

Front approximant /r/

A new and vigorous change in Dutch

Renée van Bezooijen, Suzan Kroezen and Rob van den Berg
University of Nijmegen/CLS

1. Introduction

According to Ladefoged and Maddieson (1996) about 75% of all languages contain the phoneme /r/. It subsumes an extremely varied collection of sounds, grouped under the heading of rhotics. The varied nature of the rhotics category has often been mentioned in the literature. A widely quoted statement is that of Ladefoged and Maddieson: “Although there are several well-defined subsets of sounds (trill, flaps, etc.) that are included in the rhotic class, the overall unity of the group seems to rest mostly on the historical connections between these subgroups, and on the choice of the letter ‘r’ to represent them all” (1996:245). Lindau (1985:166) formulates it even more concisely: “There is no physical property that constitutes the essence of all rhotics”.

Most languages have a single type of /r/. However, about one fifth of the languages with /r/ have two or more variants (Ladefoged & Maddieson 1996). Dutch is one of these languages. It is generally assumed that the oldest variant in Dutch is alveolar /r/, realized with the tip of the tongue against the alveolar ridge. Uvular /r/, produced with the back of the tongue against the uvula, dates back to the end of the seventeenth century (Van Reenen 1994). Nowadays a wide variety of rhotics can be heard in standard Dutch. One of the most conspicuous new variants is the front approximant. Front approximant /r/ (mostly ‘approximant /r/’ from now on) differs from truly consonantal types of /r/ in that the constriction is incomplete and the airstream is less interfered with. It is this /r/ which is the focus of this study. More specifically, it is our aim to gain insight into the way in which front approximant /r/ is spreading in standard Dutch, both socially and geographically.

The views on the articulatory characteristics of front approximant /r/ in Dutch do not agree. Van den Toorn (1992:6) and Stroop (1998:36) contend that this type of approximant is always retroflex, Van Reenen (1994:54) states that it is sometimes

retroflex, and Mees and Collins (1982: 10) note that although its articulation gives rise to “pseudo-retroflex resonance” it fails to be truly retroflex because “the tongue-tip is not curled back nor even raised”. In addition to its manner of articulation, there is some disagreement on its place of articulation. Van Reenen (1994: 54) is of the opinion that it is palatal-velar, Mees and Collins (1982: 10) state that it is pre-velar, and Booij (1995: 8) considers it to be palatal. It might well be that in fact its realization varies somewhat, depending among other things on the other r-variant(s) in a speaker’s repertoire. For so much is clear that the front approximant dealt with in this study can only occur postvocally, which means it always co-occurs in a speaker’s speech with alveolar or uvular /r/ in prevocalic position. It differs in this respect from the uvular approximant /r/, which, according to among others Booij (1995) and Mees & Collins (1982), can occur both before and after a vowel. The back approximant is not considered in this study.

Linguists’ ideas on the degree of standardness of front approximant /r/ vary as well. Paardekoper (1978: XIV) considers the j-type variant of r “used by some northern Dutchmen, particularly at the end of a word” unacceptable in standard Dutch.¹ In contrast, Van Reenen (1994: 61), has a positive attitude towards approximant /r/ in the standard language. Others (e.g. Cohen, Ebeling, Fokkema & Van Holk 1961 and Voortman 1994) mention approximant /r/ without any comment as one of the present day variants of standard Dutch.

The oldest reference we have found to front approximant /r/ is Meertens (1938), who complains about the “unrecognizably distorted” /r/ of some radio-presenters (p. 54). The link to the media (cf. also Van den Toorn 1992) must have given rise to the popular name for approximant /r/ in Dutch, i.e. “Gooise r”. “Het Gooi” is the region south-east of Amsterdam where the national broadcasting services are located, with Hilversum as its main centre. The western origin of approximant /r/ is also explicitly stated by some linguists (Stroop 1998). If a distinction between the sexes is made, women are seen as the ones using approximant /r/ more frequently (Van den Toorn 1992: 6, Van de Velde 1996: 140, Gussenhoven & Broeders 1976: 127). In addition, youngsters and children are associated with approximant /r/ more often than old people (Stroop 1998: 34, Gussenhoven & Broeders 1976: 127). However, these socio-geographical relationships have not been empirically verified in a systematic study. In view of the amazing speed at which front approximant /r/ seems to be spreading in Dutch, we thought it the right moment to test the three most important hypotheses formulated in the literature:

1. Front approximant /r/ is more frequent in the west than in other parts of the Netherlands;
2. Front approximant /r/ is used more often by women than by men;
3. Front approximant /r/ is more common in children than in adults.

By combining the socio-geographical production data with data on speakers’ awareness of approximant /r/, we hoped to gain insight into the type of language

change at hand and to get a first idea of the route approximant /r/ is taking, both socially and geographically, in the Netherlands.

2. Method

2.1 Speakers

Recordings were made in Haarlem and Nijmegen. Haarlem is a city of 148,484 inhabitants (1–1–2000) located in the west of the Netherlands, a region characterized by alveolar /r/ (Goeman & Van de Velde 2001). Nijmegen, a city of 152,200 inhabitants (1–1–2000) situated in the east of the Netherlands, typically has uvular /r/ (Van Hout 1989). In either city, data were gathered from male and female speakers of two age groups, ‘young’, ranging between 10 and 13 years, and ‘old’, ranging between 36 and 51 years. All eight combinations of the three socio-geographical factors Place, Age, and Sex included eight speakers, except for the young males from Haarlem, where there were only seven.² So the total number of speakers was 63. All four types of child-parent relationships (son-mother, son-father, daughter-mother, and daughter-father) were represented. All children were members of a korfbal club. The adults were contacted through the children. Almost all speakers had lived their entire lives in the respective places; a few had lived somewhere else, but never for more than a few years. Most speakers are centrally located in the social class hierarchy. Their speech can be qualified as (an approximation of) standard Dutch, as it contains no or very few regional markers.

2.2 Speech material and procedure

The speech material consisted of a read word list. The original list consisted of 155 words. 105 of these contained the phoneme /r/, the other 50 were r-less distractors. The 105 r-words can be subdivided into three categories, according to the phonological context in which /r/ occurs: 29 prevocalic with /r/ in word initial position or preceded by one or two consonants ((C)(C)rV), 10 intervocalic with /r/ preceded and followed by a vowel (VrV), and 66 postvocalic with /r/ in word final position or followed by one or two consonants (Vr(C)(C)). Nine vowels were represented: the four front vowels /i/, /e/, /ɛ/, /a/, the mid vowel schwa /ə/, and the four back vowels /u/, /o/, /ɔ/, /ɑ/. In CrV, VrC and VrCC, all consonants permitted in the respective positions were included. The consonant cluster in CCrV was restricted to /sxr/.

All 29 words with prevocalic /r/ and all 10 words with intervocalic /r/ were examined in the present study. However, only 30 of the 66 words with postvocalic /r/ were considered, namely those where /r/ was word final ($n=20$) or followed by /s/, /t/, /st/ or /ts/ ($n=10$). The 36 words where /r/ was followed by /k/, /p/, /m/, /n/,

/f/ or /x/ were left out of consideration because of possible schwa epenthesis (/kɛrk/ 'church' is realized as [kɛrək]). As a consequence of schwa epenthesis, which is fairly common in Dutch, the /r/ involved becomes prevocalic, which precludes the use of the front approximant variant, the focus of this study. So, the total number of r-items on which this study is based is 69.

The r-words were presented to the speakers in a random order, mixed with the 50 r-less distractors. They were asked to read the words carefully and in a quiet tempo. The recordings were made with a Sony DAT-recorder TCD-D3 and a Sony microphone ECM-737. Afterwards, the speakers were informed about the purpose of the study and were asked some questions about their own usage of /r/ and their knowledge about the use of /r/ by others. The whole procedure took about 10 minutes per speaker.

2.3 Transcription

The transcription was made by the second author and checked by the first author. Six r-variants were transcribed.

1. Front approximant /r/ light.
2. Front approximant /r/ heavy.

The phonetic properties of front approximant /r/ were described in the introduction. In the transcription a distinction was made between a light and a heavy variant, the latter being perceptually more markedly present, probably due to a longer duration and perhaps a somewhat more constricted articulation.

3. Alveolar /r/, realized with the tip of the tongue against the alveolar ridge. No distinction was made between taps and trills.
4. Uvular /r/, produced with the back of the tongue against the uvula. No distinction was made between trills and fricatives.
5. Schwa /r/, where /r/ is vocalized and realized as the neutral vowel schwa.
6. Zero /r/, where no trace of /r/ is present.

3. Results

First an inventory was made of the frequency of occurrence of the six r-variants in the material, split up by position within the word, i.e. prevocalic, intervocalic, and postvocalic. Table 1 shows that the number of different r-variants in prevocalic and intervocal positions is much smaller than in postvocalic position, a finding often reported in the literature (Vieregge & Broeders 1993). In prevocalic and intervocalic position, only two variants occur, namely alveolar /r/ and uvular /r/. In postvocalic position, these two variants are fairly common as well, in addition to the two types of approximant and schwa. Zero realization of /r/ is extremely rare.

Table 1. Relative frequency of occurrence (in %) of the six r-variants, summed over 63 speakers and split up by position within the word. In the last two columns the number of missing data and the total number of occurrences. Approximants are shaded in grey.

	1 approx. light	2 approx. heavy	3 alveolar	4 uvular	5 schwa	6 zero	N missing	N total
Pre	0.0	0.0	35.5	64.4	0.0	0.0	1	1827
Inter	0.0	0.0	35.1	64.9	0.0	0.0	0	630
Post	16.1	24.1	15.9	28.3	14.5	1.1	1	1890

Table 1 gives an overview of the positional distribution of the variants separately, but does not show how these co-occur in the speech of the speakers. To this end a speaker typology was made. As the differences between the prevocalic and intervocalic positions were minimal (see Table 1), the data were taken together under the general heading ‘prevocalic’. Furthermore, light and heavy approximant /r/ were combined, thus reducing the number of variants included in the typology from six to five. Of these variants, three, i.e. approximant /r/ (“a”), schwa /r/ (“ə”), and zero /r/ (“Ø”), can only occur after a vowel, whereas the other two, i.e. alveolar /r/ (“t” of “tip of the tongue”) and uvular /r/ (“u”), can occur both after and before a vowel (see Table 1). Taking this into account, speakers may theoretically manifest 93 types of r-behavior.

The 93 types differ as to the number of variants (one, two, three, four, or five) and the combination of variants. For example, if a speaker is mono-rhotic, i.e. only has one type of /r/ in his or her repertoire, there are only two possibilities, he or she either uses t or u, in all phonological contexts. For a bi-rhotic speaker there are 19 possibilities, namely prevocalic t combined with postvocalic (t)u, (t)a, (t)ə, or (t)Ø, prevocalic u combined with postvocalic (u)t, (u)a, (u)ə, or (u)Ø, and prevocalic tu combined with postvocalic t, u or tu.³ For a tri-rhotic speaker, there are 36 combinatory possibilities, for a quadri-rhotic speaker 28, and for a penta-rhotic speaker 8.

Of the 93 potential speaker types, 16 were attested, as shown in Table 2. There were no speakers with all 5 variants, and only 1 speaker (1.6%) with 4 variants. This speaker uses uvular r prevocalically and alternates uvular, approximant, schwa and zero /r/ postvocalically. Furthermore, there are 12 tri-rhotic speakers (19.0%), 42 bi-rhotic speakers (66.7%), and 8 mono-rhotic speakers (12.7%). So, speakers with two r-variants are by far the most common type; they constitute two-thirds of the sample.⁴

39 out of the 63 speakers (61.9%) have approximant /r/ in their repertoire (see Table 2), in the context specified above, i.e. postvocalically either in word final position or followed by /s/, /t/, /st/ or /ts/. For 13 speakers it is the only r-variant they have in this position, 26 speakers alternate the use of the approximant with one

Table 2. Frequency of occurrence of different types of mono-rhotic, bi-rhotic, tri-rhotic, and quadri-rhotic speakers. a=approximant (in grey), t=alveolar, u=uvular, ə=schwa, Ø=zero. x-=prevocalic, -x=postvocalic

Mono		Bi							
t-t	u-u	tu-tu	u-uə	u-ə	u-uØ	t-ta	t-a	u-ua	u-a
4	4	1	8	2	1	10	6	7	7

Tri					Quadri
tu-uØ	u-uəØ	t-taØ	u-aə	u-uaə	u-uaəØ
1	3	1	2	5	1

or more other postvocalic variants. In Table 3 the number of speakers using approximant /r/ (at least once) is shown as a function of Place, Sex, and Age.

Table 3. Number of speakers with approximant /r/, split up by Place, Sex, and Age

	Haarlem		Nijmegen	
	female	male	female	male
young	8	7	6	4
old	7	4	2	1

The distribution of approximant /r/ speakers in Table 3 suggests a strong relation-ship with the socio-geographical characteristics of the speakers. Approxi-mant /r/ occurs most frequently in the repertoire of children in Haarlem (15 out of 15) and least often in the repertoire of adults in Nijmegen (3 out of 16). Of course, Table 3 only shows part of the picture: usage is defined very roughly in terms of presence or absence and the two types of approximant have been aggregated. A number of questions arise:

1. Is the effect of Place, Sex, and Age on the degree of usage of approximant /r/ significant?
2. Is there a correspondence between the use of approximant /r/ by children and their parents?
3. What is the distribution of the two types of approximant /r/, i.e. the light and heavy realizations?

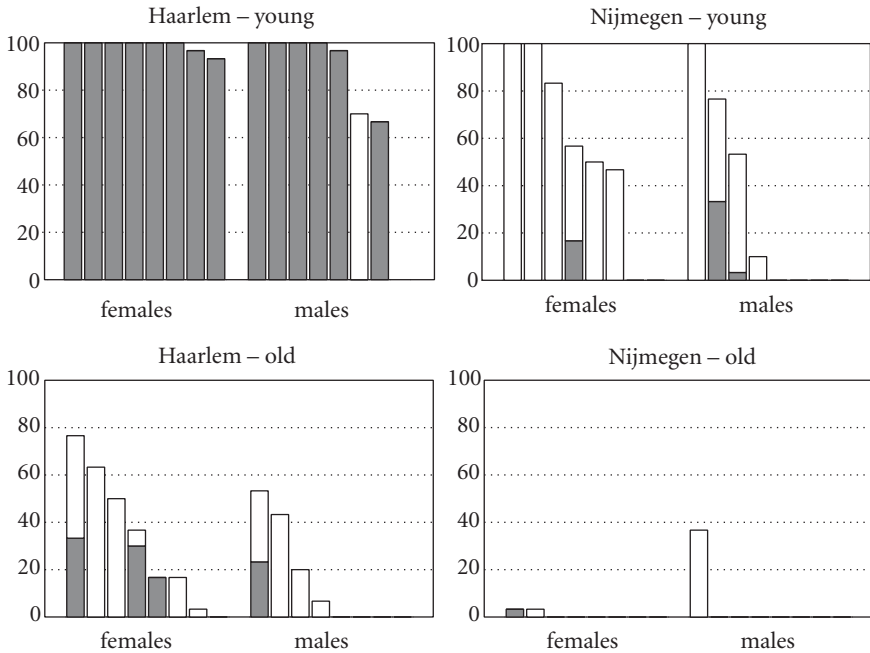


Figure 1. Frequency of occurrence (in %) of approximant /r/ per speaker, split up for Haarlem young, Nijmegen young, Haarlem old, and Nijmegen old. White bars represent light variants, grey bars heavy variants.

To answer the first question, percentages approximant /r/, independent of type, were calculated for all speakers (the stacked bars in Figure 1), and an analysis of variance was conducted to test the significance of the factors Place, Sex, and Age. As suggested by Figure 1, all three main effects were (nearly) significant, and in the expected direction. Speakers from Haarlem (58.4%) use more approximants than speakers from Nijmegen (22.6%): $F_{1,55} = 34.07$, $p < .001$, women (46.9%) use more approximants than men (33.3%): $F_{1,55} = 3.48$, $p = .067$, and young speakers (67.8%) use more approximants than old speakers (13.4%): $F_{1,55} = 76.48$, $p < .001$. Two of the three hypotheses formulated in the introduction are corroborated statistically: the effects of Place and Age are significant, the effect of Sex shows a strong tendency. In addition, there is a significant two-way interaction between Place and Age ($F_{1,55} = 5.91$, $p < .05$), showing that the difference between young and old is larger in Haarlem (94.9% versus 24.2%) than in Nijmegen (42.5% versus 2.7%).

The answer to the second question can be deduced from Figure 2, where the percentages approximant /r/ are shown for paired couples of children and parents. The generation gap in the use of approximant /r/ is clearly very large. Children with 100% approximant /r/ live side by side with parents having none. The product-moment

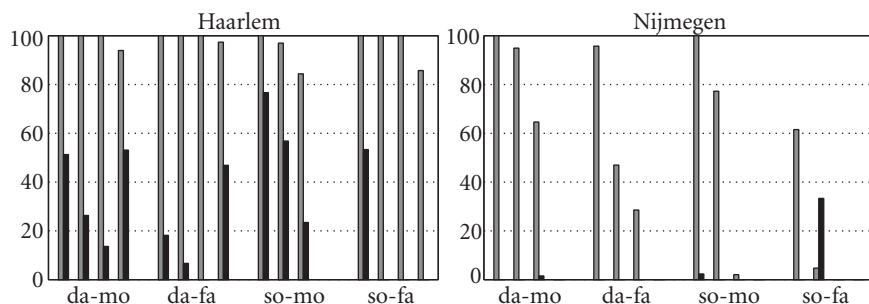


Figure 2. Frequency of occurrence (in %) of approximant /r/ for 31 paired couples of children (grey bars) and parents (black bars); da = daughter, mo = mother, so = son, fa = father.

correlation between children and parents is .36, which is significant at the 5% level, but so low in terms of percentage shared variance as to be negligible.

To answer the third question, the proportions of heavy and light approximant /r/ are indicated in Figure 1. It appears that all approximants used by the Haarlem children are heavy, except for one boy, who systematically uses the light variant. The adults in Haarlem, just like the children in Nijmegen, use predominantly light variants, but some speakers use the heavy variant as well. The adults in Nijmegen hardly use any heavy variants at all.

4. Discussion

The main aim of the present study was to gain insight into the frequency of occurrence and the distribution of front approximant /r/ in present-day Dutch. To that end 63 speakers of socio-geographical diverse origin read out a list of r-items. 40.2% of all postvocalic /r/ in non-epenthetic context was found to be realized as a front approximant. How does this compare to the findings of previous research? Van de Velde (1996) distinguishes ten r-variants in his diachronic study of standard Dutch in the Netherlands and Flanders. In our view, two of these variants can be grouped under the heading of Gooise r: 'front approximant' and '[j]'. Together these constitute 25.3% of the postvocalic r-realizations by Dutch male radio reporters in 1993. In view of the probably western origin of the reporters, this figure is best compared to the male adults from Haarlem, who show 15.4% approximants. So, Van den Velde found 10% more approximants than we did. We can think of at least two explanations for this discrepancy. First, Van de Velde's reporters may have come from a region where more approximants are used than in Haarlem (e.g. Het Gooi). Second, approximants may occur more often in spontaneous than in read speech. Both are interesting topics for further research.

The distribution of approximant /r/ manifests strong socio-geographical influences. All three hypotheses formulated in the introduction were (nearly) confirmed: approximant /r/ is more frequent in the west than in the east of the Netherlands, there is a strong tendency for it to be used more often by women than by men, and it is more common in children than in adults. The last effect is the most salient and manifests itself in several ways. A first indication is the number of speakers who use approximant /r/ at least once: 80.6% of the children versus 43.8% of the adults. More precisely, in the specified contexts approximant /r/ constitutes 67.8% of the realizations by children versus 13.4% by adults. The age effect also manifests itself qualitatively: children use many more heavy variants than adults, especially in Haarlem.

That a sound change is going on is obvious. The question is, what type of sound change, is it a change from above or from below (Labov 1994, 2001)? The main characteristics of changes from above can be summarized as follows: introduced by the dominant social class, with full public awareness, borrowed from another speech community with higher social prestige, acquired by adults, primarily in careful speech. An example is the adoption of uvular /r/ from French by the higher classes in the Hague in the seventeenth century. The characteristics do not seem to fit the spreading of approximant /r/ in present-day Dutch.

Better suited seems to be the second type of change described by Labov. Changes from below are introduced by the central classes, below social awareness except when nearing completion, result of the operation of internal factors, acquired by children from age 4, primarily in vernacular. The dominant role of children clearly emerges from the present study, which automatically leads to the vernacular as the main carrier of the change. The low social awareness emerged convincingly from the last part of the interview: none of the parents appeared to be aware of their daughter or son using a different /r/ from their own. We think that the central classes are indeed the initiators, but this needs some further attention, as well as does the origin of approximant /r/. When Labov speaks of “the operation of internal factors” he is thinking of gradual changes in the vowel system. The emergence of a completely new consonantal sound might well be of a different order.

If approximant /r/ is a change from below, the question as to the stage of development still needs to be answered. Labov distinguishes five stages: incipient, new and vigorous, mid range, near completion, and completed. The change progresses slowly at the beginning and end, and fast in the middle (so-called S-curve). On the basis of the present evidence we think that the change towards approximant /r/ in Dutch is best characterized as a new and vigorous one. This appears from the large gap between children and adults, pointing to a fast rate of change, as well as from the low level of social awareness, which according to Labov is characteristic of the initial and mid stages. The change seems to be somewhat

more advanced in Haarlem than in Nijmegen, as appears from the significant interaction between Place and Age.

So, we contend that approximant /r/ is a new and vigorous change from below which is spreading fast from the west to the other parts of the Netherlands, affecting large groups of speakers of standard Dutch. Except for a few linguists and non-linguists with an acute awareness of pronunciation, the change seems to go unnoticed. This is remarkable, as we are not dealing with the subtle and gradual vowel changes as described by Labov (1994, 2001) for the northern cities in the United States, but with an abrupt change in a consonant, the approximant realization of which can easily be distinguished from the more established alveolar and uvular r-variants in standard Dutch. It can be conceived that the restriction to postvocalic position plays a role: Listeners may be more sensitive and/or attentive to prevocalic /r/. This could be verified in a perception experiment.

We assume that approximant /r/, like all changes from below, is spread by children, who adopt them from other children a few years older. This means that, at least for the time being, most children will start out with another /r/ in postvocalic position, namely that of their caretaker. Which children, most likely girls, have been the stimulating initiators of the spreading of the change is unclear. Approximants have been around for at least 60 years in the west, but their use may have been limited for a long time to a small area, such as Amsterdam or Het Gooi. Approximant /r/ has now reached Nijmegen and perhaps even more remote areas in the Netherlands. Its limits will be our next topic of research.

Notes

1. The similarity of approximant /r/ to [j] has been observed by others as well, for example Gussenhoven & Broeders (1976: 127).
2. One of the Haarlem boys had reading problems and was deemed unfit to be included.
3. Here tu stands for a speaker who uses both t and u in a particular position. (t)u stands for u or tu.
4. Van de Velde & Van Hout (1999) constructed a speaker typology of /r/ as well. However, due to differences in method, variants, and material it is hard to compare their results to ours.

References

- Booy, G. (1995) *The phonology of Dutch*. Clarendon Press, Oxford.
- Cohen, A., C. L. Ebeling, K. Fokkema & A. G. F. Van Holk (1961) *Fonologie van het Nederlands en het Fries*. [*The phonology of Dutch and Frisian*.] Martinus Nijhoff, 's Gravenhage.
- Goeman, T. & H. Van de Velde (2001) 'Co-occurrence constraints on /r/ and /ɹ/ in Dutch dialects'. In: H. Van de Velde & R. van Hout (eds.) *r-atics. Sociolinguistic, phonetic and phonological characteristics of /r/*. Etudes & Travaux 4, Université Libre de Bruxelles, 91–111.

- Gussenhoven, C. & A. Broeders (1976) *The pronunciation of English. A course for Dutch learners*. Wolters-Noordhoff-Longman, Groningen.
- Labov, W. (1994) *Principles of linguistic change. Internal factors*. Blackwell, Oxford/Cambridge.
- Labov, W. (2001) *Principles of linguistic change. Social factors*. Blackwell, Oxford/Malden.
- Ladefoged, P. & I. Maddieson (1996) *The sounds of the world's languages*. Blackwell, Oxford.
- Lindau, M. (1985) 'The story of /r/'. In: V.A. Fromkin (ed.) *Phonetic linguistics*. Orlando: Academic Press: 157–168.
- Meertens, P.J. (1938) 'De radio en de uitspraak van het Nederlands'. [The radio and the pronunciation of Dutch.] *Logopaedie en Phoniatrie*, 10, 53–56.
- Mees, I. & B. Collins (1982) 'A phonetic description of the consonant system of Standard Dutch (ABN)'. *Journal of the International Phonetic Association*, 12, 2–12.
- Paardekoper, P.C. (1978) *ABN-uitspraakgids*. [Pronunciation guide of standard Dutch.] Heidelberg-Orbis, Hasselt.
- Stroop, J. (1998) *Poldernederlands. Waardoor het ABN Verdwijnt*. [Polder Dutch. What makes Standard Dutch disappear.] Bert Bakker, Amsterdam.
- Van den Toorn, M.C. (1992) *De tweede wereldoorlog en het Nederlands van nu*. [The second world war and present-day Dutch.] Nijmegen University Press, Nijmegen.
- Van de Velde, H. (1996) *Variatie en verandering in het gesproken Standaard-Nederlands (1935–1993)*. [Variation and change in spoken standard Dutch (1935–1993).] Dissertation Nijmegen University.
- Van de Velde, H. & R. van Hout (1999) 'The pronunciation of (r) in Standard Dutch'. In: R. van Bezooijen & R. Kager (eds.) *Linguistics in the Netherlands*, 16, 177–188.
- Van Hout, R. (1989) *De structuur van taalvariatie. Een sociolinguïstisch onderzoek naar het stadsdialect van Nijmegen*. Foris, Dordrecht.
- Van Reenen, P. (1994) 'Driemaal /r/ in de Nederlandse dialecten'. [Three times /r/ in Dutch dialects.] *Taal en Tongval*, special issue 7, 54–72.
- Vierregge, W.H. & A.P.A. Broeders (1993) 'Intra- and interspeaker variation of /r/ in Dutch'. *Proceedings of Eurospeech Berlin*, 267–270.
- Voortman, B. (1994) *Regionale taalvariatie in het taalgebruik van notabelen*. [Regional variation in the language use of local elite.] Dissertation Amsterdam University.