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The Acquisition of English Indefinite Restrictive Relative Clauses by Lattakian Arabic Speakers

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ABSTRACT

One of the goals of second language acquisition research is to contribute to the development of a theory that can answer intriguing issues related to the role of first language in development and the extent to which universal principles of linguistic organization (universal grammar) guide the development of second language learners' mental grammars for the target language. This study homes in on contributing to this goal by investigating how speakers of Lattakian Syrian Arabic acquire English indefinite RRCs. Based on the well-known properties of restrictive relative clauses in English, the account that best fits the data of English is the traditional operator movement analysis, while for Lattakian Syrian Arabic a clitic left-dislocation account offers the best fit. In this study, learners of different proficiency levels (as measured by an independent proficiency test) completed a grammaticality judgement task, a guided gap-filling task and a translation task. Results show partial first language influence at early stages of learning and persistent influence in later stages of learning, but specifically on properties that involve uninterpretable features. The findings largely support the theoretical position that argues for fundamental differences in native speaker and L2 syntactic representations. The implications of these findings for theories of second language acquisition are considered.

Keywords: UG; Indefinite Restrictive Relative Clauses; Proficiency; Uninterpretable Features

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1. Introduction

One of the goals of second language acquisition (SLA) research is to contribute to the development of a theory that can answer intriguing issues related to the role of first language in development, and the extent to which universal principles of linguistic organization (universal grammar (UG)) guide the development of second language (L2) learners' mental grammars for the target language. UG is a proposed architecture for the language faculty and it establishes a number of design principles within which languages fall[1]. It also offers a range of interpretable and uninterpretable features (parameters). The acquisition of English restrictive relative clauses (RRCs) as in "The lady whom I dated ___" has been the subject of considerable investigation in second language acquisition (SLA) literature. Unlike much SLA research that treats RRCs generally, this study zooms in on indefinite RRCs, a syntactic subdomain with distinctive cross-linguistic behaviors. A number of studies indicated that this structure poses an acquisition problem. This study aims to investigate the extent to which L2 learners can fully acquire syntactic properties of the L2 by investigating the Lattakian Syrian Arabic LSA speakers' acquisition of English indefinite RRCs given the syntactic differences between the two languages. A quasi-longitudinal design was employed in this study. Learners at different proficiency levels (elementary, lower intermediate, upper intermediate and advanced) completed three tasks. The findings largely support the theoretical position that argues for fundamental differences in native speaker and L2 syntactic representations.

This paper is organized in the following way. Section 2 states the study motivation. In section 3, a definition of indefinite RRCs is provided. This is followed by an analysis of the structure of English indefinite RRCs. Indefinite RRCs in LSA are introduced in section 4. Section 6 presents major SLA theories. Later in section 7, the research hypotheses are introduced. The methodology of the empirical study and data analysis are in sections 8 and 9. The discussion is presented in section 10. Finally, the conclusion is in section 11.

2. Study Motivation

The study is motivated by the need to answer some crucial questions related to the status of the theories that were advanced to investigate the availability of UG in SLA: (1) Why it is insightful to examine LSA speakers' acquisition of English indefinite RRCs? (2) The theoretical motivation for assuming that LSA speakers would or would not show sensitivity to operator movement involved in English indefinite RRCs? (3) How the literature views L1 transfer in L2 syntax acquisition? These questions are put to the test empirically by answering some questions given that there are various studies on L2 acquisition of RRCs which show divergent results. In particular, would LSA speakers

1) Recognize that presence/absence of the relativizer in English is not determined by definiteness.
2) Identify the fact that resumptive pronouns are disallowed in English.
3) Recognize that the presence of gaps in English indefinite RRCs is the result of operator movement.

The next section introduces and defines indefinite RRCs.

3. Indefinite RRCs in English

Different proposals were advanced for the analysis of RRCs, one of which is the operator-movement/matching analysis. This analysis assumes that a clause (CP) is right-adjoined to a head N[1–3], and an operator moves from a DP position in the clause to the specifier (Spec) of complementizer phrase (CP) leaving behind in the extraction site a full copy deleted in PF. The fronted operator is co-indexed with the null copy in the clause, as illustrated in (1).

(1)
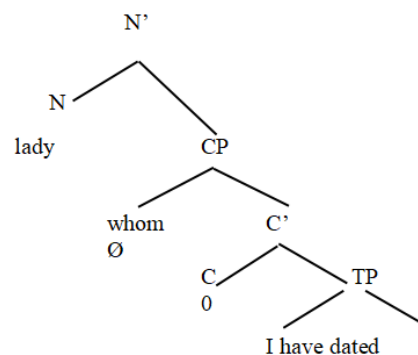
This analysis accounts for the three possibilities in RRCs: wh-operator-null C, null operator-null C, null operator-that C, (but not wh-operator-that C (see the work of Rizzi (1990) for a discussion of the impossibility of this op-

tion in English))[4]. When the RRC begins with a wh-element such as whom, whom occupies the Spec CP position, and when there is no overt wh-element, the Spec CP position is occupied by an empty/null operator followed either by an overt C or a null C.

4. Indefinite RRCs in LSA

Indefinite RRCs are used with a phonologically empty C, and they involve resumptive pronouns, and they never involve a relative pronoun introducing the indefinite RRC.

There are no contexts in which both gaps and clitics can appear. The distribution of clitics in different RRC types is illustrated in the following examples:

Clitics are required in all non-subject positions:

Direct object position:

(2) walad [ḍrab-t-o]
     boy [hit-I-him]
     A boy I hit

Object of preposition positions:

(3) kātīb [sme`-t `ann-o]
     writer [heard-I about-it]
     A writer I heard about

Possessor position:

(4) kātīb [krī-na ktāb-o]
     writer [read-we book-his]
     An author whose book we read

Clitics do not occur when subject position is relativized.

(5) kātīb [katab l-ktāb]
   writer [wrote the-book]
     An author that wrote the book

Shaheen (2012) proposed an analysis for indefinite RRCs[5]. In her analysis, an indefinite RRC is based on a clitic left dislocated CLLD structure; there is movement of a relative operator to Spec CP. The empty operator is definite and the fact that it can be co-indexed with an indefinite element does not rule out that it cannot be definite. A pronoun can have a (in)definite antecedent, e.g. *a/the man shot himself*.

Assuming a CLLD structure for RRCs is necessary especially to account for the fact that, in indefinite RRCs, object clitics are obligatory in LSA. An element is necessary to check the features of empty C (definiteness and φ features) in the course of the derivation. This set of features is identified with a null operator. This is because the operator can

be related not only to an argument position but also to an adjunct position.

Thus, in indefinite RRCs, the only movement will be from Spec TopP to Spec CP. On the assumption that there is no movement in a CLLD structure, there will be no other movement in (6), but there will be a *pro* somewhere coindexed with the empty operator in Spec TopP. If *pro* is in object position it will need to be identified by a clitic. RRCs in LSA has the structure in (6).

(6)
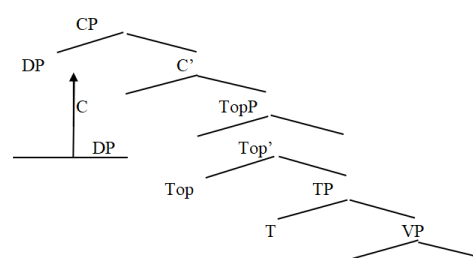
The set of assumptions arrived at about the syntax of indefinite RRCs in LSA and English and the insights gained from this comparative study will be used to test claims about the role of the L1 and access to properties of UG in adult L2 acquisition.

5. Theories of SLA

In much of the existing research literature there is no consensus over the role that the L1 plays in the development of L2 knowledge and the extent to which UG is involved. In the case of the initial stage, some argue for full first language transfer[6–8], others argue for a minimal transfer[9], and yet others for no transfer (No transfer hypothesis)[10].

In the case of the ultimate state, there are those who argue for the full access to UG (e.g., Full Transfer Full Access)[11], others for a partial access (e.g. Failed Functional Feature Hypothesis[12,13], and yet others for no access (for a detailed review see the work by Shaheen (2012))[5,14,15].

Section 6 focuses on studies conducted on *wh*-movement particularly *wh*-movement in RRCs. The more evidence that is accumulated from the investigation of different L1–L2 pairings where features underlying syntactic constructions differ, using different methodologies, the more chance there will be of deciding between competing hypotheses about the role of UG and the L1 in L2 acquisition. Since

indefinite RRCs show constrained differences in realisation cross-linguistically, and implicate principles of UG, they are a good area in which to pursue further research.

6. Studies of the L2 Acquisition of Indefinite RRCs

As mentioned above, the existing literature is largely divergent with different views on accessibility to UG and influence of the L1 in early and advanced stages.

Supporting the partial availability of UG hypothesis, Hawkins and Chan (H&Ch) (1997) provided evidence for their *Failed Functional Features Hypothesis* based on the absence of acquisition of properties associated with uninterpretable features[12]. H&Ch focused on testing L1 Chinese speakers and L1 French speakers learning L2 English[12]. In particular, they wanted to examine their acquisition of RRCs at different ages and proficiency levels: elementary, intermediate and advanced. The formation of RRCs in English and French on the one hand and Chinese on the other reflects a parameteric difference. The results were consistent with the predictions: there was a noticeable difference between the performances of the two groups, with the French speakers outperforming the Chinese on all the aspects tested. As for the Chinese speakers, they appeared not to have acquired most properties of English RRCs; most importantly they have not acquired *wh*-movement. Subjects at the elementary level base-generated the *wh*-phrase in CP and bound it to an overt RP in the lower clause. Advanced learners, on the other hand, analysed the English gap as a null RP, thus giving the impression that they were aware of the ungrammaticality of resumptives, but consequently they accepted sentences which for native English speakers violate Subjacency because for the Chinese speakers movement is not involved. Based on the results obtained, they concluded that although adult learners of Chinese were able to associate new morphophonological forms with RRCs in English, their interlanguage grammars are still not native-like.

H&Ch were criticised for not including other kinds of constructions such as questions which involve *wh*-movement in their study[12]. White and Juffs (1998), for example, argued that in the case of questions, L2 learners whose language does not involve movement were able to acquire this uninterpretable feature[16].

Superficial native-likeness is evidenced in another study by Yuan (2007)[17]. Yuan carried out an empirical study to test the acquisition of *wh*-questions in Chinese. His L2 participants are native speakers of Japanese. *Wh*-questions in Chinese and Japanese are similar in many respects: i) both are *wh*-in-situ languages; ii) both use question particles in the formation of *wh*-questions. However, the differences between the two lie in the features attached to the question particles. The results of an acceptability judgement test used in this study show that the intermediate and advanced Japanese speakers 'overwhelmingly' allowed the question particle to value and specify C, and this process seem to happen when the *wh*-word remains *in-situ*. However, when they were asked to judge sentences that involve a quantifier, their judgement was divided equally between acceptable and unacceptable. This suggests that there is still *wh*-movement in their L2 Chinese grammars, and that this movement is blocked by the c-commanding quantifier. This led Yuan to the conclusion that '... any lexical item with deficient morphological features selected from the L2 lexicon by the computational system will have an effect on the L2 syntax.... The lexical morphology-syntax interface is likely to be a source of variability in L2 grammars' (355).

Hawkins and Hattori (H&H) (2006) is another study which investigated the role of the L1 in restricting the ultimate attainment of L2 learning[18]. H&H explored the acquisition of the uninterpretable feature that forces wh-movement in English interrogatives by L1 Japanese. Japanese lacks a strong uninterpretable feature for interrogative C required to drive movement of wh-phrases, i.e., it has wh-in-situ interrogatives. English has an uninterpretable strength feature that forces wh-movement. In Japanese, a wh-word could move in multiple wh-questions without violating Subjacency because this movement is not forced by an uninterpretable feature. In order to test L2 Japanese speakers' sensitivity to Subjacency, a truth value judgement task was administered. The results indicate that although Japanese participants were aware of the long distance dependency between the wh-word and the gap, they showed no sensitivity to Superiority and Subjacency. They allowed both the grammatical and ungrammatical readings of the embedded clauses. For H&H, this implies that they have different mental representations for the dependency other than movement driven by the uninterpretable feature. This can be due to their L1.

For a similar account of the reduced availability of UG to L2 learners, see the works by Schachter (1989) and Johnson and Newport (1991)[19,20].

Taking divergence from natives' competence as a sign of L1 influence on L2 learners' access to UG is such a challenging conclusion for strong proponents of the FT/FA view. Many studies explored the availability of UG in its entirety for adult learners. For example, White and Juffs (1998) designed a study that measures awareness of island constraints involved in *wh*-question formation[16]. Chinese is the language under study once again. White and Juffs' argument is that if Chinese learners show evidence of 'obeying constraints that operate only in the L2, or of resetting parameters to L2 values, this suggests UG availability, since knowledge of the L2 system cannot come solely from the L1 and ..., could not have come solely from the L2 input (1998: 113). This constitutes a counterargument to those who believe in the difficulty of parameter setting.

Two tasks were devised: the former is a GJT and a question formation task. Generally speaking, the results showed that both groups of adult subjects achieved native-like competence in the production and perception tasks. Thus they concluded that attainment of native-like competence was possible, and UG knowledge remains accessible regardless of the L1.

Hu and Liu (2007) report the results of the study they conducted to investigate the acquisition of RRCs in Chinese by L1 English and Korean speakers[21]. In particular, they wanted to check whether the differences and similarities between these languages affect the development of L2 learners' mental representation. The results of their study were consistent with FT/FA hypothesis. The elementary Korean learners started out accepting ungrammatical RRCs more strongly than grammatical ones. This, superficially, does not follow the FT hypothesis whereby feature specifications of functional categories of the L1 constrain elementary learners' grammar. Hu and Liu's analysis for this superficially-no-transfer case is that either i) elementary Korean learners assume that 'L2 RRC falls in line with the RRC pattern in their L1 and contains a CP structure without a complementizer in C'; or that since the main verb of a Korean RRC is marked by a morpheme, and since Chinese RRCs do not show tense overtly, this resulted in the absence of an identifiable clause boundary in a Chinese RRC which caused problems for these learners. This is unlike the performance of the elementary English participants who accepted the grammatical RRCs more than the ungrammatical ones. Hu and Liu's interpretation is that the difference between English and Chinese led to a 'rapid restructuring' in the English L2 grammar.

Not many studies were conducted on the acquisition of indefinite RRCs by LS speakers. Here I report the results of two studies on the acquisition of indefinite RRCs by Syrian L1 speakers.

Sarko (2009) conducted a study to test the acquisition of the article system in English by speakers of L1 Syrian Arabic[22]. The use of the article was tested in a number of constructions, one of which is indefinite RRCs. The participants were of four proficiency levels: lower intermediate, upper intermediate, advanced and very advanced. It is shown that in a Forced Choice Elicitation Task, lower intermediate Syrian Arabic learners showed poor suppliance of the indefinite article 44% in indefinite contexts, whereas they overused *the* in the same context 53%. On a different task, a Story Recall Task, lower intermediate learners provided 41% indefinite articles in indefinite contexts and 46% definite articles in the same context. The upper intermediate learners provided 35% indefinite articles in indefinite context and 56% definite article in the same context. The conclusion arrived at is that the L1 is playing a role in the learners' choice of articles in RRCs.

Similar results were obtained from an experiment conducted by Hajjar (2009)[23]. Hajjar conducted a Grammatical Gap Filling Task taken by lower intermediate, upper intermediate and advanced speakers of Syrian Arabic learning English[23]. The results reveal that the lower intermediate learners were not target like in indefinite contexts. His interpretation for this is that 'the behaviour of the Syrian L2 learners in both definite and indefinite contexts was influenced by their L1: since Arabic has articles that mark definiteness, potential knowledge of the distribution of definite articles in English is already present in low proficiency Syrian L2 learners and is unaffected by further development of general proficiency' (269).

Having reviewed a selection of related research, the nature of the divergence in the perspective of researchers on the acquisition of *wh*-movement in the L2 is clear. There is no consensus on the nature of the initial stage and the final stage or about the involvement of UG.

7. Research Questions

The languages under study give the chance to deal with relevant research questions. LSA has some morphological and structural properties that are advantageous for studying the acquisition of RRCs: (i) indefinite RRCs are introduced by a null C, unlike English which has relative pronouns, C and a null-form used in indefinite RRCs; (ii) LSA makes use of resumptive clitics whereas English does not.

The differences will allow us to address the following question(s): Do native speakers of LSA no longer significantly differ from English native speakers in:

1) Recognizing that presence/absence of the relativizer in English is not determined by definiteness. This measures L1 influence on the L2 grammar.

2) Identifying the fact that RPs are disallowed in English. This is another measure for L1 influence

3) Recognizing that the presence of gaps in English RRCs is the result of operator movement. This directly engages access to UG.

Here are predictions relevant to the acquisition of indefinite RRCs by LSA learners from the perspective of the different hypotheses.

7.1. Initial Stage

From the Full Transfer point of view, it is predicted that LSA learners would i) prefer Ø relativizer with indefinite RRCs; ii) overuse RPs.

Under the Minimal Trees, the functional categories of LSA are not transferred. This implies the following: i) no Ds are expected to be used, and hence learners' judgements of indefinite RRCs are going to be the same or random; ii) RPs will be used.

7.2. Final Stage

FA predicts that LSA learners would reach a native-like English grammar as a result of the restructuring of the L2 English grammar which is guided by UG. That means they will come to realize that i) the presence/absence of the relativizer in English is not determined by definiteness; ii) optionality of the relativizer in English has to do with the function of the relativized position; iii) the learners will unlearn the resumptive strategy, however, if there seem to be variability in

the use of RPs, this might be taken as an indication of some superficial problem.

The FFF viewpoint predicts that learners i) will recognize that C can be used with indefinite RRCs; ii) learners will experience no difficulty using all the possible relativizers in English: *that*, *wh*-relativizer, and Ø-relativizer; iii) there is going to be a variability in the use of the RP.

8. Methodology of the Empirical Study and Results

In order to test the predictions in relation to development of knowledge of RRCs, participants were chosen from different proficiency levels using a standardised general test of proficiency, version 2 of the Oxford Quick Placement Test (OPT) (1992)[24]. Furthermore, three tests were constructed specifically aimed at eliciting information about knowledge and use of English RRCs by the participants: a grammaticality judgement task (GJT), a guided gap filling task (GGFT) and a translation task (TT). The rationale for selecting these tasks was the following. Because indefinite RRCs are relatively infrequent in the spontaneous use of a target language by L2 speakers, and because information about participants' use and knowledge of both grammatical and ungrammatical RRC constructions was required, tasks were needed where control could be exercised over the clause types involved.

The participants in the GJT, GGFT, and TT were speakers of LSA and they were learning English as an L2. Native speakers of English who formed the control group were all university educated and spoke British English.

8.1. Materials

The GJT included sentences that tested extraction from S, O, and OP positions. The reason for including these different types of extraction is that in Arabic, unlike in English, these positions involve an obligatory clitic (except for the S position), and this provides a means for investigating L1 transfer. Indefinite heads of RRCs were distinguished because in LSA indefinite RRC heads disallow overt Cs, and this is a potential measure of L1 influence. RRC tokens involving overt relative pronouns, null relative pronouns, overt C *that* and the null C were included to test participants' knowledge of the distribution of these forms. Ungrammatical sentences involving RP. This is in order to test whether

they are sensitive to movement. See **Appendix A Table A1**.

Participants were given three choices for each sentence: perfect, possible and impossible. The use of different levels of rating in principle allows the researcher to gain greater insight into the subtleties of participants' intuitions than a forced choice test. Where participants rated the sentence as impossible, they were asked to underline the part of the sentence which made the sentence impossible.

The final GJT was arrived at following extensive piloting. The aim of the pilot study was to examine the validity, adequacy and reliability of the instruments used in the full study as well as the administration procedures.

The GGFT is both a comprehension and production task. It is a multiple-choice test with more than one right answer. Participants were encouraged to choose more than one option if this was appropriate.

The items in the GGFT tested the same range of RRC types tested in the GJT. This is in order to increase the validity and reliability of the results gained from GGJT. **Table A2** gives detailed information about the GGFT; its properties and number of items.

Under each test item, participants were given 4 or 5 options for filling the gap. The gaps in these items were two: one in the landing site and one in the extraction site. See **Table A2**.

The translation task tested properties comparable to those in the other tasks. See **Table A3**.

Participants were asked not to change the structure of the sentence except when the change was necessary to produce a proper English sentence. Participants were encouraged to ask about the meaning of words that might be difficult for them although a translation for some vocabulary items was provided next to the majority of sentences.

8.2. Scoring

In the GJT, the first analysis of the data was simply in terms of participant ratings of sentences that were a priori deemed to be grammatical. A three point scale 0–2 was used to represent perfect (2), possible (1), and impossible (0) options. In this analysis all those who chose impossible got 0 regardless of whether they underlined the correct part of the sentence or not.

The second analysis was in relation to participant ratings of sentences deemed a priori to be ungrammatical. This

analysis distinguished different categories of response where the impossible option was chosen: the degree to which the participant recognizes the true nature of the impossibility:

1 was given to a participant who rated an ungrammatical RRC as perfect

2 was given to a participant who rated an ungrammatical RRC as possible

3 was given to a participant who rated an ungrammatical RRC as impossible and correctly underlined correctly the ungrammatical part.

4 was given to a participant who rated an ungrammatical RRC as impossible but underlined the wrong part.

5 was given to a participant who rated an ungrammatical RRC as impossible but underlined only a RP, where the RP is not the only error as in *a doctor that we called his secretary.

6 was given to a participant who rated an ungrammatical RRC as impossible but did not underline the incorrect part

In the GGFT, each answer chosen was given the value 1 regardless of its correctness (and if not chosen the subject is awarded 0). Then the number of times a participant selected a particular token out of the total number of possible tokens for a given type was counted, e.g. the number of times a participant chose which in a context like a book ___ I bought, the number of times the participant chose that, Ø....so each participant is scored separately for each option offered for each sentence, not with a single score for a sentence item.

In the TT, only one value 1 was given to the translation provided. In other words there was a set of relevant features of translations which was established and each person scored 1 or 0 depending on whether their translation had that feature(s). The scores were given to the following:

- Producing a perfect RRC
- Producing a RRC which contains a RP
- Producing a RRC which contains wrong linking word
- Changing the structure of the RRC
- Not completing the sentence
- Using a wh-word as a linking word
- Using that as a linking word
- Using Ø form as a linking word
- Producing a RRC with an indefinite head

In this task, errors of tense, agreement and spelling were not considered.

9. Data Analysis

Data from each of the tasks used were scored and analysed using the statistical package SPSS (v18). Because Kolmogorov-Smirnov tests showed that some (although not all) of the variables used for comparisons between and within groups were normally distributed, it was decided to use parametric inferential statistics (ANOVAs and *t*-tests), which is also a common practice in the analysis of data in L2 studies. Furthermore, since there are no non-parametric tests for repeated measures and independent groups combined together equivalent to those in the parametric tests, and since there is a focus in this study on the interaction effect of proficiency groups and repeated measures, parametric tests were used.

However, as a rough check, non-parametric tests of main effects were carried out, with the finding that on the whole the non-parametric results agreed with the ANOVA results.

Percentage agreement and standard deviation were used as measures of item reliability to quantify how far identical judgements were given to items that are testing the same property. Reliability here means absolute agreement reliability, i.e. consistency in the rating scale. The reliability results were all positive and high in most of the tests

9.1. Results of the GJT

In LSA, the presence of C in RRCs is associated with the definiteness/indefiniteness of the antecedent. In English, the presence/absence of a relativizer is associated with the grammatical function of the head in the RRC: an overt form is obligatory with the SRRCs, optional elsewhere. If learners are influenced by their L1, they are expected to show a preference for the Ø relativizer as it is the option that they have in their L1.

Two questions are addressed here:

- Will L2 learners recognize that presence/absence of the complementizer/relativiser in English is not determined by definiteness? This question is meant to measure L1 influence on L2 grammar.
- Will they identify the grammatical-function-constrained optionality of the complementizer/relativiser in English? This question measures the ability to acquire a target property that is underdetermined by input.

Table 1 provides the mean ratings of participants for the three relativizers in relativized S position.

Table 1. Mean Rating/2 for Each RRC Linking Form: Indefinite SRRCs.

Linker	wh-		that		Ø	
Participants	M	sd	M	sd	M	sd
Elementary (n = 36)	1.54	0.48	1.50	0.41	.68	0.52
Lower Interm (n = 58)	1.65	0.47	1.61	0.52	.78	0.52
Upper Interm (n = 28)	1.69	0.41	1.55	0.56	.62	0.52
Advanced (n = 25)	1.84	0.27	1.84	0.34	.38	0.54
Native speakers (n = 16)	1.56	0.40	1.81	0.25	.15	0.30

The mean scores show that L2 learners accepted the *wh*-operator more than the other two linkers (the advanced learners accepted *that* equally as the *wh*-operator). The native control group accepted *that* more than the other two linkers.

Results of a repeated measures 5*3 ANOVA (proficiency level*relativizer type) show a non-significant proficiency effect, a significant main effect of the relativizer type, and importantly a significant interaction of the proficiency level and the relativizer type (**Table 2**).

Table 2. Summary of ANOVA Output – SRRCs.

	df	F	Sig
proficiency	4	1.700	0.153
Relativizer type	2	289.406	< 0.001
interaction	8	5.378	< 0.001

The results show that almost all the groups from early stages rated the *wh*-type and the C type highly. They did not, however, rate the Ø form highly. Learners might have been expected to accept the Ø relative operator/null C construction

given that it is the only possibility with indefinite RRCs in LSA, but reject the other two options, but all proficiency groups are rating the *wh*-relativizer as the most acceptable form.

The mean ratings of participants for the three types of linkers in ORRCs are displayed in **Table 3**.

Table 3. Mean Rating/2 for Each RRC Linking Form: Indefinite ORRCs.

Linker	wh-		that		Ø	
Participants	M	sd	M	sd	M	sd
Elementary (n = 37)	1.45	0.55	1.37	0.49	0.78	0.40
Lower Interm (n = 58)	1.56	0.49	1.62	0.42	1.02	0.54
Upper Interm (n = 28)	1.66	0.40	1.50	0.49	1.19	0.56
Advanced (n = 25)	1.80	0.35	1.84	0.27	1.74	0.32
Native speakers (n = 16)	1.71	0.44	1.53	0.38	1.78	0.31

The elementary and upper intermediate learners accepted the *wh*-operator more than *that* and the Ø form, the lower intermediate and advanced learners accepted *that* more than the other forms, and the control native group preferred the Ø form more than the other forms.

A repeated measures 5*3 ANOVA (proficiency level*relativizer type) found a significant proficiency effect, a significant main effect of the relativizer type, and a significant interaction of the proficiency level and the relativizer type (**Table 4**).

Table 4. Summary of ANOVA Output – ORRCs.

	df	F	Sig
proficiency	4	17.355	< 0.001
Relativizer type	2	23.388	< 0.001
interaction	8	5.540	< 0.001

To sum up, learners are more likely to accept the overt links in the early stages, but less likely to accept the Ø option.

The mean ratings of participants for the three linkers in relativized OP are displayed in **Table 5**.

Table 5. Mean Rating/2 for Each RRC Linking Form: Indefinite OPRRCs.

Linker	wh-		that		Ø	
Participants	M	sd	M	sd	M	sd
Elementary (n = 36)	1.38	0.44	1.38	0.49	1.06	0.54
Lower Interm (n = 58)	1.42	0.56	1.56	0.50	1.17	0.52
Upper Interm (n = 28)	1.46	0.42	1.60	0.45	1.30	0.65
Advanced (n = 25)	1.64	0.33	1.80	0.38	1.70	0.43
Native speakers (n = 16)	1.65	0.39	1.81	0.30	1.50	0.40

That was the mostly preferred form among all groups (the elementary group accepted the *wh*-operator equally as *that*)

A repeated measures 5*3 ANOVA (proficiency level*relativizer type) shows a significant proficiency effect, a significant main effect of the relativizer type, but a non-significant interaction of the proficiency level and the relativizer type (**Table 6**).

Table 6. Summary of ANOVA Output – OPRRCs.

	df	F	Sig
proficiency	4	9.511	< 0.001
Relativizer type	2	13.013	< 0.001
interaction	8	0.882	0.532

Learners favoured the overt linking forms to the null link. Given what they have in their L1, they might be expected to show a preference for the Ø link, but this was not the case.

Rating of RRCs Involving Resumptive Pronouns:

In LSA, RRCs require a clitic in the relativised position. English disallows resumptives and clitics in all relativized positions. **Table 7** displays the mean ratings of participants for the three types of relativized positions involving a RP.

Table 7. Mean Rating/2 for Simple S, O, OP RRCs with a RP.

RP	S		O		OP	
Participants	M	sd	M	sd	M	sd
Elementary (n = 36)	1.31	0.45	1.31	0.46	1.21	0.47
Lower Interm (n = 58)	1.28	0.52	1.21	0.53	1.22	0.53
Upper Interm (n = 28)	0.97	0.47	0.94	0.48	1.08	0.61
Advanced (n = 25)	0.62	0.48	0.24	0.41	0.57	0.59
Native speakers (n = 16)	0.33	0.24	0.18	0.20	0.18	0.29

The mean scores show that all L2 groups increasingly rejected RPs as their proficiency increased (with the exception of lower intermediate learners who were almost at the same level as the elementary learners in OPRRCs). Natives rejected them.

The results of a repeated measures 5*3 ANOVA (proficiency level*relativized position) show a significant proficiency effect, a significant main effect of the relativized position, and a non-significant interaction of the proficiency level and the relativized position.

The between-subject paired comparisons reveal that all groups were significantly higher than the natives in accepting the RP in S and OP RRCs even at the advanced levels: ($p <$ 0.001) ($p < 0.001$) ($p < 0.001$) ($p = 0.056$) for the SRRCs, and ($p < 0.001$) ($p < 0.001$) ($p < 0.001$) ($p = 0.024$) for OPRRCs (**Table 8**). In the case of the ORRCs, only the advanced group were not significantly different from the control group: elementary group ($p < 0.001$), lower intermediate ($p < 0.001$), upper intermediate ($p < 0.001$).

Table 8. Summary of ANOVA Output – S, O, and OP RRCs with a RP.

	df	F	Sig
proficiency	4	39.670	<0.001
Relativized position	2	3.708	0.026
interaction	8	1.809	0.075

Further within-subject comparisons with a paired sample t-test were carried out to compare learners' judgement of RRCs with and without a RP. This is to check whether they make any distinction between the two cases as they were highly accepting both. The test results show that there is a significant difference between cases that involve RPs in the different relativizing positions and the cases which do not: for definite SRRCs, the result was (t(15), df = 162, $p < 0.001$); for definite ORRCs, the result was (t(13.182), df = 163, $p < 0.001$), and for definite OPRRCs (t(8.776), df = 163, $p < 0.001$).

Although learners highly accepted the RP in all three positions, nevertheless, they seem to be aware of the difference between RP cases and their grammatical counterparts.

9.2. Results of the Guided Gap Filling Task

The additional perspective that the GGFT brings to our understanding of the knowledge of the L2 learners and which makes it complementary to both the GJT and TT is that it is a combination of an intuition/receptive task and a production task; the learner does not have to generate answers since the answers are already provided under each testing item, so it is similar to the GJT. However, unlike the GJT also, the answers provided are not ratings rather they are im/possible answer/s to be filled in the blanks; the learner has to think about which options are (not) acceptable. Being so, it requires the learner to provide the possible matching options for the blanks. So this task shares some of the properties of both the GJT and the GGFT, this has the effect of enhancing the validity of the study through three way triangulation.

The results of SRRCs are consistent with those of the GJT in that the *wh*-form is the preferred form among L2 learners, while the null form was the least accepted. Native speakers showed different preferences: they chose *that* in the GJT and *wh*-form in the GGFT. In ORRCs, only the elementary learners preferred *that*, other learners chose the *wh*-form. In OPRRCs, the *wh*-relativizer was the preferred form in the GGFT. Different preferences were found in the GJT: *that* is the preferred linker in the GJT among all partic-

ipants (elementary learners favoured the *wh*-form equally as *that*).

RPs in Relativized S, O, OP Positions:

Learners did not accept the RP in S position; however, they (apart from the advanced learners) accepted the RP in OP position. In O position only elementary and lower intermediate learners accepted the RP. Natives did not accept the RP in any relativized position. In the GJT elementary learners accepted the RPs in all relativized positions, however, as proficiency increased, learners progressed in rejecting the RPs.

All groups, except for the lower intermediate group, were not significantly different from the natives in accepting the RP. The lower intermediate group accepted the RP more than natives ($p = 0.054$). In the case of the ORRCs, both the elementary and lower intermediate groups were significantly different from the control group in accepting the RP more: ($p < 0.001$) ($p < 0.001$) respectively. All groups except for the advanced, were significantly higher than the natives in accepting the RP in OPRRCs ($p < 0.001$) ($p < 0.001$) ($p < 0.001$).

The paired samples t-tests results show that there is a significant difference between cases that involve RPs in the different relativizing positions and the cases which do not: for SRRCs the result was (t(25.258), df = 161, p < 0.001);

for ORRCs, (t(8.072), df = 162, p < 0.001), and for OPRRCs (t(1.278), df = 162, p = 0.203). Although learners accepted the RP in all three positions (though to varying degrees), they nevertheless seem to be aware of the difference between RP cases and their grammatical counterparts.

9.3. Results of the Translation Task

The TT used in this study is the closest of the three tasks to a measure of production, and the extent to which participants produce RRCs in a native-like way. It is also useful for comparison with participants' intuitions (the results from the GJT) and the semi-productive GGFT.

The mean translation accuracy of S, O and OP RRCs with *wh*-word, that, zero form is presented in **Table 9**.

Learners were not accurate in the early stages in translating ORRCs and OPRRCs, but as they progressed, their accuracy increased. They were, however, accurate right from early stages in translating SRRCs.

The source of inaccuracy in translating the indefinite RRCs comes slightly from the production of sentences which are not RRCs as in **Table 10** and the overuse of definite heads where indefinite ones are required (**Table 11**). There are very few cases where there is a wrong use of the linking word, a change in the structure of the sentence, or the sentence is not complete.

Table 9. Mean Translation Accuracy/1 of Indefinite S, O and OP RRCs.

Linker	S Rc		O Rc		OP Rc	
Participants	M	sd	M	sd	M	sd
Elementary (n = 37)	0.74	0.30	0.17	0.29	0.17	0.24
Lower Interm (n = 58)	0.70	0.35	0.38	0.37	0.34	0.31
Upper Interm (n = 28)	0.69	0.28	0.58	0.38	0.62	0.32
Advanced (n = 25)	0.84	0.31	0.84	0.23	0.84	0.23

Table 10. Inaccuracy: Sentence is Not a RRC/1.

Not a RRC	SRRc		ORRc		OPRRc	
Participants	M	sd	M	sd	M	sd
Elementary (n = 37)	0.13	0.25	0.02	0.11	0.33	0.23
Lower Interm (n = 58)	0.05	0.17	0.02	0.11	0.32	0.27
Upper Interm (n = 28)	0.07	0.17	0.01	0.09	0.23	0.28
Advanced (n = 25)	0.08	0.18	0.02	0.10	0.12	0.21

Table 11. Inaccuracy: The Indefinite Simple RRC is Translated as Definite/1.

Not a RRC	SRRc		ORRc		OPRRc	
Participants	M	sd	M	sd	M	sd
Elementary (n = 37)	0.71	0.30	0.71	0.38	0.39	0.35
Lower Interm (n = 58)	0.83	0.30	0.82	0.28	0.44	0.38
Upper Interm (n = 28)	0.82	0.24	0.83	0.23	0.53	0.33
Advanced (n = 25)	0.86	0.27	0.84	0.27	0.74	0.32

9.3.1. Different Relativizers in S, O and OP RRCs

The *wh*-relativizer is the preferred linker, there are almost no cases where the Ø relativizer is used.

The results of this test are consistent with the results of GGFT in the sense that the preferred-linker is the *wh*-form. In the GJT, all learners preferred the *wh*-relativizer in the case of SRRCs, but they showed varied preferences in the other relativized positions.

9.3.2. Ungrammatical Relatives Involving RPs

RPs in relativized S, O, OP positions

In early stages, learners produced RPs mainly in ORRCs and OPRRCs. However, their production of RPs decreased to almost nothing among the advanced proficiency learners.

A comparison of the results of the three tasks shows that the results of GGFT and TT tasks are consistent; while RPs were not used in SRRCs right from early stages, they were used in the other positions though they decreased as learners progressed in their proficiency. In the GJT, elementary learners used the RPs in all relativized position, but rejected them as they progressed.

The results of this test are not consistent with the results of the GGFT; learners did not accept RPs highly in all relativized positions in the GGFT. In the GJT, RPs remained prominent even among advanced learners in all relativized positions.

10. Discussion

10.1. Discussion of the GJT Results

10.1.1. Answer 1

There was a progression in recognizing that the absence of C in English is not decided by definiteness.

All elementary learners preferred the *wh*-relativizer. There also appears to be no L1 effect, as elementary learners did not favour the Ø form. Learners treated indefinite English structures as completely different from the Arabic structures. One explanation could be that learners are treating definite RRCs and indefinite RRCs similarly; they might have over-generalized the *wh*-relativizer either because it can be used in many contexts, or because it is more frequent in the input.

However, as learners get more proficient, they become familiar with the frequency of these forms in the input, and that all three are possible.

The above discussion has the following implications:

i) The L1 facilitates L2 learning, in contrast to the claim proposed by some linguists, e.g. Hu and Liu (2007) that similarity might not facilitate L2 learning [21]. Elementary learners accepted the *wh*-form the most, they tended to accept the overt linkers as it is the case in their L1. This is consistent with the claim by Martohadjono and Gair (1993) that similarity between languages facilitates acquisition [25].

ii) Learners accepted C, which is a functional category, right from early stages. This provides a counterargument to what Vainikka & Young-Scholten (1998) proposed that in early grammars functional categories are absent [9].

10.1.2. Answer 2

There is a gradual recognition that the optionality of the relativizer in English has to do with the relativized position rather than definiteness of the head.

Superficially there was no L1 influence with regard to elementary learners' recognition that the choice of the linking word is grammatically constrained in English. That is, the choice of an overt linking word or Ø form is related to the function of the relativized position in English: in SRRCs, the linking word has to be overt, whereas in ORRCs and OPRRCs the overt and the Ø relativizers are possible. Elementary learners used an overt form (mainly wh-word) in SRRCs, when they were expected to favour only Ø relativizer for indefinites. In ORRCs and OPRRCs, elementary learners accepted all three types. The other more proficient groups accepted the three forms.

Apparently, this does not reflect L1 transfer. That the situation could be that there is L1 transfer as in the textbooks taught in Syria, the complementizer is taught as equivalent to a wh-relativizer. This may mean that learners transferred the form which they thought equivalent to a wh-form. Alternatively, learners could have over-generalized the use of the overt linker. They could also have used the overt form which is most frequent in the input. There is no clear evidence to support one explanation over the others.

10.1.3. Answer 3

Learners accepted RPs even at advanced stages.

The results of between subject comparisons show that there is a progression in the rejection of RPs in the case of simple SRRCs, ORRCs, and OPRRCs; the low proficiency subjects allowed more RPs than the more proficient groups. However, when comparing learners' judgements of RRCs that involve a RP and those that do not, it is found that there is a significant difference between the two. This tentatively suggests that learners' L2 grammars have both RPs and gaps, that learners make a distinction between the two cases and that they have acquired the English structure possibly because they could have got clear positive evidence that there are gaps. It might also be argued that they judged the RPs as acceptable just because they want to make the co-reference between the RP and the antecedent explicit (and not because they have the RP in their L1). However, these arguments are dubious as all the groups were more likely to accept the RPs than the natives (except for the advanced learners in the case of ORRCs).

The interpretation of this in terms of the acquisition of movement would be either that in some contexts advanced speakers have got movement so they do not use RPs, whereas in other contexts they still allow non-movement; or it means that they have not actually acquired movement at all; they simply allow a null RP in some contexts.

10.2. Discussion of the GGFT Results

The results of this task present converging evidence to those of the GJT.

10.2.1. Answer 1

Elementary learners showed a preference for the *wh*-word and then *that* and finally the Ø relativizer (except for the indefinite ORRCs where elementary learners chose *that* more than the *wh*-word, and OPRRCs where learners favoured both the *wh*-relativizer and *that* equally.). Apparently, this does not entail an L1 effect, however, learners might have given the form that they think equivalent to *yalli*. In this sense, it is possible to argue that they transferred the Arabic equivalent relativizer into English. Learners might have over-generalised the *wh*-relativizer as it can be used in a variety of constructions, or they could have been influenced by the input where the *wh*-form is more frequent than the others.

Elementary learners did not choose the Ø relativizer as the link for indefinite RRCs. This is probably because they might have over-generalized the *wh*-relativizer either because of its wide uses, or frequency in the input.

For advanced learners, the preferred pattern was similar to that of the elementary learners: *wh*-relativizer, then *that* and finally Ø relativizer.

10.2.2. Answer 2

Elementary Learners' choice of the relativizer was in a sense affected by their L1 (they favoured the overt linker); they did not recognize that the choice of the relativizer has to do with the position that is being relativized. This is because an overt linker, *wh*-linker, was the preferred link among all the advanced learners. They did not highly accept the Ø relativizer or *that* in ORRCs and OPRRCs. However, there was a trend to accept the other forms as their proficiency developed.

10.2.3. Answer 3

There was a progression among all participants in rejecting the RP, and they reached a native-like level (though they varied at the stage when they started to be native-like). When comparing their choice of RRCs that involve a RP with those that do not, there was a significant difference between the two in the case of SRRCs and ORRCs indicating that they can distinguish the two cases. However, no significant difference was found in the case of OPRRCs suggesting that learners do not make a distinction between the cases. What the case could be here, as in GJT, is that the learners are assuming a null RP, because if they were able to distinguish the two constructions, one would expect this to be the case for all the relativized positions, not just some of them.

10.3. Discussion of the TT Results

The TT is expected to show learners' productive grammar which might be more restricted and closer to the LSA grammar. The discussion of the TT will reveal findings compatible to a large extent with those of the other tasks.

10.3.1. Answer 1

Learners had the tendency to treat indefinite RRCs like definite RRCs. Learners were inaccurate in producing RRCs with indefinite heads rather they tended to overgeneralize the definiteness of the head to the indefinite cases. This ten-

dency might be the reason why they preferred to use overt relativizers rather than the null relativizer.

These findings are consistent with the results in Sarko (2009) and Hajjar (2009) where learners tended to overgeneralize the definite article in RRCs in contexts where they were supposed to use indefinite ones [22,23].

10.3.2. Answer 2

The *wh*-linker was overwhelmingly the most used especially at the elementary level though the two other forms were used correctly when produced. There was no use of Ø relativizer in SRRCs. It is not very clear whether learners realized that the choice of the linker is decided by the relativized position and not the definiteness of the head. This again can be an L1 effect, overgeneralization of *wh*-form, or input influence.

10.3.3. Answer 3

Learners did not allow RPs in advanced stages, actually learners showed once more a progression in rejecting the RP.

11. Conclusions

The above discussion has the following implications for a number of competing theories of SLA.

11.1. Contaminated L1 Transfer

The results offer partial support for the Full Transfer Hypothesis. Not all the properties tested seem to have transferred from LSA. It would appear that the conscious taught element might simply have overridden potential transfer, or that over-generalizing of the wh-relativizer might have taken place.

However, it seems quite conceivable that there are clear cases of L1 effects. The persistent use of RPs appears to suggest that the instantiations of RRCs are still those of the L1. The results are not compatible with the Minimal Trees Hypothesis as functional categories were present in learners' grammars right from early stages.

11.2. No Parameter Resetting

The results of this study largely, not completely, support the claims made by FFF view in that learners progressively recognized that C can be used with indefinite RRCs, and that

learners experienced no difficulty in using all the possible relativizers, and most importantly that there was a variability in using RPs. This being the case, the results tentatively constitute a challenge for the advocates of parameter resetting; the belief that all the parameters of the L2 are acquirable in adult L2 learners. The results show that the assumption of parameter resetting potentially overestimates the success of learners as it seems that not all the parameters were reset.

It should be emphasized here that the data show variability and gradual improvement, not definitive evidence that parameter resetting is unachievable in adult learners. Learners seemed to progressively be more accurate in their intuitions and production of RRCs in English. The more advanced learners are, the more likely they are to accept the sentences without RPs. However, the results from the three tasks also suggest that participants may not have acquired movement, and that they resorted to the way the L1 generates RRCs in order to deal with these constructions in the L2. What this could suggest is that the learners' mental representation of these constructions does not include operator movement. In other words, the status of the gap in LSA learners' mental grammars may not be that of a trace/copy, but rather that of a null RP, and the operator has not moved from within the RRC rather it has moved from Spec TopP to Spec CP. Thus RRCs for LSA learners could still be antecedent-topic-clitic, and this structure is basically LSA suggesting that they may not have established the parametric option that allows the wh-operator to move from within the RRC to Spec CP.

Future research should include diagnostics such as long distance movement and extraction from islands. Knowledge that English RRCs involve operator movement can be shown in responses to the ungrammaticality of extraction from islands and from long-distance movement. Further research is required to make sure that learners' performance is not affected by factors such as processing limitations and input effects.

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Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

Data Availability Statement

Research data can be found in Appendices B and C.

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Conflicts of Interest

The author declares no conflict of interest.

Appendix A

Table A1. Distribution of Items in the GJT.

Tested Aspects	Sub-classes within Each Aspect	No. of Test Items in Each Sub-Class	Total No. of Test Items in Each Aspect
Indefinite simple RRCs using a relative pronoun	S O OP	2	6
Indefinite simple RRCs using	S O OP	2	6
Indefinite simple RRCs using Ø relative pronoun and Ø C	*S O OP	2	6
RPs in definite simple RRCs	*wh (S) *that(S) *Ø(S)	3	
		3	
	*wh (O) *that (O) * Ø (O)	3	
	*wh (OP) *that (OP) * Ø (OP)	4	
		4	
		4	

Appendix B

Table A2. Distribution of Items in the GGFT.

Tested Aspects	Sub-classes within Each Aspect	Choices in Each Aspect	Total No. of Items in Each Su-Bclass
Indefinite simple RRCs	S	Wh- that *Ø *Wh- that *Wh- RP *none	2 = 1 +animate head 1 −inanimate head
	O	Wh- … Ø that … Ø Ø… Ø *Wh- that … Ø *Wh- …. RP *none	2 = 1 +animate head 1 −inanimate head

Table A2. *Cont.*

Tested Aspects	Sub-classes within Each Aspect	Choices in Each Aspect	Total No. of Items in Each Su-Bclass
Indefinite simple RRCs	OP	Wh- … Ø that … Ø Ø… Ø *Wh- that … Ø *Wh- …. RP *none	2 = 1+animate head 1 −inanimate head

Appendix C

Table A3. Distribution of Items in the Translation Task.

Tested Aspects	Sub-classes within Each Aspect	No. of Test Items in Each Sub-Class	Total No. of Items in Each Aspect
Indefinite simple RRCs	S O OP	2 = 1+animate head 1 -inanimate head	6

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