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The acquisition of the present perfect: explaining differences in the speech of Scottish and American children*

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ABSTRACT

This study assesses the role of frequency of input in the acquisition of the present perfect by Scottish and American children. Two questions were addressed: (1) Do adults speaking Scottish English use the present perfect more frequently in speech to children than those speaking American English? (2) If there is a difference in the frequency of input, how does this affect the course of development of this structure in the language of Scottish vs. American children? Cross-sectional data were collected from 12 Scottish and 12 American children aged 3;0 to 6;4 and from adults interacting with them in naturalistic settings. The data led to the conclusions that (1) Scottish adults use the present perfect construction in their speech to children much more frequently than American adults do; (2) Scottish children use the present perfect construction in their speech long before their American counterparts; and (3) frequency of input does play a major role in the timing and order of acquisition of the present perfect. However, its role appears to be an interactive one, in which it conspires with factors such as semantic, syntactic, and cognitive simplicity to make some forms easier to learn than others.

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INTRODUCTION

The primary purpose of this study was to assess the role of frequency of input in the acquisition of tense and aspect markers by comparing the acquisition of the present perfect by Scottish and American children. Some reports indicated that children learning English acquire the present perfect relatively late (Cromer 1968, 1971, Brown 1973, de Villiers & de Villiers 1973, Nussbaum & Naremore 1975). Cromer (1968) reported that Adam's first meaningful uses of the present perfect emerged at 4;6, and Sarah never used the form until 5;5. Nussbaum & Naremore (1975) reported that the use of the present perfect auxiliary *have* was only beginning to appear in their 4-year-old subjects and was not stabilized in their speech by 6 years of age. This late acquisition of the present perfect has sometimes been attributed to cognitive complexity (Cromer 1968, 1971, 1976, Kuczaj & Daly 1979), in that the perfect tense requires an 'ability to consider the relevance of one timed sequence to another' (Cromer 1976: 301). Cromer argues that Adam and Sarah had all the requisite linguistic skills for the generation of the present perfect: they both used *have* as an auxiliary, as in 'We have to keep dis for something' (Cromer 1976: 301)[1]; they both used *be* with *-ing*, which, like the present perfect, involves affix movement; they both were using some past participle forms like *seen* and *gone*; and they both were able to produce utterances of sufficient length to accommodate the present perfect. The problem, Cromer concluded, was the inability to decentre in time, an inability to appreciate the relation between past events and present consequences. He comments that it appears that 'the child DOES NOT MAKE REFERENCE to what the perfect tense expresses' (1968: 150; emphasis mine).

There are two major problems with this hypothesis. The first problem comes to light when viewed in relation to hypotheses concerning young children's early uses of the past tense. One theory regarding the acquisition of the past tense form is that it is used for aspect before it is used for tense – in particular, in reference to either a recent event or change of state that has a clear present result (Antinucci & Miller 1976) or a recent event or change of state that is non-durative and completive (Bloom, Lifter, & Hafitz 1980). Other investigators (Smith 1980, Harner 1981, Weist 1983, in press) have argued that tense and aspect develop concurrently in children's speech. Weist (in press) points out that the aspect-before-tense hypothesis predicts

[1] The relevance of the *have* in *have to* to the *have* in the present perfect is debatable, however. One could argue that there may be no connection between the two auxiliaries in language acquisition, and that, further, one should not expect there to be a connection. Note especially that the phonological shapes of *have* in the two forms are considerably distinct. The first typically surfaces as /hæf/ (/tə/) or /hæs/ (/tə/), while the second surfaces as /s/ ('it's broken'), /z/ ('he's fallen'), /v/ ('we've eaten'), /hæz/ ('he *has* fallen'), and /hæv/ ('we *have* fallen').

that only telic verbs (i.e. those 'which have a well defined terminal point' – *break*, *fall*, and *find* are given as good examples in Bloom *et al.* (1980)) will occur in the past in young children's speech and that 'only references to immediate past situations are expected'. He argues, however, that evidence shows that the past tense is used both for telic verbs and for activity verbs, and for both events that occurred immediately before the time of utterance and events that occurred as much as two weeks prior to speech time. He notes, however, that the use of the past with telic verbs is more frequent, and that the earliest uses of the past tend to refer to more immediate events, and uses become progressively more remote with development. (See also Sachs 1983).

The difficulty with the cognitive complexity hypothesis for the late acquisition of the present perfect is that two of the common uses of the present perfect involve its application to contexts that are similar to the contexts in which children apply their earliest uses of the past tense. In particular, the present perfect can be used in reference to events that occurred immediately before the time of speech (Comrie's (1976) 'perfect of recent past'), and in reference to present states that are the results of some past situation (Comrie's 'perfect of result'). In fact, many of the experiments performed to elicit the past tense provide contexts that would, perhaps, be more appropriate for eliciting the present perfect than for the past tense. Many experiments involve actions that are performed by the experimenter immediately before a test (Bronckart & Sinclair 1973, Harner 1981); others involve pictures depicting activities that occur immediately prior to a reference point depicted in a second picture (Harner 1980). (In fact, some investigators (e.g. Herriott 1969, Harner 1980) use the present perfect in their stimuli for comprehension of the 'past' and repeatedly refer to the children's responses to these stimuli as representing their knowledge of the 'past tense'.) The fact that children do use the past in relation to these recent, completed events and events that have relevance to the present suggests that cognitive complexity alone will not lead to an adequate explanation for the late acquisition of the present perfect in English. (Smith (1980: 266) makes a similar point). Why are English-speaking children capable of using the past in relation to these events, but not the present perfect? (This question is even more puzzling in the light of data from children learning Finnish (Toivainen 1980, cited in Weist in press) that indicate that these children use the perfect, in contrast to the preterite, to refer to an event time that is prior to speech time, equated with reference time, by 2;4).

It should be noted that cognitive complexity is quite distinct from the linguistic complexity of a given form within a linguistic system. It is one thing, for example, for the child to be able to refer to recently occurring events *in some way* with the linguistic means available to him or her; it is another thing for the child to know that that event can be referred to in two

distinct ways, or in a way that might be different from the language used to refer to remote events. A theory built on cognitive complexity might predict that once a child has a certain concept (e.g. events occurring prior to speech time), she will use whatever is available in the input language to refer to that concept – in this case, that linguistic means might be the past tense, but it could equally well be the present perfect. A theory built on linguistic complexity, in contrast, might predict that when a child first gains a certain concept, she will use the least marked linguistic form available in the input to refer to that concept. The more marked expression will develop only later, as the child gains some appreciation of how the less marked and more marked forms are related.

The second problem with this hypothesis has to do with recent evidence suggesting that not all children learning English acquire the present perfect late. Fletcher (1981) presents data suggesting that children learning British English, which is comparable to American English in its syntactic and semantic formation of the present perfect, might learn the present perfect earlier than their American counterparts. Fletcher reported that children who were learning British English were using the present perfect in a variety of constructions by the age of 3;3, even though they had not yet mastered the present perfect. Fletcher points out that British and American English differ in the extent to which they require the present perfect in certain contexts; American English allows the use of the simple past form in some contexts in which British English requires the present perfect. Thus, adults speaking these two dialects of English may differ considerably in the frequency with which they use the present perfect form in their speech to children. If so, and if children learning British English do indeed learn the present perfect before children learning American English, then frequency of input, although it may not play the only role in determining the timing and order of acquisition, may play a major role in the acquisition of this construction. (Johnson (1985) recently challenged the conclusion that American children learn the present perfect later than their British counterparts. However, her subjects, American children aged 4;5 to 5;11, were considerably older than those of Fletcher's study, and in her study, children's imitations of present perfect forms that were syntactically deviant were accepted as evidence of knowledge of the present perfect construction).

Frequency of input has until recently been considered of minor importance in first-language acquisition, due in large part to Brown's (1973) conclusion that the order in which Adam, Eve, and Sarah learned the grammatical morphemes did not correlate with the frequency of the forms in parental speech. However, debate on this topic has increased in recent years, both in reference to the acquisition of grammatical morphemes (Moerk 1980, 1981, Pinker 1981) and with regard to the more general process of language acquisition. (See, e.g. Furrow, Nelson & Benedict 1979, Gleitman, Newport

& Gleitman 1984.) The present study was designed to examine more closely the potential relevance of frequency of input in the acquisition of the present perfect by examining the use of the present perfect in the speech of Scottish and American adults and children.

In order to explore this question, it is first necessary to examine the uses of the present perfect, relative to the simple past, in the two dialects. Scottish English (SE) and American English (AE) share a number of characteristics. (*i*) Both dialects require the present perfect in reference to an event or state that began at some past moment and has continued up to the present (Comrie's (1976) 'perfect of persistent situation'). This use is often accompanied by an expression of time with *for* or *since*. Thus, the sentences in (1) are acceptable, while those in (2) are not, at least not without changing the meaning.

(1) (*a*) Catherine has been very thin since she was a young girl.
(*b*) Carmela has been trying to catch your attention for 15 minutes.
(2) (*a*) Catherine was very thin since she was a young girl.
(*b*) Carmela was trying to catch your attention for 15 minutes.

Similarly, both dialects require the perfect construction (*ii*) in the syntactic construction of past forms of the modal auxiliaries, as in (3), and (*iii*) in reference to yet-to-be completed activities that are embedded under the time conjunctions *afer*, *till*, and the like, as in (4). (The present tense is an acceptable alternative in both dialects, but not the simple past).

(3) John may have lost his wallet.
Carl should have noticed the dent in his car.
Lynn could have gone dancing tonight.
(4) After you've finished your work, be sure to put the paint away.
I can't go for a walk until I've washed the dishes.

SE and AE differ, however, in the use of the present perfect to refer to (*iv*) actions or changes of state that have just occurred immediately prior to the time of utterance (Comrie's (1976) 'perfect of recent past'), (*v*) those that occurred in the past but have relevance in the present (Comrie's 'perfect of result'), and (*vi*) those that occurred at some unspecified time in the past (Comrie's 'experiential perfect'). SE favours or requires the present perfect, as in (5) to (7), while AE optionally allows either the present perfect or the past, as in (8) to (10).

(5) My pen has just run out of ink.
Tom has just left for work without his briefcase.
(6) The mailman has already brought the mail.
The Joneses have lost their home in a tornado.
(7) Have you ever walked across a tightrope?
Marla has heard that record before.
(8) My pen just ran out of ink.
Tom just left for work without his briefcase.

(9) The mailman already brought the mail.
The Joneses lost their home in a tornado.
(10) Did you ever walk across a tightrope?
Marla heard that record before.

Finally, the two dialects differ in their use of *have got* to refer to a present state of possessing something. While SE favours the use of *have got* over *have*, AE favours *have* over *have got*. Although it can be argued that this use of *have got* is not technically a present perfect in meaning (see Fletcher 1981), it *is* a present perfect in syntactic form, and frequent use of *have got* in adult SE speech may make the syntactic construction of the present perfect available at an early age to children learning SE, thus facilitating the subsequent acquisition of forms that are more properly seen as encoding present perfect concepts.

Given the differences between SE and AE, it was hypothesized that Scottish adults would use the present perfect more frequently in their speech to children than American adults. If so, and if frequency of input is a significant variable in the process of first-language acquisition, then children learning SE and AE should follow significantly different paths of development for this structure. Thus, two main questions were addressed: (1) Do adults speaking SE use the present perfect more frequently in speech to children than those speaking AE? (2) If there is a difference in the frequency of input, does this affect the course of development of this structure in the language of these two groups of children? If children learning SE and AE follow similar courses of development at similar times, even though the input frequency differs, this would lend particularly strong support to claims that other factors alone determine the course of acquisition of the present perfect. If there are marked differences in the timing and course of acquisition for the two groups of children, on the other hand, the best explanation would be that frequency of input plays a major role in the acquisition of the present perfect.

METHOD

Subjects

The child subjects for this study were 12 Scottish children and 12 American children between the ages of 3;0 and 6;4. The Scottish subjects consisted of 4 '3-year-olds' (mean age: 3;2·15), 4 '4-year-olds' (mean age: 4;2), and 4 '5-year-olds' (mean age: 5;0). the American subjects consisted of 4 '3-year-olds' (mean age: 3;11), 4 '4-year-olds' (mean age: 4;6·15), and 4 '5-year-olds' (mean age: 5;7·15). (Slightly older subjects were used for the American subjects because younger subjects that were not bilingual were not readily available. Since previous studies had suggested that American children do not use the present perfect before 4;6 or 5;0, while children learning British dialects use it by 3;0, it was hypothesized that the slight

age advantage of the American children would not significantly alter the picture gained from the data. In fact, the low use of the present perfect in the American children's speech to be reported below supports this prediction.) Both groups were predominantly middle class children attending pre-schools in university settings. The Scottish children were attending the Nursery of the Psychology Department of the University of Edinburgh, in Edinburgh, Scotland; the American children were attending the Child Care Center at Florida International University, in Miami, Florida.

Six adults were enlisted to participate in the study, four to interact with the Scottish children, two with the American children. The Scottish adults were four native-born Scottish women: two the children's teachers, one the servitor of the nursery, and one a mother of one of the children. The first three have had educations through secondary school, with the first having additional nursery nurse training; the last has attended college and has had experience as a primary teacher. The American adults were two native-born American women, one the children's teacher, the other a teacher and mother. Both have college degrees.

Procedure

Each group of Scottish children was videotaped in eight half-hour sessions (a total of 24 sessions); each group of American children in four half-hour sessions (a total of 12 sessions). Each adult participated in two sessions with each group for her nationality. One of these was a free-play session, the other a structured play session. The structured play sessions in which both the Scottish and American children participated consisted of a session in which each child was asked to copy a model of a car with an enclosure made from Lego and a session in which each child attempted to make a paper flower or mask similar to one prepared by the investigator.

All utterances were transcribed from the videotapes, along with extensive information on the non-linguistic contexts of utterances. All those utterances that involved the present perfect or some form of the past tense were then categorized, by speaker, according to their semantic and syntactic content and were analysed. Utterances were grouped into semantic categories as follows,

REC: Verb form used in reference to an event or change in state that has recently occurred ('recent past').
e.g. C (3;7): Look what I've done! [*C has just put some Lego pieces onto a base; showing adult*]

RES: Verb form used in reference to an event or change of state that has occurred in the past but has present relevance ('perfect of result').
e.g. GR (4;3): Where's the pen gone? [*Looking for a pen the children had been using*]

At times, both RES and REC seemed to apply. The criterion used for categorizing utterances into the two groups was the following. If the speaker was referring to an event or change of state that he or she had just witnessed or performed, the utterance was classified as REC. If, however, the utterance was used in reference to an event or change of state that the speaker had not witnessed, but whose effect had just been discovered or was presently relevant, it was classified as RES.

EXP: Verb form used in reference to an event or state that occurred or existed at some unspecified time in the past ('experiential perfect').
e.g. SL (adult): Have you ever been to a circus?

PERS: Verb form used in reference to an event or state that began at some past moment and has continued up to the present ('perfect of persistent situation').
e.g. *Not Progressive*: G (4;10): We've not had that out since I was three. [*re: a puzzle that has been in the nursery closet*]

Progressive: SL (adult): Some of the girls and boys have been...doing some pictures. Look. See? They've been sticking all different shapes on... See?

In addition to these semantic categories, four other categories were used:

GOT: Any form of (*have/has*) *got* used for *have/has got* when this referred to a present state or for *have/has got to*.
e.g. L (3;0): I've got a pony...tail in today.

YET: Verb form used with *yet* or *already*.
e.g. G (4;10): I've not finished mine yet.

A separate category was formed for *yet* and *already* for two reasons. First, it was not always clear which of the above categories *yet* and *already* utterances fitted into. Second, there have been suggestions that children's first attempts at expressing present perfect notions are accomplished by the use of words like *yet* and *already* with the simple past construction (Cromer 1968, Slobin 1973).

MOD: Use of the perfect form of a modal auxiliary.
e.g. S (adult): It must have crashed. [*re: a car*]

CONJ: Use of the present perfect in a clause embedded under the temporal conjunctions *till*, *after*, and the like.
e.g. N (4;4) [*Adult has just asked N if N is going to let R play with puzzle N has been working on. N nods, then says:*] But I want to wait till I've...finished it.

RESULTS

The Scottish data were collected in 24 sessions, with four adults, while the American data were collected in 12 sessions, with two adults. So that the data

might be easily compared, all figures reported below for the Scottish data represent the totals from the 24 sessions divided by 2. In order to ensure that the data from 24 sessions, with four adults, was not significantly different from the data that would have been collected in only 12 sessions, with two adults, several statistical analyses were performed.

First, several analyses were performed in relation to the distribution of the uses of the present perfect across the 10 semantic and syntactic categories employed in the analysis of the data below. With regard to the adults, the data from the sessions with every pair of adults were compared with those from the remaining pair. Rank sum tests revealed that no two pairs of adults differed significantly in their use of the present perfect across the ten categories (adults 1 and 2 vs. 3 and 4: $T = 1{\cdot}3$, $P > 0{\cdot}25$; adults 1 and 3 vs. 2 and 4: $T = 0$, $P = 1{\cdot}0$; adults 1 and 4 vs. 2 and 3: $T = 0{\cdot}116$, $P > 0{\cdot}50$). Spearman rank correlations similarly revealed significant correlations between the distributions of the present perfect in the speech of these pairs (adults 1 and 2 vs. 3 and 4: $r = 0{\cdot}788$, $T = 3{\cdot}6$, $P < 0{\cdot}01$; adults 1 and 3 vs. 2 and 4: $r = 0{\cdot}925$, $T = 6{\cdot}9$, $P < 0{\cdot}001$; adults 1 and 4 vs. 2 and 3: $r = 0{\cdot}764$, $T = 3{\cdot}3$, $P < 0{\cdot}02$). Thus, the data from any two adults reveal essentially the same relative uses of the present perfect across the ten categories as those from the remaining two adults.

The same data were submitted to more stringent χ^2 analyses to reveal similarities and differences in the absolute frequencies of use between any two pairs of adults. These analyses showed significant differences in the frequencies of use of the present perfect for the 10 categories across two sets of these pairs: for adults 1 and 3 vs. 2 and 4, $\chi^2 = 26{\cdot}2$, $P < 0{\cdot}005$; and for adults 1 and 4 vs. 2 and 3, $\chi^2 = 31{\cdot}3$, $P < 0{\cdot}001$. However, in these two cases, the significant differences are due entirely to a higher frequency of use of the present perfect in contexts EXP and CONJ in adult 3's speech. When categories EXP and CONJ are removed from analysis, the χ^2 figures become non-significant (adults 1 and 3 vs. 2 and 4: $\chi^2 = 6{\cdot}8$, $P > 0{\cdot}25$; adults 1 and 4 vs. 2 and 3: $\chi^2 = 12{\cdot}3$, $P > 0{\cdot}05$). Further, when the data from any two adults are compared with the totals from the 24 sessions divided by 2, χ^2 analyses reveal no significant differences in use across the 10 categories. Thus, the figures obtained by dividing the totals across 24 sessions by 2 are not significantly different from those obtained from the sessions with any two adults. Thus, these figures will be reported below. Where relevant, differences in adult 3's use of EXP and CONJ will be noted.

Similar analyses were performed for the data from the children. Their speech in the 12 sessions with each pair of adults was compared with their speech in the 12 sessions with the remaining pair of adults. χ^2 analyses revealed no significant differences for any of these pairs (with adults 1 and 2 vs. 3 and 4: $\chi^2 = 0{\cdot}28$, $P > 0{\cdot}10$; with adults 1 and 3 vs. 2 and 4, $\chi^2 = 3{\cdot}71$, $P > 0{\cdot}10$; with adults 1 and 4 vs. 2 and 3: $\chi^2 = 7{\cdot}05$, $P > 0{\cdot}05$).

A second set of analyses was performed in relation to the choice of the present perfect vs. the past tense for the categories EXP, REC, RES, PERS, and YET. For the adults, χ^2 analyses again revealed that the data from adults 1 and 2 vs. 3 and 4 and from adults 1 and 3 vs. 2 and 4 did not differ significantly ($\chi^2 = 7{\cdot}67$, $P > 0{\cdot}05$, and $\chi^2 = 7{\cdot}23$, $P > 0{\cdot}05$, respectively). However, when adults 1 and 4 were contrasted with adults 2 and 3, $\chi^2 = 8{\cdot}4$, $P < 0{\cdot}05$. This significant difference is due to a slightly greater use of the past in the speech of adults 2 and 3 for REC. (Adult 1 used the past seven times, adult 2 thirteen times, adult 3 ten times, and adult 4 five times.) However, when the figures for adults 2 and 3 are compared with the totals divided by 2, there is no significant difference between the figures ($\chi^2 = 2{\cdot}18$, $P > 0{\cdot}25$). The totals divided by 2 will be reported below, but the differences in the use of the past by adults 2 and 3 will be noted where applicable.

When the children's speech was subjected to similar analyses, differences in the use of the past vs. the present perfect were non-significant in sessions with adults 1 and 2 vs. 3 and 4 ($\chi^2 = 0{\cdot}80$, $P > 0{\cdot}10$) and with adults 1 and 3 vs. 2 and 4 ($\chi^2 = 2{\cdot}44$, $P > 0{\cdot}10$). However, with adults 1 and 4 vs. 2 and 3, χ^2 reached significance ($\chi^2 = 15{\cdot}7$, $P < 0{\cdot}005$). The difference is due to the children's greater use of the past in sessions with adult 1: 39 uses of the past for REC and RES with adult 1, 14 with adult 2, 16 with adult 3, and 21 with adult 4. (The greater use of the past with adult 1 in these contexts appears to be correlated with a greater use of the past in general with adult 1. In contexts other than those appropriate for the present perfect, the children used the past 136 times in sessions with adult 1, compared with an average of 73·3 times with the other three adults.) Again when the figures with adults 1 and 4 are compared with the totals divided by 2, the differences are non-significant ($\chi^2 = 2{\cdot}98$, $P > 0{\cdot}05$).

In sum, the data from the 24 sessions are highly representative of the adults' and children's speech. In most cases, the data taken from the sessions with any two adults do not differ significantly from the data taken from the sessions with the remaining two adults. In *no* case did the data from the sessions with any two adults differ significantly from the totals divided by 2. Thus, the data reported below will be the totals divided by 2. In those few cases in which the above analyses revealed slightly different performances in the sessions with one of the adults, those data will be reported along with the totals divided by 2.

Uses of the present perfect

The Scottish adults used the present perfect (excluding *have got*) approximately five times as often as the American adults. The Scottish uses were distributed over all of the present perfect categories. The American uses were distributed over all the categories except PERS (not progressive) and MOD. (See Table 1.) (Note that if, because of the higher use of EXP and CONJ

TABLE 1. *Uses of the present perfect*

	GOT with AUX	GOT w/o AUX	EXP	REC	RES	PERS		YET	MOD	CONJ
						Prog	Not prog			
					Scottish					
Ad.	246·0	4·0	26·5	56·5	18·0	8·0	8·5	5·0	17·5	7·5
Ch.	163·5	10·0	15·5	41·5	6·5	1·0	1·5	5·0	2·5	1·5
					American					
Ad.	16·0	15·0	5·0	8·0	5·0	5·0	0	4·0	0	1·0
Ch.	2·0	81·0	1·0	0	0	0	0	0	0	0

Notes

1. Some of the uses of GOT without an auxiliary appear to be instances of ellipsis, either with the subject and auxiliary of a declarative both missing or the utterance-initial auxiliary of a *yes-no* question deleted. This is true of all of the Scottish adults' uses of GOT without an auxiliary, one of the American adults' uses of GOT without an auxiliary, half (80% of these produced by 3-year-olds, 20% by 4-year-olds) of the uses of GOT without an auxiliary by the Scottish children, and one of the uses of GOT without an auxiliary by the American children.
2. 34·0% of the Scottish adults' uses, 60% of the American adults' uses, and 45·2% of the Scottish children's uses of EXP occurred with adverbials *before*, *ever*, and the like.
3. 27·3% of the Scottish adults' uses, 40% of the American adults' uses, and 40% of the Scottish children's uses of PERS occurred with *for*, *since*, and *how long* expressions.

by adult 3, the figures for EXP and CONJ were replaced by the figures from only the 12 sessions with adults 1 and 2, EXP would show 17 uses, CONJ 3.)

In addition, the Scottish adults used *have got* with an overt auxiliary 15·4 times as frequently as the American adults. These figures are also shown in Table 1. Some of the uses of GOT were equivalent to *have* (SE: 227·5 (+4 without the auxiliary), AE: 16 (+8 without the auxiliary); some were uses with *to* (SE: 18·5, AE: 0 (+7 without the auxiliary)). (It is of note that where either *have got* or *have* would have been acceptable, the Scottish adults preferred *have got* over *have*, while the American adults chose *have* more often than *have got*. Including uses of *got* without the auxiliary, the Scottish adults used *have got* 227·5 out of 258·5 uses of *have got/have*, and 18·5 out of 38 uses of *have got to/have to*; the American adults used *have* in 77 out of 101 uses of *have/have got*, and 47 out of 54 uses of *have to/have got to*.)

The Scottish children used the present perfect (excluding *have got*) 75 times per six hours of speech, while the American children used the present perfect on only one occasion. The Scottish children's uses of the present perfect were distributed across all the categories of use. (See Table 1.)

In addition, as Table 1 also shows, the Scottish children used *have got* 81·75 times as frequently as the American children. Similar to their adult

counterparts, the Scottish children preferred *have got* over *have*, and the American children preferred *have*. (The Scottish children used *have got* in 164·5 out of 174 uses of *have got/have*, and 9 out of 23 uses of *have got to/have to*; the American children used *have* in 78 out of 159 uses of *have/have got* (all but one of the uses of *have got* were without the auxiliary, however), and in 32 out of 36 uses of *have to/have got to*.)

On the basis of these data, the uses of the present perfect by the Scottish children can be ranked as follows, according to frequency of use (greatest use to the left):

GOT > REC > EXP > RES > YET > PERS > MOD, CONJ [or GOT > REC > EXP > RES > YET > MOD > PERS (not prog.), CONJ > PERS (prog.)]

This ranking, based on overall frequency of use, is consistent with implicational rankings of the uses of the present perfect by these children. (An implicational ranking would be based on relationships between forms whereby one could state that any child who used form X would also use form Y, but not necessarily vice-versa.) Table 2 shows the applications of the present perfect by the individual children. The implicational ranking of these uses, based on Table 2, is as follows:

MOD→PERS→YET→RES→EXP→GOT, REC[2]

TABLE 2. *Individual children's uses of the present perfect construction*

	GOT	REC	EXP	RES	PERS		YET	CONJ	MOD
					Prog	Not prog.			
C (3;7)	×	×	.	.	.	.	.	.	.
L (3;0)	×	×	×	.	.	.	.	.	.
J (5;1)	×	×	×	.	.	.	.	.	.
V (4;11)	×	×	×	.	.	.	.	.	.
CL (3;3)	×	×	.	×	.	.	.	.	.
JA (3;0)	×	×	×	×	.	.	.	.	.
B (4;0)	×	×	×	×	.	.	.	.	.
GR (4;3)	×	×	×	×	.	.	.	.	.
R (4;0)	×	×	×	.	.	.	×	×	.
N (4;4)	×	×	×	.	.	×	.	×	.
K (4;11)	×	×	×	×	×	.	×	.	.
G (4;11)	×	×	×	×	×	×	×	.	×

[2] Fletcher (1981) comments that, in his data, other uses of the present perfect imply the use of GOT, but not vice-versa. On the basis of this information, we can hypothesize that REC→GOT.

The only exceptions to this ranking are R's (4;0) use of YET without RES, and CL's (3;3) uses of RES, but not EXP. However, (1) R used YET on only a single occasion, with *have got*, and it is not clear whether this use of *have got* is intended as a present perfect or as equivalent to a present 'have'; and (2) CL did use the auxiliary *have* for EXP in an elliptical response. The data do not provide a clear implicational relationship between PERS (progressive) and PERS (not progressive), nor between CONJ and the other forms.

It is impossible from these data to rank-order the uses of the present perfect as they emerge in American children's speech. However, there are some indications in these data that the earliest uses of the present perfect may be for EXP and GOT, at around 4;6. In addition to the two uses of *have got* with an auxiliary and the single occurrence of the present perfect for EXP shown in Table 1, a few uses of elliptical forms with the auxiliary *have* occurred for EXP, along with some uses of the past participle without *have*, also for EXP. It is hypothesized that these latter forms may be early attempts at a present perfect in American children's speech. Examples of these two types are given in (11).

(11) (*a*) JU (adult): Did anybody ever see a germ? Did you ever see a germ?
J (4;3): I–I have seen a germ.
JU: You've seen a germ?
S (4;8): I *haven't*.
(*b*) B (4;0): I *been* with my daddy and mommy. [*re : a local fair*]

(There was one later use of the past participle for REC, by M (5;4), shown in (12):

(12) M (5;4): Look what I *done*!)

Present perfect vs. past

To assess the relative use of the present perfect versus the past in contexts in which the present perfect would have been appropriate (but not necessarily in which the past would have been inappropriate), the uses of these two forms for the categories EXP, REC, RES, PERS and YET were calculated. These figures are shown in Table 3. For the adults, the overall choice of present perfect versus past forms in these contexts was significantly different for the two nationality groups ($\chi^2 = 113{\cdot}7$, $P < 0{\cdot}001$). For categories EXP, RES, PERS and YET, the Scottish adults used the present perfect almost exclusively. They used both the present perfect and the past for REC, but they preferred the present perfect. (It should be recalled that adults 2 and 3 together used the past in relation to REC somewhat more frequently than adults 1 and 4 together. When the figure in Table 3 is compared with that from adults 1 and 2 alone, the occurrences of the past for REC are somewhat higher, 20, instead of 17). The American adults, in contrast, used both the present perfect and the past for all of these categories. They showed a

TABLE 3. *Present perfect vs. past for* EXP, REC, RES, PERS, *and* YET

	Present perfect				Past			
	Scot.		Amer.		Scot.		Amer.	
	Ad.	Ch.	Ad.	Ch.	Ad.	Ch.	Ad.	Ch.
EXP	26·5	15·5	5·0	1·0	0·5	2·0	13·0	7·0
REC	56·5	41·5	8·0	0	17·0	39·0	87·0	185·0
RES	18·0	6·5	5·0	0	2·0	5·5	17·0	11·0
PERS	17·0	2·5	5·0	0	0	0	1·0	3·0
YET	5·0	5·0	4·0	0	0	0·5	3·0	10·0

preference for the present perfect to express PERS; they used the present perfect and the past with about equal frequency for YET; and they showed a marked preference for the past to express EXP, REC, and RES.

The Scottish and American children's relative use of the present perfect versus the past for each of the categories EXP, REC, RES, PERS and YET are also shown in Table 3. (If, because of the greater use of the past with adult 1, the data for the children's use of the past for REC were replaced by the figures from only the sessions with adults 1 and 2, this would raise the number of uses of the past for REC to 47.) χ^2 analysis reveals that the American and Scottish children's choice of the past versus the present perfect differed significantly ($\chi^2 = 80{\cdot}1$, $P < 0{\cdot}001$). For PERS and YET, the Scottish children used the present perfect almost exclusively. They used both the present perfect and the past for REC, RES, and EXP, with a clear preference for the present perfect for the last of these. The American children, in contrast, almost exclusively employed the past for all of these uses.

DISCUSSION

It is clear that the Scottish children use the present perfect long before their American counterparts, and that the earlier use of this form correlates positively with greater frequency of use in SE adult speech to children. The interpretation of this finding is not without difficulty, however. In this section, I will discuss several considerations that are important for assessing the above findings.

First, it is necessary to consider the possibility that the opportunities simply did not arise for the American children to use the present perfect. The data in Table 3 make it clear that, in fact, the American children had *more* opportunities than the Scottish children, or at least *took* more opportunities (217, as opposed to 118 taken by the Scottish children), to produce utterances in relation to EXP, REC, RES, PERS and YET contexts; they chose, however, to use the past tense instead of the present perfect in most of those contexts.

A second possibility is that the American children, in not using the present perfect, may simply be reflecting preferences for usage that are standard in AE. That is, it is possible that the differences here reflect, not differences in when and how Scottish and American children LEARN the present perfect, but, rather, differences in their USE of this form, differences that are quite in keeping with the dialects they are learning. Examination of the data reveals two relevant facts that lead to the rejection of this hypothesis, however. First, the data show that the American adults used the present perfect for all of its uses, except MOD and PERS (not progressive). Thus, it is not that Americans never use the present perfect; they do use it, even in their speech to children. Thus, the non-use of the present perfect in the American children's speech does not reflect the proportional use of the present perfect standard in AE. Secondly, there are errors in the American children's speech that suggest that, not only are they not USING the present perfect, but they lack knowledge about the syntax and semantics of this form. The first type of error is the use of *gots* for the third person singular, as in the examples in (13).

(13) J (3;11): Now she gots a new baby. [*re : a teacher who has recently had a baby*]
S (4;8): This is so pretty 'cause it gots...the kind that shine in the dark. [*re : a fluorescent felt-tipped pen*]
F (5;2): Who gots the brown? [*re : a felt-tipped pen*]

Such errors suggest that American children treat *got* as a normal verb that takes the forms usual for the present tense and that, perhaps, they lack the relevant knowledge about the auxiliary *have*. This type of error did not occur in the adults' speech (either nationality), nor in the Scottish children's speech.

A second type of error involves the choice of the past tense in place of the present perfect where only the present perfect would be appropriate, as in the expression of PERS in the following exchange.

(14) [*children have been discussing going to dancing lessons*]
JU (adult): How long have you been doing it?
M (5;4): For 50 years I *did* it.
JU: Fifty years! Oh, how could you do that for 50 years?
F (5;2): I *took* it for–I don't know when–I started a week ago.
J (6;4): (I took it) 12 years.
JU: Twelve years! How old are you?
J: Six.
JU: Six, and you've been dancing for 12 years?
M: I really *danced* for 300 years.

Even though the adult, JU, repeatedly provides a present perfect (progressive) model, these children continue to err in using the past in its place. (See Nussbaum & Naremore (1975) for additional errors produced in contexts in

which the experimenter provided the present perfect in more controlled settings.)

Finally, if the lack of use of the present perfect by American children were not related to a lack of knowledge, one would expect that children would use the present perfect at least in those cases in which the adult provides the present perfect in the discourse. (Bloom *et al.* (1980: 409) observed in their study that 'the use of an inflection was often facilitated when the adult used that inflection in a prior utterance...'). Exchanges like that above and in (15) below show that the American children did not use the present perfect in such contexts.

(15) JU (adult): Have you ever gone there before? [*re : a local fair*]
S (4;9): I *did*.
Z (4;5): I *did*.
B (4;11): I been.
S: I *did* with my mom and J—'s mon.

Even if Scottish children do learn the present perfect before their American counterparts, can we assume that frequency of input is RESPONSIBLE for this earlier acquisition? Even if there is an absolute correlation between frequency in adult speech and order of acquisition, it is not necessarily the case that this question will be answered in the affirmative. First, it is possible that frequency of use is not the only difference between the present perfect in SE and AE. One might wish to argue that SE and AE also differ in the functional load of the present perfect. Since the present perfect and the past are more interchangeable in some contexts in AE than in SE, children learning AE do not need to learn the present perfect, whereas those learning SE do. The problem with this hypothesis is that the adult SE data show that the Scottish adults use the past, along with the present perfect, most frequently in relation to REC, but REC is precisely the category of use that comes into the SE children's speech FIRST (after GOT). In contrast, the category of use that REQUIRES the present perfect–PERS–emerges quite late in the Scottish children's speech.

A second possible difference between the two dialects is that SE may discriminate between the present perfect and the past when they are used in what I have called the same contexts, so that there might be subtle meaning or distributional differences between the two constructions in SE. To examine this possibility, the verbs used by the Scottish adults in the present perfect and past for REC were compared. These verbs are shown in Table 4. This table shows that, contrary to what this hypothesis might predict, a majority of the verbs (tokens) used for REC were used in both the present perfect (75/113) and the past (25/34).

A second question to consider in evaluating the potential role of frequency of input is the possibility that, rather than frequency of input being directly responsible for the timing and order of acquisition, it is only indirectly

TABLE 4. *Verbs used in the past and present perfect for REC by the Scottish adults*

Present perfect		Past
be	go (2)	bang
choose (3)	happen (2)	choose
come off	have (2)	do (6)
come out	leave	draw (2)
come through	lose	drop (2)
cover	make (8)	enjoy
cut	mix	fall
do (38)	paint	finish (3)
dry	pick (2)	give
eat (4)[a]	pop	go
find (2)	put (6)	happen (2)
finish (13)	say	have
fit	show	lose (2)
fly	shut	make (6)
float	take (3)	manage
get stuck	use (5)	put (3)
get X muddled	wrap	
glue		

[a] Two of these were instances of 'you've ate'.

responsible for the differences found here between Scottish and American children. There may simply be some minimal frequency of input necessary to make a given form available to the child when he or she is ready to acquire it; this minimum level may be surpassed in the case of the present perfect for Scottish children and may not be met in the case of the present perfect for American children. It is clear that Scottish children are bombarded with present perfect forms in the input. Table 1 shows 393·5 full present perfect forms in six hours of adult speech, and this does not include elliptical forms and tag questions that contain full forms of the auxiliary. There was an average of 53·5 such occurrences in six hours in the Scottish adults' speech, and only one in the American adults' speech. (Fletcher (1981) suggested that the contraction *'s* might present special difficulties for the child, since it is the superficially ambiguous form for both *is* and *has*. The frequent elliptical and tag question forms observed in this study often serve to clarify which auxiliary underlies contracted *'s*. It should be noted that contracted *'s* only occurred in this study in 22·2% of the adults' present perfect constructions. Perhaps because of this and the frequency of the clarifying elliptical forms, the children in this study rarely confused *be* with *have*, which indicated that *'s* did not, in fact, present great difficulty for these Scottish children.) The American children, in contrast, may simply not be hearing the present perfect often enough to make it accessible to them.

Although this possibility is quite plausible, it is not clear what would constitute the minimum frequency for a form and whether this minimum has been met in the case of the American subjects. One might examine this question by comparing the input frequencies of the present perfect with those of other forms that the children are acquiring or have acquired. Of particular relevance might be some uses and forms of the past in the adults' and children's speech. Table 5 shows the frequency of use of four forms and uses that occurred in the data: (1) the past progressive (e.g. GR (4;3): 'We *were making* monsters'), (2) *used to* (e.g. SL (adult): 'And do you know B—'s big brother who *used to be* at the nursery?'), (3) past forms used as subjunctives (e.g. R (4;0): 'If I *turned* it that way, it would be better.' [turning her picture 90 degrees]), and (4) past forms used because of the sequence of tenses (e.g. SL (adult): 'That's what I thought it *looked* like. An egg.' [said in response to J's 'I'm making an egg', with reference to an oval piece of paper he is cutting]).

TABLE 5. *Occurrence of past progressive,* used to, *subjunctive and sequence of tenses*

	Past progressive	*used to*	Subjunctive	Sequence of tenses
		Scottish		
Adults	31·5	3·0	8·5	9·0
Children	8·0	2·5	3·0	1·5
		American		
Adults	15·0	0	8·0	9·0
Children	26·0	3·0	6·0	2·0

These forms are relevant in that they, like the present perfect, exemplify either some syntactic complexity (past progressive) or semantic complexity (the others) and appear to be in the process of being acquired. (The past progressive was used by nine of the Scottish children and eight of the American children; *used to* by two Scottish and two American children; the subjunctive by three Scottish and two American children; and the sequence of tenses by two Scottish and two American children.) Interestingly, only one of the items shown in Table 5 (the Scottish adults' use of the past progressive) was used as frequently as the American adults used the present perfect (if *have got* is not counted; none of them was used as frequently if *have got* is counted). Yet the children from both nationalities appear to be in the process of acquiring these forms. Thus, if these forms are being heard often enough to be 'available' to children, it appears that the present perfect must also be frequent enough in American adults' speech to be similarly available.

Rather than any of the above hypotheses providing the ultimate explanation for the differences in the acquisition of the present perfect by children learning SE and AE, I propose that the best explanation will include frequency of input in interaction with some of the above factors. In order to spell out this interaction as explicitly as possible, I have rated the main uses of the present perfect on four scales, cognitive simplicity, relative syntactic simplicity, frequency of input, and functional load. These are shown in Table 6. The first of these, cognitive simplicity, is based on the assumption that even though in the adult language all of the uses of the present perfect involve relevance to the time of utterance (see Comrie 1976 or Lyons 1977), it is not necessarily the case that the CHILD will recognize this. Thus, as suggested by Fletcher (1981), the child may use the present perfect form for GOT but treat it as simply encoding a present state. Or the child may use the present perfect for EXP without recognizing that the present perfect entails present relevance, in that the use of the present perfect requires that the action or state be repeatable. In Table 6, cognitive simplicity is rated '+++' if the present perfect can be (mis-)interpreted as referring to a present state, '++' if the present perfect can be (mis-)interpreted or (mis-)used as referring simply to an event time immediately previous to utterance time, '+' if it can be (mis-)used as simply encoding a relationship between a (more remote) past event time and utterance time, and '−' if it cannot be interpreted in any of these imperfect ways. The second factor rates the various uses of the present perfect according to syntactic complexity. A '+' indicates that the simple present perfect form is used, a '−' a more complex syntactic construction.[3] The third factor shows frequency of input. Arbitrary divisions were drawn between low frequency, '−' (less than once per hour); intermediate frequency, '+' (one to five times per hour); high frequency, '++' (six to ten times per hour); and extremely high frequency, '+++' (over ten times per hour). The fourth column shows functional load. Again arbitrary divisions were made, as follows: absolute, '++++' (only the present perfect construction can be used); very high, '+++' (the present perfect is used at least 90% of the time; the past less than 10%); high, '++' (the present perfect is used at least 75% of the time, but less than 90%; the past is used for the remainder); intermediate, '+' (present perfect is used at least 25%, but less than 75%, of the time); relatively low, '−' (present perfect

[3] I have rated the present perfect progressive as more complex than the simple present perfect on the basis of the presence of two, rather than one, auxiliaries, each of which requires a certain ending on the following root (*be* must go with *-ing*, *have* with the past participle). Johnson's (1985) study, however, makes it clear that, in one way, the present perfect progressive is less complex. That is in the formation of the main verb when that verb is an irregular one. To form the present perfect progressive correctly with such a verb, one does not need to know the irregular forms of that verb, whereas for the simple present perfect, one does.

TABLE 6. *Ratings for the subtypes of present perfects on four scales*

Type	Cognitive simplicity	Syntactic simplicity	Frequency of input		Functional load	
			SE	*AE*	*SE*	*AE*
GOT	+++	+	+++	+	++	−
REC	++	+	++	+	++	−−
EXP	+	+	+	−	+++	+
RES	+++	+	+	−	++	−
PERS	−	simple: +	+	−	++++	++
		prog.: −				
MOD	+/++	−	+	−	++++	++++

is used less than 25%, but more than 10%, of the time); and low, '− −' (the present perfect is used less than 10% of the time). In general, the greater the number of '+'s for a form, the more accessible that form might be for the child.

In the case of the children learning SE, the forms GOT and REC, the earliest uses that enter their speech, rate high on all four factors. This suggests that the combination of frequent input with high functional load and cognitive and syntactic simplicity facilitates the early acquisition of the present perfect. The extremely frequent use of *have got*, combined with the possibility of interpreting this construction as referring to a present state, seem to make it possible for SE children to become familiar with the syntactic shape of the present perfect early. Since the syntactic shape of the present perfect is established early with *have got*, the child has little difficulty in applying this form to cognitively more and more complex uses and in eventually elaborating the syntax to more complex forms (PERS progressive, MOD). The four factors shown in Table 6 appear similarly to facilitate the early use of the present perfect in REC contexts. The above-mentioned use of the competing form, past tense, for REC appears to be less problematic for Scottish children than American children (so that this does not hinder the early association of the present perfect with REC contexts) for two reasons. First, the syntax of the present perfect has already been, or is well on its way to being, established with *have got*. Second, despite the adults' use of the past for REC, their use of the present perfect for REC is extremely high, both in absolute frequency and in frequency relative to their use of the past for REC. In the cases of EXP and RES, at least one of the four factors that contribute to the early acquisition of GOT and REC is missing. For EXP, as noted above, the present perfect carries a higher functional load than it does for GOT and REC. However, the absolute frequency of use of the

present perfect is quite a bit lower than in the cases of GOT and REC, and EXP appears to entail greater cognitive complexity than GOT and REC. In the case of RES, only absolute frequency appears to set RES apart from GOT and REC. As in the cases of the GOT and REC contexts, the present perfect in RES contexts could be interpreted in a cognitively simple manner, and the functional load of the present perfect is high.

The situation with the American children is quite different. Although the frequency of use of the present perfect seems to surpass a necessary minimum level, there is no cognitively simple form like *have got* that is used frequently enough by American adults (and frequently enough relative to non-present perfect forms) to capture the American child's attention at an early stage and initiate him/her to the syntactic formation of the present perfect. Not that *have got* is not used by the adults, but it is not used with the very high frequency that is in evidence in the Scottish adults' speech. Furthermore, the use of the present perfect in contexts like REC, which might be learned early both because of their cognitive simplicity and because of the relatively frequent use of the present perfect by adults in them, is inhibited by the overwhelmingly more frequent use of the past tense in the same contexts. If, as these data suggest, the present perfect emerges in American children's speech in reference to EXP contexts, it is not because it is used by adults more frequently in this context, but because it is used more frequently relative to the competing past tense form. (The alternative possibility is that the present perfect is learned by American children when they begin to acquire the forms that require the perfect construction – e.g. the modals. Under this second possibility, the acquisition of the simple present perfect forms for REC, RES, EXP, and the like is delayed until the modal forms force the child to pay attention to the perfect construction. The relatively low frequency of use of the present perfect, and the greater frequency of use of the past tense, in adult speech in the REC, RES, and EXP contexts may either keep the child from noticing the simple present perfect forms used in these same contexts or make it unnecessary for him/her to attend to those forms.)

CONCLUSION

It appears that frequency of input is a major contributor to the differences found here in the acquisition of the present perfect by Scottish and American children. Although cognitive and syntactic simplicity are held constant across the uses of the present perfect in the two dialects, the children learning these two dialects acquire the present perfect in markedly distinct fashions. The timing of emergence and mastery of the present perfect appear quite different, and the order in which the children acquire the various sub-uses of the present perfect also seems to vary. However, it is hypothesized that frequency alone would not lead to the dramatic differences found here.

Rather, it is probable that it is when high frequency of input conspires with the other factors of cognitive and syntactic simplicity and high functional load that the timing and course of acquisition are affected to the extent that they are in the present study.

The results of this study, therefore, lead to the rejection of the hypothesis that children acquire the present perfect late because of an early cognitive inability to decentre in time. The data provide ample evidence that children are capable of acquiring the present perfect in English much earlier than had been suggested by some studies. However, it is, nevertheless, possible that the ability to decentre in time may play some role in the acquisition of the present perfect for certain uses (e.g. PERS). This study did not address the question of when the child begins to appreciate that the present perfect, in contrast to the simple past, entails relevance to the time of utterance. The exact details of how and when the child comes to an appreciation of this subtlety remains to be explored.

Finally, the findings of this study are not consistent with Johnson's recent (1985) assertion that American and British children learn the present perfect in the same age range. The difference in conclusions appears to stem from the methodology employed in the two studies, and differences in what is accepted as evidence that the present perfect has been acquired. The data here were entirely from naturalistic production, while those reported by Johnson were from elicited imitation. However, a more important difference appears to be that in her study, imitations that were not fully correct syntactically were accepted as evidence that the present perfect was being acquired. Thus, although the 4- and 5-year-old children made numerous errors in their imitations by, e.g. frequently omitting the auxiliary *have*, Johnson concluded that they were acquiring the present perfect. Although the present study did not include elicited imitation, the data here suggest that Scottish children much younger than those studied by Johnson had absolutely no difficulty in using the auxiliary *have* in its correct form, in their present perfect utterances.

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The acquisition of the voicing study of voice onset time in consonants*

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ABSTRACT

This paper reports on a cross-sectional acc development of the voicing contrast in Th onset time (VOT) productions associated w p p^h/), three alveolar stops (/d t t^h/), and tv measured in seven 3-year-old children, seve 7-year-old children, and seven adults. Withir in mean VOT between homorganic stop 3-year-olds have acquired all voicing contr /d/ vs. /t/. By age five, children have acq However, as measured by differences in me 5-year-olds still do not produce /b/ or/d/ in concerning the order of acquisition and nat consonants are discussed.

INTRODUCTION

The literature on the acquisition of voicing consonants, as measured by voice onset time (V to our understanding of developmental proces

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