

# NEW ZEALAND ENGLISH MORPHOLOGY: SOME EXPERIMENTAL EVIDENCE

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## 1 Introduction

This paper presents the results obtained from a questionnaire designed to elicit preferred morphological forms from speakers of New Zealand English (NZE). The questionnaire was based on one used by Johansson (1979), and a few of the questions were common to the two questionnaires. The questionnaire was developed to study the feasibility of eliciting grammatical forms of NZE by this method. A second aim was to compare the results obtained with those already obtained by Johansson (1979) for British and American English. It quickly became clear that not all of the questions included by Johansson were of interest in the New Zealand context, and also that there were many other things which were of interest which Johansson had not included. A single questionnaire to include all the relevant material was out of the question, since it would be far too long to be answered comfortably by informants without loss of concentration. Accordingly, a shorter questionnaire was devised, which focused on morphology. Even in this, there were 44 items, which took informants approximately 15-20 minutes to complete. The questionnaire was administered to a second year Linguistics class at Victoria University in 1986. Although 80 sets of responses were obtained, when non-native and non-NZE speakers had been filtered out there were 44 usable sets of responses, 29 from females, 15 from males. These figures are not sufficient for this test to be seen as anything other than a pilot test, and strictly speaking the population sampled was the population of second year university humanities students, rather than the population of speakers of NZE. It is not clear what differences this has made.

A copy of the instructions for the questionnaire appears as an appendix to this paper. The use of the phrase 'extremely unusual' in the questionnaire turned out to be unfortunate, since it was apparently interpreted by some informants as 'something that I would not expect to hear every day'. However, as far as can be seen, this has not made any difference to the results obtained.

The 44 test items were presented in random order. The random order was obtained by ordering the test sentences alphabetically by the  $n$ th letter in the sentence, where  $n$  was a number chosen at random. As a result, some items turned up closer together than might have been desirable, but in general the sentences were well sorted. The results from the questionnaire were entered in the University's IBM/341 computer, and statistics were calculated using the SAS statistical package.<sup>1</sup> Statistical results are presented below only where they appear likely to clarify matters. For each question the acceptability rating was noted, and whether or not a relevant change had been made. The highest acceptability rating was noted as 1, the lowest as 5.<sup>2</sup> Irrelevant corrections that did not affect the point being considered were counted as no correction; irrelevant corrections that masked the point being considered (as when a different verb was chosen, or a sentence re-written so as to have an infinitive in the place of the past participle under consideration) were omitted from all statistical processes. Where informants did not provide an acceptability rating, that was also ignored for statistical purposes.

It turned out that there was a good correlation between a sentence being judged acceptable and no relevant correction being made, despite a fairly large number of irrelevant corrections. The correlation, using a Spearman Correlation Coefficient, was about 0.87. There was no significant difference between the ways in which males and females marked acceptability ratings (based on a Student's  $t$  statistic), but there was a significant difference ( $t = 2.82$  on 42 degrees of freedom,  $p < 0.01$ ) in the number of relevant corrections made by males and females. This difference, however, does not seem to be attributable to answers on specific questions, but to be a slight general tendency over all the questions. Females made more relevant corrections on average than did males.

Various corrections would be made to the questionnaire format if this type of experiment were repeated. In particular, it would probably be worthwhile salting the

items with non-native-speaker-like errors (errors in article usage, concord, prepositional usage). This would have two functions. Firstly, it would give greater credibility to the assertion that the sentences had been produced by non-native speakers. Secondly, it would hide the fact that there was a theme to all the corrections that were required. Informants may have been encouraged to correct verb forms by the fact that they were so obviously the focus of interest. Having said that, it should be noted that many informants corrected other points in the questionnaire sentences - even where the amended version was less 'correct' in a prescriptive sense than what was in the questionnaire. It is impossible to evaluate the kind of effect this and other experiment design defects may have had. Where comparison is possible with Johansson's figures there does seem to be gross comparability, so no further attention will be paid to such factors.

## 2 Noun plurals

The questions on plural forms concentrated on the plural forms of nouns ending in *-f*. There were six items to test this, three presenting *-fs* plurals, three presenting *-ves* plurals:

Item  
Number

- (1) *I've spent my whole summer painting other people's rooves.*
- (43) *The roofs on both my outhouses collapsed in the earthquake.*
- (17) *When she fell off her horse, she was hit by two of its hoofs.*
- (40) *Animals that have hooves are called unguulates.*
- (25) *The wharfs were deserted at that time of night.*
- (33) *The strike has stopped work on all the wharves in New Zealand.*

Standard descriptions (e.g. those derivable from Fowler (1965), Quirk *et al.* (1985), Weiner & Hawkins (1984) and standard English dictionaries) suggest that both *hoof* and *wharf* are found with either plural, but that the *-fs*

plural is more common, while the plural of *roof* is *roofs*. The situation in NZE as reflected by the answers to this questionnaire is radically different. The *-ves* plural was overwhelmingly preferred in every case - including for *roof*. My impression is that this would also reflect pronunciation of these items, although there is no guarantee that spelling and pronunciation should reflect each other in such cases. The result is only partially reflected in the NZE dictionaries.<sup>3</sup> The *NZPO* gives only *roofs* and *wharfs* as plural forms, but both *hoofs* and *hooves*. The *CCED* lists both *hoofs* and *hooves*, *wharfs* and *wharves*, and puts the *-ves* form first, but lists only *roofs* which it says is pronounced /rufs/ or /ruvz/. The *HNZD* allows either plural for *hoof* and *roof*, but only lists the *-ves* plural for *wharf*.

The figures for *-fs* plurals as opposed to *-ves* plurals are presented below. It will be noted that more people used *roofs* than either *hoofs* or *wharfs*, which presumably reflects the English and/or historical pattern. Interestingly enough, most of the *roofs* responses arise from people failing to correct (43), in which they were presented with *roofs*, rather than from correction in (1).

	<i>-ves</i>	<i>-fs</i>
HOOF	70	16
WHARF	72	16
ROOF	62	26

A further example of noun plurals was added to the questionnaire as a distractor:

(22) *All the New Zealand university campi are in a mess.*

As expected, this was generally rejected, only two informants failing to change it to some version of *campuses* (although spelling and the use of apostrophes were obviously not among the informants' strong points!).

### 3 Plural 'yous'

Two sentences were included in an attempt to elicit plural

'you's'.

- (32) *I asked the children, 'Are you ready yet?'*  
(12) *Are you coming, you bunch of layabouts?*

As might be expected, given the social class of the informants and the fact that the questionnaire was presented in written form, *you* was preferred by almost everyone. No-one changed *you* to *you's* in (12) and only six informants left *you's* in (32), although some added marginal comments to indicate that they recognized the usage.

#### 4 Verbal morphology

##### 4.1 Regular versus irregular stem + ed forms

Quirk *et al.* (1985:105-106) comment that for the verbs *burn*, *learn*, *smell*, *spell*, *spill* and *spoil* 'the irregular -t spelling [in the past tense and past participle] is generally rare in AmE. In BrE, the -t spelling is of varying frequency, but the /t/ pronunciation is widely current' and again that 'there is a tendency to associate -t forms ... more with [the past participle] than with [the past tense], and with [the past tense] when there is least implication of duration'. Johansson (1979:206), on the basis of his study, concludes:

- (i) The *t*-form is almost completely lacking in AE;
- (ii) In BE the *t*-form is the preferred choice, though *ed*-forms are also frequent;
- (iii) The frequency of *ed*-forms in BE varies depending on the particular verb.

In this study, the following verbs were included in this section: *burn*, *dream*, *lean*, *learn*, *smell*, *spell*, *spoil* and also, although they belong to a rather different class, *fit* and *light*. The test items used were the following:

- (36) *She learnt a lot during the course.*
- (11) *She had learnt how to speak English before she came.*
- (37) *He must have learned how to make himself useful.*

- (34) He learned painfully the proper way to ski.
- (27) The smoke smelled of burning rubber.
- (24) The inside of the fridge smelt funny.
- (4) Somehow I fitted it into my hand luggage.
- (38) When I tried it, the bolt fit the hole exactly.
- (30) My books were burned before I could get to them.
- (8) The gorse was burnt very quickly.
- (13) The fire burned for hours.
- (20) Kim burned the letters, and left the room.
- (7) A flame burnt in her heart for many years.
- (15) When the flame caught, the curtains burnt immediately.
- (35) He spelt his name in a strange way.
- (9) She spelled out the implications very clearly.
- (5) Lee lighted the fire with a lighter.
- (18) John lit a cigarette, and slouched back in his chair.
- (16) Ophelia spoiled my entrance completely.
- (19) It was Max who spoilt the game.
- (3) I'd never have dreamed that it would be possible.
- (6) She said that she dreamt of it every night.
- (42) He leant his elbow on the mantelpiece, trying to look relaxed.
- (14) When she leaned back on the chair, it broke.

The numerical results for these questions are set out in the first part of Table 1. Basically, these show a preference for the British option, rather than the American option, although there is a certain amount of lexical diffusion evident (though it is not clear in which direction any change is taking place). If we simply total the number in favour of each form from all the questions, we find the following, where the distribution appears to be reasonably significant.

*Fitted* is preferred to *fit*, 65 to 17.

**TABLE 1: Table of Results, Verbal Morphology**

The various columns in this table are as follows:

- Q1, Q2** The two questions forming the pair under discussion
- MA1, MA2** Mean acceptability rating for Q1 and Q2 respectively
- T** Student's *t* statistic for the difference between MA1 and MA2; degrees of freedom = N1L + N2L + N1C + N2C - 2
- P<0.01** Probability statement based on T
- N1L, N2L** The number of informants making no relevant correction in Q1 and Q2 respectively
- N1C, N2C** The number of informants making a relevant correction in Q1 and Q2 respectively

Q1	Q2	MA1	MA2	T	P<0.01	N1L	N2L	N1C	N2C	VERB
3	6	1.95	1.88	0.32	no	40	38	3	6	dream
4	38	1.43	2.52	4.97	yes	36	15	2	29	fit
5	18	3.00	1.29	8.55	yes	8	44	34	0	light
7	13	2.15	1.22	4.60	yes	23	38	18	6	burn
8	30	1.93	1.90	0.11	no	38	19	6	24	burn
15	20	2.06	1.88	0.75	no	35	25	7	19	burn
10	35	1.97	1.09	5.41	yes	17	42	24	1	spell
11	37	1.83	2.00	0.80	no	36	18	8	26	learn
34	36	2.04	1.22	4.61	yes	31	39	13	5	learn
14	42	1.61	1.79	0.90	no	28	28	16	14	lean
16	19	1.72	1.39	1.77	no	28	36	16	8	spoil
24	27	1.15	2.43	6.78	yes	44	10	0	34	smell
2	29	2.02	1.18	4.83	yes	19	43	20	0	get
9	39	3.25	1.02	14.10	yes	1	43	26	1	get
26	28	2.52	1.58	4.29	yes	11	36	32	7	get
21	31	1.68	1.71	1.63	no	30	28	10	15	prove
41	44	1.79	1.70	0.44	no	30	24	14	20	prove

*Lit* is preferred to *lighted*, 78 to 8.

*Spelt* is preferred to *spelled*, 66 to 18.

*Smelt* is preferred to *smelled*, 78 to 10.

*Learnt* is preferred to *learned*, 114 to 62.

*Spoilt* is preferred to *spoiled*, 52 to 36.

*Dream* and *lean* go together in another group. In the case of *dream*, there were very few corrections, whichever form was presented. It thus seems that informants do not notice this distinction. With *lean* in contrast, there was no significant patterning in either direction for either question, despite the fact that there were many more changes for both questions than there were with *dream*. The case of *burn* is of interest with respect to a different hypothesis. In items (7) and (13) which were clearly marked as lasting a long time, there were very few corrections to the *-ed* past, but corrections to the *-t* past showed no significant trend in either direction. In items (15) and (20), which were marked as lacking duration, the opposite state of affairs is found, as it is in (8) and (30), where the past participle is used. Quirk *et al.*'s comments on duration thus appear to hold for NZE, too.

There is very little data in my results to support the hypothesis that the past tense and the past participle might act differently with respect to regular versus irregular morphology. More people changed *learned* to *learnt* when it was a past participle than when it was a past tense, but the results are not striking. Marginally more people changed *burned* to *burnt* when it was a passive participle than when it was a past tense, but that difference is not significant. The evidence, then, is slightly on the side of Quirk *et al.*'s observation for British English, but far from overwhelming.

TABLE 2: Results for Four Items from Johansson (1979)

Column headings as for Table 1.

Q	British English			VERB	American English		
	MA	NL	NC		MA	NL	NC
20	1.42391	79	10	burn	1.68478	88	0
27	2.38043	46	37	smell	1.84946	86	1
35	1.21739	86	2	spell	2.62365	10	82
36	1.66304	85	3	learn	3.29350	8	83

In four cases items in this questionnaire were identical to or fundamentally the same as items from Johansson's (1979) questionnaire. The items in question were (20), (27), (35) and (36). In each case the mean acceptability



rating, the number of corrections and relevant changes were calculated, and these are presented in Table 2.<sup>5</sup> The distributions of acceptability ratings in Johansson's data for speakers of British English and for speakers of American English were also compared with the distribution of acceptability ratings for the NZE speakers in my data, with the following results.<sup>6</sup> In item (20) (use of *burned* as a past tense form) the NZE results are not significantly different from the American English results, but are significantly different from the British English results. In item (27) (use of *smelled* as a past tense form), the NZE results are not significantly different from the British English results, but are significantly different from the American English results. In item (35) (use of *spelt* in the past tense) the NZE results are not significantly different from the British English results, but are significantly different from the American English results. And in item (36) (use of *learnt* in the past tense) the NZE results are significantly different from both the British and the American English results. There is thus some evidence that NZE is not simply a reflection of British English in the use of these past tense and past participle forms.

#### 4.2 Forms of 'to prove'

The use of the participle *proven* (variously pronounced) is well established in NZE. Yet Gordon's (1980:112) advice is clear:

The past participle of 'prove' is 'proved', as is its past tense. Do NOT use the form 'proven', which can be used only in the specialised phrase 'not proven'.

This clearly does not reflect actual NZE usage. A query must also be placed beside a later statement on the same forms (Gordon 1985), which I unfortunately did not uncover until after the results from the questionnaire were in:

New Zealand English strongly favours 'proved' ... ['Proven'] is always transitive and needs an actual or implied object ... One cannot idiomatically say 'He has proven to be wrong'.

The items used to elicit participial forms of 'prove'

were

- (21) *Linguistics has proven too difficult for me.*
- (31) *My experience as a teacher has proved useful again and again.*
- (41) *This theorem has been proven by every student in the class.*
- (44) *The case has been proved beyond all reasonable doubt.*

Both of examples (21) and (31) were intransitive, and illustrated the past participle. If Gordon were correct, therefore, we should expect to find no tokens of *proven* in the answers to these questions. In fact, there were more *proven* responses to (21) and (31) than there were *proved* responses: 45 to 38. But this is not particularly illuminating. In (21) there was a significant tendency ( $z = 3.16, p < 0.01$ ) to leave *proven*, while in (31) there was a much less significant tendency to leave *proved* ( $z = 2.13, p < 0.05$ ). With the passive sentences (41) and (44), where, according to Gordon we should find *proven*, the tendencies are less marked. In (41) there is a significant, but not highly significant, tendency to leave *proven* ( $z = 2.41, p < 0.05$ ), but in (44) there is no significant tendency to leave or to change *proved*. Again there are more responses in favour of *proven* than *proved* (50 to 38), but again this does not tell us a great deal.

In general it seems that there is a slight tendency to prefer *proven* to *proved*. If Gordon (1985) is correct that it is easier to use *proven* in transitive sentences, it may be the case that *proven* is more widely used than *proved* across the board by this type of informant.

#### 4.3 Forms of 'to get'

The use of *gotten* seems to be a recent innovation in NZE. Trudgill & Hannah (1982:45) point out that in American English *gotten* cannot be used with the meaning 'have'. Since I suspected that such subtleties were probably not appreciated by non-native speakers of American English, it seemed worth checking. Some of my examples for *got/gotten* were borrowed from Trudgill & Hannah, although item (2) was overheard from a NZE speaker.

The items used to elicit responses to forms of 'get' were

- (2) *If I had known, I wouldn't have gotten out of bed.*
- (9) *I've gotten plenty to eat now.*
- (26) *They've gotten me into trouble again.*
- (28) *I've got myself out of worse positions in the past.*
- (29) *Don't tell me I've got it wrong again.*
- (39) *I've got the idea now.*

The most striking thing about the responses to these items is the low number of changes to *got*, which shows clearly that this is the dominant form, although not everyone changed *gotten* to *got*. It is noticeable, however, that where *get* means 'have' in items (9) and (39), far fewer informants are happy to leave *gotten*. There was a particularly low number of relevant responses for item (9) (27 out of a possible 44) because so many informants changed the verb to *have*. It thus seems that informants are aware of the difference in past participle forms when *get* means 'have'. A second hypothesis, suggested to me by a student who uses *gotten*, is that *gotten* only occurs (or occurs preferentially) before vowels. This hypothesis was tested with items (2) and (29) (with *get* before a vowel) and (26) and (28) (with *get* before a consonant). While significantly more informants left *gotten* before a vowel than before a consonant ( $z = 2.22, p < 0.05$ ), significantly more informants also changed *got* to *gotten* before a consonant than before a vowel ( $z = 3.62, p < 0.01$ ). This apparent contradiction cannot be explained on the basis of this hypothesis.

It is clear that *got* is preferred to *gotten*, but there is not sufficient evidence to suggest whether *gotten* is increasing in particular areas.

#### 4.4 Concord

Two examples were included that involved concord with the noun *linguistics*.

- (21) *Linguistics has proven too difficult for me.*
- (23) *What are linguistics, anyway?*

Only two informants changed (21) to *linguistic* have ..., and only 10 informants left (23) with plural concord (and of these, some seem to have misread the sentence as *What are linguists, anyway?*). Unsurprisingly, singular concord is the dominant choice.

#### 4.5 Dictionaries

The forms listed by the three NZE dictionaries for the verbs discussed in this section are listed in Table 3, along with the forms listed in *Webster's Third New International Dictionary* (1966) as a representative American dictionary and *Hamlyn's Encyclopedic World Dictionary* (1971) as a representative British dictionary not related to any of the NZE dictionaries. Results from this study are included in the last column. As can be seen from the table, none of the NZE dictionaries is entirely accurate. In particular, those that mention *proven* and *gotten* tend to say they are archaic, literary, American or Scottish (as relevant) and yet both are found in NZE, and, in particular, *proven* is very common. The tendency for NZE to be like British English as opposed to American English can also be seen from Table 3, although it can also be seen that the likeness does not imply identity.

TABLE 3: Verb Morphology Listed in Various Dictionaries

A single form indicates that only one is listed. A form preceded by an asterisk indicates that both are listed in the dictionary, but the one given here is preferred (by being listed first). The form given for this study is the preferred one.

VERB	IEWD (GB)	Webster (US)	NZPO	HNZD	CCED	This study
burn	*t	*ed	*t	*t	*t	t
dream	*ed	*ed	*t	*t	*t	either
fit	ed	*ed	ed	ed	ed	ed
get	got	*got	got	got	got	got
lean	*t	*ed	*ed	*ed	*t	either
learn	*t	*ed	*ed	*t	*t	t
light	*t	*ed	*t	*ed	*ed	t
prove	*ed	*ed	ed	*ed	*ed	either
smell	*ed	*ed	*t	*t	*t	t
spell	*t	*ed	*t	*t	*t	t
spoil	*ed	*ed	*t	*t	*t	t

## 5 Conclusion

The conclusions of this study are not in themselves particularly surprising. Rather they confirm things that have, in some sense, been known for a long time. They also illustrate the relatively close connection between NZE and British English, without identifying the two. The question of how far these results can be generalized remains. Are they typical of NZE as a whole, or only of undergraduate English? In particular, it might be expected that the use of *gotten* and *proven* might be greater among younger speakers, and this might explain the high usage of *proven* shown in this experiment. The low acceptability given to *yous* would not be expected to be repeated at lower socio-economic levels, for different ethnic groups, or even in less formal situations. The preferences for *-ves* noun plurals and *-t* past tense/participle forms are striking in the data presented here, and are the major results to be drawn from this study.

Of course, many questions remain. Is the preference for *-ves* plurals shown for all relevant items, or do some still have *-fs*? Does the finding here generalize to *-ths* plurals? Is Gordon right that *proven* is more common in transitive sentences? If *gotten* is spreading, what factors encourage its appearance? Which of these variables are affected by social factors such as age and socio-economic status? These and other questions will have to await further study.

In particular there are two questions which were not specifically addressed in this study, but which ought to be considered in any further study of these matters.

(i) Is the pronunciation of the past tense/past participle forms more consistent than the written form? That is, do people who write *dreamed*, for example, still pronounce it /drempt/?

(ii) Is it always the case that adjectival function encourages the use of the irregular form? The *Longman Dictionary of Contemporary English* suggests that this is true for *burn*, and there is a semantic distinction between a *learnt speech* and a *learned speech* (but note the disyllabic pronunciation of *learned* in this last example). Do people who otherwise say *proved* say things like a *proven effect*? Is there

an implicational hierarchy such that the past participle is more regular than the passive participle is more regular than a participle used in attributive position?

It is clear that there is much more work to be done in descriptive morphology within NZE.

#### NOTES

<sup>1</sup>I should like to thank Steve Haslett of the Institute of Statistics and Operations Research at Victoria University for telling me what to ask SAS, and how to phrase it so that SAS would understand. He is hereby absolved from any responsibility for any misuse to which I have put his expertise, or the results that it generated.

As an aside on statistical tests, statements of significance about relevant change/no correction to the stimulus sentences used a test statistic ( $z$ ) based on the normal approximation to the binomial (Spiegel 1972). Mean acceptabilities and usages dependent on sex were compared using  $t$ -tests.

<sup>2</sup>This, I later discovered, is the reverse of what was done in Johansson (1979). This does not matter for the present paper, but means that mean acceptability ratings are not directly comparable between the two papers.

<sup>3</sup>The three NZE dictionaries are referred to in this paper by their initials: *HNZD* is the *Heinemann New Zealand Dictionary* (1979), *CCED* is the *Collins Concise English Dictionary* (New Zealand edition, 1982), and *NZPO* is the *New Zealand Pocket Oxford Dictionary* (1986).

<sup>4</sup>I have not given figures for this significance, since they vary for the two members of the pair. The results for *light* and *smell* show a clear and statistically significant preference for the forms listed in the text from both questions: for question (5), with *lighted* presented, most changed it to *lit*,  $z = 4.0$ ,  $p < 0.01$ , and for question (18) with *lit* presented, all informants left it,  $z = 6.6$ ,  $p < 0.01$ ; for question (24) with *smelt* presented no-one changed it,  $z = 6.6$ ,  $p < 0.01$  and with question (27) with *smelled* presented, most informants changed it to *smelt*, and  $z = 3.6$ ,

$p < 0.01$ . *Fit* and *spoil* almost make the same category, but the significance of change on items (16) and (38) is far lower. For *spell* and *learn* very few informants change from the British form to the American form, although when presented with the regular *-ed* ending, the number who change it to *-t* is not significant.

<sup>5</sup>I should like to thank Stig Johansson for making figures available to me so that the various calculations could be made. For reasons explained elsewhere, the mean acceptability rating given for Johansson's data is not the same as the one given in his (1979) paper, but rather one which allows direct comparability with my figures.

<sup>6</sup>The difference was tested using a 1-way non-parametric analysis of variance and a significance level of 0.01.

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### Format of the questionnaire

Victoria University of Wellington  
Linguistics Section

### Questionnaire

In this questionnaire you are presented with a number of sentences which have been produced by foreign speakers of English. Some of the sentences may sound strange to you - because of the choice of words, the grammatical construction used etc. Your task is

- (1) to rate each sentence on a five-point scale ranging from 'the sentence is completely normal and idiomatic' at one end to 'the sentence is extremely unnatural and abnormal' at the other;
- (2) to change the sentence (if necessary) to the form you would have used yourself.

THANKYOU FOR YOUR HELP

((new page at this point))

- (1) I've spent my whole summer painting other people's rooves.

I find this sentence

absolutely normal \_ \_ \_ \_ \_ extremely unusual

I would have said it differently, in the following way:

.....

(2) If I had known, I wouldn't have gotten out of bed.

I find this sentence

absolutely normal \_ \_ \_ \_ \_ extremely unusual

I would have said it differently, in the following way:

.....

((and so on; 44 questions in all))

((new page at this point))

Now that you have completed the questionnaire, could you please provide the following personal information for statistical purposes:

Your sex:

MALE FEMALE

Are you a native speaker of English:

YES NO

If NOT, what is your native language?

If you ARE a native speaker of English, in which country were you brought up in between the ages of approx. 5 and 14 years?

Your help is much appreciated.

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# The Carrier Pigeon

The Carrier Pigeon is a journal of the Department of Anthropology, Stanford University. It is published quarterly, in April, August, and February. The journal is devoted to the study of human evolution, human ecology, and human behavior. It is a multidisciplinary journal, and includes articles from a wide range of disciplines, including biology, anthropology, psychology, and sociology. The journal is published by the Department of Anthropology, Stanford University, Stanford, CA 94305, USA. The journal is published by the Department of Anthropology, Stanford University, Stanford, CA 94305, USA. The journal is published by the Department of Anthropology, Stanford University, Stanford, CA 94305, USA.

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