

Speech Processing Prerequisites or L1 Transfer? Evidence From English and French L2 Learners of Arabic

Mohammad T. Alhawary
The University of Oklahoma

Abstract: *The article aims at investigating speech processing prerequisite claims made by Pienemann's Processability Theory (1998). Longitudinal data from eight English L1 and one French L1 speaker learning Arabic as an L2 were used to investigate the emergence/processing of demonstrative-predicate gender agreement and verbal agreement structures hypothesized to be processable at the same stage: Stage 4. The findings show that both forms were not processable by the English L1 participants at the same stage, as the participants seemed to encounter more problems with demonstrative-predicate agreement than with verbal agreement. The findings are further supported by cross-sectional data of 53 English and French L2 learners of Arabic, where between-group effects were found with respect to demonstrative-predicate agreement. It is concluded that this is likely due to L1 transfer—a factor not accounted for by Processability Theory.*

Key words: *Arabic second language acquisition, Arabic L2 learning, L1 transfer, processability, processing prerequisites*

Language: *Arabic, English, and French*

Introduction

Processability Theory (PT) (Pienemann, 1998; Pienemann & Håkansson, 1999) is one of the most recent attempts within a well-defined framework aimed at explaining second language (L2) grammatical development. PT makes assumptions about how and when L2 grammatical morphemes are acquired or processed. In particular, the theory claims that grammatical morphemes emerge according to an implicational sequence. If such a prediction were to be valid, then the implications such a theory has for teaching, learning, and testing foreign languages are far and wide. For the textbook writer and the instructor, any information relevant to what and when to teach is quite crucial in helping to provide the most optimal input for the L2 learner. For testers, such information is equally invaluable, as proficiency testing levels and sublevels can be further clarified. To date, rubrics

Mohammad T. Alhawary (PhD, Georgetown University) is Associate Professor of Arabic in the Department of Modern Languages, Literatures, and Linguistics and the School of International and Area Studies at the University of Oklahoma.

of such levels are lacking in specific information about the exact grammatical structures expected to be acquired at a certain level or sublevel. These are among the most important implications for testing the assumptions and claims made by PT and hence the present research reported on here.

PT is based on the assumption that speech production is by nature constrained in that working memory is a “limited capacity” processor of information. Therefore, additional, temporary “memory buffers” in L2 development are posited in which “processing procedures” deposit grammatical information for temporary storage (Pienemann, 1998, p. 60). Based on speech production models following Levelt (1989) and Kempen and Hoenkamp (1987), processing procedures are further assumed to operate hierarchically in an implicational order.

The notion of temporary memory buffers is explained in terms of the specific morpheme types held.¹ Three such morphemes are identified: lexical morphemes, phrasal (i.e., “phrasal” as in phrase structure) morphemes, and interphrasal morphemes. These are assumed to be processable by the L2 learner along five main distinct stages in an implicational set sequence as follows:

1. Lack of any language-specific processing procedures

2. “Category procedures” stage, where grammatical categories (i.e., S, V, N, etc.) are assigned and “lexical morphemes” (e.g., the {-ed} tense marker in English) are assumed to be produced
3. “Phrasal procedures” stage, where development from word level to phrase level becomes possible and “phrasal morphemes” are produced (i.e., lexical morphemes, such as tense, number, gender, and case markers, when unified between a head of a phrase and its modifier/s)
4. “S-procedure” stage, where interphrasal morphemes involving exchange of information across phrases are developed (e.g., subject-verb agreement features)
5. “S'-procedure” stage where subordinate/embedded clauses are developed

The hierarchical stages of speech processing procedures are illustrated in Table 1. The implicational nature of the above hierarchy “derives from the assumption that processing resources developed at one stage are necessary prerequisites for the following stage” (Pienemann, 1998, p. 87) to the extent that such “stages cannot be skipped even through formal instruction” (p. 250). Skipping a stage is claimed to cause the hierarchy to be “cut off in the learner grammar at the point of the missing processing procedure and the rest of the hierarchy will be replaced by a direct map-

TABLE 1

PT Hierarchy of Implicational Sequence of Speech Processing Procedures

Procedures	Developmental Stages				
	t1	t2	t3	t4	t5
S'-procedure	-	-	-	-	+
S-procedure/interphrasal	-	-	-	+	+
Phrasal procedures	-	-	+	+	+
Category procedures	-	+	+	+	+
Word or lemma access	+	+	+	+	+

“t” = time, “+” = emergence, “-” = non-emergence.

ping of conceptual structures onto surface form” (Pienemann & Håkansson, 1999, p. 391; see also Pienemann, 1998, p. 250).

As for evidence in support of PT, most of what is cited deals with word order and other syntactic phenomena. Little evidence has been presented with respect to morphological features. In particular, Pienemann (1998) identified subject-verb agreement in both German and English as a structure involving interphrasal agreement morphemes predicted to emerge at Stage 4. Pienemann claimed that the form emerged according to the predicted stage in both German, based on data from only one subject (see also Glahn, 2001, p. 545) and the contingent production of the *optional* zero morpheme for the marking of the first person in week 19 of the observation period, and in English even though English exhibits a nonuniform verbal agreement paradigm. In English, acquisition of the 3rd singular agreement involves an additional subtle learning task requiring the “unlocking” of this nonuniform form-function mapping not accounted for by Pienemann (1998, p. 158; for an elaborate discussion of the methodological limitations of the German and English data, see Alhawary, 1999, 2003).²

Glahn et al. (2001) investigated the predictions made by PT with respect to morphological features based on cross-sectional production data from L2 learners of Danish, Norwegian, and Swedish. The study produced somewhat mixed evidence. Glahn et al. (2001) investigated three forms: (1) agreement features of gender and number (plural) of attributive adjectives (i.e., phrasal agreement within noun phrase), (2) agreement features of gender and number (plural) of predicative adjectives (interphrasal agreement), and (3) negation placement (within subordinate clause construction). Glahn et al. (2001) relied on multiple criteria (single emergence, 50% accuracy, and 80% accuracy) and found that while number (plural) and gender (neuter) in attributive agreement are “acquired” before their counterpart features in predicative agreement, number (plural) is acquired be-

fore the agreement feature of gender (neuter) in both attributive and predicative contexts. Glahn et al. (2001) claimed that the two features belong to two “conceptually different morphological categories”; whereas number in Scandinavian is conceptually relevant but natural gender (in Scandinavian) is not (Glahn et al., 2001, p. 412). Accordingly, feature category type is concluded to be an additional processing factor not accounted for by PT, thus giving the theory the benefit of the doubt. However, the study also reported on cases where “reference cross-sententially in the discourse appears to violate the processability hierarchy” (Glahn et al., 2001, p. 414).

Nielsen (1997) investigated PT claims on a non-European language: Arabic. Nielsen observed longitudinally two adult Danish speakers learning Arabic as an L2 over a 15-month period. Nielsen focused on third-person singular masculine and third-person singular feminine agreement morphemes. The most important findings of the study relate to subject-verb agreement, noun-adjective agreement, and gender agreement between the demonstrative pronoun and a head noun. Nielsen found that while neither noun-adjective (a Stage 3 structure) nor subject-verb agreement (a Stage 4 structure) emerged in one of the two subjects during the entire period of the observation, the two forms emerged at the same time in the other subject, learner A (in Nielsen’s recoding number 4). Nielsen also found that gender agreement between demonstrative pronouns and a head noun (a Stage 3 structure) emerged in neither of the two participants’ interlanguage (IL) system. Hence, PT’s notion of processing prerequisites is falsified on two grounds: (1) two structures belonging to two different stages (subject-verb agreement and noun-adjective agreement) emerged at the same time in learner A, and (2) a Stage 4 structure (subject-verb agreement) emerged in learner A but a lower Stage 3 structure (demonstrative-pronoun gender agreement) did not.

Alhawary (1999, 2003) is another Arabic second language acquisition (SLA)

study that investigated PT predictions. The study observed longitudinally eight (American) English speakers and one French speaker learning Arabic as an L2 over a school year. All nine participants were zero beginners. The study investigated a number of structures, but the most unambiguous findings related to the acquisition of Arabic noun-adjective and subject-verb agreement; the former was predicted to be acquired before the latter. The study focused on third-person singular feminine and masculine (for subject-verb agreement) and singular masculine and feminine (for noun-adjective agreement). Like Nielsen (1997), Alhawary (1999, 2003) relied on the following emergence criterion: rule application of both singular masculine and feminine on the same lexical (verb/noun) item within the same data set. Accordingly, Alhawary (1999) found that the majority (as many as six) of the participants acquired subject-verb agreement before noun-adjective agreement. The findings seemed to be particularly strong, as the study found that the participants were exposed to noun-adjective agreement before they were exposed to subject-verb agreement yet acquired the structures in violation of the predicted order. Moreover, using a 90% correct criterion, Alhawary (2003) arrived at the same finding. Five of the six participants who acquired subject-verb agreement before noun-adjective agreement conformed to the same pattern. In addition, almost all the participants exhibited more backsliding in noun-adjective agreement than they did with subject-verb agreement, suggesting that the participants had more problems with noun-adjective agreement than subject-verb agreement. Thus, the data of the study boldly challenge PT claims with respect to the hypothesized speech processing hierarchy.

Mansouri (2000, 2005) is a third Arabic SLA study that investigated PT claims. The study analyzed cross-sectional/semi-longitudinal data of four native (Australian) English speakers learning Arabic as an L2, two at the beginning level (during their second year of enrollment in Arabic cour-

ses) and two at the intermediate level (during their third year of their enrollment in Arabic courses). Two data samples were collected from each of the four participants. Due to the limited size of the data samples, the small number of participants, and the cross-sectional/semi-longitudinal nature of the study, the findings of the study are somewhat inconclusive (for a detailed discussion of the methodological limitations of the study, see Alhawary, 2003). The most important findings of Mansouri's study (2000, 2005) are related to the morphological structures investigated in Nielsen (1997) and Alhawary (2003): phrasal (noun-adjective agreement) and interphrasal (subject-verb agreement) grammatical morphemes. Mansouri (2000) claimed that noun-adjective agreement had already emerged before the first data set took place and that subject-verb agreement emerged later (in the second data set) when the learners produced third-person plural agreement, even though they produced the features for first-person singular, third-person singular masculine, and third-person singular feminine (in the first data set). However, relying on a more reliable emergence criterion such as that adopted by Nielsen (1997) and Alhawary (1999, 2003), as one would not expect L2 learners to acquire the entire agreement paradigm at an early stage, as Mansouri did, the data in fact showed that subject-verb agreement had also already emerged in the IL systems of the two beginning learners (see also Meisel, 1994, for a discussion against defining successful verbal agreement acquisition in terms of completeness of the set of the morphological forms of a given paradigm). Hence, if both structures had already emerged prior to the first data session, it could not be maintained whether one structure (i.e., noun-adjective agreement) emerged before the other (i.e., subject-verb agreement), given the cross-sectional/semi-longitudinal nature of the study. Hence, Mansouri's (2000, 2005) morphological findings are neither in support nor against PT with respect to the two structures.

TABLE 2

Longitudinal Participants

Name	Gender	Age	L1	Major	Year
Ann	F	21	English	Theology	1st
Beth	F	23	English	History Graduate	1st
Jeff	M	19	English	Int'l Relations	1st
John	M	19	English	Int'l Economics	1st
Kay	F	18	English	Arabic & History	1st
Mark	M	32	English	Int'l Relations	2nd
Viola	F	18	English	Int'l Economics	1st
Mary*	F	19	English	Arabic	1st
Adam*	M	22	Creole & French	MBA	4th

* = early withdrawal in second half of the school year. All names are pseudonyms.

In sum, while PT promises to account for L2 grammatical development within a well-defined framework, the SLA data available seem to provide mixed evidence. While SLA data from Western European languages (including Danish, English, German, Norwegian, and Swedish) seem to provide some evidence in support of PT, albeit not without methodological limitations and some counterevidence, Arabic SLA data seem to solely provide counterevidence. The purpose of the present study is to examine PT claims further based on a structure that has not been investigated before, mainly gender agreement between the demonstrative pronoun and a predicate noun/adjective, within a new typological constellation (English and French speakers learning Arabic as an L2) in both longitudinal and cross-sectional settings.

Methods

Participants

Sixty-two Arabic L2 learners, belonging to two different native language (L1) backgrounds, (American) English L1 and French L1, were invited to participate in the study in their home institutions in the Uni-

ted States and France, respectively. The participants included nine longitudinal and 53 cross-sectional participants. The longitudinal participants were invited to participate in their home institution in the United States and were observed longitudinally for a school year. Table 2 displays the various demographic data of the longitudinal participants. These participants were taking Arabic language (a six-credits-per-semester class) at the time as part of their program requirements at their university and had zero background in Arabic prior to their observation. With the exception of one participant, Mark, all the other participants attended the same class with the same teacher, but all were using the same textbooks (Brustad, Al-Batal, & Al-Tonsi, 1995a, 1995b).

The cross-sectional participants were 27 (American) English L1 and 26 French L1 speakers learning Arabic as an L2. They were invited to participate in the study in their own home institutions in the United States and France, respectively. These participants, men and women, were grouped according to their placement by their home institution and according to length of exposure to Arabic as part of their academic

TABLE 3

Cross-Sectional Participants

Groups	Length of Exposure	Credit Hours Enrolled in	M/F	Ages Range	Ages Means
English L1					
Group 1 (n = 9)	Year 1	6	4/5	18–21	19.22
Group 2 (n = 9)	Year 2	5	5/4	20–29	22.22
Group 3 (n = 9)	Year 3	4	6/3	22–34	29.11
French L1					
Group 1 (n = 9)	Year 1	6.75	5/4	18–32	21.33
Group 2 (n = 9)	Year 2	6.75	1/8	21–36	26.22
Group 3 (n = 8)	Year 3	7.50	3/5	23–28	25.75

M/F = Total males/total females.

programs. Table 3 summarizes the demographic details of the participants. The cross-sectional participants were selected because they had little or no exposure to Arabic prior to joining their academic institutions and were not heritage speakers who would speak Arabic occasionally or often at home. In particular, first-year students of both language groups had zero exposure and had made no trips to Arabic-speaking countries. A few participants from both language groups at other levels had traveled to Arabic-speaking countries but did not stay there for a significant period of time. One student (French L1, Year 3) stayed in Egypt one year. Her performance in the study, however, was about average among her group. Participants of both L1 language groups received formal instruction in Arabic with focus on all grammatical forms from early on. The L1 English group used mainly *Elementary Modern Standard Arabic* (Abboud et al., 1983) and *Intermediate Modern*

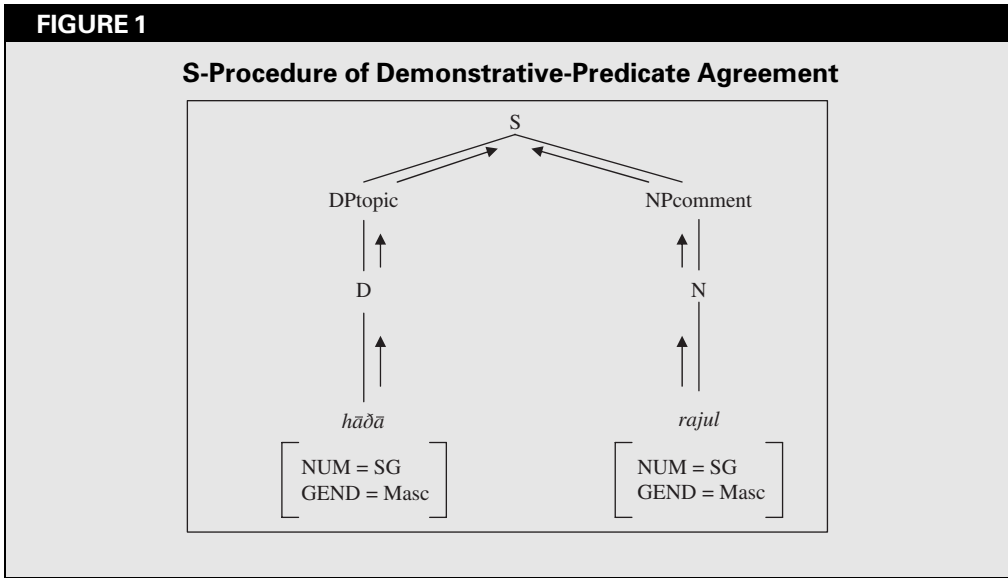
Standard Arabic (Abboud, Attieh, McCarus, & Rammuny, 1997), and the L1 French group mainly used *Manuel d'Arabe Moderne*, vols. I-II (Deheuvelds, 2002, 2003).

Target Forms

The present study investigates the emergence of gender agreement between demonstrative pronouns and predicate nouns/adjectives within verbless or “equational” sentences. To control for the stage of emergence of demonstrative-predicate gender agreement for comparison, emergence of verbal agreement is included.

Demonstrative-Predicate Gender Agreement

In Arabic, demonstrative pronouns agree with a predicate noun or adjective in number, gender, and case. The investigation of demonstrative-predicate gender agreement in this study is restricted to singular masculine and singular feminine, with the



focus being on the demonstrative pronouns *hāḍā* “this [singular masculine]” and *hāḍiḥi* “this [singular feminine].” Sentences (1)–(2) below are examples of demonstrative-predicate gender agreement contexts in the target L2 language (Arabic).

- (1) *hāḍā ṭālib (-un)*³
 this.s.m student.s.m (-Nominative)
 “This (is) a (male) student.”
- (2) *hāḍiḥi ṭālib-a (-t-un)*
 this.s.f student-s.f (-Nominative)
 “This (is) a (female) student.”

As illustrated in (1)–(2), the demonstrative pronouns *hāḍā* and *hāḍiḥi* exchange grammatical agreement information of gender (singular feminine vs. singular masculine) with the predicate/topic noun/adjective. This type of agreement procedures is a Stage 4 structure, because agreement occurs between two constituent structure phrases at the S-procedure level. Figure 1 is a simplified LFG c-structure of sentence (1) of demonstrative-predicate gender agreement.⁴

Like Arabic, French (the L1 of half the cross-sectional participants) exhibits the same type of gender agreement between demonstrative pronouns and predicate adjectives and nouns within copular sentential construction. However, unlike Arabic, English (the L1 of the longitudinal

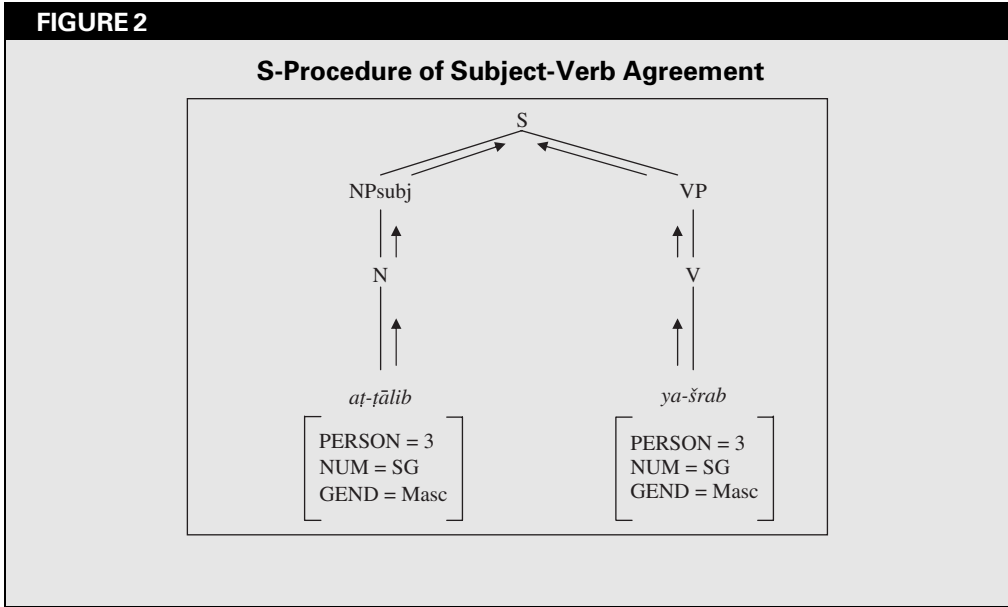
participants and half the cross-sectional participants) lacks the ϕ -feature gender altogether. According to the above explanation of agreement features involving demonstrative pronouns and predicate adjectives/nouns, the two following typological pairings (3)–(4) are yielded:

- (3) American English participants who are speakers of a [-gender] and [-strong] L1, learning a [+gender] and [+strong] L2
- (4) French participants who are speakers of a [+gender] and [+strong] L1, learning a [+gender] and [+strong] L2.⁵

Verbal Agreement

The investigation of verbal agreement here is restricted to third-person singular masculine and third-person singular feminine. Sentences (5)–(8) below are examples of person and gender agreement between the subject and the verb in both perfective and imperfective contexts in the target L2 language (Arabic):

- (5) a. *aṭ-ṭālib (-u) ya-šrab (-u)*⁶
 def-student.s.m (-Nominative) 3.s.m-drink (-Indicative)
 “The male student drinks/ is drinking.”
 b. *ya-šrab (-u) aṭ-ṭālib (-u)*



- 3.s.m-drink (-Indicative) def-student.s.m (-Nominative)
 “The male student drinks/is drinking.”
- (6) a. *at-ṭālib (-u) šariba*
 def-student.s.m (-Nominative) drank.
 3.s.m
 “The male student drank.”
 b. *šariba at-ṭālib (-u)*
 traveled.3.s.m def-student.s.m (-Nominative)
 “The male student drank.”
- (7) a. *at-ṭālib-a (-t-u) ta-šrab (-u)*
 def-student-s.f (-Nominative) 3.s.f-drink (-Indicative)
 “The female student drinks/is drinking.”
 b. *ta-šrab (-u) at-ṭālib-a (-t-u)*
 3.s.f-drink (-Indicative) def-student-s.f (-Nominative)
 “The female student drinks/is drinking.”
- (8) a. *at-ṭālib-a (-t-u) šarib-at*
 def-student-s.f (-Nominative) drank-3.s.f
 “The female student drank.”
 b. *šarib-at at-ṭālib-a (-t-u)*
 traveled-3.s.f def-student.s.f (-Nominative)
 “The female student drank.”
- Sentences (5)–(8) show that the subject can be placed pre-verbally or post-verbally,

but agreement in person and gender between the subject and the verb is maintained equally in both contexts. This type of agreement procedures is a Stage 4 structure, because agreement occurs between two constituent structure phrases at the S-procedure level. Figure 2 is a simplified LFG c-structure of sentence (5) of subject-verb agreement.

The LIs of the participants of the present study, French and English, differ somewhat in their subject-verb agreement in relation to Arabic. While French displays somewhat rich verbal agreement, English exhibits an impoverished morphological agreement system and lacks the ϕ -feature gender altogether (see Namai, 2000), with feature agreement being restricted to {-s} for third person singular and {-0} elsewhere. Accordingly, the typological constellation of the target and native languages of the participants yield the following (9)–(10) pairings:

- (9) American English participants who are speakers of a [-gender] and [-strong] L1, learning a [+gender] and [+strong] L2
- (10) French participants who are speakers of a [+gender]⁷ and [+strong] L1, learning a [+gender] and [+strong] L2.

Data Collection and Coding

Data collection aimed at eliciting spontaneous/semi-spontaneous (oral) production data of the target forms from the L1 English and L1 French participants. Elicitation took place in one-on-one interview sessions (30–45 minutes each session). Elicitation tasks included picture description, picture differences, picture sequencing, story retelling, and object/person identification tasks (where the participants were asked to identify what they saw to the interviewer with a complete sentence). The data were transcribed and coded. Certain items were not coded. These included hesitations, repetitions, and self-corrections except the last attempt. In coding verbal agreement tokens, agreement was determined by considering the verbal form and whether it was inflected properly, not by identifying first the subject and then the verb it agrees with. This is significant, because the verb may agree with a discourse referent subject and the L2 learner participants may have been mindlessly producing the wrong subject, especially when the subjects used were the pronouns *hiya* “she” and *huwa* “he,” which are close in their pronunciation (see also Poeppel & Wexler, 1993; Prévost & White, 2000; cf. Meisel, 1991).

Research Questions

The present study attempts to address the following questions:

1. Do the target structures (demonstrative-predicate and subject-verb agreement) that are Stage 4 structures emerge in Arabic L2 learners at the same time as predicted by PT?
2. Do such L2 learners exhibit L1 transfer in their IL systems?

Results

Longitudinal Results

With respect to demonstrative-predicate gender agreement, the participants produced a good number of tokens of verbless/equational sentences with the demonstrative as the subject constituent of the

sentence, as in sentences (1)–(2) above. In the majority of tokens produced, the predicate/topic was a noun, the smaller number occurring with the predicate/topic as an adjective such as: *hāḍā ṭālib* “This[s.m] is a male student” versus *hāḍā kabīr* “This[s.m] is big,” respectively. Applying a two-minimal token emergence criterion, evidence of rule application (i.e., of transferring gender agreement features from the demonstrative pronoun to the predicate/topic) was established for the first pair of tokens in each data set when both demonstrative pronouns were used correctly with a contrasting predicate masculine and feminine predicate, such as *hāḍā ṭālib* “This[s.m] is a male student” versus *hāḍiḥi ṭālib-a* “This[s.f] is a female student” and *hāḍā rajul* “This[s.m] is a man” versus *hāḍiḥi ?imra?-a* “This[s.f] is a woman.” Tokens coded included those in which the participant over-supplied the definite article with the predicate noun: as in **hāḍiḥi aṭ-ṭālib-a* → *hāḍiḥi ṭālib-a* “This[s.f] is a female student.”⁸ Errors produced were basically due to use of one demonstrative pronoun for the other.

As for verbal agreement, evidence of rule application was established for verbal agreement with the first instance of the same lexical verb occurring in both the third-person singular masculine and third-person singular feminine. In other words, the sole contrast between the two target forms were the features singular masculine and singular feminine. Verbal agreement errors produced exhibited more variability than demonstrative-predicate agreement errors (where the participants substituted one demonstrative pronoun for the other), although the vast majority of verbal agreement errors were those where the verb was inflected for third-person singular masculine rather than third-person singular feminine and vice versa. Other errors included use of other persons such as first-person singular, second-person singular masculine, and second-person singular feminine.

According to the emergence criterion adopted above, the data yielded different

TABLE 4

Emergence Schedule of Demonstrative-Predicate and Verbal Agreement

	Demonstrative Gender Agreement Interview Week #	Verbal/Subject-Verb Agreement Interview Week #
Beth	10	10
Mark	8	10
Adam	10	10
Ann	8	8
Kay	10	8
Viola	10	10
John	14	10
Jeff	10	10
Mary	10	14

emergence schedules for both forms by the participants of the study. Table 4 lists the emergence of both forms (demonstrative-predicate gender agreement and verbal agreement) in the participants' IL systems. As Table 4 shows, the emergence criterion yielded three emergence patterns: (1) emergence of verbal agreement and demonstrative-predicate agreement at the same time (in the IL systems of Beth, Adam, Viola, and Jeff in week 10 and in Ann's IL system in week 8), (2) emergence of demonstrative-predicate agreement before verbal agreement (in Mark's IL system in weeks 8 and 10 and in Mary's IL system in weeks 10 and 14, respectively), and (3) emergence of verbal agreement before demonstrative-predicate agreement (in Kay's IL system in weeks 8 and 10 and in John's IL system in weeks 10 and 14, respectively).

Using a 90% correct in obligatory contexts measure (with a minimum of three contexts per elicitation session) yielded a different pattern, where verbal agreement seemed to be less problematic for the participants to process, and it emerged clearly sooner than demonstrative-predicate agreement with two exceptions, Beth and Mary, as shown in Tables 5 and 6.

Thus, Beth reached 90% correct in obligatory contexts of demonstrative-predicate agreement in week 14 and exhibited backsliding in weeks 18, 20, and 24; she reached criterion for verbal agreement in week 16 and slipped in weeks 20 and 24. Mark never reached criterion for demonstrative-predicate agreement; he reached criterion for verbal agreement in weeks 10 and 14 but not again until week 27. Adam neither reached criteria for gender agreement in demonstrative (he came close in week 8) nor verbal agreement. Ann reached criterion for demonstrative-predicate agreement in week 10 and exhibited backsliding in weeks 16 to 20 and again in week 27; she similarly reached criterion for verbal agreement in week 10 and slipped in weeks 14 and 16. Kay never reached criterion for demonstrative-predicate agreement but reached criterion for verbal agreement in weeks 10, 24, and 26, backsliding in intervening sessions: weeks 14, 16, 18, 20, 22, and 27. Viola reached criterion for demonstrative-predicate agreement in week 18, slipping in weeks 20 and 26, but she reached criterion for verbal agreement in week 10, backsliding in weeks 18, 20, 24, and 27. John reached criterion for demonstrative-

TABLE 5

Applying 90% Acquisition Criterion

Ss	Forms	w8	w10	w14	w16	w18	w20	w22	w24	w26	w27
Beth	Dem	/	.78	1.0	1.0	.86	.82	1.0	.89	1.0	1.0
	S-V	(.0)	.78	.75	1.0	.90	.86	1.0	.66	1.0	1.0
Mark	Dem	.88	.79	.83	.64	.60	.52	.82	.47	.67	.89
	S-V	.50	.90	1.0	/	.66	.71	.76	.84	.81	.90
Adam	Dem	(1.0)	.55	.64	-	-	-	-	-	-	-
	S-V	.66	.76	.85	-	-	-	-	-	-	-
Ann	Dem	.80	.93	.95	.89	.70	.71	1.0	1.0	1.0	.89
	S-V	.80	1.0	.83	.66	1.0	.91	1.0	1.0	1.0	.95
Kay	Dem	.43	.67	.82	.67	.60	.74	.68	.73	.67	.71
	S-V	.83	1.0	.86	.10	.76	.80	.86	.94	1.0	.89
Viola	Dem	.54	.68	.86	.78	.91	.69	1.0	1.0	.71	1.0
	S-V	.40	.96	.90	1.0	.66	.88	.92	.10	.92	.71
John	Dem	.50	.78	.82	.89	.80	.75	1.0	1.0	.92	.75
	S-V	(.0)	.87	.80	1.0	1.0	.73	.94	.93	1.0	1.0
Jeff	Dem	(1.0)	.72	.69	.67	.43	.42	(.50)	.67	.83	.67
	S-V	(1.0)	.85	.50	1.0	1.0	.70	.82	.92	.82	.74
Mary	Dem	/	.67	1.0	.92	-	-	-	-	-	-
	S-V	.80	.78	.80	1.0	-	-	-	-	-	-

“w” = week; “DEM” = demonstrative-predicate agreement; “S-V” = subject-verb agreement; “/” = zero occurrences; “()” = less than three tokens; “-” = participant withdrawal.

TABLE 6

Applying 90% Acquisition Criterion

Ss	Forms	w8	w10	w14	w16	w18	w20	w22	w24	w26	w27
Beth	Dem	-	-	+	+	-	-	+	-	+	+
	S-V	-	-	-	+	+	-	+	-	+	+
Mark	Dem	-	-	-	-	-	-	-	-	-	-
	S-V	-	+	+	-	-	-	-	-	-	+
Adam	Dem	-	-	-	-	-	-	-	-	-	-
	S-V	-	-	-	-	-	-	-	-	-	-
Ann	Dem	-	+	+	-	-	-	+	+	+	-
	S-V	-	+	-	-	+	+	+	+	+	+
Kay	Dem	-	-	-	-	-	-	-	-	-	-
	S-V	-	+	-	-	-	-	-	+	+	-
Viola	Dem	-	-	-	-	+	-	+	+	-	+
	S-V	-	+	+	+	-	-	+	-	+	-
John	Dem	-	-	-	-	-	-	+	+	+	-
	S-V	-	+	-	+	-	-	+	+	+	+
Jeff	Dem	-	-	-	-	-	-	-	-	-	-
	S-V	-	-	-	+	+	-	-	+	-	-
Mary	Dem	-	-	+	+	-	-	-	-	-	-
	S-V	-	-	-	-	+	-	-	+	-	-

“w” = week; “+” = acquired; “-” = not acquired; “[blank space]” = participant withdrawal.

predicate agreement in weeks 22, 24, and 26, then fell below in the end, week 27; he reached criterion for verbal agreement earlier in week 16 and briefly exhibited backsliding in week 20. Jeff never reached criterion for demonstrative-predicate agreement (came close in week 8), but he reached criterion for verbal agreement in three sessions: weeks 16, 18, and 24. Mary reached criterion for demonstrative-predicate agreement in weeks 14–16; she reached criterion for verbal agreement in week 16.

In addition to providing corroborating evidence, the 90% criterion here proved even to be a more useful criterion than emergence, as it revealed that most of the participants found demonstrative-predicate agreement more problematic than verbal agreement. This observation would have been missed by relying on a criterion such as emergence. The observation that the participants reached the emergence criterion (i.e., by using the emergence criterion) may be due to random hits, as the choice was merely between *hāḍihi* and *hāḍā*, amounting to a 50% chance.

These findings are particularly strong, because the participants were exposed to demonstrative-predicate agreement (as early as week 6) before they were exposed to verbal (subject-verb) agreement (in week 8), yet they found demonstrative-predicate agreement more problematic than verbal agreement. Table 7 chronologically lists the learning objectives of the target structures in the participants' textbooks. Thus, according to the 90% acquisition criterion, even though the participants of the study were exposed to demonstrative-predicate agreement before they were to verbal agreement, most of them acquired the latter before the former.

Finally, to further speculate on the extent that the participants were aware of applying the agreement rule, the researcher examined tokens of rule application in non-contexts. Apart from the random hits where *hāḍā* "This[s.m]" is followed by feminine predicate nouns/adjectives (i.e., with the

feminine suffix {-a}) and *hāḍihi* "This[s.f]" followed by masculine predicate nouns/adjectives (i.e., with the masculine zero morpheme suffix {-0})—although mismatches of the former were more frequent than the latter, suggesting that the masculine form *hāḍā* may have been used as default by most participants—only two actual tokens of rule application in non-contexts were found. The two tokens were produced by Jeff: *hāḍā ṭāyyir* "This[s.m] is an airplane[s.m]" → *hāḍihi ṭā?ir-a* "This[s.f] is an airplane[s.f]" and *hāḍā ṭawāl* "This[s.m] is a table[s.m]" → *hāḍihi ṭawil-a* "This[s.f] is a table[s.f]." Because the participants produced the correct gender (masculine and feminine) on all nouns/adjectives (following *hāḍā* and *hāḍihi*), with the exception of two tokens in all the data sets, one can conclude that the main problem that the participants had with demonstrative gender agreement had mainly to do with the correct choice of the demonstrative *hāḍā* versus *hāḍihi*.

It is also worth noting here that Adam, who is a Creole/French L1 speaker, did not seem to exhibit the same problem with demonstrative-predicate gender agreement as the other participants, who are English L1 speakers. In fact, he seemed to perform somewhat equally on both verbal and demonstrative-predicate agreement forms (see Tables 4–6 above). I return to this issue in the discussion section below.

Cross-Sectional Results

Verbal Agreement

Based on immediate observation of the production data of verbal agreement of the cross-sectional participants, the French L1 groups seemed to slightly outperform their L1 English counterparts in producing the appropriate verbal agreement markings for third-person singular feminine and third-person singular masculine (Table 8; see also Figures 3–4). Both L1 groups had higher agreement ratios for singular masculine than for singular feminine. All French L1 groups 1–3 had correct agreement ratios for

TABLE 7

Learning Objective Schedule of *Al-Kitaab* (Brustad et al., 1995a, 1995b)

Forms	Demonstrative Pronouns				S-V (Imperfective) Agreement								
	S.M.	S.F.	P.H.M.	P.H.F.	P.Non-H.	3.S.M.	3.S.F.	3.P.M.	IS.	I.P.	2.S.M.	2.S.F.	2.P.M.
Weeks	Units												
6	X	X	X										
7	(/)	(/)	(/)										
10	(/)												
8	(x)	(x)	(x)			X	X	X	X				
9-10	(/)	(/)	(/)	(/)	(/)	(x)	(x)	(x)	(x)			(x)	
3	(x)	(x)	(x)	(/)	(/)	(x)	(x)	(x)					
11-14	(x)	(x)	(x)	(/)	(/)	X	X	X	X	X	X	X	X
5	X	X	X	(/)	(/)	(x)	(x)	(x)	(x)	(x)	(/)	(/)	(/)
6	(/)	(/)	(/)	(/)	(/)	(x)	(x)	(x)	(x)	(x)	(/)	(/)	(/)
15-16	(x)	(x)	(x)	(/)	(/)	(x)	(x)	(x)	(x)	(x)	(/)	(/)	(/)
17-18	(x)	(x)	(x)	(/)	(/)	(x)	(x)	(x)	(x)	(x)	(/)	(x)	(x)
9	(x)	(x)	(x)	X	X	X	X	X	X	X	X	X	X
19-20	(/)	(/)	(/)	(/)	(/)	[x]	[x]	[x]	[x]	[x]	[x]	[x]	[x]
11	(x)	(/)	(/)	(/)	(/)	[x]	[x]	[x]	[x]	[x]	[x]	[x]	[x]
21-22	(x)	(x)	(x)	(/)	(/)	[x]	[x]	[x]	[x]	[x]	[x]	[x]	[x]
23-24	(x)	(/)	(/)	(/)	(/)	[x]	[x]	[x]	[x]	[x]	[x]	[x]	[x]
25-26	(x)	(x)	(x)	(/)	(/)	[x]	[x]	[x]	[x]	[x]	[x]	[x]	[x]
27-28	(x)	(x)	(x)	(/)	(/)	(x)	(x)	(x)	(x)	(/)	(/)	(/)	(x)

X = focused attempt to teach the structure; [x] indirect focused attempt where main focus is on lexical item/s or mood; (x) = structure is not the focus of instruction but occurs in the lesson and drills 4 or more times; (/) = structure not the focus of instruction and occurs less than 4 times; the figures in bold are the elicitation sessions; S = singular; P = plural; M = masculine; F = feminine; H = human; 1 = first person; 2 = second person; 3 = third person.

TABLE 8

Correct Rule Application of Verbal Agreement

	SV-Feminine Correct/Total	SV-Masculine Correct/Total
Arabic L2 (English L1)		
Group 1 (n = 9)	135/162 (83%)	168/190 (88%)
Group 2 (n = 9)	158/236 (67%)	298/347 (86%)
Group 3 (n = 9)	212/246 (86%)	381/409 (93%)
Arabic L2 (French L1)		
Group 1 (n = 9)	135/181 (75%)	224/231 (97%)
Group 2 (n = 9)	204/236 (86%)	293/306 (96%)
Group 3 (n = 8)	201/217 (93%)	335/342 (98%)

singular masculine well above 90% and the English L1 groups 1–2 had correct agreement ratios of well above 80%, while Group 3 had an agreement ratio of well above 90%. However, with respect to singular feminine and unlike the French L1 groups, the performance of the English L1 1–3 groups exhibited some oscillation, with Group 1 having the highest correct verbal agreement ratios for singular feminine (94, 67, and 86%, respectively).

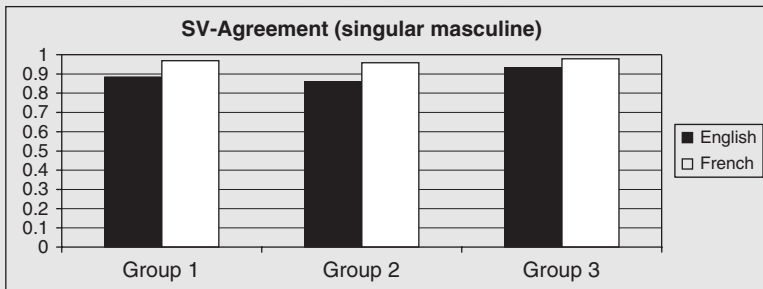
A series of one-way and two-way MANOVAs as well as follow-up ANOVAs of the MANOVA tests revealed no significant

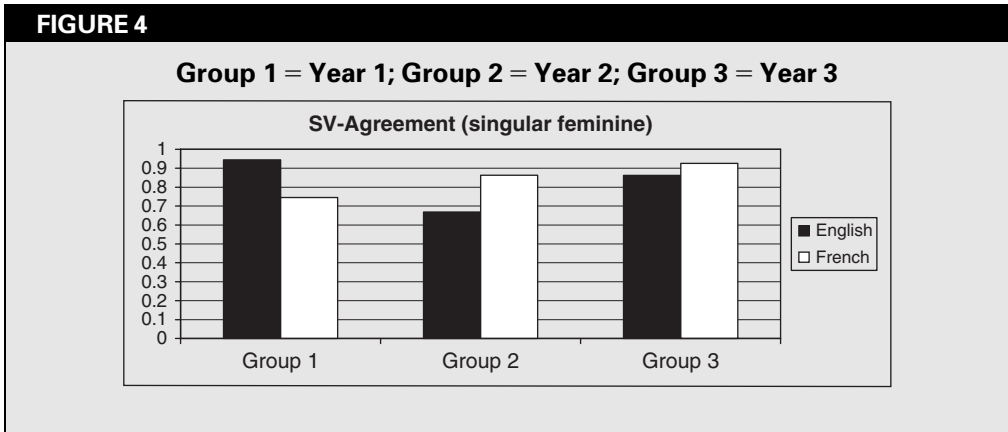
difference between groups and within groups. In other words, neither singular masculine verbal agreement nor singular feminine contributed to group difference, neither between groups (i.e., L1 English vs. L1 French) nor within groups (i.e., within groups of each native language backgrounds).

As for agreement errors made by both L1 groups, errors in the singular masculine were due to use of singular feminine forms. Errors in singular feminine were due to use of singular masculine forms and also, to a much lesser extent, due to use of other gender and person markings, mostly the first-person

FIGURE 3

Group 1 = Year 1; Group 2 = Year 2; Group 3 = Year 3





singular suffix {-tu}. Examples of subject-verb agreement errors are given in (11)–(12):

- (11) IL: *?imra?-a ḏahaba⁹
 person-s.f went.3.s.m
 TL: [al]-?imra?-a ḏahab-at
 [def]-person-s.f went-3.s.f
 “The woman went.”
 (L1 English: Group 1)

- (12) IL: *hiya ḏahab-tu
 she went-1.s
 TL: hiya ḏahab-at
 she went-3.s.f
 “She went.”
 (L1 English: Group 2)

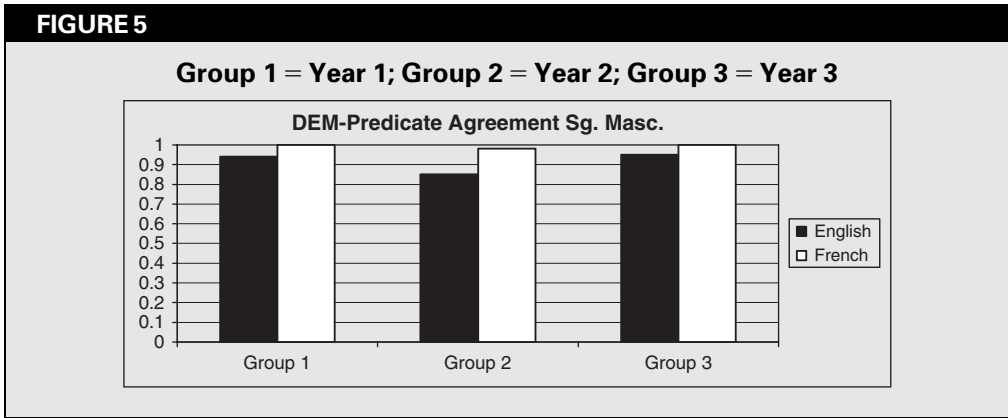
Demonstrative-Predicate Agreement

As the distribution of the production data of the cross-sectional participants on demonstrative-predicate agreement shows (Table 9; see also Figures 5–6), three observations are yielded. First, the participants of both L1 groups had higher correct agreement ratios on masculine demonstrative-predicate agreement than on feminine demonstrative-predicate agreement, due perhaps in part to use of the masculine form as the default forms by some of the participants across all groups. Second, all three French L1 groups had higher correct agreement ratios on masculine demonstrative agreement (100% accuracy by Groups 1 and 3 and 98% by Group 2) than

TABLE 9

Correct Rule Application of Demonstrative-Predicate Agreement

	Feminine Dem. Agreement Correct/Total	Masculine Dem. Agreement Correct/Total
Arabic L2		
English L1		
Group 1 (n = 9)	36/57 (63%)	47/50 (94%)
Group 2 (n = 9)	17/48 (35%)	23/27 (85%)
Group 3 (n = 9)	38/79 (48%)	63/66 (95%)
French L1		
Group 1 (n = 9)	48/54 (89%)	51/51 (100%)
Group 2 (n = 9)	38/52 (73%)	42/43 (98%)
Group 3 (n = 8)	32/37 (86%)	15/15 (100%)



their English L1 counterparts. Third, all three French L1 groups outperformed their English L1 counterparts with respect to feminine demonstrative agreement.

One-way and two-way MANOVA tests as well as follow-up ANOVAs of the MANOVAs were run. The tests found an effect for L1 between the French L1 and English L1 groups for performance on demonstrative predicate agreement (Wilks' $\Lambda = .68$, $F(2,33) = 7.6$, $p < .003$), with a near effect for feminine demonstrative agreement on the follow-up ANOVAs ($F(1,34) = 5.3$, $p = .027$) and another near effect on masculine demonstrative agreement on the follow-up ANOVAs ($F(1,34) = 4.4$, $p = .044$).¹⁰ In other words, the performance of the French L1 groups significantly differed from that of the English L1 groups, as the latter seemed to have

found the form more problematic than the former.

These findings are particularly strong when examining the formal classroom input that the participants (especially Group 1) received on the target structures, particularly demonstrative-gender agreement. Tables 10–11 display how often and when verbal agreement and demonstrative agreement (both in predicative and attributive contexts) were presented in the textbooks of the English L1 and French L1 participants, respectively. On the one hand, Table 10 shows that demonstrative agreement was present in the input (textbook) of the English L1 participants (Group 1) from early on. In particular, it was formally introduced in the input as early as Unit/Lesson 1, then formally again in Unit 3, and it was maintained in the input throughout (until Unit

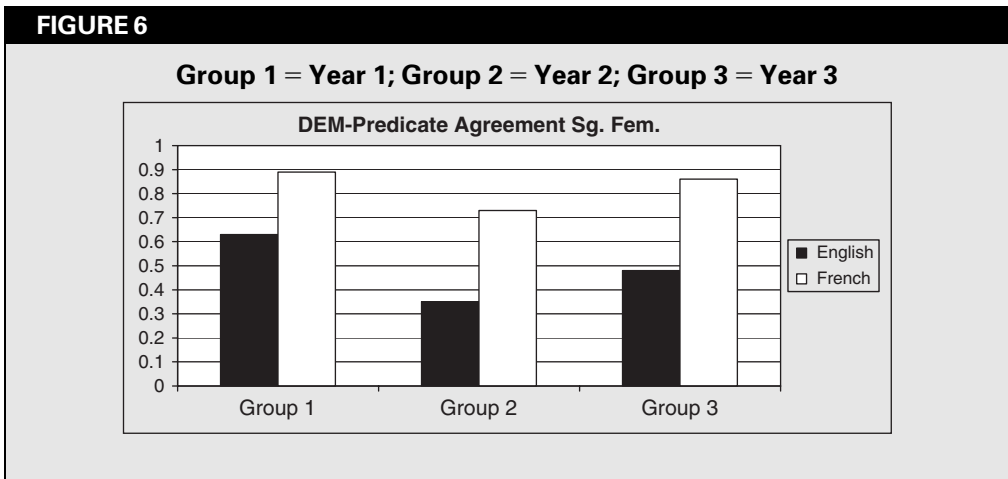


TABLE 10

Learning Objective Schedule of the First 15 Lessons of *Elementary Modern Standard Arabic* (Abboud et al., 1983)

Units	Demonstrative Pronouns						S-V (Perfective & Imperfective) Agreement						
	S.M.	S.F.	P.H.M.	P.H.F.	PNon-H.	3.S.M.	3.S.F.	3.P.M.	IS.	1.P.	2.S.M.	2.S.F.	2.P.M.
1	X	X											
2	(x)	(x)											
3	X	X											
4	(x)	(/)											
5	(x)	(x)											
6	(/)					X	X						
7	(x)	(x)				X	X		X		X	X	
8	(x)	(x)				X	X	X	(x)		(/)		
9	(x)	(x)				X	X	X	X	X	X	X	X
10	(x)	(x)				(x)	(x)	(x)	(x)	(x)	(x)	(x)	(x)
11	(/)	(/)				[x]	[x]	[x]	[x]	[x]	[x]	[x]	[x]
12	(/)	(/)				[x]	[x]	[x]	[x]	[x]	[x]	[x]	[x]
13		(/)				[x]	[x]		[x]	(/)	[x]	[x]	
14	(x)	(/)				[x]	[x]	[x]	[x]	[x]	[x]	[x]	[x]
15	(x)	(x)			X	(x)	(x)	(/)	(x)	(x)	(/)	(/)	(/)

X = focused attempt to teach the structure; [x] = indirect focused attempt where main focus is on lexical item/s or mood; (x) = structure is not the focus of instruction but occurs in the lesson and drills 4 or more times; (/) = structure is not the focus of instruction and occurs less than 4 times; S = singular; P = plural; F = feminine; M = masculine; H = human; 1 = first person; 2 = second person; 3 = third person. Note: other inflected forms are omitted here for ease of reference.

TABLE 11

Learning Objective Schedule of *Manuel d'Arabe moderne* (Deheuveles, 2003)

Units	Demonstrative Pronouns				S-V (Imperfective and Perfective) Agreement								
	S.M.	S.F.	P.H.M.	P.H.F.	PNon-H.	3.S.M.	3.S.F.	3.P.M.	IS.	1.P.	2.S.M.	2.S.F.	2.P.M.
1						X			X		X		
2					(/)	(/)	X		X		(/)	X	
3					(/)	(/)	(/)		(x)	X		(x)	X
4					X	X	X	X	X	X	X	X	X
5					(x)	(x)	(x)	(/)	(/)	(x)	(/)	(/)	(/)
6					(x)	(/)	(/)	(x)	(x)	(x)	(/)	(/)	(/)
7					(x)	(x)	(x)	(x)	(x)	(x)	(/)	(/)	(x)
8					(x)	(x)	(x)	(x)	(x)	(x)	(/)	(/)	(/)
9					X	X	X	X	X	X	X	X	X
10	(/)	(/)			(x)	(x)	(/)	(x)	(x)	(/)	(x)	(/)	(/)
11					(x)	(x)	(x)	(x)	(x)	(/)	(x)	(/)	(/)
12					[x]	[x]	[x]	[x]	[x]	[x]	[x]	[x]	[x]
13					[x]	[x]	[x]	[x]	[x]	[x]	[x]	[x]	[x]
14	(x)				(x)	(x)	(x)	(x)	(x)	(x)	(x)	(x)	(x)
15	X	X	X		X	(x)	(x)	(x)	(x)	(x)	(/)	(/)	(/)

X = focused attempt to teach the structure; [x] = indirect focused attempt where main focus is on lexical item/s or mood; (x) = structure is not the focus of instruction but occurs in the lesson and drills 4 or more times; (/) = structure is not the focus of instruction and occurs less than 4 times; S = singular; P = plural; F = feminine; M = masculine; H = human; 1 = first person; 2 = second person; 3 = third person. Note: other inflected forms are omitted here for ease of reference.

15, corresponding to the first year). On the other hand, Table 11 shows that the structure was in fact almost absent from the formal input (textbook) of the French L1 participants (Group 1). Demonstrative pronouns were informally introduced in Unit/Lesson 10 and briefly again in Unit 14. They were formally introduced only in the last lesson (Unit 15) of the book. Demonstrative pronouns may have been presented formally to the French L1 (Group 1) participants when they occurred in their textbook in Unit 10. However, the clear observation remains that the form was evidently absent in most of the units of the textbook.

Hence, despite the fact that the French L1 participants (Group 1) received much less focused instruction on demonstrative-gender agreement than the English L1 participants (Group 1), they exhibited fewer problems with the form in question. In fact, Group 1 of the L1 French participants outperformed even the other two groups of the L1 English participants (Groups 2–3) on both masculine and feminine forms (see Table 9; see also Figures 5–6).

To examine the extent that the participants were aware of the demonstrative-predicate gender agreement, the researcher examined tokens of demonstrative-predicate agreement in non-contexts. Only three IL instances of rule application of singular feminine and singular masculine demonstrative-predicate agreement in non-contexts (not to be confused with the random agreement mismatches resulting from using one demonstrative pronoun for the other) were found in all the data sets. One was produced by an English L1 participant (Group 3): **hāḍā al-ṣūr* “This[s.m] picture[s.m]” → *hāḍihi al-ṣūr-a* “This[s.f] picture[s.f]”; and two identical instances were produced by a French L1 participant (Group 1): **hāḍi bayt* “This[s.f] is a house[s.f]” → *hāḍā bayt* “This[s.m] is a house[s.m].” The latter may also be due to treating *bayt* “house” as a feminine word on par with *bint* “girls,” as it ends with the feminine suffix {-t}. Due to the insignifi-

cant number of instances of rule application in non-contexts, the main observation here is that the participants correctly produced the predicate nouns/adjectives occurring after the (subject) demonstratives, whether inflected for masculine or feminine. Therefore, the learning task that the use of demonstrative gender agreement constituted for the participants of the study was to correctly choose the demonstrative *hāḍā* or *hāḍihi* to agree with the noun following it or to be aware of the gender marking and use the correct demonstrative pronoun accordingly.

Discussion and Conclusion

Based on the longitudinal findings, the present study provides converging evidence against a speech processing prerequisite account of SLA. Although the two target forms of the study, demonstrative-predicate and verbal agreement, are identified as Stage 4 structures, requiring the same speech processing prerequisites as PT claims, they did not emerge in the IL systems of the longitudinal participants at the same time. The emergence measure yielded three emergence patterns: emergence of verbal agreement and demonstrative-predicate agreement at the same time (in five participants), emergence of demonstrative-predicate agreement before verbal agreement (in two participants), and emergence of verbal agreement before demonstrative-predicate agreement (in two participants). This finding is not in line with PT prediction, because the theory would predict that both forms should emerge at the same time. If processing resources become available for a certain stage, all structures of the stage should emerge at the same time, especially if such forms are present in the input from the beginning until the end of the period of the observation. Given the closeness of the emergence schedule, the findings may not seem quite problematic.

However, if one considers the results based on a 90% correct acquisition measure, the findings become more revealing. Because production of proper verbal agree-

ment requires selection of agreement markings from many members of the agreement paradigm, whereas production of the correct demonstrative-predicate agreement entails the selection from two forms (of what is focused on in the input at least), I argue that a 90% measure is a more appropriate measure, because correct selection between *hādā* and *hādīhi* amounts to a 50% correct chance (i.e., amounting to a mere random hit). Using a 90% measure shows that most of the participants found demonstrative-predicate agreement far more problematic, as it either emerged later than verbal agreement (in two participants) or it never emerged during the entire period of the observation (in three participants). Even in the IL systems of the participants where both forms were acquired at the same time (in one case) or where verbal agreement was acquired before demonstrative-predicate agreement (in two cases), it is evident that the participants had more problems with demonstrative-predicate agreement than verbal agreement, as they exhibited more backsliding in the performance of the former (see Tables 5–6 above).

Thus with respect to the first research question (i.e., whether the target structures, demonstrative-predicate and verbal agreement, which are Stage 4 structures, emerge in Arabic L2 learners at the same time as predicted by PT), the answer is negative. In other words, the data of the present study provide counterevidence to PT's hypothesized speech processing hierarchy and speech processing prerequisites, adding to the growing body of evidence contrary to PT (Nielsen, 1997; Alhawary, 1999, 2003).

The question as to why the English L1 longitudinal participants found demonstrative-predicate agreement more problematic to process than verbal agreement may be attributed to an L1 transfer factor not accounted for by PT. Answering this question makes it possible to answer the second research question: whether the L2 learners of the present study exhibit L1 transfer in their IL systems.

An L1 transfer account such as the Full Transfer/Full Access hypothesis (Schwartz

& Sprouse, 1994, 1996; Schwartz, 1998) provides a better explanation for the developmental paths of the two forms in the IL systems of the participants. According to the Full Transfer/Full Access hypothesis, "the entirety of L1 grammar (excluding the phonetic matrices of lexical/morphological items) is the L2 initial state," with full access to Universal Grammar through the L1 grammatical system (Schwartz & Sprouse, 1996, p. 41). The implication of this proposal is that the L2 learners need not wait until they are able to develop category procedures and then develop agreement procedures as PT assumes. Furthermore, the L2 learners are assumed to have access to abstract knowledge of inflection (associated with functional categories); hence, L2 learners somehow know to check for a certain feature (if present in L1) in the L2. Accordingly, because the copular construction in English does not exhibit gender agreement between the demonstrative pronoun and predicate adjective/noun, feature checking, in Minimalist terms (e.g., Chomsky, 1995), for the gender feature agreement may often be skipped before spell out, generating structures that do not exhibit gender agreement. On the other hand, English exhibits verbal agreement, though non-uniformly, between the subject and the verb (with the possible transfer of the feature-checking mechanism from L1, if even checking weak features takes place at Logical Form); hence, processing of verbal agreement in Arabic was not as problematic for the English L1 participants (for similar findings on nominal gender agreement vs. verbal agreement, see Alhawary, 2002, 2005). It is equally significant that Adam, a Creole/French L1 speaker, did not seem to find demonstrative-predicate agreement more problematic than verbal agreement. His data (the three data samples collected from him) showed that the learning tasks of both forms were somewhat equal for a French L1 learner of Arabic. According to the L1 transfer account presented above, because French also exhibits gender agreement between demonstrative pronouns and

predicate nouns/adjective, one would predict a difference between his emergence schedule of the two forms and those of the English L1 participants. Unfortunately Adam withdrew at an early stage and it was not possible to confirm the exact emergence time of the two structures.

The conclusion of the longitudinal data is supported by the English L1 and French L1 cross-sectional findings. The findings show that while there was no significant difference in performance between the English L1 and French L1 participants on verbal agreement, there was a significant difference in their performance on demonstrative-predicate gender agreement.¹¹ The French L1 participants significantly outperformed their English L1 counterparts even though the former were far less exposed to demonstrative agreement in the input than the latter. Unlike English, French does exhibit gender agreement between the demonstrative pronoun and the predicate noun/adjective within copular constructions. It is particularly significant that the French L1 Group 1 scored higher than any of the English L1 groups (1–3) on feminine demonstrative agreement. Hence, the second research question is answered positively here: the data do seem to exhibit evidence of L1 transfer. Furthermore, given the specific amount and extent of the exposure to the target forms by the participants of the study, the role of L1 transfer here seems to override that of the input. It would be interesting to examine in future research the extent of the role of L1 transfer in intensive or immersion instruction setting.

Acknowledgments

I would like to thank the anonymous reviewers for their careful reading and insightful comments. All errors are mine alone.

Notes

1. Due to the scope of the present study, focus here is mainly on what PT claims

about morphological development to the exclusion of syntax.

2. Note in addition that Lui (1991), Tarone and Lui (1995), and Tarone (2007) argued that social contexts can influence second language acquisition (SLA) to the extent of forcing a stage to be skipped, contrary to PT predictions. Longitudinal data from English L2 acquisition from a five-year-old show that the child skipped a Stage 3 structure (WHX-front without inversion: “Why you do that?”) and produced structures at Stages 4–6, including pseudo-inversion (“Where’s the monkey?”), aux-2nd (“What are you doing?”), and question tag (“You don’t like green, are you?”) (Lui, 1991). The child later produced the Stage 3 structure. The study was based on Pienemann and Johnston’s (1987) framework, a precursor of PT.
3. The parentheses indicate that case markings are not focused on in the present study.
4. Lexical Functional Grammar (LFG) was adopted by Pienemann (1998) as a notational framework for PT (for a comprehensive account of LFG, see Bresnan, 1982).
5. This research follows the standard Minimalist assumption of attributing parametric variation to strength of functional features.
6. The parentheses indicate that case and mood markings were not target features of the study. Similarly, definiteness was not a target structure.
7. Verbal agreement involving gender in French should be considered *somewhat* strong; i.e., not exactly on a par with that in Arabic, because (subject-verb) gender agreement in French is not exhibited with the same degree of uniformity, involving mainly past participial forms within compound verb tenses, passive voice, and pronominal verbs.
8. The context of such a token is that of a picture identification task, where the

participant was required to identify the person with a full sentence. The assumption here, following Bley-Vroman (1983), is to accept this token as exhibiting correct rule application of the form in question and to avoid the pitfall of the “comparative fallacy,” which would otherwise result in a misleading assessment of the systematicity of the learner’s IL system (i.e., by comparing the learner’s production directly to the target language rather than analyzing it as part of the IL system as a system by itself). It is to be noted here that supplying the definite article on the noun in a demonstrative-noun/adjective sequence makes it a noun phrase, while dropping it makes it a sentence.

9. IL = interlanguage use; TL = target language form.
10. Alpha is set at .025.
11. Recall as noted above in note 7, with respect to verbal agreement, French does not exhibit gender agreement in structures equivalent to the target structures (except in past participial forms within compound verb tenses, passive voice, and pronominal verbs).

References

- Abboud, P., Abdel-Malek, Z., Bezirgan, N., Erwin, W., Khouri, M., McCarus, E., et al. (1983). *Elementary modern standard Arabic* (Vol. 1). Cambridge, UK: Cambridge University Press.
- Abboud, P., Attieh, A., McCarus, E., & Ramunty, R. (1997). *Intermediate modern standard Arabic*. Ann Arbor, MI: Center for Middle Eastern & North African Studies, University of Michigan.
- Alhawary, M. T. (1999). *Testing processability and effectiveness of computer-assisted language instruction: A longitudinal study of Arabic as a second/foreign language*. Unpublished doctoral dissertation, Georgetown University, Washington, DC.
- Alhawary, M. T. (2002). The role of L1 transfer in L2 acquisition of inflectional morphology. In D. Parkinson & E. Benmamoun (Eds.), *Perspectives on Arabic linguistics 13-14* (pp. 219–248). Amsterdam: John Benjamins.
- Alhawary, M. T. (2003). Processability theory: Counter-evidence from Arabic second language acquisition data. *Al-‘arabiyya*, 36, 107–166.
- Alhawary, M. T. (2005). L2 acquisition of Arabic morphosyntactic features: Temporary or permanent impairment? In M. T. Alhawary & E. Benmamoun (Eds.), *Perspectives on Arabic linguistics 17-18* (pp. 273–312). Amsterdam: John Benjamins.
- Bley-Vroman, R. (1983). The comparative fallacy in interlanguage studies: The case of systematicity. *Language Learning*, 33, 1–17.
- Bresnan, J. (1982). *The mental representation of grammatical relations*. Cambridge, MA: MIT University Press.
- Brustad, K., Al-Batal, M., & Al-Tonsi, A. (1995a). *Alif baa: Introduction to Arabic letters and sounds*. Washington, DC: Georgetown University Press.
- Brustad, K., Al-Batal, M., & Al-Tonsi, A. (1995b). *Al-kitaab fi ta’ allum Al-Arabiyya*. Washington, DC: Georgetown University Press.
- Chomsky, N. (1995). Categories and transformations. In *The minimalist program* (pp. 219–394). Cambridge, MA: The MIT Press.
- Deheuvels, L. (2002). *Manuel d’Arabe moderne* (Vol. 2, 2nd ed.). Paris: Asiathèque.
- Deheuvels, L. (2003). *Manuel d’Arabe moderne* (Vol. 1, 2nd ed.). Paris: Asiathèque.
- Glahn, E. (2001). Review of Manfred Pienemann’s “Language processing and second language development: Processability Theory”. *Applied Linguistics*, 22, 544–548.
- Glahn, E., Håkansson, G., Hammarberg, B., Holman, A., Hvenekilde, A., & Lund, K. (2001). Processability in Scandinavian second language acquisition. *Studies in Second Language Acquisition*, 23, 389–416.
- Kempen, G., & Hoenkamp, E. (1987). An incremental procedural grammar for sentence formulation. *Cognitive Science*, 11, 201–258.
- Levelt, W. J. M. (1989). *Speaking: From intention to articulation*. Cambridge, MA: MIT University Press.
- Lui, G. (1991). *Interaction and second language acquisition: A case study of a Chinese child’s acquisition of English as a second language*. Unpublished doctoral dissertation, La Trobe University, Melbourne, Australia.

- Mansouri, F. (2000). *Grammatical markedness and information processing in the acquisition of Arabic L2*. Muenchen, Germany: Lincom Europa.
- Mansouri, F. (2005). Agreement morphology in Arabic as a second language: Typological features and their processing implications. In M. Pienemann (Ed.), *Cross-linguistic aspects of Processability Theory* (pp. 117–153). Amsterdam: John Benjamins.
- Meisel, J. M. (1991). Principles of universal grammar and strategies of language use: On some similarities and differences between first and second language acquisition. In L. Eubank (Ed.), *Point-counterpoint: Universal grammar in the second language* (pp. 231–271). Amsterdam: John Benjamins.
- Meisel, J. M. (1994). Getting FAT: Finiteness, agreement and tense in early grammars. In J. M. Meisel (Ed.), *Bilingual first language acquisition: French and German grammatical development* (pp. 89–129). Amsterdam: John Benjamins.
- Namai, K. (2000). Gender features in English. *Linguistics*, 38, 771–779.
- Nielsen, H. L. (1997). On acquisition order of agreement procedures in Arabic learner language. *Al-ʿArabiyya*, 30, 49–94.
- Pienemann, M. (1998). *Language processing and second language development: Processability Theory*. Amsterdam: John Benjamins.
- Pienemann, M., & Håkansson, G. (1999). A unified approach toward the development of Swedish as L2. *Studies in Second Language Acquisition*, 21, 383–420.
- Pienemann, M., & Johnston, M. (1987). Factors influencing the development of language proficiency. In D. Nunan (Ed.), *Applying second language acquisition research* (pp. 45–141). Adelaide, Australia: National Curriculum Research Centre, Adult Migrant Educational Program.
- Poepfel, D., & Wexler, K. (1993). The full competence hypothesis of clause structure in early German. *Language*, 69, 1–33.
- Prévost, P., & White, L. (2000). Missing surface inflection or impairment in second language acquisition? Evidence from tense and agreement. *Second Language Research*, 16, 103–133.
- Schwartz, B. D. (1998). The second language instinct. *Lingua*, 106, 133–160.
- Schwartz, B. D., & Sprouse, R. A. (1994). Word order and nominative case in nonnative language acquisition: A longitudinal study of (L1 Turkish) German interlanguage. In T. Hoekstra & B. D. Schwartz (Eds.), *Language acquisition studies in generative grammar* (pp. 317–368). Amsterdam: John Benjamins.
- Schwartz, B. D., & Sprouse, R. A. (1996). L2 cognitive states and the Full Transfer/Full Access model. *Second Language Research*, 12, 40–72.
- Tarone, E. (2007). *A sociolinguistic perspective on interaction in SLA*. Paper presented at the April 2007 Conference of the American Association for Applied Linguistics, Costa Mesa, CA.
- Tarone, E., & Lui, G. (1995). Situational context, variation, and second language acquisition theory. In G. Cook & B. Seidlhofer (Eds.), *Principles and practice in applied linguistics: Studies in honour of H. G. Widdowson* (pp. 107–124). Oxford, UK: Oxford University Press.