

Interference of L in the acquisition of H in diglossia: The case of Arabic dental/interdental and emphatic/non-emphatic oppositions

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ملخص

تهدف هذه الدراسة الى البحث في أثر النظام العامي على تعلم سمتين صوتيتين في الفصحى هما: التمييز بين الاصوات الانسانية ومقابلاتها البياسنانية، وبين الاصوات المفخمة ومقابلاتها المرفقة. ولهذا الغرض، تم اختيار ست مجموعات من المتعلمين كانوا يتابعون دراستهم بالسلكين الاساسي والاعدادي بالمملكة المغربية: قسمان من المستوى الرابع، وقسمان من المستوى السادس، وآخران من المستوى الثامن. وقد خضع المتعلمون لاختبار عبارة عن لائحة من الكلمات ينقصها حرف واحد طلب منهم أن يقرروا عما إذا الحرف الناقص أسنانيا أم بياسنانيا، أو مفخما أم غير مفخم. وقد طبق اختبار MANOVA على النتائج فتيبين أن الفرق بين المستويات الثلاث له دلالة إحصائية. غير أن اختبارا بعديا أشار الى أن نتائج المستويين السادس والثامن لا تتميز عن بعضها تمييزا ذا دلالة إحصائية. وقد فسر ذلك على أنه إشارة الى حصول تحجر في مرحلة مبكرة من عملية التعلم، مما سينتج عنه بعض التنوع في العربية الوسطى. كما أن الفرق بين نتائج المجموعات التابعة للتعليم للعمومي وتلك التي تتابع دراستها بالتعليم الخصوصي كان دالا إحصائيا كذلك، مما يدل على أهمية الوسط التعليمي. وبناء على كل هذا، تم التأكيد على الطابع السيكلولساني لبعض التنوع الذي تعرفه العربية الوسطى، وبذلك لا يصبح كل ذلك التنوع راجعا لعوامل سوسيلولسانية.

Abstract:

The purpose of this study is to investigate the effect of L in the acquisition of two H phonological aspects: the dental/interdental and the emphatic/non-emphatic contrasts. For this purpose, six classes were selected from three fundamental levels: the 4th, the 6th and the 8th levels from Morocco, with two classes from each level. A task was administered to them to measure their proficiency in recognizing which CA/MSA words have a dental phoneme and which have an interdental one, and which have an emphatic phoneme and which have a non-emphatic one. A MANOVA test was run and the effect of grade on the variables was found statistically significant. A post hoc procedure, however, indicated that none of the differences between the 6th and the 8th grades was significant. This fact was interpreted as an early fossilization which will necessarily be responsible for some variation in Mixed Arabic. The difference between the public and the private groups was also found to be significant, a fact which points to the crucial role of the teaching environment. On the basis of these results, the psycholinguistic effects of interference from L were stressed; thus, indicating that not all variation in Mixed Arabic is sociolinguistically significant.

Key words: language acquisition, diglossia, Mixed Arabic

1. Introduction¹

This study will focus on the acquisition of two phonological contrasts in Classical or Modern Standard Arabic (CA/MSA). These are the dental/interdental contrast, as in ‘*ḡanb*’ ذنب “guilt” and ‘*darb*’ درب “alley”, and the emphatic/non-emphatic contrast, as in ‘*tura:b*’ تراب “soil” and ‘*tari:q*’ طريق “road”. These contrasts in the standard variety are not symmetrical with their equivalents in the colloquial varieties because of the mergers of the dental and the interdental phonemes and of the emphatic and the non-emphatic phonemes (in some contexts) that occurred during the development of the colloquial varieties. The argument that will be advanced and defended in this paper is that the Moroccan Arabic (MA) phonological system will hinder the acquisition of the two phonological contrasts by Moroccan learners of CA/MSA.

This paper will be articulated as follows. Section 1 will state the problem. Section 2 will present the methodology of the study and will consist of a discussion of the instrument and the sample. Section 3 will present the results of the investigation. And finally, Section 4 will discuss some of the implications of the findings on the study of the so-called ‘Mixed Arabic’; that is, discourse in which both classical and colloquial features co-occur.

2. Statement of the Problem.

Since the publication of Ferguson’s (1959) seminal paper, the phenomenon of diglossia has not ceased to stimulate researchers’ interest and to stir debate about the most optimal framework to approach the extremely heterogeneous data produced by native speakers in diglossic communities (cf. the references in Hudson 1992 and in Fernandez 1993). The debate concerns the functions of H and L and other intermediate varieties/levels as well as their formal structure. But in this paper, nothing will be said about function. The focus, instead, will be exclusively on the phonological structure of H as realized by MA speakers.

It should be pointed out that dissatisfaction with Ferguson’s (1959) model started immediately after the appearance of the paper (cf. Blanc 1960, Palva 1969). The claim that there are two distinct varieties in the Arabic diglossia, for example, seemed very abstract in view of the linguistic reality easily noticeable on the ground. As Hary (1992) rightly notes, L features can be found in the most classical texts, and H features are equally attested in the most colloquial

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discourse of illiterates. This phenomenon is not sporadic and could not have escaped the attention of Ferguson himself, who remarks that “The communicative tensions which arise in the diglossia situation may be resolved by the use of relatively uncoded, unstable, intermediate forms of the language (Greek *mikti*, Arabic *al-lughah al-wuṣṭā*, Haitian *Créole de salon*) and repeated borrowing of vocabulary items from H to L” (Ferguson 1959: 240). What many students of diglossia have been attempting to show, however, though without much success, is that these intermediate forms are not as unstable as Ferguson claims (cf. Eid 1982, Bassiouney 2009, Mejdell 2006).

Perhaps among the most influential writings on the sociolinguistic aspect of Arabic diglossia is Badawi (1973). In this work, Badawi argues that Arabic does not consist of two varieties, a literary and a colloquial one, but forms a continuum in which one level shades into another, much like the colors of the rainbow. Although he believed that the number of levels may be indeterminate, he identified five major ones. These are named by him as: 1) *fuṣḥā al-turāth* (Classical Arabic), 2) *fuṣḥā al-ḥaṣr* (Modern Standard Arabic), 3) *ḥāmmiyat al-muthaqqafīn* (colloquial of the cultured), 4) *ḥāmmiyat al-mutanawwirīn* (colloquial of the basically educated), and 5) *ḥāmmiyat al-ḥummiyyīn* (colloquial of the illiterate). One of the examples he uses to illustrate these levels is the CA phoneme /θ/ and its cognates in Egyptian Arabic /s/ and /t/. In CA as used by Al-Azhar University professors, only /θ/ tends to occur. But in Modern Standard Arabic, /s/ may also be as frequent as /θ/. In the next level, however, /s/ becomes more frequent than /θ/; and in level four, /s/ alternates only with /t/. Finally, only /t/ occurs in the last level. In Badawi’s conception, these formal features are only expressions of sociolinguistic factors such as topic, setting, level of education, etc.

Another study that attempted to explain the distribution of classical and colloquial features in terms of sociolinguistic factors is Schulz (1981). Building on previous work by Schmidt (1974) and Salib (1979), Schulz (1981) tried to focus on variation in Badawi’s (1973) level three; that is, the so-called colloquial of the cultured in Egypt. Although his main interest lied in morphological and syntactic variation in the speech of educated speakers on radio programs, he did deal with some phonological aspects among which were the CA interdentalals and their colloquial reflexes /s/ and /t/. In this respect, he notes that the lexicon can be divided into three categories: 1) those in which interdentalals and their sibilant and stop reflexes are possible variants, 2) those in which only interdentalals and the corresponding sibilants are possible,

and 3) those in which only stops are possible. But Schulz remarks that although this categorization may be relevant to many speakers in many situations, it does not hold for all speakers in every situation. Accordingly, the researcher decided not to rely on it. In principle, this means that a speaker could possibly use any of the three variants in all words which have etymological interdentals, though in practice, there are sociolinguistic factors that increase or decrease the probability of occurrence of this or that variant.

It seems that most researchers interested in mixed/intermediate levels of Arabic have assumed, sometimes explicitly and sometimes implicitly, that variation of classical and colloquial features is governed mostly by sociolinguistic factors, though little progress has been achieved in the understanding of these factors (cf. Mejdell 2006, Bassiouney 2009, among others for a review of the literature). Some factors other than sociolinguistic ones have been alluded to sometimes, among which is the effect of L as a mother tongue. This effect is more obvious in phonology than in any other level to the extent that Ferguson (1959) suggests that H and L are underlied by a single phonological system. However, to the best of my knowledge, no detailed study has been carried out on the role of L in the variation in Mixed Arabic. This paper has as a purpose to draw attention to this effect by focusing on two phonological phenomena in CA/MSA: the distinction between interdentals and their corresponding dentals, and the distinction between emphatics and their equivalent non-emphatics. The study will deal with the acquisition of these oppositions by Moroccan learners of CA/MSA.

In CA/MSA, there are interdental as well as dental phonemes. The interdental set includes /θ/ ث, /ð/ ذ and emphatic δ ظ, which will be represented by the symbol /z/; their corresponding dentals are /t/ ت, /d/ د and /d/ ض, respectively. Examples of minimal pairs in which the change of an interdental sound for a corresponding dental sound results in a change of meaning are: *maθānah* مثانة “bladder” / *matānah* متانة “strength”, *baðr* بذر “seed” / *badr* بدر “full moon”, *ðall* ضل “be lost” / *zall* ظل “spend the day”. Both dental and interdental phonemes are widespread in the language, but the functional load of the opposition between the two sets is rather low in the sense that there are not many minimal pairs in which a dental phoneme contrasts with a corresponding interdental phoneme. This fact was perhaps one of the factors behind the merger of interdentals into dentals in MA and many other varieties in the Arab world. It is precisely this merger that makes the acquisition of the dental/interdental contrast in CA/MSA very challenging for speakers of these dialects. It is not the pronunciation of interdentals that is

challenging so much as the recognition of which are cases of interdental phonemes and which are cases of dental phonemes. When faced with a frequent expression like ‘*mən fədlək*’ من فضلك “please”, for example, a MA speaker would usually hesitate when rendering it into its CA/MSA version because of the uncertainty whether the /d/ in ‘*fədl*’ “favor, grace” has etymological /d/ or /z/. Indeed, it is not unusual for many speakers or writers to opt for the wrong choice.

The contrast between emphatics and non-emphatics is equally confusing. CA/MSA has a set of four emphatics including /t/ ط, /d/ ض, /z/ ظ and /s/ ص. Their corresponding non-emphatic sounds /t/ ت, /d/ د, /ð/ ذ and /s/ س are also phonemes. In MA, the contrast between the two sets of sounds is also functional with the difference that interdentals have been lost. Examples of minimal pairs involving some of these phonemes are: ‘*təht*’ تحت “under” vs. ‘*ṭəht*’ طحت “I fell”; ‘*dərb*’ درب “alley” vs. ‘*ḍərb*’ ضرب “hitting”; ‘*snaṇ*’ سنان “teeth” vs. ‘*ṣṇan*’ صنان “bad odor”. Besides, unlike the case of CA/MSA, emphatic /z/ has become a phoneme in MA, probably because of borrowings from Amazigh, the indigenous language of North Africa (e.g. ‘*zrəf*’ زرع “plant, sow” vs. ‘*ṣrəf*’ زرع “wheat”). But the phenomenon that is most responsible for the disruption of the CA system of emphatic and non-emphatic phonemes, as it was gradually integrated into the emerging variety of Arabic molded by Moroccan speakers, was emphasis spread, also known as pharyngealization. This is an allophonic and an allomorphic process that results in the emphaticization of underlying non-emphatic sounds. The process was already very active in CA, as witnessed by the detailed description by Sībawayhi and the so-called ‘*tajwīd*’ scholars.

In many modern Arabic varieties, however, the domain of emphaticization has been extended beyond the limits imposed by the classical system. In MA, for example, a CA/MSA word like ‘*ṣadr*’ صدر “chest” is realized either as [sdər], without emphasis, or as [ṣḍər], with the pharyngealization of all the sounds. The alternation of emphatic and non-emphatic sounds within word boundaries, which is possible in CA/MSA, seems to be avoided in varieties of MA, either by complete emphaticization or by complete de-emphaticization, though the first seems to be more dominant. This aspect of MA phonology affects not only Moroccans’ version of MSA, but also their acquisition of French or French borrowings into MA (cf. Kenstowits 2008, Watson 1999, Zellou 2011, Naim 1998). This aspect makes it challenging for MA speakers to recognize which phonemes are etymologically emphatic and which are not.

But although the phenomenon is far from being rare and cannot have gone unnoticed, it has received very little attention from researchers. It is part of Moroccans' accented realization of CA/MSA which distinguishes their pronunciation from the pronunciations of other Arabic speakers in Egypt, the Levant or the Gulf, for example. But unlike some of these varieties, variation in Arabic as used in Morocco has not been studied thoroughly and our knowledge about it is less than satisfactory. Local researchers have been concerned either with Fushā, as described by traditional grammarians, or with regional variation in the dialects. On their part, foreign scholars tend to avoid North African varieties of Arabic in general, probably because many other languages are spoken there; in other words, there are too many variables to control. As a consequence, there is very little research on the effect of Moroccan Arabic on the acquisition of Fushā by Moroccan learners, in general, and the variables studied here, in particular.

In order to investigate the effect of MA on the acquisition of CA/MSA phonemes, a test was designed and administered to Moroccan students from three grades of fundamental school (i.e. primary school and junior high school). In the following section, both the instrument and the population sample will be described.

3. Methodology

3.1. Instrument.

The test was divided into two parts: one for the dental/interdental opposition, and the other for the emphatic/non-emphatic opposition. The first part consisted of three sets of contrasts: d/ð, t/θ and ḍ/z, while the second consisted of four sets: d/ḍ, t/t̤, s/s̤ and ḍ/z̤. Each set included 20 items with blanks to be filled by one element of a pair of letters representing phonemes, as in the following examples:

املا الفراغ بأحد الحرفين: (fill in the blanks with one of the letters)

ض <input type="checkbox"/>	ظ <input type="checkbox"/>	مُ...لم	<input type="checkbox"/> ذ	<input type="checkbox"/> د	ثب.....
ص <input type="checkbox"/>	س <input type="checkbox"/>	در....	<input type="checkbox"/> د	<input type="checkbox"/> ض	أفرا.....

Generally, 10 of the items required one answer, and the other 10 required the other answer. But in a few cases, the distribution was slightly uneven in order to avoid providing testees with any useful clue. The items were arranged in columns, and in front of each item, two choices were provided, and the subject had only to tick the answer s/he deemed to be the correct one. Generally, the subjects took about half an hour to complete the task.

This format, however, does not by itself guarantee that the test will be accessible to the subjects. For this purpose, care was taken not to include infrequent words or those that required good knowledge of CA/MSA. Judging from Buckwalter and Parkinson's (2011) frequency dictionary of Arabic, most of the items fall within the range of the 5000 most frequent words. Concerning the dental/interdental lists, 12 items are among the first thousand most frequent words, 16 among the second thousand, 9 among the third, 1 among the fourth, and 6 among the fifth. 15, however, are not listed in the dictionary and these will be discussed later on. As to the emphatic/non-emphatic lists, 16 items fall within the first thousand range, 11 within the second, 17 within the third, 13 within the fourth, and 6 within the fifth. 17 items, however, do not appear in the dictionary.

It should be pointed out that the items that do not appear on the 5000 list in Buckwalter and Parkinson (2011) are not necessarily less frequent than those on the list. It seems that the categories of texts of which their corpus consisted of has discarded a lot of frequent words (cf. their introduction to the dictionary). As an example, the word 'ḡubābah' ذبابة "fly" does not appear in their dictionary, although an Arab child is very likely to encounter it at an early stage in his/her life. The other words from the dental/interdental lists which are not mentioned in Buckwalter and Parkinson (2011) are: *dalw* دلو "bucket", *yartaḡid* يرتعد (shivering), *ḡanīd* عنيد (stubborn), *ḡaxīd* فخذ (thigh), *tīn* تين (fig), *ḡaḡlab* ثعلب (fox), *miḡrāḡ* محراث "plough", *ḡūt* حوت "whale", *ḡabuḡ* ضبع "hyena", *ḡazāḡir* أظافر "nails", *ḡalīz* غليظ "fat", and *ḡadd* عد "counting". As to those of the emphatic-non-emphatic lists, they are: *ḡirs* ضرس "molar", *ḡudāḡ* صداد "noise", *ḡirādah* إرادة "will", *ḡird* قرد "monkey", *ḡiḡḡafā* إصطفى "choose", *watar* وتر "string", *sawḡ* سوط "whip", *marsā* مرسى "sea port", *ḡaḡas* غطس "dive", *ḡaḡas* عطس "sneeze", *ḡuḡr* ظفر "nail", *ḡaxīrah* ذخيرة "ammunition", *ḡaḡārah* قذارة "dirt", *ḡazīrah* حظيرة "stable", *ḡurah* ذرة "corn", *ḡaḡīrah* ظفيرة "braid", and *ḡuraḡ* جرد "rat". Most of these items have colloquial cognates, and it is most likely that the testees were acquainted with their meanings.

Finally, two remarks should be made in connection with the test. The first is that good care was taken to avoid minimal pairs; that is, cases in which the insertion of either elements of a dyad would result in an attested word, no matter how infrequent it may be. The second is that all

the items were vocalized, also to avoid any ambiguity or possible multiple answers. The piloting showed that no major changes to the test were necessary.

3.2. Sample.

Since the study aims at investigating the effect of L on the acquisition of H phonology, one of the best ways to approach this effect, if effect there is, is to compare learners from different levels of proficiency in the target language. Level here has been equated with pupils' grades because I wasn't able, for practical reasons, to administer a proficiency test and regroup the subjects in accordance with their scores. Accordingly, three grades were chosen from the elementary and the preparatory schools. These are, respectively, the 4th, the 6th, and the 8th grades. Two classes from each grade were chosen on the basis of availability: one class from a public school, and the other from a private school. The inclusion of private schools was decided because of their good reputation, as opposed to the not-so-good reputation of public schools. The following table exhibits the number of subjects for each category:

Table 1: Number of subjects by category

Level	Public	Private	Total
4 th level	26	23	49
6 th level	39	23	62
8 th level	24	27	51
Total	89	73	162

Because the classes were taken as intact groups, the number of their pupils varied from one class to another. But apart from the 6th level class of the public school, which had 39 pupils, the difference in number between the other classes was not large.

It should be pointed out that Moroccan children generally start school at the age of six or seven, depending on families' views. Prior to that, they attend kindergarten for three or less years. Although there are no regulations in this domain, it seems that this is the general practice. The focus during these early stages is on literacy in CA/MSA and French. Since kindergartens are not public in Morocco, elementary school teachers are supposed to focus on literacy activities with no assumption that their pupils already know how to read and write. But by the time they reach the 4th grade, pupils are expected to have acquired enough of CA/MSA to read long texts and

write short essays. At this stage, they are also taught lessons of grammar which consist mainly of *ḥiṣrāb* “case marking”. At the end of the 6th grade, they take a final exam which entitles them, if they pass, to get the Elementary School Degree. This degree enables them to access the preparatory school, which lasts for three years (i.e. from the 7th grade to the 9th grade), after which starts high school. So, our sample was drawn partly from elementary school (viz. 4th and 6th grades) and partly from preparatory school (viz. 8th grade).

4. Results

As was expected, the higher the level, the greater the score mean recorded for each dyad. The means and the standard deviations are summarized in the following table:

Table 2: Results in means and S.Ds

	d/ḍ		t/ṯ		ḍ/z		d/ḍ		t/ṯ		ḍ/z		s/ṣ	
	Mean	S.D	Mean	S.D	Mean	S.D	Mean	S.D	Mean	S.D	Mean	S.D	Mean	S.D
4 th grade	12.59	3.34	12.28	12.28	11.87	3.21	12.68	3.24	14.18	4.28	10.77	4.13	11.89	3.00
6 th grade	14.45	2.68	14.09	14.09	13.43	3.86	14.21	3.30	15.68	3.00	13.80	3.38	14.21	3.15
8 th grade	14.96	2.95	14.58	14.58	14.46	3.63	15.67	3.50	15.51	3.86	13.83	4.06	14.24	3.92

These mean differences, however, need to be subjected to statistical analysis in order to see whether they are statistically significant or not.

Since the dyads d/ḍ, t/ṯ and ḍ/z measure similar constructs here grouped under the label “the dental/interdental contrast”, they will be treated as three dependent variables. Likewise, the dyads d/ḍ, t/ṯ, ḍ/z and s/ṣ are different aspects of the construct here labeled “the emphatic/non-emphatic contrast” and, therefore, will be considered as dependent variables upon which the independent variable of level acts. The appropriate statistic for cases in which there is more than one dependent variable is the Multivariate Analysis of Variance (MANOVA) (cf. Tabachnick and Fidell 2007, Pallant 2007, Stevens 1996). In what follows, the results of the MANOVA tests will be presented in two separate subsections: one for the dental/interdental contrast and the other for the emphatic/non-emphatic contrast.

4.1. Dental/interdental

As noted in the literature on multivariate analysis, the MANOVA is sensitive to a number of data distributions, including sample size, normality, outliers, linearity, multi-collinearity and singularity, and homogeneity of variance-covariance matrices (cf. the references cited above). Therefore, before running the test, it must be checked whether these assumptions are met.

Fortunately, no serious violations of the assumptions were found. The number of subjects per cell far exceeded the required minimum (which is equal to the number of dependent variables). Indeed, the numbers in Table 1 above indicate that they also exceed the minimum of 20 subjects per cell that ensures robustness against certain degrees of skewness and kurtosis. The Mahalanobis test also indicates that there are no serious outliers (Mahal. Distance = 14.27; critical value = 16.27). Likewise, a matrix of scatter plots generated by the SPSS software show that linearity is satisfied. The value for Box's test is $.25 > .05$, thus indicating that our data do not violate the assumption of homogeneity of variance-covariance matrices. Finally, Levene's test shows that none of the significance values for the three variables are less than .05, a fact that indicates that the assumption of equality of variances is not violated. On the whole, there seems to be no risk in performing a MANOVA test on our data to explore the effect of level on the set of dental/interdental variables.

When a MANOVA test is run, the results turned out to be statistically significant. The values are as follows: $F(6, 312) = 3.663$, $p = .002$; Wilks' Lambda = .88; partial eta squared = .06. When considered separately, the values for the three variables are found to be statistically significant. In the case of d/δ , $F(2, 158) = 8.77$, $p = .000$; partial eta squared = .10; for t/θ , $F(2, 158) = 6.68$, $p = .002$; partial eta squared = .07; for d/z , $F(2, 158) = 6.43$, $p = .002$; partial eta squared = .07. Therefore, the null hypothesis can be rejected.

An LSD post hoc test was also run to see if all the differences between group means are statistically significant for the three dependent variables. In this respect, only differences between the 4th grade and the other two grades are found significant, while none of the differences between the 6th and the 8th grades are significant. Concerning the d/δ dyad, the difference with the 6th grade was significant at the .001 level, and with the 8th grade at the .000 level. As to the t/θ dyad, the alpha levels are .005 and .001, respectively. Finally, the respective alpha levels for d/z are .025 and .000. This means that, starting from the 6th grade, knowledge of the dental/interdental contrast tends to be stabilized.

Comparison with the results of the emphatic/non-emphatic opposition will show that this is a general trend for our sample.

4.2. Emphatic/non-emphatic.

As in the previous case, a preliminary assumption testing was conducted and some violations were noted. In particular, when multivariate normality was checked through Mahalanobis distances, the maximum value recorded was 24.49, which far exceeded the critical value of 18.47. Fortunately, only one person (the outlier) exceeded the critical value and, therefore, a decision was taken not to discard him/her. Levene's test also showed that the significance value for the t/t variable was less than .05, thus indicating that this variable did violate the assumption of equality of variance. According to Tabachnick and Fidell (2007), the alpha level in such cases should be reduced to .025 or .01 rather than the conventional .05. Apart from these violations, the other assumptions were satisfied.

The MANOVA test shows that the effect of level is statistically significant. These are the values: $F(8, 304) = 4.66$, $p = .000$; Wilks' Lambda = .79; partial eta squared = .10. Therefore, the hypothesis that level has no effect on the acquisition of the emphatic/non-emphatic contrast (i.e. the null hypothesis) should be rejected. However, when the variables are considered separately, the relation between level and the t/t variable is not found to be statistically significant. By comparison, level has a highly significant effect on the other three variables: $p = .000$ for δ/z , $p = .001$ for s/s , and $p = .000$ for d/d . Partial eta squared varies between .09 and .11.

When an LSD post hoc test was performed, the difference between the 6th and the 8th grades was found to be non-significant, just as was the case with the dental/interdental contrast. By opposition, the difference between the 4th grade and these two was highly significant for the three variables: $p = .000$ for δ/z for differences with both the 6th and the 8th grades; $p = .000$ and .001 for s/s for differences with the two grades, respectively; and $p = .014$ and .000, respectively, in connection with d/d .

Before turning to the interpretation of these results, we will consider in the following section the variable of sector (i.e. public or private) to see whether it has any effect on the data. As will be discussed later on, this section has been included mainly because other studies (cf. Schmidt 1987) have shown the in(effectiveness) of the teaching/learning atmosphere in the acquisition of MSA.

4.3. Sector.

The means achieved by groups from public and private schools were also subjected to statistical analysis to consider whether or not the difference between them was significant.

Indeed, there was a difference between the scores of the public and the private groups, as shown by the following table:

Table 3: Means for public and private groups

	d/δ		t/θ		d/z		d/d		t/t		δ/z		s/s	
	pub.	priv.	pub.	priv.	pub.	priv.	pub.	priv.	pub.	priv.	pub.	priv.	pub.	priv.
4 th grade	1.30	4.04	1.07	3.65	1.26	2.56	1.19	4.45	1.69	7.13	.57	2.18	0.53	3.50
6 th grade	3.87	5.43	3.23	5.56	2.79	4.52	2.86	6.65	4.78	7.17	3.07	5.00	3.57	5.26
8 th grade	3.65	6.07	1.78	6.96	2.39	6.22	3.77	7.22	3.04	7.51	1.77	5.51	1.50	6.48

These means show a clear difference between the two categories of groups for all grades and all dyads. A MANOVA test indicates that the differences are highly significant ($p = .000$) both for the dental/interdental dyads and for the emphatic/non-emphatic dyads.

Private and public schools in Morocco differ in a number of respects some of which may be held responsible for the achievements of our groups. But some aspects should be mentioned first only to be discarded as possible explanatory factors. One of them concerns curricula: private schools use the same textbooks dictated by the ministry of education or its regional representatives for all schools. The teachers are also supposed to follow the same ministerial guidelines dictating the objectives, both general and procedural, for each lesson and each unit and the time period allotted to each activity. Private schools do not have their own inspectors, but these are public officers responsible for watching over the teaching process and making sure that the official guidelines are respected in public as well as in private schools. From an administrative angle, private schools work under the supervision of the ministry delegations under the same rules and obligations as public schools. As to teachers, most of those working for private middle schools are generally public school teachers who work for the private ones under part-time contracts. The primary school teachers, on the other hand, are generally recruited as

full-time teachers for salaries that are far worse than the salaries of their public school colleagues, at least in schools similar to those in which this study was conducted. Generally, they are university graduates who had no pre-service training, and most of them wait for an opportunity to have a job in the public sector. Therefore, it seems unlikely that private school teachers differ much from their public school colleagues concerning the linguistic input they provide their students with, at least as far as our variables are concerned.

Private schools, however, are preferred for their teaching atmosphere. Parents associations are very active and require a certain level of discipline and hard work on the part of teachers and staff in return for the fees they pay. Absenteeism among teachers is very rare and when a teacher is absent, the school managers generally hire substitutes so that students do not miss their lessons, which is not the case in public schools. But the most crucial difference between private and public schools resides in the nature of parents. Most of the families that send their children to private schools come from the middle classes characterized by their level of education. In a country where the rate of illiteracy among the population is still high, educated parents can make a big difference in the way they raise their children. Unlike uneducated parents, educated parents can help their children do their homework, encourage them to read and write, make sure that they acquire the basic skills, bring them learning materials, and so on and so forth. Judging from the context in which this study was conducted, it seems that this is the most important factor that distinguishes private schools from public ones. As a consequence of this, the bar of standards and students' motivation are expected to be higher than in public schools, not only in Arabic, but also in other subjects.

It should be pointed out, however, that the success of public schools stops at the level of middle school. Many parents prefer to send their children to public school immediately after the six year period of primary school or after middle school. The result is that there are very few successful private high schools, and still less private universities or colleges. What is common to these is that they tend to specialize in economics and management in which the language of instruction is basically French.

5. Discussion

The major point, though perhaps a weak one, that can be made on the basis of the results of this study is that the more a learner advances in the acquisition of CA/MSA, the more s/he will

be able to distinguish between cases of dental phonemes and cases of interdental ones, and between cases of emphatic phonemes and cases of non-emphatic ones. This would indeed be a trivial finding if it was agreed among students of Arabic diglossia that CA/MSA and colloquial MA are two different languages, with the latter being a mother tongue and the former a second language. It is well-known among researchers of second and foreign language acquisition that L1 continues to exert various degrees of influence on knowledge of L2 until the learner achieves complete, native-like assimilation of the L2 system, though very few manage to reach this stage (cf. Ellis 1985, Gass and Selinker 1994/2008 and the references cited therein). But as was pointed out in Section 1 above, a large number of scholars propose analyses that consider Arabic as a single language or a single system where CA/MSA and the colloquial are endpoints of a continuum rather than distinct systems. This point will be elaborated later on.

Another finding of this study – and this time it is not a trivial one – is that the acquisition of the dental/interdental and the emphatic/non-emphatic contrasts in CA/MSA seems to fossilize very early in the learning process. Gass and Selinker (1994/2008:14) quote *The Random House Dictionary of the English Language* as defining the fossilization of a linguistic form, feature, rule and so forth in the following way: “to become permanently established in the interlanguage of a second language learner in a form that is deviant from the target-language norm and that continues to appear in performance regardless of further exposure to the target language”. It should be recalled that, while the differences between the means of the 4th grade and those of the 6th and the 8th grades for all the variables (except one) are statistically significant, none of the differences between the 6th grade means and the 8th grade means are significant. This fact indicates that very little progress is achieved after the 6th grade; that is, after learners are about twelve years of age. It is true that this finding cannot be generalized over the whole population, given the small size of the sample and non-random selection, but the fact that it is reached on the basis of seven variables (i.e. seven dyads) representing two phonological constructs should confer some weight on it. Indeed, many researchers have already noted the resilience of colloquial phonology, not only in the acquisition of diglossic H, but also in second and foreign language acquisition in general (cf. Ellis 1985).

In comparison with the other variables, the t/ṭ contrast seems to fossilize earlier. The reader should recollect that none of the differences between group means concerning this variable is statistically significant. It is not clear why this should be so, but in principle two explanations

can be suggested: either the contrast is very challenging and the higher grades do not manage to achieve any significant progress after what they have learned in the beginning stages, or it is not very challenging and beginners quickly assimilate as much of it as intermediate learners do. In view of the means recorded for this variable by the three groups, it seems that the second explanation is more plausible. As exhibited by Table 2 above, the group means are, respectively, 14.18, 15.68 and 15.51, and they are among the highest means recorded for all the variables. To formulate it differently, learners seem to have assimilated in the 4th grade as much of the t/ṭ contrast as they manage to assimilate of the other contrasts in later stages. But once they assimilate that much of the t/ṭ contrast, very little progress is made later on. This early fossilization can be due to different factors, including, but not only, phonological and lexical factors. A detailed contrastive analysis between CA/MSA and MA in these areas can help greatly in elucidating this point as well as different aspects of other variables. But this is not the focus of this paper, which rather directs the attention to the implications of these facts on variation in Mixed Arabic, as was explained right from the beginning.

Perhaps the most obvious implication of the findings of this study on Mixed Arabic is that speakers will vary in their attempt to approach CA/MSA. This fact has often been recognized, though only in passing. It has been clear to researchers that uneducated speakers cannot produce, in writing or in speaking, higher levels of the language such as MSA or CA. What has not been stressed, however, is that even educated speakers will show varying degrees of confusion while trying to produce what they believe to be instances of CA/MSA, and this is sometimes due to the persistent negative effect of the phonology of their colloquial varieties. For example, I have seen many written signs which read ‘*min faḏlikum*’ من فظلكم “please” with a ظ while the correct form is with ض. In Morocco, this mistake would not generally result from a direct effect of L1, but rather from hypercorrection, since MA has no interdental sounds. It seems that hypercorrections like this one should be understood as indications that the speaker is aiming at H in his/her discourse. But then, even when s/he gets the pronunciation or the spelling of an item right, or when the mistake consists in realizing an interdental phoneme as a dental one, the analyst will not know for certain whether the speaker is aiming at H or at some other level if his/her real proficiency in H is not known in advance. In short, performance is *PARTLY* influenced by L1, as is usually the case in the acquisition of a second linguistic system. Therefore, corpora (i.e. texts

produced by real speakers, either spontaneously or during elicitation) should not be assumed to be exact reflections of underlying systems, or that they are always sociolinguistically meaningful.

Now, how should the difference between private and public schools be interpreted? Schmidt (1987), who was investigating the effect of Arabic on the acquisition of the English interdental phonemes /θ/ and /ð/ by Egyptian students, noted the difference between students from well-reputed (non-terminal secondary) schools and those from ill-reputed (terminal secondary) ones. The two groups differed not only in their mastery of the correct pronunciation of the English interdental phonemes, but also in their Classical Arabic equivalents. The second group tended to realize the two phonemes as /s/ and /z/, respectively. This finding is in line with the results of this study, as shown in Table 3 above. But can these results be interpreted as an indication that those who can afford fees for private schools will form a socio-economic class and that one of the indicators of belonging to this class is the mastery of CA/MSA phonemes considered here? If so, our dental/interdental and emphatic/non-emphatic dyads would obviously form sociolinguistic variables. However, while sending one's children to private schools may be an indicator, beside others, of middle class culture, it is doubtful that good pronunciation of CA/MSA is seen as indexical of that class in Morocco. In fact, there are social circles in which the opposite would happen: highly reputed schools use French as the language of instruction while Arabic is taught only as a subject. In these circles, it is correct pronunciation of French rather than Arabic that is indexical of high social status. Therefore, I think that all that should be retained from the difference between the scores of the private and the public school subjects is that there are some factors, e.g. teaching environment, that stand behind it, and that students who are good at Arabic will also be good in other school subjects and vice versa.

Besides, the task used in this study measures the receptive knowledge of the dental/interdental and the emphatic/non-emphatic oppositions. The results are certainly no guarantee that production will also show similar differences between private and public schools. Although no previous study that I know of has studied the variables considered here in production, my speculation is that Moroccan speakers will show idiosyncratic differences that will be difficult to interpret consistently in sociolinguistic terms. If receptive knowledge turns out to be different from productive knowledge, the hypothesis that L exerts some influence on the acquisition of H will be given further support, for, apart from the negative influence of L1, what would preclude speakers from uttering the sounds of the target language even when they know

the correct pronunciation? The difference between reception and production of H seems to be an issue worth investigating in order to shed more light on the interaction between L and H in Arabic diglossia.

A few comments should be made about the notion of “local H” often referred to in the literature. It is noted that there is a lot of variation in CA/MSA, not only between different Arab countries, but also within a single country (cf. Ibrahim 1997, among others). Many aspects of this variation are not the result of transfer from the colloquial variety, but some of them certainly are. Take the example of the pronunciation of CA/MSA /ʃ/ as [g]: Egyptians generally do not consider the realization of ‘*ʃamal*’, for example, as ‘*gamal*’ (camel) as incorrect MSA, while other Arabic speakers recognize this pronunciation as indexical of them precisely because the replacement of /ʃ/ by /g/ is a feature of Egyptian (more precisely ‘Cairene’) colloquial Arabic. Similarly, there are many aspects of CA/MSA in Morocco that indicate interference from MA. Although this local variety has not been studied as closely as was MSA in Egypt, we can point out some of its features on the basis of impression. Of relevance to us in this paper is the realization of interdental phonemes as dentals. It seems that Moroccans generally do not care much to pronounce these phonemes as required by correct CA/MSA except perhaps in reading the Quran; and even here, only experienced readers do. Why should this be the case? My answer is that the pronunciation of interdentals is not sociolinguistically very significant. In other words, this feature does not vary between the educated and the uneducated, or between formal and informal contexts or whatever. I have noticed that among religious scholars, many do not make any effort to avoid this kind of interference from MA, and that must be because it is not considered to be an indicator of less good scholars. The case does not seem to be different with emphaticization vs. de-emphaticization, although the issue needs further research. *It seems that, of all the possible aspects of interference from L into H, some gain sociolinguistic significance while others don’t.*

Failure to recognize this fact can result in misinterpretations of data. It should be conceded that not all variables exhibit similar degrees of complexity to the ones considered in this study. For example, for those MA speakers who realize the phoneme /t/ as the affricate [ts], there is a one-to-one relation between this sound and its CA/MSA equivalent [t]. Thus, if a speaker shifts from colloquial [ts] to standard [t], it would be safe to interpret this shift as an attempt on his/her part to emulate the H style. On the other hand, if the speaker does not shift, that should be interpreted either as a subconscious effect of L1 or as a conscious refusal to sound

very classical or some other such reason. In comparison with this case, the use of dental /t/, /d/ or /ð/ instead of their interdental equivalents does not necessarily indicate that the speaker's target is not H. In fact, the speaker may be aiming to produce discourse in H, and the colloquial features that show up are simply not under his/her control. The early fossilization of the dental/interdental and the emphatic/non-emphatic contrasts is well in support of this claim. If Moroccan learners of CA/MSA generally stop progressing in the acquisition of these aspects, and probably many others, at an early stage (viz. end of primary school), then some colloquial features will keep showing up in their CA/MSA discourse even after they have become competent in this language. If this is not taken into consideration, an analyst may be misled into believing that the presence of the colloquial features in question is sociolinguistically meaningful, much like the presence of [ʈ] instead of [t]. In fact, even if fossilization occurs at a later stage, or does not occur at all, speakers will differ in their proficiency in H and, simultaneously, in their control over the negative effect of colloquial interference. Consequently, at least some of the puzzling variation in Mixed Arabic will be due to interference from L1 and, therefore, is not sociolinguistically significant, apart from indicating the effect of various degrees of proficiency in H.

On the basis of what has just been said, I suggest that some aspects of Mixed Arabic should be investigated by means of tools developed within the area of Second Language Acquisition (SLA). The nature of these aspects remains to be determined, but will most probably include phonological, syntactic and semantic variables; that is, variables that can be shown not to be completely under speakers' control at some stage in the learning process. This psycholinguistic investigation should not only focus on the acquisition of individual features of the target language, and on the role of the mother tongue either in encouraging or in hindering the acquisition process, but also on the interaction between various features (e.g. their order of acquisition). Perhaps the major explanatory factors at this stage are cognitive in nature, but the effect of social psychological factors can also elucidate some aspects of H learning. In this respect, the investigation of such phenomena as language attitudes may be very illuminating, especially when diglossic and bilingual settings are compared. When the major psycholinguistic phenomena are identified, and their effect on Mixed Arabic determined, we will also be able to understand the effect of different Arabic colloquials on the acquisition of CA/MSA as well as differences in the Mixed Arabic produced by different Arabs.

Once the effects of psycholinguistic factors are identified, the sociolinguistics of Mixed Arabic can then be tackled. It should be pointed out that sociolinguistics is used here to refer to the speaker's manipulation, whether conscious or unconscious, of linguistic items to communicate meanings other than the propositional content generally expressed by these items. Some features such as accent may be less amenable to the speaker's manipulation, but it would be clear both to him/her and to the audience what social meaning these features have. Variation that is due to psycholinguistic factors, both inter-speaker and intra-speaker, does not fall within the domain of sociolinguistics because it does not express any social meaning, apart from providing an idea about the speaker's (or the writer's) proficiency in H. In second or foreign language acquisition, a learner's interlanguages (i.e. intermediate grammars between L1 and L2), no matter how systematic they can be, are generally not approached sociolinguistically (cf. Selinker 1992). In diglossia, the mixing of L and H is partly sociolinguistic and partly psycholinguistic in nature. Failure to recognize this double character has halted research on Mixed Arabic at the stage where it stands in the present time, and which is very well described by the subtitle of Mejdell (2006): "somewhere between order and chaos". Researchers of Mixed Arabic have apparently proceeded with the assumption that competent speakers of H at least have complete mastery of H features and that, consequently, any deviance from these features toward their colloquial equivalents must be intended by the speaker to have some meaning or to produce some effect. The major argument behind this study is that there certainly are many features which are used in this way, but there are also others which are produced by interference from L1, the colloquial variety. Hopefully, when the latter are disentangled from the former, the nature of diglossic mixing (and its sociolinguistic functions) will become more systematic and less chaotic than it is now.

6. Conclusion

In this study, the focus has been on a possible correlation between level defined in terms of grade (and by implication, proficiency) and the acquisition of the dental/interdental and the emphatic/non-emphatic contrasts in CA/MSA. The test administered to Moroccan 4th, 6th, and 8th grade learners of fundamental school revealed that, while the difference between the 4th and the 6th/8th grades is statistically significant, the difference between the 6th and the 8th grades is not. This finding was interpreted as a fossilization that occurred at early stages of the learning

process. On the assumption that it is not a matter of coincidence, or that it is specific to the sample or the variables investigated here, this finding should alert students of Arabic diglossia that Mixed Arabic will exhibit a good number of similar features that are neither under the control of the speaker, nor taken by the audience to be sociolinguistically meaningful. These aspects should be investigated within psycholinguistics and, more specifically, within SLA, while sociolinguistics will deal with the other aspects of Mixed Arabic that correlate with social variables (i.e. constituents of a speech situation). Thus, it should be clear that, while this study calls for a return to psycholinguistic methods to investigate variation in Arabic, it does not claim that all aspects of this variation can be explained by psycholinguistic factors; sociolinguistics will continue to do part of the job.

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