

**Title:**

Preposition Pied-piping and Preposition Stranding Constructions  
in the Interlanguage Grammar of Iranian EFL Learners

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**The Development of  
Preposition Pied-piping and Preposition Stranding Constructions  
in the Interlanguage Grammar of  
Iranian EFL Learners**

**Abstract**

Several studies of the interlanguage of L2 learners of English have evidenced an interim stage in the development of preposition pied-piping and preposition stranding when learners tend to omit the preposition in both interrogatives and relative clauses. The phenomenon generally referred to as null-prep has been controversially discussed in the literature. Dekydsprotter, Sprouse and Anderson (1998) have attempted to account for the phenomenon by positing the rule of preposition incorporation, hence accounting for their observation of asymmetrical behavior of arguments vs. adjuncts. However, Klein and Casco (1999) have presented evidence casting doubt on the speculated contrast between arguments and adjuncts and conjecture that null-prep is a consequence of null-operator movement operating similarly in both complement types. The present study examined the development of preposition pied-piping and preposition stranding in the interlanguage grammar of 80 Iranian participants at three proficiency levels and specifically focused on null-prep constructions in the participants' grammar to test the two conflicting hypotheses. The results showed that even though the Iranian EFL learners initially appeared to possess the subcategorization knowledge for the targeted verbs, they

exhibited systematic and robust evidence of null-prep in both interrogatives and relative clauses across the two complement types, thus lending empirical support to Klein and Casco's analysis.

**Key words:** L2 acquisition, interlanguage, preposition pied-piping, preposition stranding, null-prep

## **Introduction**

Researchers have scrutinized second language (L2) learners' interlanguage to see whether their grammars are constrained by UG principles and parameters or not and the results obtained have been mixed. To account for grammatical properties of the interlanguage grammars a variety of hypotheses as to access to UG has been proposed (*full access* to UG: Schwartz and Sprouse 1996; *partial access* to UG: Hawkins and Chan 1997; *no access* to UG: Clahsen and Muysken, 1986; *direct access* to UG: Hamilton, 1998; *indirect access* to UG: Gass, 1996, among others).

However, White (1998) notes a recent shift of attention from the *source* of grammatical properties in the interlanguage grammar, i.e. L1, UG or something else, to the *nature* of those properties. Nevertheless, she warns that this shift should not be misinterpreted as abandonment of the UG question, rather it implies viewing it from a different angle. In other words, interlanguage grammars are studied to determine whether they are natural language systems or wild in the sense that they are not constrained by

UG. White considers this as surpassing the UG question to answer a bigger one, i.e., "What are natural language grammars like?" (White, 1998, p.11) She further comments that

By focusing more on what ILGs [interlanguage grammars] are like (their nature rather than their source) we are arriving at a more fruitful way of investigating the involvement of UG in SLA. It is important to bear in mind that claims for UG operation in L2 acquisition are simply claims that interlanguage grammars fall within a limited range, that the 'hypothesis space' is restricted by UG. (White, 1998, p. 11)

As such, following Dekydsporter, Sprouse and Anderson (1998), she abandons 'full access' in favor of 'full restriction' on the conviction that the latter not only draws our attention to properties of interlanguage grammars but also it reminds us that the restrictions are UG-bound.

Studies done on the development of extraction constructions involving the object of a preposition have revealed varying patterns in different languages. Two options available to most languages are pied-piping (PiP) and preposition stranding (PS) (Haegamann, 1995). These structures are readily observed in WH-constructions, which are derived by WH-movement, as well as relative clauses. Although pied-piping is permissible in all languages studied so far, the possibility of stranding is subject to crosslinguistic variation. The following examples illustrate instances of preposition pied-piping and preposition stranding in interrogatives and relative clauses:

### Preposition Pied-piping (PiP)

- 1) To whom did John give the book?
- 2) The man to whom John gave the book was Kevin.

### Preposition Stranding (PS)

- 3) Who did John give the book to?
- 4) The man who John gave the book to was Kevin.

Several L2 studies investigating the development of preposition pied-piping and stranding report an interim stage at which learners omit the required prepositions in relatives and/or questions producing what is generally referred to as 'null-prep' (Mazurkewich, 1985; Bardovi-Harlig, 1987; Klein 1993a; 1993b; 1995a; 1995b; Klein and Casco, 1999; Kao, 2001). That is, instead of relative clauses and questions shown in 1) to 4) above, L2 learners' interlanguage grammar demonstrates 5) and 6) shown below:

### Null-prep

- 5) \*Who did John give the book?
- 6) \*The man who John gave the book was Kevin.

By contrast, Klein (1993a) reports, L1 studies of the development of piping and stranding constructions have rarely detected the null-prep phenomenon.

On the other hand, null-prep constructions are rare in natural languages. As Klein (1995a) explicates, null-prep constructions are highly constrained by UG—that is, they are merely licensed in relative clauses of particular languages and are generally prohibited in

interrogatives due to identification, licensing and recoverability issues. Nevertheless, the results of a number of studies of the interlanguage grammar of child and adult L2 learners explicitly exhibit instances of null-prep phenomenon in interrogative constructions as well as relative clauses (Mazurkewich, 1985; Bardovi-Harlig, 1987; Klein 1993a, 1993b, 1995a, 1995b; Klein and Casco, 1999; Kao, 2001).

Making a comparison between L1 and L2 research, MacLaughlin (1993) highlights a critical difference between the two and argues against the difference. He notes that in some L2 research it is presumed that adult L2 learners, just like L1 learners, have access to UG and it accounts for their interlanguage as well. However, the results of L2 research are appraised differently from those of L1 research. He observes that L1 acquisitional data inspire changes in the linguistic theory whereas L2 acquisitional data do not. By this is meant that if predictions made based on the linguistic theory adopted are not supported, the results are interpreted in terms of differences between L2 and L1 acquisition. As a matter of fact, in contrast with L1 acquisitional data, "L2 results are rarely, if ever, used to influence the linguistic theory" (MacLaughlin, 1993, p. 3). He criticizes this unidirectional view of L2 acquisition and suggests that L2 data be used as "a viable input to the formulation of linguistic theory" (MacLaughlin, 1993 p. 9).

Klein and Casco (1999) seem to have taken a step in the right path by attempting to resolve the controversies originating from the results of research on preposition pied-piping and preposition stranding and on the null-prep phenomenon (specifically, Klein, 1995a and Dekydsprotter, Sprouse and Anderson, 1998) by revising the linguistic theory. Still their alternative proposal also contributes to the illumination of the differences between L1 and L2 acquisition.

On the other hand, Kaplan and Selinker (1997) argue that exploration of the nature of the null elements observed in the interlanguage and their relevance to UG merit further investigation. They report that "Apparently, there is little serious empirical work investigating these phenomena, and NO work of any kind...linking them in a clear theoretical framework" (p. 173).

Accordingly, the nature of interlanguage grammars, in general, and the null elements, in particular, warrants further empirical investigation. Thus, the development of pied-piping, preposition stranding and null-prep constructions lends itself well to such an investigation. Studies done on the development of pied-piping and stranding constructions in the interlanguage of L2 learners may shed more light on the nature of the interlanguage grammars and, as White (1998) posits, would deal with the role of UG in SLA from a new perspective.

This study tends to probe into the issue of the development of preposition pied-piping and preposition stranding constructions in the Iranian EFL learners' interlanguage. It is attempted to see how the Iranian EFL learners' interlanguage grammar would compare with that of other L2 learners discussed in the literature. In other words, the study is conducted to specifically find out whether the null-prep phenomenon is significantly observed in the Iranian EFL learners' interlanguage grammar and whether the development of preposition pied-piping and preposition stranding in relative clauses and interrogatives would differ. To study developmental changes, one could do either a longitudinal or a cross-sectional study. The former investigates changes over time whereas the latter focuses upon a cross-section of a population at a single point in time (McBurney, 1998). However, due to practicality considerations, this study is intended to

be a cross-sectional one. Hence, performances of various groups of learners are also compared to uncover differences in terms of proficiency levels. Further investigation of the results might furnish sufficient evidence to assess the competing proposals and may hopefully help to resolve the controversies.

### **Studies on Preposition Pied-piping and Preposition Stranding**

Mazurkewich (1985), following Markedness Theory, examines the acquisition of dative WH-questions in English by second language learners with two different native languages, namely French and Inuktitut. She notices a stage when the subjects show evidence of 'no-prep' constructions. However, she actually dismisses the stage on the ground that the L2 learners at this stage lack subcategorization knowledge of verbs for their prepositional complements. She asserts that the results of her study support the theory of markedness for the reason that the two groups of subjects under study prove to have acquired the dative preposition pied-piping, the presumably unmarked structure, before preposition stranding, the marked counterpart. Moreover, a constant increment is observed in the use of the two structures as the level of competence in English increases, though instances of pied-piping always outnumber instances of preposition stranding.

Bardovi-Harlig (1987) criticizes Mazurkewich's (1985) analysis on the ground that she overlooks a piece of evidence which does not support her claim: the Inuktitut speakers have actually produced more instances of preposition stranding in the early stages. Bardovi-Harlig (1987) also maintains that the early acquisition of pied-piping by French learners can be due to L1 transfer because the structure meets all the conditions necessary for transfer to occur, i.e. it is considered to be unmarked, regular, productive

and common. She raises a significant question as to the role of English itself in the acquisitional sequence. She notes that there is such a growing tendency in English towards using preposition stranding instead of preposition pied-piping that many linguists have considered stranding as the norm and the cases in which stranding is impossible as exceptions. As such, she comments that salience might influence the acquisitional sequence of the learners of English.

In an attempt to compensate for the shortcomings of Mazurkewich's study (1985), Bardovi-Harlig (1987) replicates her test for questions and expands it to include relative clauses as well so that she can examine the acquisition of preposition pied-piping and preposition stranding across two structures, one linguistically simple (dative WH-questions) and the other linguistically more complex (relative clauses). She administers the test to a group of subjects who have a variety of native languages and are at different levels of proficiency in English.

The findings of the study support the stepwise progression from the simple to the more complex structure, i.e. both constructions first appear in WH-questions and then in relative clauses. The so-called null-prep constructions are also employed in both questions and relatives, especially in the early levels, before pied-piping and stranding are attempted. However, instances of null-prep diminish with a rise in the proficiency level. She attributes the emergence of null-prep constructions to lack of subcategorizational knowledge, just as Mazurkewich (1985) does. The results of her study further show that preposition stranding, which is assumed to be the marked structure, is acquired before preposition pied-piping, the presumably unmarked counterpart. This, she concludes, suggests that salience is also a determining factor in the acquisition order.

Van Buren and Sharwood Smith (1985), carrying out a project which is aimed at exploring the acquisition of preposition stranding in English and Dutch as a second language, discuss the application of Government and Binding Theory to second language acquisition. The project is also intended to investigate the role that the marked and unmarked properties of the learner's native language and the target language play in the acquisition process. The results of the studies show evidence of both pied-piping and stranding as alternatives but they report a general tendency in favor of pied-piping. In other words, the subjects' responses to a variety of tests employed do not emulate the widespread presence of stranding in the input. They argue that although Government Binding Theory has undeniable potentialities for generating sophisticated linguistic research questions, the acquisitional aspects of the theory should be elaborated and adapted so that it can handle the special features of second language acquisition as well. They suggest that incorporation of the concept of markedness in Universal Grammar will enhance the precision of the theories of second language acquisition formulated within the UG framework.

Klein (1995a) argues that to attest strong UG claims in L2 acquisition, the learners' interlanguage grammars should be shown to be constrained by UG, i.e. their grammars should present no evidence of constructions forbidden in the world's languages. An illicit or 'wild' grammar would indeed downgrade the role of UG in second language acquisition.

Building upon earlier studies of preposition pied-piping and preposition stranding in English, Klein (1995a) examines the interlanguage of child and adult learners acquiring the structures in English and finds considerable instances of null-prep

phenomenon. She notes that the null-prep construction is severely constrained by UG as it is merely permissible in non-movement relative clauses while it is absolutely forbidden in interrogative constructions. Thus, the occurrence of null-prep in L2 questions, as it is observed in the interlanguage of child and adult learners of English as a second language, appears to be an unequivocal instance of wild grammar. This observation runs against the conception that the learner's interim grammars conform to a natural language system.

Finally, she raises several questions as to the nature of null-prep. The first deals with the reason why null-prep phenomenon shows up. She speculates that the construction emerges because learners may not have learned the licensing and identification restrictions on the constructions. Positing that null-prep only occurs in combination with *Pro* while questions normally require a trace, she attempts to account for the illegitimacy of null-prep instances in wh-questions. The implication, she speculates, is that the "L2 learners have (incorrectly) set the licensing parameters for these null-prep elements but have not yet considered the necessary identification requirements" (Klein, 1995a, p. 107).

Another significant issue raised by Klein (1995a) is whether null-prep constructions appear as a general language acquisition process or they are merely the result of language-specific input factors. In case the phenomenon is systematically observed in L2 acquisition data, a reformulation of UG principles seems warranted so that the data may be coped with more efficiently. Alternatively, she offers, the relationship between UG and acquisition may need to be revised in the sense that the mandate for conformity of intermittent grammars with UG is relaxed, thus allowing for non-conformist grammars as transitional stages. In fact, she favors the latter suggestion

inasmuch as it endorses the role of UG in the process of L2 acquisition, yet it casts off the strong constraints laid by UG claims on the interlanguage grammars.

In her study of second language acquisition as opposed to third language acquisition, Klein (1995b) intends to explore differences between unilinguals and bilinguals while acquiring English as a second language and third language, respectively. She compares the acquisition of subcategorisation knowledge of unilingual learners of English with that of multilingual learners (lexical learning) as well as their acquisition of preposition stranding (syntactic learning). She specifically sets out to test the following hypotheses: 1) Multilinguals learning English will significantly surpass their fellow unilinguals in subcategorization knowledge. 2) Both groups will evidence null-prep phenomenon.

It is surprising to note that the data show no instances of pied-piping in spite of the fact that some of the learners' prior languages demonstrate this construction and the match is assumed to augment the rate of acquisition. This observation, indeed, contradicts language transfer. The results support the first hypothesis thereby attesting the advantage of multilinguals over monolinguals in lexical learning and parameter setting. The second hypothesis is similarly supported inasmuch as both groups demonstrate null-prep, albeit to different degrees.

In their study of English-French interlanguage, Dekydtspotter, Sprouse, and Anderson (1998) report to have found compelling evidence that rejects the claims as to the divergence of null-prep grammars from UG constraints. First, they present some data suggesting that "construals between interrogative operators and covariant *Pros* are not banned by UG" (p. 351). This is supposed to illustrate that null-prep phenomenon falls

within the UG-governed binding options, contra Klein's (1995a) assertion. They also provide instances of nonmatching PP-gaps in popular French and Yoruba interrogatives which they interpret as A-bar binding. Moreover, it is suggested that null-prep manifests familiar argument-adjunct asymmetry. They suggest that the asymmetry may be accounted for by positing the rule of preposition incorporation. The rule implies that in null-prep constructions the category status of the complement of the verb undergoes a change. In other words, the VP complement becomes an NP rather than a PP in such constructions. Accordingly, they conclude that null-prep in L2 development displays a preliminary stage when learners form WH-questions by binding construals rather than WH-movement.

Klein and Casco (1999) scrutinize L2 learners' grammar with a focus on the differences between L1 and L2 acquisition and present some evidence which is suggested to weaken Dekydspter, Sprouse and Anderson's (1998) analysis. The results reveal that L2 learners optionally select null-prep in questions well up to the advanced level. Of course, the number of correct instances of piping and stranding rises as general proficiency increases. Robust evidence of optional null-prep exhibited in both adjuncts and arguments is claimed to provide counterevidence to Dekydspter, Sprouse and Anderson's (1998) analysis in that they offer the rule of preposition incorporation to propel null-prep constructions into UG-constrained hypothesis space. However, Klein and Casco (1999) argue that the rule does not hold in the case of adjuncts inasmuch as incorporation of a preposition into a verb is banned across a CP as is the case in adjuncts. Refuting Dekydspter, Sprouse and Anderson's (1998) analysis of preposition incorporation, Klein and Casco rationalize that as stranding is quite a rare phenomenon in

most languages of the world, L2 learners' prior exposure to L1 usually leads to a bias against stranding. Instead, L2 learners attempt null-operator movement that is more economical as it merely moves the features rather than an overt operator. This analysis readily permits null-prep as an interim strategy for adjuncts as well as arguments. Hence, it manages to place L2 learners' null-prep grammar within the limits permitted by UG. Yet, they call for further research to help support their analysis.

In her study of the acquisition of English prepositional verbs by Japanese EFL learners, Kao (2001) further examines Klein's (1995b) report that preposition stranding is the generally preferred form and her account that it may be due to "the frequency of stranding in informal language and the potentially marked nature of piping in English." (p. 198) Kao warns that Klein's findings should be interpreted with caution since her targeted sentences raise the possibility of stranding. Her relative clauses all include the complementizer *that* instead of the WH-pronouns. As the subjects have only been required to correct the sentences, they have been free to change one place (PS) or two (PiP). It is naturally expected that the subjects favor a minimal correction (inserting a preposition leading to PS) over a two-step process (inserting a preposition and changing *that* to a relative pronoun leading to PiP).

Accordingly, Kao (2001) intends to replicate Klein's study to verify her claims. Of course, she avoids the pitfall in Klein's study by including relative pronouns rather than *that* in her relative clauses. The results of her study evidence instances of null-prep constructions though to a far lesser degree than those of Klein's studies. Moreover, stranding turns out to be the preferred option and the subjects show the preference by rejecting even correct piping sentences in favor of stranding.

Kao examines six grammar books used by Japanese students and finds that although both preposition pied-piping and preposition stranding are introduced, five out of six references recommend students to leave the preposition at the end of the sentence when the relativized NP is the object of a preposition. Or in the case of interrogatives, the references generally state that the WH-word/phrase should be placed at the beginning of the sentences. Kao speculates that some learners may avoid piping because piping may seem to violate the grammar rule taught in the books. Her idea is indeed supported by the results of an ad hoc follow-up test given to the subjects different from the ones taking part in the main experiment.

Kao also refers to Sharwood-Smith's (1993, cited in Kao, 2001) distinction between consciousness-raising and input enhancement and comments that as the results of her study show, although formal instruction is intended to help the learners acquire a rule (e.g., prepositional verbs and their co-occurrence restrictions or wh-question formation), the product the learner carries away is the presumably preferred structure: preposition stranding. Accordingly, Kao highlights the effect of instruction on the learner's performance in the second language.

As it was discussed above, extensive investigations done on the acquisition of preposition pied-piping and preposition stranding have generally produced mixed results. Specifically, the two most recent investigations, Dekydsporter, Sprouse and Anderson (1998) and Klein and Casco (1999), have made rather contradictory claims about the interim stage in the development of preposition pied-piping and preposition stranding at which some L2 learners evidence null-prep constructions.

In an attempt to resolve the controversies discussed above, this study was intended to further investigate the issue. It specifically sought to answer the following questions:

1.
  - a. *Do Iranian EFL learners robustly evidence null-prep in relative clauses and/or questions?*
  - b. *How do the interlanguage grammars of Iranian EFL learners at various levels of proficiency differ in terms of null-prep constructions?*
2.
  - a. *Are there any differences between questions and relative clauses in terms of the emergence of preposition pied-piping and/or preposition stranding and null-prep constructions?*
  - b. *How do the interlanguage grammars of Iranian EFL learners at various levels of proficiency differ in terms of the emergence of preposition pied-piping and/or preposition stranding and null-prep constructions?*
3. *Do Iranian EFL learners evidence null-prep in adjuncts and/or arguments?*

## **Method**

### **Participants**

A total of 80 adult Iranian male and female EFL learners studying at Shiraz University Language Center constituted the participants in the study. The main body of the students at this institute study in conversation classes ranging from levels 1 to 12. Candidates for the courses at this institute are initially interviewed. Their performances are then matched against the contents of the textbooks they are going to study, i.e., *New*

*Headway English Course* (Soars and Soars, 1998). The series includes 6 volumes, beginner, elementary, lower intermediate, intermediate, upper intermediate and advanced. On the basis of the volumes studied at each level, levels 1 to 4 are considered to be beginner, levels 5 to 10 intermediate and levels 11 and 12 advanced.

As one of the goals of the study was to compare the performance of learners at different proficiency levels, namely, low, mid and high groups, sampling was carried out in the following way. The participants of the study were selected from levels 4 (N=30), 8 (N=30) and 12 (N=20) which best represented the afore-mentioned levels of proficiency, respectively. It is worth mentioning that the low group was selected from level 4 to make sure that the participants had already been exposed to the constructions under study, i.e., preposition pied-piping and preposition stranding. From among all classes at levels 4, 8 and 12, two classes were randomly chosen, one from the boys' section and the other from the girls' section in each level, and all the students in each class took the instrument utilized in the study.

### **Materials and Procedure**

The instrument for data collection comprised a grammaticality judgment and correction task. A total of 8 verbs were tested in the task. The items included an equal number of instances of adjuncts and arguments, i.e., four verbs with arguments and four with adjuncts. Each verb was initially presented in a declarative sentence to test the subcategorization knowledge of the participants. In addition, for each verb two sets of sentences were developed, one interrogative and the other with a relative clause, to check the differences between the two structures. Thus there were a total of 24 targeted

sentences. In all the targeted sentences the preposition was omitted. The task also included 24 incorrect filler sentences.

The participants were asked to judge the acceptability of the items. In case a sentence was judged unacceptable, the participants were required to correct it, for instance, inserting a preposition in the target sentences. Acceptance of the declarative sentence with no preposition suggested that the participant did not have the subcategorization knowledge for the verb and hence his/her responses to the interrogative and the relative constructions did not count. However, if a participant rejected the declarative sentence and inserted the missing preposition, then his/her responses to the interrogative and the relative constructions were further analyzed as he/she appeared to possess the required subcategorization knowledge for the verb. In the case of relative and interrogative constructions, acceptance of the sentence would be considered as a null-prep response. Alternatively, the result of rejecting the sentence in the test and inserting the preposition in the initial position of the clause was considered as piping and rejecting the sentence in the test and inserting the preposition in the final position was considered as stranding.

## **Results and Discussion**

The results delineated in Table 1 clearly show that although the subcategorization knowledge of the Iranian EFL learners increases with their proficiency, the interlanguage grammar of the participants at various levels of proficiency who possess the relevant subcategorization knowledge evidence null-prep. The low group accurately subcategorized 72 declarative sentences. However, they accepted 66.7 and 76 percent of

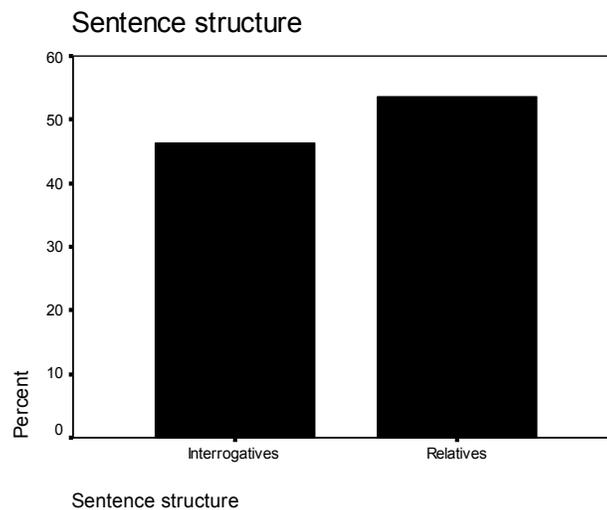
the corresponding interrogatives and relatives, respectively, without the preposition. The mid group accurately subcategorized 113 declaratives. Yet, they accepted 54 and 61.9 percent of the interrogatives and relatives without the preposition. The high group who had accurately subcategorized 101 declaratives accepted 37 percent of the interrogatives and 44.6 percent of the relatives without the preposition.

Figure 1 as well as the percentages in Table 1 apparently indicates that the incidence of null-prep in relative clauses (53.6%) is greater as compared with interrogatives (46.4%). However, the results of a chi-square test showed no significant differences between the two structures, i.e., interrogatives and relative clauses ( $X^2= 1.66$   $df=1$   $p>0.05$ ). As such, null-prep can be similarly observed in both relatives and interrogatives, hence providing a positive answer to question 1a posed earlier. As for question 1b, although the incidence of null-prep seems to decline as the proficiency level increases (interrogative: Low=66.7% Mid=54%, and High=37%; relatives: Low=76%, Mid=61.9% and High=44.6%), a pair of chi-square tests did not show significant differences among proficiency levels in terms of the use of null-prep in each of the two structures (interrogatives:  $X^2=5.42$   $df=2$   $p>0.05$ ; relatives:  $X^2=5.58$   $df=2$   $p>0.05$ ).

**Table 1: Null-prep Results by Proficiency Level**

<b>Prof. Level</b>	<b>No. of Part.</b>	<b>No. of Subcat.</b>	<b>Null-prep Inter. No. (%)</b>	<b>Null-prep Relat. No. (%)</b>
<b>Low</b>	30	72/240	48 (66.7)	55 (76.4)
<b>Mid</b>	30	113/240	61 (54)	70 (61.9)
<b>High</b>	20	101/160	38 (37)	45 (44.6)
<b>Total</b>	80	286/460	147 (46.4)	170 (53.6)

**Note:** Prof.=proficiency ; Part.=participants; Subcat.=correctly subcategorized declaratives; Inter.=interrogatives; Relat.=relative clauses

**Figure 1: Null-prep in Interrogatives vs. Relatives**

Further examination of the results tabulated in Table 2 shows robust evidence of null-prep in both questions and relatives (51.4% and 59.4%, respectively) despite correct subcategorization knowledge indicated in the corresponding declaratives. The results also suggest that in both structures L2 learners are more prone to use preposition stranding

(interrogatives: 28.3% and relative clauses: 22.8%) than preposition pied-piping (20.3% in interrogatives and 17.8% in relative clauses). The results of a chi-square test showed significant differences between the two structures in terms of the emergence of the three types of constructions ( $X^2=323.04$   $df= 4$   $p<0.01$ ), hence providing a positive answer to question 2a.

**Table 2: Null-prep, Preposition Pied-piping and Preposition Stranding Results in Interrogatives vs. Relative Clauses**

<b>Structure</b>	<b>Null-prep (%)</b>	<b>PiP (%)</b>	<b>PS (%)</b>
<b>Inter.</b>	51.4	20.3	28.3
<b>Relat.</b>	59.4	17.8	22.8

Table 3 depicts the differences among the three proficiency groups in terms of the emergence of null-prep, preposition pied-piping and preposition stranding. The table evidently shows that at the three proficiency levels tested null-prep forms a stage of development prior to the acquisition of preposition pied-piping and/or preposition stranding in both interrogatives (Low: 66.7%; Mid: 54%; High: 37.6%) and relative clauses (Low: 76.4%; Mid: 61.9%; High: 44.6%). However, null-prep gradually diminishes in both structures as proficiency increases. The table also indicates that apparently the rise in the use of both preposition pied-piping and preposition stranding and the fall in the rate of null-prep generally occur in interrogatives earlier than relative clauses, except for preposition pied-piping in the mid group and preposition stranding in the high group where a reverse sequence is observed.

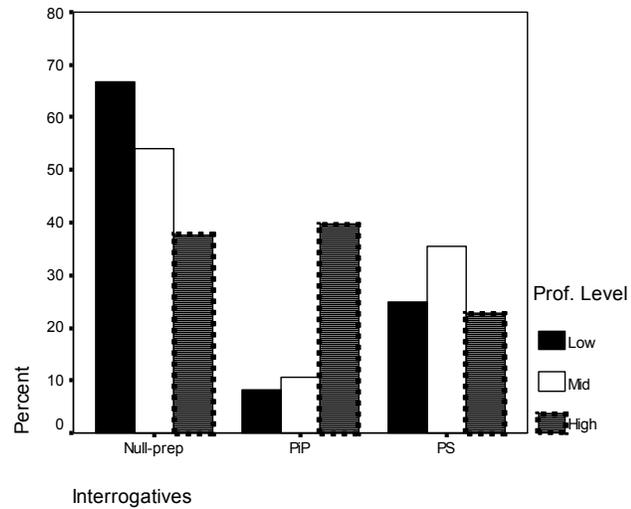
**Table 3: Results of Interrogatives vs. Relative Clauses by Proficiency Level**

Prof. Level	Null-prep (%)		PiP (%)		PS (%)	
	Inter.	Relat.	Inter.	Relat.	Inter.	Relat.
<b>Low</b>	66.7	76.4	8.3	8.3	25	15.3
<b>Mid</b>	54	61.9	10.6	12.4	35.4	25.7
<b>High</b>	37.6	44.6	39.6	30.7	22.8	24.8

As for question 2b, the results of a pair of chi-square tests showed significant differences among the three proficiency groups in terms of the emergence of preposition pied-piping and preposition stranding in each of the structures (interrogatives:  $X^2= 39.38$   $df=4$   $p<0.01$ ; relatives:  $X^2= 24.62$   $df=4$   $p<0.01$ ). Figures 2 and 3 clearly depict the differences among the three proficiency groups in interrogatives and relative clauses, respectively. They present additional information that help to answer question 2b.

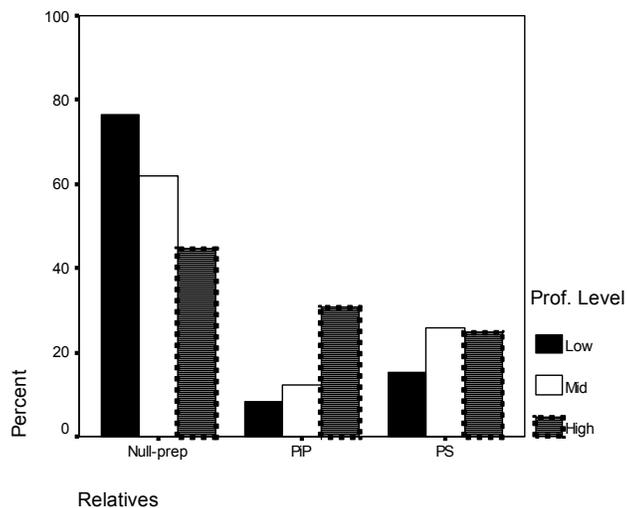
Figure 2 shows that generally in each proficiency group as the occurrence of null-prep in interrogatives decreases, instances of preposition pied-piping and preposition stranding increase. Moreover, instances of preposition stranding outnumber those of pied-piping in both the low and the mid groups, the high group being an exception. Indeed, an abrupt increase is observed in the use of preposition pied-piping by the high group whereas the use of preposition stranding by the same group not only does not show such a growth but also displays even a sudden decrease.

**Figure 2: Null-Prep, Preposition Pied-piping and Preposition Stranding  
in Interrogatives by Proficiency Level**



Similarly, Figure 3 reveals the gradual decline in the use of null-prep in relative clauses and the increment in the use of preposition pied-piping as a result of the growth in proficiency level. The mid group, as compared with the low group, shows a similar increase in the tendency to make use of preposition stranding; yet, the high group exhibits no such tendency.

**Figure 3: Null-Prep, Preposition Pied-piping and Preposition Stranding  
in Relative Clauses by Proficiency Level**

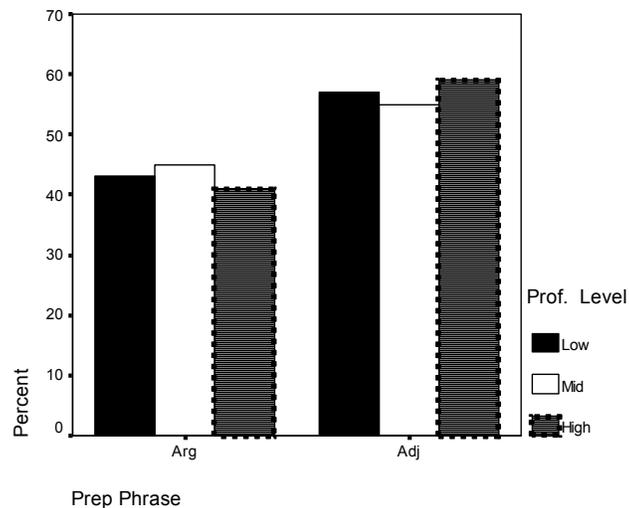


Question 3 also receives a positive answer because further examination of the data reveals evidence of null-prep in adjuncts (Adj) as well as arguments (Arg). Table 4 shows that the three proficiency groups attempt null-prep in both adjuncts and arguments rather similarly (Low: Arg=43% Adj= 57%; Mid: Arg= 45% Adj=55%; High: Arg=41% Adj=59%). Figure 4 clearly depicts the null-prep responses of the three proficiency groups in both types of complement. The results of a chi-square test run to check the differences among the three proficiency groups in terms of the use of null-prep in arguments vs. adjuncts show no significant differences ( $X^2=0.326$   $df=2$   $p>0.05$ ).

**Table 4: Results of Null-prep in Arguments vs. Adjuncts  
by Proficiency Level**

Prof. Level	Arg (%)	Adj (%)
Low	43	57
Mid	45	55
High	41	59

**Figure 4: Null-Prep in Arguments vs. Adjuncts by Proficiency Level**



## 5. Summary and Conclusion

Iranian EFL learners in this study evidently omitted the prepositions in interrogatives and relative clauses in spite of the fact that they had already demonstrated their knowledge of subcategorization requirements of the verbs for the missing preposition. Moreover, they attempted null-prep constructions even in the advanced level although the null-prep occurrence decreased with the rise in proficiency. This is in line

with the findings of earlier research on preposition pied-piping, preposition stranding and the null-prep phenomenon (cf. Mazurkewich, 1985; Bardovi-Harlig, 1987; Klein, 1995a, 1995b; Klein and Casco, 1999; Kao, 2001). The systematicity of the occurrence of the phenomenon in L2 acquisition attests to null-prep as an undeniable stage in L2 acquisition and thus shows irrelevance of null-prep to "language-specific input factors" (cf. Klein, 1995a, pp. 107-108).

Another finding of the study, namely the early emergence of preposition stranding and greater tendency of the participants (in the low and the mid groups) to use it, is in line with the findings of Van Buren and Sharwood Smith (1985), Bardovi-Harlig (1987), Klein (1995b) and Kao (2001). Given that Persian is a language in which preposition pied-piping, but not preposition stranding, is permissible, one cannot account for the observation by resorting to prior linguistic knowledge or L1 transfer. In fact, the early emergence of preposition stranding and the learners' preference to use it over pied-piping might be due to the salience of the structure in English (cf. Bardovi-Harlig, 1987). The fact that the sentences in the test included relative pronouns rather than "that" as well as the observation of similar null-prep phenomenon in both relative clauses and interrogatives refutes Kao's (2001) conjecture that learners attempt it because they choose changing one place (resulting in preposition stranding) rather than two (resulting in preposition pied-piping). However, the results corroborate minimalists' view that derivations are directed by the economy principles and that the most economical alternative always wins out (cf. Klein and Casco, 1999). As for preposition pied-piping and preposition stranding, there is a competition between the two because they comprise the same set of lexical items. Since stranding involves movement of less material (NP out

of PP) than pied-piping (the entire PP), the most economical derivation winning the competition is preposition stranding.

On the other hand, a comparison between the number of piping and stranding constructions attempted by the low and the mid groups showed a smooth increase in both interrogatives and relative clauses. In addition, instances of pied-piping outnumbered those of stranding. Nevertheless, the high group evidenced an abrupt rise in the use of preposition pied-piping but a sudden fall in the use of stranding. This unexpected change may be reasonably attributed to the classroom instruction recommending the prescriptivists' view of the supremacy of preposition pied-piping over preposition stranding (cf. Kao, 2001).

Moreover, although the gradual reduction in the use of null-prep co-occurred with a general rise in the use of preposition pied-piping and preposition stranding in both interrogatives and relative clauses, null-prep was retained longer in relative clauses. This is in line with Bardovi-Harlig's (1987) finding that acquiring preposition pied-piping and preposition stranding in relative clauses is more difficult than in interrogatives.

Finally, given that null-prep occurred rather similarly in both arguments and adjuncts, no distinction can be made between the two structures as far as the null-prep phenomenon is concerned. Thus, Dekydsporter, Sprouse and Anderson's (1998) speculation of the rule of preposition incorporation does not hold here inasmuch as the incorporation of a preposition into a verb across a CP, as is the case in adjuncts, is illicit in UG.

Alternatively, the study yields empirical evidence consistent with Klein and Casco's (1999) proposal. Their analysis of null-prep incorporates null-operator movement

and hence is in keeping with the economy principles because it presumes minimal movement, i.e., movement of wh-features. Additionally, and more importantly, it makes no distinction between arguments and adjuncts in terms of movement. Finally, Klein and Casco's analysis seems more theoretically sound because, unlike Dekydsporter, Sprouse and Anderson's (1998) proposal, it enjoys the privilege of reinforcing the contrast between the L1 vs. the L2 learners' behavior. As far as the evidence goes, L1 learners lack empty operators in their early stages of language acquisition leading to the absence of the null-prep phenomenon in their grammar whereas L2 learners have evidenced null-operator constructions early on (cf. Klein and Casco, 1999).

As such, the results of this study furnish theoretically viable input for a reformulation of the hypotheses (cf. MacLaughlin, 1993) as to the nature of the null-prep phenomenon, the findings of the study being fully compatible with Klein and Casco's (1999) analysis. The results obtained also imply that the interlanguage grammar of Iranian EFL learners, though at times diverging from that of L1 learners due to the absence of obligatory prepositions, still falls within the space constrained by UG.

Although this study primarily addressed theoretical issues independent of their practical significance, it may be broadened and deepened to help supply robust foundations for settling problems in second language teaching practices. Since the results show that Iranian EFL learners are obedient to the UG constraints on extraction even when they diverge from L1 learners on their path to language learning, teachers do not need to worry about the interim stage at which learners may omit the prepositions in the prepositional constructions discussed earlier. As numerous studies have attested to the role of input and instruction in L2 acquisition (Long, 1985; Kellerman, 1985; Oxford and

Scarcella, 1994; Sadighi and Tagharchi, 2001, to name just a few), as a result of exposure to more positive input, learners would hopefully learn how to correctly pied-pipe and/or strand the preposition.

To add a word of caution, the researchers would like to emphasize that the results of this study are by no means conclusive because of the following reasons. First, participants in the study were selected from a limited number of proficiency levels. Moreover, one elicitation task was employed in this study which has most probably impinged upon the results to a great extent. Therefore, further research including participants with a variety of proficiency levels using different elicitation tasks is needed if definite statements are to be made.

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