate learners acquired the properties of English obligatory subjects and subject-verb clause agreement to some extent (mean score 13.12). Moreover, the high correlational coefficient may serve as evidence that there is a developmental connection between the two phenomena in L2 learning. However the mean differences between RTs on grammatical and ungrammatical sentences (Table 5) show that the correlational coefficient is not due to clustering effects resulting from the resetting of a particular parameter. According to SM experiments in L1 acquisition research, clustering appearance of two syntactic variables should produce significantly more RTs for ungrammatical units than grammatical ones.
As the data in Table 6 indicates, the late-starters could gain much better results than the early-starters. This can be interpreted as a shift of improvement compared to the results in the pre-intermediate group.

## 5.3. Advanced Group:

Table 7. Mean Scores and Correlational Coefficient between Grammatical and Ungrammatical Structures for A level

| | |
|---|---|
| General Mean Score | 18.3 |
| Mean score of the First Variable | 8.5 |
| Mean Score of the Second Variable | 9.81 |
| Correlational Coefficient between the Two Variables | 0.58 |

*Note.* The general mean value is calculated out of 20.

Table 8. Mean Differences between RTs on Grammatical and Ungrammatical Sentences for A level

| | |
|---|---|
| Mean Score of RTs on Grammatical Sentences (Correct Judgment) | 17.66 |
| Standard Deviation of Rts on Grammatical Structure | 0.38 |
| Mean Score of RTs on Ungrammatical Sentences (Correct Judgment) | 17.77 |
| Standard Deviation of RTs on Ungrammatical Structures | 0.08 |
| df. | 18 |
| Level of Significance | .05 |
| T-Critical | 1.73 |

| T-Observed | 0.89 |
|---|---|
| | |

*Note.* The time criterion is in seconds.

Table 9. Mean Differences between the Early and Late Starters of A level

| Mean Score of Early-Starters | 17.99 |
|---|---|
| Standard Deviation of Early-Starters | 0.52 |
| Mean score of Late-Starters | 18.74 |
| Standard Deviation of Late-Starters | 0.76 |
| df. | 8 |
| Level of Significance | .05 |
| T-Critical (One-Tailed) | 1.86 |
| T-Observed | -1.87 |

*Note.* Mean values are calculated out of 20.

The results concerning the advanced group show that they acquired the correct obligatory subjects as well as the subject-verb clause paradigm in English. Further data analyses reveal a good correlation between the two variables indicating a developmental connection between the two variables. A deep look into the result tables (7, 8 and 9) for advanced group would indicate that two possible combinations are possible: (a) Learners acquired both overt subjects and subject-verb clause agreement alternatively. (b) Learners acquired both of two properties in cluster. So the data gained from advanced learners who patterned like native speakers in both conditions may seem ambiguous. Proponents of the pure clustering hypothesis might speculate that these learners have acquired subject-verb clause agreement and correct overt subjects at the same time as happening in L1, and they might take this to conclude that advanced learners have set the null-subject parameter at the correct value for English. Alternatively, however, one might argue that both phenomena have been acquired separately from one another, not involving any kind of parameter resetting. Hence, the data available from the advanced learners in this study are compatible with both the pure and the moderate clustering hypotheses. The same also holds for those pre-intermediate learners who have not acquired any of the two phenomena indicating that they seem to be at a lower stage of L2 development.

In order to resolve the above ambiguity, a t-test was computed for the learners' correct judgment RTs on grammatical and ungrammatical constructions. Table 8 presents RTs for null-subject sentences and subject-verb clause agreement from advanced learners who patterned like native speakers in the null-subject condition. The figures show that although the mean RTs for ungrammatical items are longer than for grammatical ones, these differences are clearly not significant. Thus, we can be sure that for the advanced

learners there is no connection between the acquisition of the correct properties of null subjects and the acquisition of subject-verb clause agreement in English.

## 6. Discussion

In contrast to what was found for child L1 acquisition, our experiment with the Persian learners of L2 show that for these learners there is no integrative effect between the subject-verb clause agreement and correct properties of null subject in English. This was demonstrated by intermediate and advanced learners whose reaction time on judging ungrammatical and grammatical items doesn't pattern like what happens in L1 acquisition. The data gained from this study for all three levels of proficiency are incompatible with the pure version of integrative hypothesis. The first hypotheses of this research which makes prediction on the similarity between L1 and L2 acquisition with respect to the clustering effects of overt subject and agreement in English cannot be confirmed by the findings. The suggestion is that the differences between L1 and L2 learners can best be explained in terms of the moderate clustering hypothesis according to which in L2 acquisition the syntactic properties are acquired separately from one another, rather than through integrative appearance. Most probably, however, proponents of the pure clustering view will not be convinced by this finding. More specifically, they might point out shortcoming of our study and suggest alternative explanations. Let us anticipate and discuss some potential counterarguments.

First, one might argue that the high correlational coefficient in the intermediate and advanced levels is enough to conclude that there is a developmental connection between overt subjects and agreement in L2 acquisition. The general argument is that RT experiment does not provide a direct measure of grammatical complexity or the like. This is of course a valid point but notice that the results of other L2 acquisition studies (summarized earlier) are consistent with our finding, although they were based on entirely different kinds of data. These parallels minimize the danger that our experimental findings are just task-specific artifacts.

Secondly, the observation shows that in the pre-intermediate level there is no acquisition of subject-verb clause agreement and null-subject properties in English. But, in the intermediate group the learners acquired both of them to some extent and advanced learners to full extent. This might be taken to argue that there is developmental association between these two variables as the findings show gradual clustering by three experimental groups. The point is that the rising trend of the mean scores on two syntactic phenomena does not guarantee the learners acquired them at the same time. If this were so, we should have simply used a traditional grammaticality judgment test. It should be reemphasized that RTs indicate whether L2 learners pattern like native speakers with respect to clustering acquisition or not.

Thirdly, one might argue that the theoretical claims we have raised from syntactic theory, specifically Rizzi's (1986) theory of *pro*, suffer from serious shortcomings, and that the linguistic phenomena we have studied follow from other parameters or that they do not even involve UG parameters of any kind. This idea is clearly in contrast to what we term as UG-oriented approach to language acquisition. In other words, it could mean that UG parameters do not guide the acquisition process, neither of L1 nor of L2 learners. However, any theoretical approach to language acquisition should be able to

explain why subject-verb clause agreement and null subjects cluster together in child L1 acquisition.

Fourthly, the evidence that in L1 acquisition correct null-subject parameter is crucially tied to the acquisition of subject-verb-clause-agreement paradigm does not entail that they are also associated to each other in L2 acquisition. So, the finding that subject-verb clause agreement and the correct use of obligatory subjects are not connected in L2 learning does not prove the lack of clustering acquisition in L2. The point raised here emphasizes the necessity of further similar studies concentrating on the developmental connection between the other variables. The fact that more studies should be carried out on the clustering acquisition of superficially unrelated linguistic phenomena does not reject what we have found in the present study. Anyway, the results of similar studies in future may confirm or contradict our findings. In general, this is what happens in the field of research in all disciplines of science.

Finally, one may argue that the integrative acquisition in L1 may be partially due to the negotiation process in a completely communicative context. This could mean that any difference between L1 and L2 acquisition with respect to clustering appearance should be attributed to the context rather than to the process. This may be a valid justification. The point is that we want to find out whether in L2 syntactic phenomena are connected together, similar to L1 acquisition, or not. We do not intend to find out the reasons for this kind of similarity or difference. The context in which L2 acquisition takes place may be an obstacle to setting a new parameter. However, this is not our concern in this study. On the other hand, a number of similar studies ( Clahsen and Hong, 1995) were carried out in natural contexts and came up with similar results to the present study. So, it is legitimate to conclude that a change of context in which communicative activities happen cannot bring about different results from what we found in this study. Of course, it may be suggested that other studies in future concentrate on the impact of negotiation on integrative acquisition of null subjects and agreement in L2.

## 7. Conclusion

We conducted a reaction time (RT) experiment with adult Persian learners of English in three proficiency levels of pre-intermediate, intermediate and advanced to examine the integrative acquisition of obligatory subjects and subject-verb clause agreement. According to a questionnaire, half of the members in each main group were the early-starters who started L2 learning about 6 years old and the other half were late-starters who started L2 learning about 13 years old. We found that the pre-intermediate learners acquired none of the variables under investigation and there was no a significant difference between the early and late starters. The intermediate learners acquired both variables to some extent and the coefficient correlation showed a high covariance between the two constructions. But, RTs analyses revealed that the learners acquired the two linguistic phenomena separately rather than in clusters. Moreover, the intermediate late starters gained significantly better results than the early starters. Finally, the advanced learners acquired the obligatory subjects and subject-verb clause agreement fully and the correlational coefficient between them is almost high. However, further

analyses on RTs do not confirm a developmental connection between them. The advanced late starters again received significantly higher scores than the early starter. We have discussed various attempts to make these findings compatible with the strong integrative hypothesis, none of which appeared to be convincing to us. We conclude that our results support the moderate integrative view according to which processes such as specification setting are not at work in L2 development.

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