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EDUCATIONAL ASSESSMENT & EVALUATION | RESEARCH ARTICLE

Grammatical proficiency and access to extended projections in Iranian learners of English as a second language

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Abstract: Linguistically and cognitively speaking, functional (extended) projections are more abstract and structurally more complicated than lexical projections. Acquiring functional projections could be problematic for second language learners and thus a crucial issue to be considered by language instructors and curriculum developers. The present study investigates the learners' level of grammatical proficiency relationship with their access to extended projections. A sample of 270 Iranian female students learning English as a foreign language took part in this correlational study. Oxford Placement Test was conducted to obtain a grammatical proficiency score for each learner. To assess the amount of access to extended projections, two tests were administered with a 10-day interval. A Grammaticality Judgment Task was administered 10 days after the test of proficiency to assess the learners' recognition of extended projections. After 10 days, a Picture Description Task was administered to evaluate the learners' production of extended projections. The data then were analyzed using Pearson Correlation-Coefficient Test. Results revealed that there was a significant though a moderate relationship between the learners' level of grammatical proficiency and their Recognition of extended

ABOUT THE AUTHORS

Dr. Ahmad Reza Lotfi has been the Member of the Academic Staff with the rank of Assistant Professor at Islamic Azad University of Isfahan (Khorasgan) since 1997. His research interests include minimalist syntax, second language acquisition studies in generative grammar, and Iranian linguistics.

Fariba Khorvash is Ph.D. candidate of TEFL in Islamic Azad University of Isfahan (Khorasgan). Her main research interests include syntax, second language acquisition, psycholinguistics, sociolinguistics and ESP. The knowledge gained from the results of this study can lead to facilitation of learning the process of learning English for the second language learners. This research endeavor has both practical and academic objectives. On the one hand, it serves the educators and their students be facilitating the understanding of the dynamics of the learning process, and on the other hand, it contributes to the body of knowledge by addressing an apparent gap in the body literature.

PUBLIC INTEREST STATEMENT

Despite the time and energy devoted to teaching grammar in L2 programs, foreign language learners still suffer from serious deficiencies in understanding and using functional categories. Since Extended Projections (i.e., functional categories) play a key role in grammar, L2 learners face difficulties using such structures. Thus, there is a need to investigate the process of acquiring Extended Projections by L2 learners. The present study investigates the extent of access to Extended Projections by the Iranian learners of English, given their level of grammatical proficiency. Results revealed that the learners' recognition and production of Extended Projections significantly improve as their grammatical proficiency increase. Findings may prove useful to SLA researchers as it explores the acquisition of Extended Projections with regard to L2 learners' use of functional categories. The knowledge gained from the results of this study can lead to facilitate the process of learning English grammar for the second language learners.

projections and a significant but weak relationship in their Production of extended projections. Our findings suggest that learners may avoid using certain functional categories despite having the knowledge of those functional categories. Thus, it might be concluded that learners may not have complete access to extended projection and they are still in the process of acquisition.

Subjects: Language & Linguistics; English Language; Grammar, Syntax & Linguistic Structure; Grammar

Keywords: Extended projections; functional categories; grammatical proficiency; lexical categories; second language acquisition

1. Introduction

One of the central issues in generative syntax is that a property of a syntactic structure is projected from a property of a lexical item (Corver, 2013). In explaining Projection Principle, Chomsky clearly states this projection of lexical information: “Representations at each syntactic level (i.e., LF, and D- and S-structure) are projected from the lexicon, in that they observe the subcategorization properties of lexical items” Chomsky (Chomsky, 1981, P. 29). The notion of extended projection (EP) according to Grimshaw (1991) refers to a maximal projection that projects from a category with which it shares categorial features. According to White (2003b) linguistic theory differentiates between lexical categories containing verb (V), noun (N), adjective (Adj), adverb (Adv), preposition (P) and functional categories, including complementizer (Comp or C), inflection (Infl or I), negation (Neg), determiner (Det), etc. The projection of the lexical category (N, V, A, P) constitutes the lowest structural domain of an extended projection. Therefore, projection of the lexical category (N, V, A, P) constitutes the lowest structural domain of an extended projection and the sequence of functional projections is built on top of the lexical projection and constitutes the higher domain of the extended projection (Corver, 2013). Unlike lexical categories, functional categories have a more “abstract” meaning and mainly satisfy grammatical functions within a linguistic expression; in other words, they are needed to glue the content words together (Muysken, 2008). Studies have shown that functional projections or extended projections are acquired later than lexical projections. An example of this phenomenon could be dropping of function words, both by children and adult learners of a second language. It seems that acquiring functional projections could be one of the problematic issues in Second Language Acquisition (SLA), which needs to be more attended both by SLA researchers and language instructors.

Over the past few decades, researchers have investigated the linguistic competence of the second language (L2) learners. One of the major under study issues in SLA has been the acquisition of functional projections both among adults and children (e.g., Hawkins, 2001; Jara, 2015; Rizzi & Cinque, 2016; Thornton & Tesan, 2013; Van Gelderen, 2010; Walton-Romariz, 2015; White, 2008; Zeijlstra, 2004/2013). Most of these studies have mainly focused on the process of acquiring and developing extended projections. For example, in a study conducted by Jara (2015) on the acquisition of the 3rd person singular – s morpheme by 11 to 15 year-old Spanish L2 learners of English, the results showed that students made errors in the production of 3rd person singular morpheme – s when using the present tense: they omitted the – s morpheme of the 3rd person singular in the vast majority of the verbs they used. In another study, Walton-Romariz (2015), explored the development of negation and Negation Phrase (NegP) in bilingual children learning both English and Spanish. She analyzed the speech of four children growing up in the United States who were learning English and Spanish simultaneously in order to establish steps of parameter setting for negation; negation external, preliminary NegP shell, True Imperatives, Negative concord, and Negative Polarity Items. She also argued that languages develop at different rates and in different stages and English and Spanish influences each other with regard to NegPs.

Other studies have investigated the role of proficiency in acquiring extended projections. Schulz (2006) states that the detected errors in the acquisition of English complex questions are due to lack of proficiency in the target language, which can be eliminated by gaining more proficiency in English. Choi and Lardiere (2005), Choi & Lardiere (2006)) investigated the interpretation of wh-expressions among intermediate and advanced L2 English native speakers of Korean. The results suggested that English native speakers were not consistently sensitive to the contingency between sentential particle types and the appropriate interpretation of wh-in-situ expressions in Korean at an intermediate proficiency level. Nevertheless, the correct interpretations of Korean wh-expressions were ultimately acquired as the learners' proficiency level improved. The data also suggested that the main learning problem confronting English-speaking acquirers of Korean was the difficulty in reassembling the features in the new language.

Snape and Kupisch (2010) examined the role of prosody in the acquisition of articles by a single high proficient Turkish L2 learner of English by the name of SD. The results revealed that SD supplied a large number of stressed articles, and as a result avoiding the target-like representation of articles. Another avoidance strategy SD employed was to delete articles, especially when a modifier was present between the article and noun. The authors claimed that their findings were in line with the strong interpretation of the Prosodic Transfer Hypothesis (PTH) according to which learners are unable to build or modify existing prosodic structures. Therefore, it was difficult for SD to overcome the effects of L1 structure, as she was a fossilized advance learner. In a study done by Yoshimura and Nakayama (2009) the acquisition of three kinds of inflectional morphology in English: 3rd person singular (3sg)/-s/, plural/-s/and past tense/-ed/was examined between two groups of low and high proficient Japanese students, participated in the study abroad programs. The results of their post-program composition tasks revealed a significant difference in their scores. The findings demonstrated that the Japanese EFL learners' production of agreement/-s/ improved as their English proficiency increased, while their omission rates of nominal plural/-s/and past tense/-ed/did not decrease significantly.

Bergeron-Matoba (2007) examined the article system of Japanese learners of English in considering the Missing Surface Inflection Hypothesis (MSIH) proposed by Prévost & White (Prévost & White, 2000). The results of the experiment demonstrated that the learners have a good understanding of the English article system however they have problems with realizing these features in the target language. The author concluded that the problem must lie in the mapping of the knowledge onto the surface forms of the articles in English, which was in line with MSIH.

Many studies have also been done recently regarding the acquisition of functional categories by Farsi speaking learners of English. Aryanik and Lotfi (2015) explored the differences between the first and the second language acquisition of complementizer projections (CP) and the role of proficiency level in acquiring CPs through picture description tasks. They proposed that the EFL participants begin to specify their representations for English C and CP at the initial stages of EFL acquisition. Later, they improve the use of CPs based on the positive evidence they receive as they go through different levels of proficiency, thus, the participants in higher levels of proficiency showed a great deal of improvement in their ability to use CPs.

Khany and Bazayr (2013) attempted to investigate the acquisition of the syntactic properties of sentential negation constructions in English as a foreign language (EFL) among Persian monolingual and Kurdish-Persian bilingual learners of English in elementary, lower intermediate, and upper intermediate levels of proficiency. The results of the study showed that increased exposure to English and its use lead to less language transfer, and consequently near native-like performance. In addition, the findings showed that the higher the level of proficiency in the L2/L3, the less transfer would occur and the closer the learner's performance

to native-like proficiency. Also shift in the mode of data elicitation (grammatical judgment task and translation test) did not highly affect the participants' performance.

In line with above studies, the current study investigates the relationship between grammatical proficiency of L2 learners and their access to extended projection. While previous studies concentrated mostly on a single functional category and its feature, this study examines four major functional categories of Inflectional Phrases (IPs), Determiner Phrases (DPs), Compliment Phrases (CPs), and Negative Phrases (NegPs) in order to assess the learners' performance on these functional categories. A metalinguistic (Grammaticality Judgment) and a production-based elicitation (Picture Description) tasks were used in this study in order to inspect the participants' mental information about extended projection.

2. Method

2.1. Participants

The current study was a correlational research conducted among a sample of 270 Iranian female students learning English as a second language. They were between the ages of 13 to 35. The gender factor was controlled in this research by using only female students. The participants included the students studying English in several of the Kanoon-Zaban-Iran language schools and the students majoring in English Translation, English Literature and English Teaching at Islamic Azad University, Damavand and Islamshahar branches, in Tehran province. The participants all had at least 2 years of studying English as a second language.

It should be noted that language school classes in Iran are separated by gender. Given the fact that the female researcher of this study conducted the survey, this study was limited to female classes in these schools. Although classes in universities are not separated by gender, we only considered the data collected from the female students in order to have consistency with the data collected from the language school classes.

2.2. Materials and procedures

Since the participants were studying in different educational and proficiency levels in the language school and at university and they had different language learning backgrounds, a test of OPT (Oxford Placement Test) was administered in order to obtain a proficiency score for each participant in this study. Because the grammatical proficiency of the learners was the focus of the study, only the OPT grammar test was given to the participants. The participants' scores were calculated based on OPT scoring instruction and they were ranked from the highest to the lowest.

A Grammaticality Judgment Task (GJT) was administered after a 10-day interval from the OPT for assessing the learners' ability to recognize grammatical problems. The participants were given a set of 47 grammatical and ungrammatical sentences including distractors. All of the sentences contained extended projections (IPs, DPs, CPs, and NegPs) and the participants were asked to identify these sentences as grammatical (correct) or ungrammatical (incorrect), and write down the correct form of the ungrammatical sentences in about 50 min. Based on the standard coding system, points were given to the correct identification of the sentences and correction of the ungrammatical sentences.

For eliciting narrative discourse samples from the participants, a Picture Description Task (PDT) was administered with a 10-day interval from GJT. The test consisted of a series of three pictures taken from "father and son (vater und sohn)" comics by E.O. Plauen (2014). The participants were asked to write down at least 10 sentences describing the event portrayed in each picture in about 25 to 30 min. As a guideline of what is expected in their writings, a sample statement was provided. The PDT score for each participant was the proponent of correctly used EPs out of the total number of EPs she should have used.

3. Results

The participants' scores on the grammatical section of OPT was used to rank the learners based on their grammatical proficiency. The mean score of the participants was 61 out of 100. The lowest score was 16 and the highest score was 94 (see Table 1).

A Grammaticality Judgment Task (GJT) was administered 10 days after OPT administration and the scores were calculated. In order to examine the existence of a relationship between the overall grammatical proficiency of the learners and their access to extended projection, the scores of the participants obtained from their OPT test were ranked from the lowest to the highest. Then, the correlation between each participant's scores in GJT and OPT was calculated using Pearson's Product-Moment Coefficient of Correlation (See Table 2).

The results revealed a significant and substantial correlation ($r = 0.616$) between grammatical proficiency (OPT) scores and the scores from GJT. Therefore, improvement in grammatical proficiency was highly related to a better recognition of grammatical and ungrammatical statements. This finding is consistent with the study conducted by Khany and Bazayr (2013).

This study also examined the association between grammatical proficiency and the ability of the participants in correct recognition of each of the four functional categories (DPs, IPs, CPs, and NegPs). Therefore, the correlation between participants' scores obtained for each of extended projections in GJT and their scores in OPT was calculated (see Table 3).

Considering the criterion provided by Best and Kahn (2006) for evaluating the magnitude of correlation, the results showed a significant and moderate relationship between the level of grammatical proficiency and correct recognition of CPs, IPs, and DPs ($r = 0.509, 0.4141$ and 0.405 , respectively). This correlation was relatively weak in the case of NegPs ($r = 0.361$). The findings were consistent with prior studies, which indicated the positive significant relationship between grammatical proficiency level, and acquiring extended projections (Choi & Lardiere, 2005, 2006; Snape & Kupisch, 2010; Yoshimura & Nakayama, 2009).

Table 1. OPT scores distribution

Number of the participants	270
Mean	61.60
Median	64.00
Mode	64
Std. Deviation	14.198
Variance	201.594
Minimum	16
Maximum	94

Table 2. Correlation between OPT and GJT scores

		VAR00001	VAR00002
VAR00001	Pearson Correlation	1	.616**
	Sig. (2-tailed)		.000
	N	270	270
VAR00002	Pearson Correlation	.616**	1
	Sig. (2-tailed)	.000	
	N	270	270

** Correlation is significant at the 0.01 level (2-tailed).

Table 3. Correlation between OPT and GJT scores

I. Correlation between OPT and IP scores				II. Correlation between OPT and NegP Scores			
		OPT	IP			OPT	NgP
OPT	Pearson Correlation	1	.414**	OPT	Pearson Correlation	1	.361**
	Sig. (2-tailed)		0.000		Sig. (2-tailed)		0.000
	N	270	270		N	270	270
IP	Pearson Correlation	.414**	1	NgP	Pearson Correlation	.361**	1
	Sig. (2-tailed)	0.000			Sig. (2-tailed)	0.000	
	N	270	270		N	270	270
III. Correlation Between OPT and CP Scores				IV. Correlation Between OPT and DP scores			
		OPT	CP			OPT	DP
OPT	Pearson Correlation	1	.509**	OPT	Pearson Correlation	1	.405**
	Sig. (2-tailed)		0.000		Sig. (2-tailed)		0.000
	N	270	270		N	270	270
CP	Pearson Correlation	.509**	1	DP	Pearson Correlation	.405**	1
	Sig. (2-tailed)	0.000			Sig. (2-tailed)	0.000	
	N	270	270		N	270	270

** Correlation is significant at the level of 0.01 (2-tailed).

However, despite its significance, this relationship was not very and even weak in the case of NegPs.

The relationship was also assessed between the grammatical proficiency level of the participants and their production of extended production. The correlation was measured between the learners' obtained score in each of the four extended projections and their OPT scores and their scores in PDT (see Table 4).

Table 4. Correlation between OPT and PDT scores

I. Correlation between OPT and IP scores				II. Correlation between OPT and NegP scores			
		OPT	IP			OPT	NgP
OPT	Pearson Correlation	1	.287**	OPT	Pearson Correlation	1	0.088
	Sig. (2-tailed)		0.000		Sig. (2-tailed)		0.147
	N	270	270		N	270	270
IP	Pearson Correlation	.287**	1	NgP	Pearson Correlation	0.088	1
	Sig. (2-tailed)	0.000			Sig. (2-tailed)	0.147	
	N	270	270		N	270	270
III. Correlation Between OPT and CP Scores				IV. Correlation Between OPT and DP scores			
		OPT	CP			OPT	DP
OPT	Pearson Correlation	1	.216**	OPT	Pearson Correlation	1	.285**
	Sig. (2-tailed)		0.000		Sig. (2-tailed)		0.000
	N	270	270		N	270	270
CP	Pearson Correlation	.216**	1	DP	Pearson Correlation	.285**	1
	Sig. (2-tailed)	0.000			Sig. (2-tailed)	0.000	
	N	270	270		N	270	270

** Correlation is significant at the level of 0.01 (2-tailed).

The results showed a significant but weak positive relationship between the level of grammatical proficiency and the participants' production in IPs, DPs, and CPs ($r = 0.287, 0.285, \text{ and } 0.216$, respectively). No significant correlation was observed between grammatical proficiency level and producing NegPs. This could be due to low production of extended projections especially in the case of CPs and NegPs. The results could be in line with (Bergeron-Matoba, 2007; Snape & Kupisch, 2010); learners tend to avoid using some functional categories and their features for some reasons. This could be especially true in the case of CPs, and NegPs in our study.

In addition, the correlation between the participants' GJT and PDT scores was also calculated for each pair of the four functional projections using a paired sample correlation test in order to explore if there exists any relationship between their recognition and production (see Table 5).

The results showed a significant positive relationship between IPs and CPs recognition and production ($r = 0.174 \text{ and } 0.175$, respectively). Thus, those with a better recognition in GJT, had a better performance in their PDT and thus more correct production. However, this relationship between recognition and production was weak. In addition, no significant relationship was observed between the ability of the learners to recognize and their production of NegPs and DPs.

4. Discussion

The overall result of this study showed that there exists a significant though moderate correlation between level of grammatical proficiency and recognition of DPs, IPs, and CPs in GJT. This relationship was significant but weak in the case of NegPs. The correlation between grammatical proficiency level and production of DPs, IPs, and CPs was significant but weak in PDT. Moreover, no significant correlation was observed in the case of NegPs in PDT. In addition, the correlation between the recognition of EPs in GJT and production of EPs in PDT was weak and not significant in the case of DPs and NegPs. There are two possible ways to interpret the results.

On the one hand, it seems that learners avoid producing certain functional projections like CPs and NegPs in PDT, while still able to recognize them in GJT. Considering the Missing Surface Inflection Hypothesis (MSIH) proposed by Prévost & White (Prévost & White, 2000), lack of language production does not necessarily reflect a lack of grammatical knowledge. Therefore, if learners have the knowledge but little or no usage, some other reasons maybe involved. Eptatein, Flynn, and Martohardjono (1996) suggest "it is simply not clear whether there is a correlation between any percentage of correct usage of a particular aspect of grammar and knowledge of that aspect. Thus it is conceivable that a learner may, in fact, know the target language ... but the learner never uses certain structures, or uses them incorrectly, for performance reasons" (p.692). Therefore, if the learners have the grammatical knowledge but avoid using certain structures, will lead us to conclude that such structures are not acquired yet. Thus low production could be because of avoidance, which is the result of low competence.

Table 5. Correlation between GJT and PDT scores

		N	Correlation	Sig.
Pair 1	IPs	270	.174	.004
Pair 2	NegPs	270	.025	.687
Pair 3	Cps	270	.175	.004
Pair 4	Dps	270	.055	.371

Another possible explanation for this observation is that generally speaking, production seems to be a more cognitively demanding process. Certain structures like CPs and NegPs naturally do not occur frequently in one's speech even in their mother tongue. It is possible that these results are due to an inadvertent bias in the design of the production task. Maybe other types of tasks are needed to elicit enough samples of such structures. For instance, argumentative task types could be more practical in order to elicit NegPs.

On the other hand, according to 'Minimal Trees Hypothesis' of Vainikka and Young-Scholton (1994; 1996a, 1996b), although functional categories are not realized in the initial grammar, the full Universal Grammar (UG) inventory of functional categories remains available. L2 learners gradually add functional categories to the inter-language grammar, on the basis of L2 input, and are eventually able to project the associated projections (IP, CP, DP, etc.) (White, 2003a). Since this gradual development occurs through input exposure, according to "Minimal Trees Hypothesis", one reason for this incomplete process could be lack of sufficient amount of input. If it is true, the results could also be supported by "Full transfer/ Full access" theory by Schwartz and Sprouse (1994, 1996) according to which from their first encounter with the second language, learners have full access to all lexical and functional categories pertinent to the construction of a mental grammar for that language. The only limitation is due to insufficient exposure of the learners to enough L2 input. Therefore, the transfer of L1 syntactic properties increases in this stage. Full access/full transfer theory claims "learners restructure this initial state grammar on the basis of the L2 input they hear or read (Hawkins, 2001)".

It seems that input can play a crucial role in developing the process of acquisition. Considering Emergentism point of view, input is determinative, not simply a "trigger". Thus, repetition of input results in strengthened network connections, which essentially constitute the knowledge of language (Preston, 2015). It is implied that not only the input, but also its frequency is of high importance in developing learners' acquisition process. Continued input should be able to eventually overcome the barriers that may exist to learning. VanPatten and Benati (2010) states, the more complex forms of a language should receive more attention with respect to the frequency of exposure and the amount of practice.

The result of our study revealed that Iranian language learners still have difficulties recognizing and using certain functional categories. According to Rizzi and Cinque (2016) "much of the complexity of syntactic structures resides in the functional layers". This is an important issue that curriculum developers and language instructors should be aware of. Since the English language is being learned and taught as a foreign language in Iran, the major part of learning is happening in class environment. Therefore, it seems that language instructors and textbooks in particular and an appropriate curriculum development by the educational system in general, play a crucial role in providing sufficient and frequent input and assignment to elicit such complex structures, which are the problematic areas for language learners.

5. Conclusion

The present study aimed at exploring the relationship between the level of grammatical proficiency and access to functional projections among 270 Iranian female learners of English. An Oxford Placement Test (OPT) was administered in order to identify the participants' grammatical proficiency. A Grammaticality Judgment Task (GJT) and Picture Description Task (PDT) were administered within a 10-day interval from each other. The scores then were calculated. The correlation was measured between the participants' OPT and GJT scores to identify the relationship between their grammatical proficiency and their ability to recognize EPs. The correlation was also calculated between the participants' OPT and PDT scores to measure the relationship between their grammatical proficiency and production of EPs. The results revealed that there is a significant but moderate relationship between the learners' grammatical proficiency and their recognition of

extended projections. The relationship was weak in production of EPs in PDT. It seems that participants' have not produced certain EPs.

It could be concluded that learners may not have enough access to extended projections since they have not acquired them completely. If a learner is acquiring a language that differs from his/her first language, the process becomes more difficult especially with those complex forms that vary between the two languages (Botero, 2016). Thus, functional projections seem to be a problematic and challenging issue for Persian learners of English. Since Iranian learners are learning English as a foreign language in a class environment, sufficient and frequent input provided by language instructors through activities, educational materials and assignments seem to play an important roles.

It is important to note that issues such as gender and age could impact acquiring extended projections in the process of learning a second language. For instance, some research studies have considered the age of exposure as the most important element when learning a second language (Abrahamsson, 2012; Abrahamsson & Hyltenstam, 2009; Bialystok & Hakuta, 1999; Chiswick & Miller, 2008; DeKeyser, 2000, 2013; DeKeyser, Alfi-Shabtay, & Ravid, 2010; Flege et al., 2006; Flege, Yeni-Komshian, & Liu, 1999). Regarding this view, age seems to be associated with developmental and biological changes that may allow young learners to acquire a second language like native speakers, while older learners find it more difficult to get to such levels especially after puberty. Lightbown and Spada (2006) reviewed the age of acquisition and the critical period hypothesis in language learning. They stated, "Older learners may depend on more general learning abilities—the same ones they might use to learn other kinds of skills or information" (p. 68) when learning a second language. Therefore, age could be one of the issues to be considered in the process of acquiring functional categories. Spinner and Juffs (2008) also include factors such as inadequate lexical learning, mapping difficulty, processing pressure, and parsing errors that cause functional paradigms to be inadequately learned. Therefore, further research is to be conducted considering these issues.

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