

A SOCIOPHONETIC STUDY OF ENGLISH-ARABIC BILINGUAL CHILDREN

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Abstract

This paper outlines some of the findings from an investigation into the speech production of two English-Arabic bilingual children. The subjects are two Lebanese boys who were born and raised in Leeds and who were aged six and nine at the time of the investigation. Analysis of the subjects' sociolinguistic behaviour with respect to accentual features salient in their community suggests that they are opting for sociolinguistically unmarked variants in their speech. An examination of the children's glottal stop production in English and Arabic shows that the subjects are aware of the different roles [ʔ] plays in each language and of the appropriate phonological contexts for its occurrence; however, the amount of glottalling expected in Leeds English does not seem to have filtered into their production. Auditory analysis of the subjects' production of six English vowels (chosen among vowels that have marked local realisations in Leeds) reveals that few of the subjects' realisations correspond to those found in the Leeds accent. The interpretation of this phenomenon is complex, involving a combination of factors, some of which are related to the bilinguals' sociolinguistic background, and others related to sociolinguistic changes which may be affecting the whole community.

1. Introduction

This study draws on insights from three areas that are rarely dealt with in combination.¹ These are: childhood bilingualism, phonology, and sociolinguistics. An investigation is undertaken into bilingual children's phonological awareness and some of the processes involved in their acquisition of two phonologies. At the same time, the study examines the children's accent with respect to sociolinguistic variables that are salient in their community. Bilingual accent acquisition and the factors affecting it have rarely been considered in the literature. In monolingual situations, the acquisition of phonological features that are known to exhibit sociolinguistic variation has been found to take place alongside the acquisition of phonological competence, as part of the child's construction of social identity (Foulkes, Docherty & Watt this volume; Roberts 1997). Since the early stages of acquisition are known to be influenced by caregivers, some of the accentual features of a community can only be acquired by the child if the caregivers speak a dialect similar to that of that community (Kerswill 1996: 190; Roberts 1997: 358). The situation is more complex in bilingual acquisition, especially if both parents speak a minority language and have no full command of the language of the host society or of its dialectal features. The study seeks to investigate into the interaction between phonology and sociolinguistics in order to obtain information about social factors affecting bilingual children's success in developing a sociolinguistic identity.

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2. Background to the study

Apart from the current debate over whether bilingual infants initially build up one phonological system or two, an important and until lately neglected issue is the examination of the 'separate' systems these children eventually develop and the search for signs of interference, even in the later stages of childhood. These signs are bound to occur among all bilinguals, whether they have acquired their languages sequentially or simultaneously, and no matter how well their languages are developed (Johnson & Lancaster 1998: 292; Schnitzer & Krasinski 1994: 586). Cross-language interference is the transfer of elements - whether phonological, lexical, grammatical, or even cultural - from one language to the other.

Interference at the phonological level mainly occurs when sound features from one language intrude on the second. Phonemic and phonetic differences between the two languages are usually considered to be the reason behind such interference. However, there are other important reasons as well. Even in monolingual situations, the existence of several accents within a speech community shows that there is no single stable phonological model that a child attempts to acquire. As every child is exposed to a range of variable inputs, some of the variation in his/her speech will be structured according to phonological principles, while some will be sociolinguistically organised.

In bilingual situations, identical sociolinguistic competence in two languages is difficult to achieve, since socio-cultural upbringing in both cultures, a pre-requisite for sociolinguistic competence, is prone to unevenness. The child's acquisition of two sociolects may be affected, especially if the home language is different from that of the host society. In such cases, the parents are usually immigrants who end up speaking a second language dialect that includes features of interlanguage, but their children will not speak this dialect. As in monolingual situations, people of the same age will presumably have more influence on how the children sound and how they use the language than will the parents (Hoffmann 1991: 26). Still, what will be missing is the initial parental model that should provide the child with the basic phonological and sociolinguistic patterns of the dialect of the society.

3. Aim of the study

This study examines a number of features in the speech of two English-Arabic bilingual children. The purpose is to explore the interaction between the phonologies of the two languages on the one hand, and social influences on the children's adoption of linguistic features that are indicative of accent development on the other. Therefore, the variables observed have variants that are phonologically as well as sociolinguistically conditioned. Sections four and five offer an overview of the subjects' background and of the procedures followed for data collection and analysis. Then, findings from two main investigations in the study are presented:

- In section six, glottal stop production in English and Arabic is examined in the subjects' speech. The aim is to check whether the children are aware of the role of [ʔ] in each language and of the appropriate phonological contexts for its use.
- In section seven, an examination is undertaken of a number of English vowels known to carry sociolinguistic relevance in the subjects' community. The aim is to observe the children's behaviour with respect to features that are known to distinguish the Leeds accent from other regional accents. A comparison is drawn between the patterns of variation observed in the children's speech and what is known about variation in their community.

4. The subjects' background

4.1 Linguistic background

Mazen (M6) and Mohammed (M9) are two English-Arabic bilingual brothers (aged 6 and 9 respectively) from a Lebanese family residing in Leeds. Both children were raised in an environment where their mother and father addressed them primarily in Arabic. At the age of three, the subjects started attending a nursery in which the medium of instruction is English, and are now pupils at a local primary school. The children are:

- 'Bilingual first language' acquirers (BFL as termed by De Houwer 1990), as they have acquired their languages sequentially
- 'Co-ordinate' bilinguals, as they have acquired each language from separate speakers and under quite separate circumstances (home *versus* society) (Lyon 1996: 48, Fantini 1985: 30)
- Bilinguals with English dominance, as was determined from analysis of their speech in each language, interviews with their parents, and self-reports.

4.2 Language input

The subjects' parents are both native speakers of Lebanese Arabic who have learned English as a foreign language. Input from the parents is mainly Arabic, except in the presence of monolingual English speakers and in certain situations in public places. Input from the subjects' community is mainly English (neighbours, friends at school), but occasional Arabic input is available from friends in neighbouring cities and from Arabic TV channels. The family also spends a one-month holiday in Beirut every year visiting relatives. On the whole, the subjects receive equal amounts of input in English and Arabic in their everyday life.

4.3 Language attitudes

Both parents and children have positive attitudes towards the society they are living in and towards both languages. The parents are satisfied with the fact that their children are growing up bilingual, and are keen on encouraging each of the languages for different purposes. On the one hand, they insist on addressing themselves to the children in Arabic since the parents are the main source of Arabic input available to their sons. On the other hand, they openly express their admiration of the children's English as compared to their own and often tell the children how proud they are of their linguistic skills. The children have positive feelings towards living in Leeds though they admit being very excited about going to the Lebanon every summer. One reason is that the brothers are often made aware by their parents of the 'advantage' they have over other children in being able to speak two languages; they are therefore anxious to meet their Lebanese relatives in Beirut and 'display' their skills. In Leeds, they often spend their leisure time playing together and with neighbours during the week, and go on trips with their parents at the weekend.

5. Procedure

5.1 Data collection

Regular visits were made to the subjects' home and observations were made of the types of linguistic interactions that took place between parents and children, and the children between themselves. Two techniques for data collection were then followed.

First, tape recordings of the speech production of the children constituted the corpus upon which all the analyses in this study were based. The recordings were made in the subjects' home partly under natural circumstances and partly using elicitation techniques. As a result, the corpus took two different forms: samples of near-natural speech elicited by asking each child to describe photos in a family album (the aim was to obtain unscripted speech that would also offer data needed for the variables under study), and isolated words elicited from each child by showing him a picture book and asking him to name objects the utterance of which required the use of the desired variables. The recordings were conducted in a way that would activate the children's monolingual mode in each language (c.f. Grosjean 1998: 138), since only-arabic or only-English sessions were carried out. However, it was not possible to achieve this in Arabic sessions. While the subjects spoke only English in English sessions, they often resorted to English utterances in Arabic sessions, as they knew that the interviewer spoke both languages. In the analysis, code-switches were discarded even if the utterances contained target sounds. A total of ninety minutes of conversation with each child were used for the analysis.

Second, interviews were conducted with the parents in order to establish their language background, their attitude towards the languages, their strategies to assist or hinder their children's bilingual development, and their social ties of friendship, work, or neighbourhood, which would reflect their degree of integration into society.

5.2 Linguistic variables

For the purposes of this paper, two variables are analysed. First (section 6), an auditory and acoustic analysis of the subjects' glottal stop production in English and Arabic is carried out, taking into consideration corresponding phonemic or socio-phonetic roles that the glottal stop plays in each language. Second (section 7), an auditory analysis of the English vowel system developed by the subjects is undertaken, with emphasis on 'accent-revealing' vowels specific to the Leeds accent.

Before presenting analysis from those two variables, a brief summary of other investigations attempted in the study is given. The latter were conducted on a series of linguistic variables chosen according to features that are likely to be responsible for language interference in the subjects' production:

- VOT patterns, taking into account the aspirated/ non-aspirated distinction in stops in English versus the voiced/ voiceless distinction in Arabic
- /r/ production in both languages, taking into account its realisation as an approximant in most varieties of English and a tap/ trill in Arabic
- A collection of consonants from each language that are absent from the phonemic inventory of the other (e.g. /p/ in English and /h, ʔ/ in Arabic).

Analysis of these variables showed signs of language interference in the children's speech that was mainly unidirectional from English into Arabic (Khattab 1998). This observation accumulated with other evidence throughout the study to suggest that the subjects' dominant language is English. Such a result is not surprising when considering the subjects' country of residence and the language of the majority. However, analysis of the subjects' sociolinguistic behaviour yielded results that were difficult to interpret.

5.3 Judgement experiment

A small experiment was designed to test the findings of the study. Twelve native English speakers – all trained phoneticians living in Leeds – were asked to

listen to the tapes in order to identify the children's accent. The judges were asked to justify their choice by referring to each child's use of:

- Consonantal variables: e.g. frequency of glottal stop usage; type of /r/ produced ([r]/ [ɹ]/ [v]); rhotic versus non-rhotic type of accent; H dropping; (ng) realisation ([ɪn], [ɪŋ], etc.); /θ, ð/ variables ([θ, ð] versus [f, v, ð]) etc.
- Vowel variables: e.g. FACE - GOAT- BATH - PALM, etc.

The rest of the paper will concentrate on findings from analysis of some of these variables (sections 6 and 7), followed by results from the judgement experiment (section 8) and tentative interpretations (section 9).

6. Glottal stops

6.1 Glottal stops in Arabic

In Arabic, like in many other languages in the world (Ladefoged & Maddieson 1996: 73) the glottal stop is part of the regular stop series, and occurs in initial, medial, and final position in the word, as illustrated in (1). In principle, the glottal stop involves a full closure of the vocal folds, and therefore shares certain properties with other voiceless stops. It occurs as the result of air-pressure which builds up behind an occlusion around the glottis, which is maintained for a considerable period of time, and during which there is no vocal cord vibration (Shaheen 1979: 108).

(1) Examples of glottal stops in initial, medial, and final position in the word:

(a) /ʔi:do/	(b) / ^h halʔa/	(c) /laʔ/
hand.GEN.3 rd pers.sing	earring.sing.fem	
'his hand'	'earring'	'no'

6.2 Glottal stops in English

Though the glottal stop is not phonemically distinctive in English, it is often present as a reinforcement of syllable-initial accented vowels when emphasis is placed on a given word ('it's [ʔ]empty!', 'such dis[ʔ]order!') (Cruttenden 1994: 168). More importantly, it is an allophone accompanying or replacing other English stops in various contexts (discussed below). It is a socio-phonetic variant, since its frequency of occurrence depends on social as well as phonetic environments (Wells 1982: 260).

Glottalling (glottal realisation of /t/ - and in some accents of /p/ and /k/) and glottalisation (glottal reinforcement of /t/, /p/, and /k/) have become increasingly familiar in most British accents - including RP - over the 20th century (Wells 1982; Mees 1987; Holmes 1995; Hughes & Trudgill 1996). Wells distinguishes up to eight different contexts for glottalling/glottalisation (pp. 260-261), depending on the stop's position in the syllable and the nature of preceding and/or following sounds (consonant, vowel, liquid, nasal...). In this study, the various contexts have been compressed into two main ones that can be distinguished in terms of their frequency of occurrence across accents. These contexts are:

- Context 1: syllable-final and pre-consonantal position (_#; _#C; _C)

(2) pot; quite good; boots

- Context 2: pre-vocalic and pre-lateral position (_#V; V_V; _l)

(3) sit on; water; bottle

Most British accents usually make use of glottalling in context 1 more than context 2 (cf. Wells 1982: 261); still, the overall frequency of glottalling varies across accents, age, and social class. In Yorkshire dialects, glottalling is frequently heard in both contexts, and is used up to two or three times more among the young generation than among older speakers (Stoddart, Upton, & Widdowson 1999).

6.3 Questions raised

Differences in the distribution of the glottal stop in English and Arabic raise important questions regarding the system(s) that bilinguals build that enable(s) them to make use of this sound and/ or its different realisations in each language. In sections 6.4–6.6, an examination of the children’s awareness of the role of the glottal stop in each language will be undertaken by:

- Checking whether the subjects have incorporated the glottal stop in English as a sociolinguistic variant of /t/ and examining the frequency and environments of its use compared to a supralaryngeal stop
- Checking whether they use this variant in their production of Arabic /t/s in environments comparable to glottalling environments in English.

The children were expected to make frequent use of [ʔ] in English as a replacement for /t/ in contexts 1 and 2 mentioned in section 6.2. There exist no studies done specifically on the use of glottal variants in Leeds that can serve as a basis for comparison of results. Still, personal communications with phoneticians based in Leeds and results for young speakers obtained from other studies investigating this variable in Newcastle, Derby and Sheffield (Docherty & Foulkes 1999; Stoddart et al. 1999) support the suggested expectation. In Arabic, the subjects were expected to produce [ʔ] only when the underlying phoneme is a glottal stop.

6.4 Procedure

6.4.1 English tokens

The investigation in English was limited to cases of glottalling of /t/. All the words spoken by the subjects which contained /t/ in any of the two contexts (section 6.2) were extracted from the tapes. These include words that were uttered during the subjects’ free conversation as well as words that were elicited through the picture naming technique. Examples include ‘feet, butter, put it, kettle’.

6.4.2 Arabic tokens

All the words that contained any occurrence of a glottal stop in any position in the word (initial, medial, or final) were extracted from the tapes. E.g. [ʔɪʒ're:n] ‘feet’- [ħal'ʔa:t] ‘earrings’- [san'du:ʔ] ‘box’. In addition, all the words that contained /t/ in any of the contexts comparable to those mentioned for English were also extracted in

order to check whether the children apply glottalling to Arabic /t/s as well. E.g. [be:t] ‘house’- [ˈte:ta] ‘grandma’- [ʃaˈra:t] ‘hair’.

6.4.3 Analysis

Auditory and acoustic² analysis was carried out on a total of 174 English /t/ tokens and 91 Arabic /ʔ/ and /t/ tokens. For /t/ tokens, a three-way decision was made as to whether each item was heard as (i) the actual voiceless stop (ii) a glottal stop or (iii) some other realisation.

6.5 Results

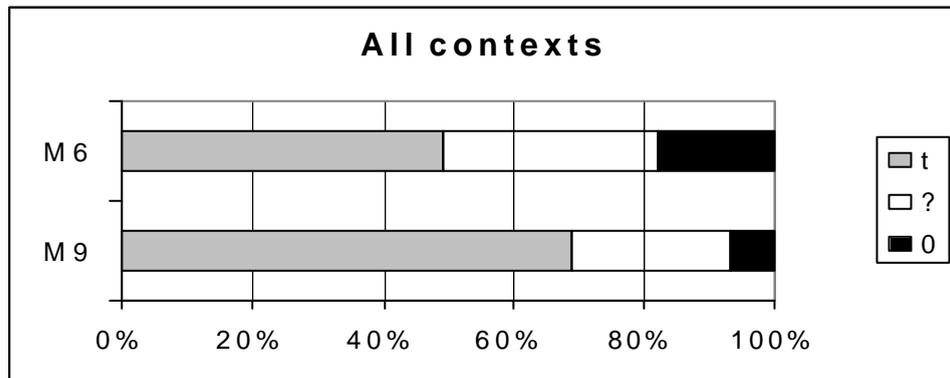
Note: M6 and M9 refer to the subjects and their ages.

6.5.1 English

There were four variants for /t/ in the tokens analysed for each subject: [t], [ʔ], [ʔt], and \emptyset . When presenting the results, the categories for glottalled and glottalised realisations are grouped together because of the small number of glottalised forms and because the main purpose is to compare the frequency of the [t] variant versus [ʔ]/[ʔt] realisations.

On the whole, the children use fewer glottalled realisations of /t/ than is expected from subjects of their age living in their region (Figure 1). While glottal variants are deeply rooted in the region and among young speakers in general, the majority of the subjects’ /t/ realisations are plain [t]s, though this observation is more salient for M9 (69%) than it is for M6 (49%).

Figure 1: Percentages for /t/ variants in all contexts as produced by the subjects in English. N (M6) = 98; N (M9) = 75.



Symbols in the legend stand for: [t], [ʔ], and \emptyset (deleted sound) respectively.

With respect to the different environments, Figures 2 and 3 show the distribution of /t/ realisations in contexts 1 and 2. Such results further support the observation that the children use fewer glottal realisations than expected. In addition, the following observations were made:

² Results from the acoustic analysis of the subjects’ glottal stop production in English and Arabic are presented in Khattab (1998).

- In context 1, which is most common for glottalling, M6 produces an equal number of [t]s and [ʔ]s (Fig. 2), while M9 produces even more [t]s (Fig. 3)
- In context 2, the subjects make little or no use of the glottal stop. (M9) has a striking 100% [t] (Fig. 3) realisation for /t/, while M6 has only 14% of [ʔ] production in this position (Fig. 2)
- Despite the fact that the subjects' overall use of [t] is predominant, their phonological behaviour is appropriate in that they separate /t/ variants according to 'permissible' phonological contexts by making use of a higher proportion of [ʔ] in context 1 than in context 2 (cf. Wells 1982: 261).

Figure 2: Percentages for /t/ variants in each context for M6.

N (context 1) = 69. N (context 2) = 29. Symbols in the legend stand for [t], [ʔ], and ∅ (deleted sound) respectively.

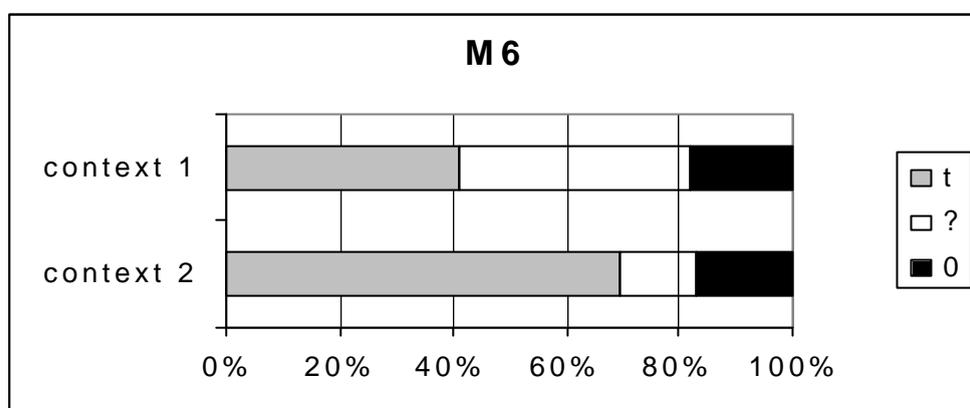
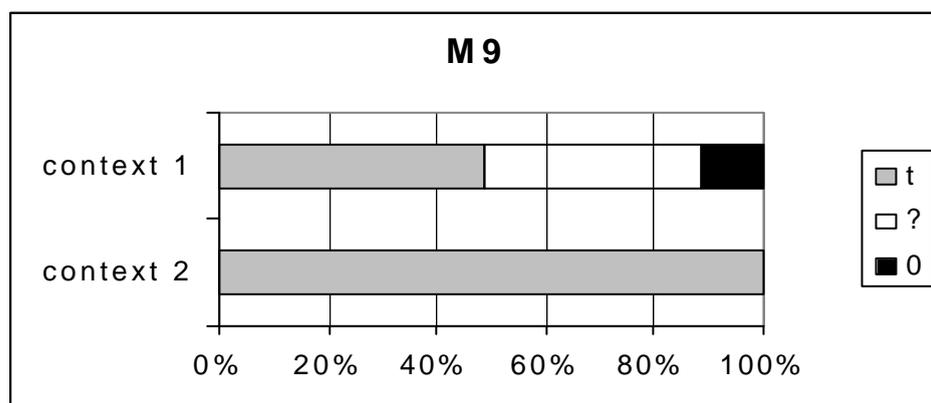


Figure 3: Percentages for /t/ variants in each contexts for M9. N (context 1) = 45. N (context 2) = 30. Symbols in the legend stand for [t], [ʔ], and ∅ (deleted sound) respectively.



When the two subjects are compared, M6 seems to have adopted the sociolinguistic patterns associated with realisations of /t/ better than M9. His overall use of glottalling versus /t/ realisations is significantly greater than that of M9 (results of Chi Square test were significant at $p < 0.025$; $df = 1$; $\chi^2 = 3.56$). He also has a

higher percentage of *t*/ omission than M9; in intervocalic cases, this might be an indication of *t*/ leniting towards zero realisation, which is found in rapid casual speech in Leeds and West Yorkshire. In this context, *t*/ can be realised as [ħ], a kind of incomplete glottal closure or weakened glottal stop (e.g. [fə'gɒħən] *forgotten*).

6.5.2 Arabic

For both subjects, the tokens where *t*/ fell into any of the environments common for glottalling were smaller in number than the English tokens and limited to two environments: word-final and intervocalic. Still, the results obtained (Table 1) offer an answer as to whether the subjects have superimposed a sociolinguistic pattern specific to English *t*/ onto their Arabic *t*/ in comparable environments:

Table 1: Distribution of realisations of Arabic *t*/ for both subjects.

M6				M9			
Environment	N	[t]	∅	Environment	N	[t]	∅
All positions	19	16	3	All positions	14	12	2
word-final	13	10	3	word-final	8	6	2
intervocalic	6	6	-	intervocalic	6	6	-

None of the *t*/ phonemes was realised as a glottal stop in an environment that would be prone to glottalling in English. All the glottal stops that were produced by the subjects in Arabic were originally present in the underlying form (/ʔ/).

There are two possible explanations for such an outcome. First, the fact that the children separate the allophones they use for *t*/ in each of their languages is a proof to their development of two separate phonological systems for English and Arabic, which is not a surprise given their age. Second, glottal realisations of *t*/ are phonological as well as social variants: they are constrained to specific environments on the one hand, and mostly associated with British accents on the other. Such a combination makes it unlikely for such variants to be used in Arabic by the subjects. Knowing that children pick up a social variable from models in their environment, the existence of glottal variants in the subjects' speech in English must have resulted from their interactions with English models in their community (peers and adults). Since the model available for their Arabic is mainly taken from their parents, they are bound to acquire the realisation(s) for Arabic *t*/ the parents utter that.

As for the tokens where *t*/ was deleted in final position (Table 1), they might be unusual when considering suggestions that Arabic final *t*/s preserve the release burst and aspiration in cases where they might be unreleased or omitted in English (Shaheen 1979: 108). However, the study being referred to was conducted on Egyptian Arabic only, and there is a need for more recent phonological descriptions of Arabic *t*/ that would support Shaheen's reported findings. Since the tokens with *t*/ deletion in this study are few (2 for M9 and 3 for M6), and so is the overall number of Arabic tokens analysed, it is not yet possible to comment on the possibility of phonological interference from English into the subjects' final *t*/ realisation.

7. Vowels

Vowel examination in this paper is restricted to a number of English vowels known to be of sociolinguistic relevance in the children's community. In principle, the

subjects' vowels should reflect the dialect of Leeds, as the subjects were born in Leeds and have been living there ever since. Their community (school, friends, neighbours, etc.) is expected to have provided them with the model.

There are few published references that provide a description specific to the Leeds dialect and to the accent we might expect the subjects to use. For the purposes of this study, I used accounts of recent developments in the speech of Sheffield and Bradford, two nearby cities with accents that are relatively similar to that of Leeds (Stoddart *et al.* 1999; Watt & Tillotson this volume). I also used descriptions from more general sources such as Cruttenden (1994), Wells (1982), Hughes & Trudgill (1996), and finally, informal observations and discussions with Leeds based linguistics students and lecturers.

7.1 Leeds vowels

In this section, Wells' (1982) method of using keywords to represent vowels has been adapted for the description of the Leeds vowel system. The keywords chosen in Table 2 are of particular interest to this study because they help distinguish the Leeds accent from other accents. The Leeds vowels are presented against RP vowels in Table 2 due to a possible relationship that will be suggested later on between certain variants found in the subjects' speech and the parents' RP-like English (the variety learned as a foreign language).

Table 2: Set of keywords from Wells (1982) *Accents of English*

	LEEDS	RP
BATH	a	ɑ
STRUT	ʊ	ʌ
FOOT	ʊ	ʊ
PALM	a:	ɑ:
START		
FACE	e:	eɪ
GOAT	o: (ɔʊ)	əʊ

Since Leeds is situated in the middle north of England, its accent has two important characteristics that usually distinguish northern accents from southern ones. The first is the absence of 'BATH broadening', i.e. the use of the vowel of TRAP in BATH words. As a result, pairs like *gas* [gas], and *glass* [glas] rhyme. The second characteristic is the absence of a FOOT- STRUT division, i.e. the lack of a phonemic opposition between the vowels of FOOT and STRUT. As a result, pairs like *put* and *putt* are homophones ([pʊt]). Another possible variant for STRUT is [ə] (e.g. *cup* [kəp], *brother* [brəðə]), though this variant has until recently been associated with self-conscious northern Near-RP speech (Wells 1982: 352), which restricts its use to adult rather than child speech. However, recent accounts of the accent of Sheffield (Stoddart *et al.* 1999) report the use of [ə] in weak position in rapid speech across all ages, while some consider it to be the usual variant for STRUT in Sheffield speech (Barry Heselwood, personal communication).

Other characteristics specific to Yorkshire English in general include the fronting of PALM and START vowels (*park* [pa:k]). As for FACE and GOAT vowels, they are usually pronounced with a long monophthong ([fe:s] - [go:t]), though a half-open [ɔ:] or a centralised [ə:] may be used for GOAT words as well (cf. Watt & Tillotson this volume).

7.2 Procedure

All the words containing the target vowels were extracted from the tapes and grouped under their corresponding categories (BATH, STRUT, etc.). The vowels in each category were analysed auditorily and a decision was made as to whether they were uttered in (i) a Leeds accent (ii) an RP-like pronunciation, or (iii) some other realisation.

7.3 Results

Results were as surprising as those found for the glottal stop analysis (Tables 3 and 4).

Table 3: Distribution of the different realisations of the vowels for M6

	N	Leeds		RP		Other	
		Vowel	%	Vowel	%	Vowel	%
BATH	10	a	100				
STRUT	29	ʊ	21	ʌ	17	ə	62
PALM	9	a:	0	ɑ:	100		
START	10	a:	0	ɑ:	100		
FACE	26	e:	4	eɪ	96		
GOAT	12	o:	42	əʊ	42	ə:	16

Table 4: Distribution of the different realisations of the vowels for M9

	N	Leeds		RP		Other	
		Vowel	%	Vowel	%	Vowel	%
BATH	13	a	100				
STRUT	32	ʊ	25	ʌ	15	ə	60
PALM	17	a:	29	ɑ:	60	ɜ:	11
START	10	a:	0	ɑ:	100		
FACE	14	e:	7	eɪ	93		
GOAT	16	o:	13	əʊ	56	ə:	31

Apart from the subjects' use of [a] for the BATH vowel, few of their other productions regarding the variables under study correspond to those expected for Leeds.

For the STRUT vowel, only few of the realisations for either subject fell under the [ʊ] category, with the majority being realised as [ə]. It was mentioned above that the [ə] variant has also been reported in Sheffield speech. Results from this study underline the need for more recent accounts of the Leeds accent in order to detect current variants used by the monolingual community and provide a better ground for comparison for my subjects.

As for PALM and START, the subjects used the open back variant [ɑ:] almost categorically. Though the use of [ɑ:] in START has been reported among middle-aged and young people in Sheffield, [ɑ:] is still pre-dominant (Stoddart *et al.* 1999).

Also surprising were the results for FACE, where the diphthong [eɪ] is widely used by the subjects in favour of the local norm [ɛ:], and for GOAT, where the subjects' realisations spread over three different categories.

In general, M6 and M9 have very similar vowel realisations. Minor differences include:

- The use of the variant [ɐ:] in PALM by M9 only. [ɐ:] is a vowel that is a common realisation for /ɑ:/ in many words in Arabic (Mitchell 1993: 132).
- The categorical use of the RP-like [ɑ:] for PALM by M6 only.
- More use of the local variant [o:] for GOAT by M6 than by M9.

The similarity between the children's vowel distribution seems normal if one considers the fact that they go to the same school, speak English with each other, and are close friends. M9 is also likely to act as a model for M6 in English in the house. However, interpretations related to the overall distribution of the subjects' vowels are more difficult to make, especially because their vowel use is different from the one commonly expected in their community.

8. Judgement experiment results

With regard to the experiment that was conducted to test the findings of this study (cf. section 5.3), the following results were obtained:

- Only two out of the twelve judges who listened to the tapes identified the children as being from Leeds or the Yorkshire area
- Two others described the children's accent as being generally northern
- The majority (seven out of twelve listeners), however, believed the accent to be from the middle or south of England. One listener could not identify the accent.

9. Summary of results

On the whole, the subjects' social background seems for various reasons to be affecting their choice of English sociolinguistic variables. Analysis of the variables presented in this paper, along with other variables examined as part of the whole study, yielded similar findings: the subjects' overall English accent is not marked by linguistic choices that are expected in their community.

With regard to the questions raised in section 6.3, it was found that glottalling has not filtered much into the subjects' spoken English as a sociolinguistic variant which might be expected considering their age and locality. Glottal realisations of /t/,

though abundant in the speech community of the children in general, and among young speakers specifically, have a small share in the overall *t*/ productions of the subjects in English, as most of their realisations fall under the [t̚] category. Still, the subjects have acquired the phonological environments associated with glottalling, along with the relative frequency of its use in each environment.

An examination of the vowel system developed by the subjects reveals realisations that are mostly standard-like compared to Leeds vowel features, particularly with reference to the use of a back vowel in the realisation of PALM and START words, and of a diphthong in the realisation of FACE and GOAT words.

10. Interpretations

10.1 The effect of input on the acquisition of a sociolect

Both the family and the community are important contexts for children acquiring a given language. The linguistic variables that are available to those children form a kind of 'repertoire' which they acquire by extensive exposure and which they draw upon according to context (Holmes 1992: 10). A given linguistic repertoire is a more or less stable factor in monolingual children's acquisition process, even if they are exposed to a variety of inputs (e.g. different dialects). The bilingual child, however, has to deal with an extra variable, that of two different languages and possible variation of input within one or two languages. Following are observations on how parental and societal input to the subjects in this study might have affected their accent acquisition.

10.1.1 Parental input

The initial transmission of sociolinguistic competence and dialect features to the child usually starts with the parents' language (usually the mother). Studies on monolingual children suggest that awareness of socially sensitive linguistic variation can be found in children as young as two (Foulkes *et al* this volume) or three years (Roberts 1997), which underlines the role of the parents in transmitting dialectal features to their children. In the case of the subjects reported on here, the input they received from their parents is the type of English that adults learn when studying English as a second language and that is not generally marked by regional variation. Many of the features that were found in the children's speech can in fact be considered as near-RP and can be attributed to the type the parents learned in language courses.

10.1.2 Societal input

At the pre-adolescent stage (ages 6 to 12), children usually begin to assert themselves outside the house, and their speech becomes more like that of their peers (Kerswill 1996: 190-191). In monolingual situations, classmates and close friends are usually linguistically more influential than teachers and parents. However, the degree to which children will be affected by peer and societal influence depends on their integration in society. In this study, the community the children are living in is neither a bilingual one, nor are their parents bilinguals, which places a lot of pressure on the kids. Having no frequent association with other similar bilinguals, they are bound to feel 'different' or alienated from other children their age in terms of their ethnic minority background. This feeling of alienation might manifest itself in the children's avoidance of accentual features salient in their community.

10.2 Other considerations

While interpretations for certain features in the subjects' speech have so far been based on their sociolinguistic upbringing, other interpretations that are related to bilingual as well as monolingual children in the subjects' community could be sought. Perhaps what is being described as unusual in the subjects' avoidance of local norms might turn out to be an emerging pattern that has recently been noted elsewhere, in which case it is likely to affect bilingual and monolingual communities alike. For instance, several observations were made throughout this study about similarities between the subjects' vowel use and that recently found for younger speakers in Sheffield (Stoddart *et al.* 1999). Also, in another recent study investigating patterns of variation in Tyneside vowels, Watt & Milroy (1999) observed a shift away from local variants among younger speakers in the realisation of certain vowels. If this phenomenon turns out to be part of an ongoing process of language change, then the subjects' production can be considered a manifestation of such a process. The scope of this study and inevitable time limits leave the door open for various interpretations until future research provides more conclusive results.

11. Conclusion

This study examined the language production of two English-Arabic bilingual children, taking into account sociolinguistic factors involved. The research was based on data obtained from tape recordings and interviews, which permitted an analysis of phonological and social variables in the children's languages. Detailed auditory and acoustic investigations were undertaken, these serving two purposes. They first revealed important features of the phonological systems of the subjects, aspects of interference, and strategies adopted in keeping the two languages separate. Then, together with the sociolinguistic perspective that was borne in mind throughout, they aided in establishing a relationship between the children's production of English and social variables existing in their environment.

First, an examination was undertaken of the subjects' glottal stop production in each language. The difference found between their English and Arabic productions in terms of the context of [ʔ] versus [t] realisations not only suggests that they have developed separate phonological and articulatory systems for their languages, but also that they can distinguish linguistic from social factors behind the use of a certain variable. Though the tokens analysed from both languages fell in environments prone to glottalling according to English phonological constraints, the Arabic tokens remained unaffected.

However, analysis of the frequency of [ʔ] realisations in English, along with analysis of other variables known to have marked local variants in the subjects' community, revealed that the bilinguals' sociolinguistic performance does not follow the patterns expected of children of their age. It seems that their Arabic background has hindered their early acquisition of local variants specific to the community. It is a type of interference from one language onto the other that cannot be measured by examining the superposition of linguistic features, but in the effect of the environment on the bilinguals' adoption of (or resistance to) sociolinguistic variants that are salient in either language. This type of interference is difficult to investigate because of the interplay of many variables within the bilinguals' social context.

An investigation is needed into how bilingual children experience accent acquisition, especially if the language of the parents is different from that of the community. One of the reasons for phonological interference is the difference between bilinguals and monolinguals in terms of the amount of exposure to the

language necessary for the internalisation of phonological rules, especially complex ones. Similarly, certain accent features require extensive exposure to the language (which starts mainly at home) before they can be internalised by the child. However, their adoption also depends on attitudinal factors related to the family and the school. For this reason, Fantini (1985: 12) uses the term 'transference' to refer to a type of language interference that the bilinguals can control (either consciously or sub-consciously) according to social factors, as opposed to uncontrollable phonological interference. Whereas interference is structurally derived, transference is socially motivated. Such a complex issue highlights the importance of considering individual cases when studying the sociolinguistic performance of bilinguals, and the difficulty of generalising any interpretation.

Finally, due to the need for other bilingual (as well as monolingual) studies investigating the issue of accent acquisition, it is difficult to distinguish findings in this study that can be attributed to the fact that the subjects are bilingual from ones that apply to all children of their age. Since this study is part of an ongoing project, more detailed investigation of the accent of monolingual children in the subjects' community will be undertaken in order to detect possible changes that might be affecting younger speakers in general.

In sum, childhood bilingualism is an area that is not easily circumscribed. Apart from the fact that it encompasses research both in the fields of child language and bilingualism, it has links with many disciplines such as linguistics, sociology, and psychology. A multidisciplinary approach is therefore needed for a better understanding of bilingual language acquisition processes.

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