English Language and Linguistics 17.1: 85–128. © Cambridge University Press 2013
doi:10.1017/S1360674312000330

T-to-R and the Northern Subject Rule: questionnaire-based spatial, social and structural linguistics[1]

ISABELLE BUCHSTALLER
University of Leipzig

KAREN P. CORRIGAN
Newcastle University

ANDERS HOLMBERG
Newcastle University

PATRICK HONEYBONE
University of Edinburgh

and

WARREN MAGUIRE
University of Edinburgh

(Received 29 September 2011; revised 5 September 2012)

1 Introduction

Accents and dialects of English and Scots in Britain have been under active investigation for many decades, as reported through the *Survey of English Dialects* (Orton *et al*. 1962–71) and the *Linguistic Atlas of Scotland* (Mather *et al*. 1975–86), Wells' three-volume compendium (1982), and a host of detailed studies of individual varieties. There are also welcome recent signs of the reintegration of variation data into theoretical discussion (see Henry 2002, Cornips & Corrigan 2005a and Trousdale & Adger 2007 for morphosyntax, as well as Anttila 2002 and Coetzee & Pater 2011 for phonology). Nonetheless, the precise structural, geolinguistic and sociolinguistic patterning of many features of vernacular Englishes in the UK is still largely unknown.

A range of factors contribute to this situation. Accessing the vernacular is particularly challenging for the investigation of complex structural features, and there is a concomitant issue, namely that these also typically arise infrequently in free conversation. Where we do have variation data for a range of geographical locations, as in the *SED* and *LAS*, the focus is primarily on lexical dialectology and on the segmental phonology of the most traditional forms of speech, with rather little coverage of morphosyntax or indeed of more complex phonological features. Furthermore, critical differences in questionnaire design make these two surveys largely

[1] The authors wish to acknowledge the intellectual contribution to the British Academy project that generated this research by April McMahon, Aberystwyth University. We are, of course, also grateful to the British Academy for their financial contribution to the research via its Small Grants Scheme (see: www.lel.ed.ac.uk/dialects/nesps.html).

incompatible. We are therefore unable to compare types of features or to address major geopolitical issues such as the extent to which the English–Scottish border, for instance, is permeable to linguistic features of different kinds using data that have been collected by the questionnaire method.[2] The viability of these techniques has been robustly demonstrated in the very successful recent compilation of the Syntactic Atlas of Netherlands Dialects (www.meertens.knaw.nl/projecten/sand/sandeng.html), which has transformed our understanding of dialect contact in the transitional zone along the Dutch–Belgian border (Barbiers 2005).

In this article, we report on parallel, pilot investigations designed to address these problems and gaps in our current knowledge of geographically contiguous regions in the British Isles.[3] Our key aims are to trial novel data-gathering methodologies based on phonological and morphosyntactic questionnaires specially tailored to elicit coherent grammaticality judgements and to interpret the results from these with a view to making comparisons across linguistic levels.

For the purposes of this investigation, and to facilitate these aims, we have investigated one phonological feature (T-to-R) and one morphosyntactic one (the Northern Subject Rule) through an initial, light sample in one Scottish locality (Hawick, in the Borders, where the dialect might be described as Hawick Scots) and one in the north-east of England (the Westerhope ward of Newcastle upon Tyne, where the dialect might be described as Tyneside English). We ask three basic research questions. First, what knowledge do speakers from north-east England and south-east Scotland have about the structural and linguistic constraints on these two features? Second, how does this knowledge vary geographically and socially? Finally, how effective were the tasks we designed in allowing access to speakers' linguistic knowledge? These questions, and our aims for this project, are therefore simultaneously dialectological, linguistic and methodological.

2 An introduction to the linguistic features

The linguistic features that we focus on here are relatively well-known characteristics of non-reference varieties of English/Scots spoken in the north of Britain. They are, however, not yet fully understood and there remain open questions about their precise structural and sociolinguistic patterning and their geographical extent, as we explain in this section.

2.1 The Northern Subject Rule

Northern English and Scots dialects share with many non-standard regional and extra-territorial varieties the possibility of variably expressing subject–verb concord in

[2] The fact that this a fruitful area of research has, of course, been comprehensively demonstrated in Docherty *et al.* (2011), Llamas *et al.* (2009), Llamas (2007, 2010) and Watt *et al.* (2010), which all rely on traditional sociolinguistic interviews of the kind that can be problematic for the investigation of morphosyntactic variation, as Cornips & Corrigan (2005b) note.

[3] A pilot using identical questionnaires and methodology investigating the same features in Dublin English is reported in Corrigan *et al.* (2012).

contexts where this would lead to ungrammaticality in the contemporary Standard (termed 'hyper -*s*', 'singular/variable concord' and 'verbal non-agreement' *inter alia*). For instance, while in the Standard the present tense is no longer morphologically marked in the first- and second-person singular and plural of all predicates (with the exception of *be*), third-person singular subjects are categorically suffixed by {-s}. By contrast, in vernacular Englishes this suffix can variably occur on verbs of other persons (singular as well as plural), and person–number concord in the past and present tenses of lexical and auxiliary *be/have* can also be variable, as the following extracts from a range of studies of the phenomenon in contemporary non-standard varieties show:

(1) they **comes** on your street and **tells** you (AAVE; Labov *et al.* 1968: 26)
(2) **Isn't** there any girls going? (Sydney English; Eisikovits 1991: 242)
(3) They **was** talkin' to a fella on the bus (Tobagonian English; Youssef 1995: 6)
(4) The lambs **is** oot the field (Scots; Miller 1993: 109)
(5) I think the hunger strikes **was** the awakening I had (Northern Irish English; Corrigan 2010: 59)

As one might expect from our knowledge of morphosyntactic variability cross-dialectally in English and other languages (as demonstrated in Tagliamonte 2001 and Barbiers 2005, for instance), this type of variation was, of course, never wholly unconstrained even in early English. Indeed, while Visser (1963–73) does not systematically describe the social constraints associated with this phenomenon,[4] he does categorize the data according to the linguistic environments that appear to promote what he refers to as 'shifting in number' (1963–73: 69). The first of these, which, following Poplack & Tagliamonte (1989: 65), Montgomery (1994: 347), Hazen (1996: 28) *inter alia*, we can term 'Type of Subject Constraint' (TSC, hereafter), concerns the syntactic and semantic properties of the subject. The aspect of the TSC that has been the focus of most research is the difference in -*s* marking patterns observed between pronominals and full lexical NPs. This phenomenon was first articulated by Murray (1873):

> In the PRESENT TENSE, aa *leyke,* wey *leyke,* yoo *leyke,* thay *leyke,* are used only when the verb is accompanied by its proper pronoun; when the subject is a noun . . . the verb takes the termination {-*s*}in all persons. (1873: 211)

The constraint is termed here the Northern Subject Rule (NSR), though various other terms referring to its northern roots including the 'Northern Personal Pronoun Rule' have been coined to describe it, despite the fact that it was extant in south-east England as early as 1500 (McIntosh 1983: 237–9).[5] Research on contemporary dialects affected by this constraint has demonstrated that there continue to be differences in the

[4] Bailey *et al.*'s (1989) analysis of letters written by two generations of the Cely family in the period 1472–88 demonstrates the importance of the age of the writer. Visser's description in this regard is restricted to comments such as the following: 'That Pope and Rowe seem to have looked upon this usage as irregular, appears from the fact that . . . the forms of -*s* under discussion were "corrected"' (1963–73: 72).

[5] For a more definitive articulation of the operation of this rule in Older Scots (particularly the fact that the analytic form is not strictly required when the verb is accompanied by a pronominal) see Aitken (1971) and for details of its operation in the later ME of the North see McIntosh (1983) and de Haas (2011). Murray (1873: 211–12)

morphological marking of verbs when accompanied by various types of NP subject and indeed when these subjects occur in different clausal, discoursal and phonological configurations. Hence, Cheshire *et al.* (1989), Godfrey & Tagliamonte (1999), Henry (2002), Wright (2002) and McCafferty (2004) suggest that existential *there* favours *-s*. NPs conjoined with *and* (Montgomery *et al.* 1993; Godfrey & Tagliamonte 1999; Beal & Corrigan 2000; McCafferty 2003) also favour *-s* marking as do those which occur in relative clause constructions (Montgomery *et al*. 1993; Godfrey & Tagliamonte 1999). Similarly, indefinite pronouns favour *-s* (Godfrey & Tagliamonte 1999), as do quantified NPs like *all of them* (McCafferty 2003). Godfrey & Tagliamonte (1999) also point out that when subjects occur with verbs in habitual aspect contexts, they promote *-s* marking on the verb as they also do when they occur in narratives. They likewise argue that *-s* marking is to some extent phonologically conditioned, so that when the accompanying verb has a vocalic ending then *-s* is more likely, as it also is when the verb is followed by a lexeme beginning with a vowel.

Certain contemporary vernaculars which exhibit the TSC also incorporate an additional constraint that captures the fact that the proximity between the subject and verb can also play a role in whether or not the latter favours *-s* (Montgomery 1994: 88). It is more likely that the verb will trigger *-s* marking in contexts where the subject and verb are not adjacent than it is when the two are proximate (i.e. the 'Proximity to Subject Constraint' or PSC). Hence, in the example from Durham given as (6) below from the *SED* (Orton *et al*. 1962–71), *speaks* is marked with *-s* because it is not adjacent to *They*, whereas *gan* is Ø-marked since it occurs to the immediate right of the pronoun without any material intervening.

(6) ***They ganØ*** *and never speak****s*** (*SED*: Du)

Recent accounts of NSR have focused either on the interplay between the factors controlling the TSC and PSC in contemporary dialects beyond the Northern English geographical boundary with which it was first associated (like Wolfram & Christian 1976; Kallen 1991; Montgomery *et al.* 1993; Henry 1995; Montgomery & Fuller 1996; Montgomery 1997; Filppula 1999; Godfrey & Tagliamonte 1999; Schendl 2000; Wright 2002; McCafferty 2003, 2004; Rupp 2006; Tortora & den Dikken 2010; Zanuttini & Bernstein 2011) or else on the extent to which NSR in all its aspects remains extant in Northern varieties (as in Beal & Corrigan 2000; Pietsch 2005; Cole 2008; Adger & Smith 2010). Our orientation here is towards the latter, so our account in section 4 examines the dynamics of the two major constraints just described in communities at some remove from one another across the linguistic north.

2.2 T-to-R

Wells (1982) introduced the label 'T-to-R' to refer to a pattern in the realisation of underlying /t/, with a complex environmental conditioning, found only in certain parts

also mentions other contexts where the synthetic form is obligatory, which will be relevant to our subsequent discussion.

of Britain. The phenomenon has been discussed under other names (Carr 1991 calls it 'weakening', for example) and, before Wells, it was described without a specific name (for example, in Hughes & Trudgill 1979), but Wells' discussion is typically seen as its *locus classicus*. As Wells' name for it suggests, this phenomenon involves /t/ being realised as a rhotic, and this has often been assumed to indicate some (likely diachronic) link to flapping, in which /t/ is realised as [ɾ] (as is described for many varieties of English, including American, Irish and southern hemisphere dialects), because [ɾ] can be used as the realisation of a rhotic. Like flapping, T-to-R can occur in an intervocalic environment, across word boundaries. Unlike flapping, however, T-to-R is very restricted word-internally, and is subject to lexical conditioning in its cross-lexical environment: /t/ only undergoes the process in certain words. Wells' description is worth citing, as it makes a number of claims, which we test below:

> A widespread but stigmatized connected-speech process in the middle and far north involves the use of /r/ instead of /t/ in phrases such as *shut up* [ʃʊɹˈʊp], *get off* [ˈgɛɹˈɒf]. The T-to-R rule takes as its input /t/ in the environment of a preceding short vowel and a following boundary plus vowel . . . Very occasionally the rule applies word-internally, as in *what's the matter* [ˈmaɹə]*?* (1982: 370)

As Wells describes the process, /t/ only rhoticises if it follows a short/lax vowel. We test this claim below. Wells does not overtly mention lexical specificity in his description of the process, but it is implicit in the fact that he lists specific phrases in which it can occur. In any case, subsequent work on the phenomenon[6] makes it clear that, while there is a degree of phonological conditioning, it can only occur in a 'a small group of words' (Broadbent 2008: 142). One research question is therefore: which words allow T-to-R and which ones prohibit it?

A full list of the lexical items which have been claimed to permit T-to-R takes up relatively little space. Every word that we are aware of is listed in (7), grouped into broad categories according to position in word/morpheme and word category. We considered all these in our research, apart from those marked with an asterisk (comparing them with other, phonologically similar words, to see if T-to-R is also possible in them).[7]

(7) Final /t/: conjunctions, particles, determiners
- *but*: Asprey, Broadbent, Carr, C&W, H&T, Wells
- *not*: Asprey, Broadbent, Carr, C&W, Shorrocks
- *that*: Asprey, Broadbent, Carr, C&W, Shorrocks
- *what*: Asprey, Broadbent, Carr, C&W, H&T, Shorrocks, Wells

Final /t/: complex determiners
- *(a) bit (of)*: Asprey, C&W, DFMMW*

[6] An exhaustive list of published work which discusses T-to-R in detail is: Carr (1991, 1999), Docherty *et al*. (1997), Broadbent (2008), Asprey (2008) and Clark & Watson (2011).

[7] The references in (7) are to: Asprey (2008), Broadbent (2008), Carr (1991), C&W = Clark & Watson (2011), DFMMW = Docherty *et al.* (1997), H&T = Hughes & Trudgill (1979), Shorrocks (1998), Viereck (1966), Wells (1982). DFMMW also mention all the words that Carr discusses because they are considering his claims, but we only list DFMMW words in (7) if DFMMW independently claim them to undergo T-to-R. It should be recognised that not all authors are necessarily intending to give an exhaustive list in their work.

- *(a) lot (of)*: Asprey, Broadbent, Carr, C&W, DFMMW

Final /t/: prepositions
- *about*: Asprey
- *at*: Asprey, C&W

Final /t/: pronouns
- *it*: Asprey, C&W, Shorrocks

Final /t/: monosyllabic verbs
- *bet*: Broadbent*
- *fit*: Carr
- *get/got*: Asprey, Broadbent, Carr, C&W, DFMMW, H&T, Wells
- *hit*: Carr, DFMMW
- *let*: Asprey, Broadbent, C&W
- *met*: Carr
- *put*: Asprey, Broadbent, Carr, C&W, DFMMW*
- *shut*: Asprey, Broadbent, Wells
- *sit*: Wells
- *thought*: Carr*

Final /t/: polysyllabic verbs with final stress
- *allot*: Carr
- *delete*: Carr
- *excite*: Carr*
- *forget/forgot*: Broadbent*
- *incite*: Carr*

Word-internal, morpheme-final /t/
- *cutting*: Shorrocks
- *forgetting*: Broadbent*
- *getting*: Broadbent, Shorrocks
- *letting*: Broadbent, Shorrocks*
- *putting*: Asprey, Broadbent, DFMMW, Shorrocks
- *setting*: Shorrocks

Morpheme-internal /t/
- *Beethoven*: Carr*
- *better*: Broadbent, Carr, Viereck
- *bottom*: DFMMW, Viereck
- *matter*: Carr, DFMMW, H&T, Viereck, Wells*
- *tata*: Asprey, Broadbent, Carr*
- *water*: Viereck
- *whatever*: Asprey, Broadbent*

One clear question is: do the words in (7) have anything in common? We consider some potential answers (including frequency of occurrence) in section 4. We should note that the list in (7) mixes reports of T-to-R from a number of varieties (as discussed below). It could well be that the set of T-to-R words varies from variety to variety, something which our methodology can capture (and there is evidence that it does, which we consider in section 4.3). It could also be that the authors are wrong in (some of) their claims. Indeed, some previous work on T-to-R is based on informal observation by authors who are not native speakers of the relevant dialects, so some

testing of these claims is clearly needed. Where only one previous discussion mentions a particular word, we may be sceptical. For example, Carr assumes that T-to-R is metrically conditioned in verbs, writing that it 'does not occur in verbs which are not stressed on the last syllable' (1991: 46), but that it 'operates foot-internally, where the target /t/ is in the coda of the head syllable' in cross-lexical feet (hence the mention of *allot*, *delete*, *excite*, *incite*). Although some of Carr's claims were reconsidered in Docherty *et al*. (1997), this prediction about metrical structure has not been tested. We consider it in section 4. A further point cries out for attention: a very small number of words with long/tense vowels preceding the /t/ are included in (7), such as *about* and *thought*.[8] The question as to whether T-to-R *is* possible (more widely?) following a long/tense vowel thus invites testing.

The definition of T-to-R thus involves two crucial characteristics: (i) it is a process which realises /t/ as a rhotic in a cross-lexical environment, perhaps only if a short/lax vowel precedes; and (ii) it is lexically restricted, so that the conditioning is not just phonological (thus, in principle, it might occur in *not* but not in *knot*). Point (i) means that it is a neutralising, structure-preserving process (i.e. it only involves categories which exist in underlying forms): it neutralises a dialect's /t : r/ contrast – mostly this entails that both are realised as [ɹ]. The realisation of /t/ as a tap [ɾ] can thus only count as a case of T-to-R if the underlying rhotic /r/ is commonly realised as [ɾ] in the variety, as in Liverpool, Scotland and the West Midlands.[9] For a variety to 'have T-to-R', it must show both characteristics (structure-preserving neutralisation and lexical specificity); this clearly differentiates the process from across-the-board flapping, or *t*-voicing. As all quantitative work on T-to-R makes clear, it is a variable phenomenon – as might be expected of a clearly non-standard-dialect process, the rhotic competes with several other possible realisations of /t/. Thus Petyt (1985) finds it in 45 per cent of the non-[t] realisations of /t/ in Huddersfield (competing with [ʔ]), Docherty *et al*. (1997) find it in 12.5 per cent of the realisations of /t/ overall in Newcastle (competing with [t̪, t, tʔ, ʔ]) and Clark & Watson (2011) discuss the different proportions of the rhotic in different words in older Liverpool speakers, showing that *it* has a rhotic 16.7 per cent of the time and *bit* 83.33 per cent, for example.

Where is T-to-R found geographically? Wells' (1982) description of the spread of T-to-R is relatively vague ('in the middle and far north'), limiting it only to the area north of the English Midlands. How far north does it spread? How far south? Our methodology is ideal for answering these questions and we consider some relevant results below. T-to-R is well attested in Tyneside English, as described in Carr (1991, 1999), Docherty *et al*. (1997) and Watt & Milroy (1999) (and likely also in Viereck 1966, although his discussion does not cover all the characteristics that we would expect

[8] It may also be that Asprey regards *out* as a possible T-to-R word, but her discussion of it is ambiguous, and it does not feature in her summary of words which allow T-to-R (2008: 119). Asprey does, however, present quite compelling evidence for T-to-R in *about*.

[9] This excludes the discussion of the realisation of /t/ as a tap in London English in Tollfree (1999), for example, even though it seems otherwise to share certain characteristics with T-to-R, because /r/ is 'typically realised as [ɹ]' (1999: 174).

for T-to-R). Shorrocks (1998) describes a T-to-R-type phenomenon in Bolton English, as do Petyt (1985) and Broadbent (2008) for West Yorkshire, Stoddart *et al*. (1999) for Sheffield, and Hughes & Trudgill (1979), Honeybone (2001) and Clark & Watson (2011) for Liverpool. Lodge (1984) transcribes it at least once for Stockport. Docherty & Foulkes (1999) and Asprey (2008) show that it stretches further south than Wells describes – into East Midland Derby and the West Midlands, respectively (Lodge 1984 also briefly describes it for Coventry). Stuart-Smith indicates that it may extend into parts of Scotland in her description of this phenomenon in Glasgow: 'If /t/ is not replaced with a glottal stop, it can be realized as a tap, particularly when /t/ is final in a short-vowelled syllable, as in e.g. *get it*, *let it* . . . ' (1999: 209). This patterning is very close to what Wells describes for T-to-R, so it may be the same phenomenon; Johnston goes so far as to claim that 'flapping of /t/ in words like *butter* . . . may be encountered occasionally in West Mid (especially Glaswegian), Stirlingshire and West Lothian Scots dialects . . . ' The result is [ɾ], which has to be considered as /r/ here. Phonologically, this rule can be considered as a Scottish version of the Northern English T-to-R rule mentioned by Wells (1997: 504); as Johnston observes, [ɾ] is a common realisation of the rhotic in Scotland, so this is a case of neutralisation. These are surprising claims, which invite investigation, given the normal association of the phenomenon with the north of England. We discuss some relevant results below. The Dublin English sandhi realisation of /t/ as [ɹ], described by Hickey (2009) (and see also Kallen 2005), may also be T-to-R, and while these works do not provide any detailed description of the phenomenon in this variety, Corrigan *et al*. (2012) report the patterning described by Wells.

Previous claims about the sociolinguistic patterning of T-to-R are (i) Petyt's (1985: 153) observation that it is favoured by older speakers, (ii) Docherty *et al.*'s (1997: 293–4) observation that, in Newcastle, '[ɹ] is favoured by working class females (particularly those in the older group, for whom [ɹ] accounts for 40% of all tokens) and rare in younger middle class speakers', and (iii) Clark & Watson's (2011: 529) observation that, in Liverpool, 'adolescent speakers are using significantly more *t*-to-*r* forms than speakers who were born 90 years ago'. Our methodology allows for the investigation of a sociolinguistically balanced sample, and we report on relevant results below.

3 Methodology

T-to-R and the NSR are similar phenomena in that both are subject to subtle structural constraints and pose intriguing theoretical issues. Previous work has not fully tested the interaction of these constraints – certainly not in the intuitions of native speakers, as the research was largely based on corpus data – so we do not have a full picture of the patterning of either phenomenon. We have only a limited understanding of their geographical spread or the way in which they pattern socially. In this section we describe a novel methodology that we devised to test claims and hypotheses about these two intriguing phenomena. Conducting parallel and

simultaneous investigations into morphosyntactic and phonological features allows us (as well as saving resources) to compare the applicability of the methodology at both linguistic levels and to begin considering the extent to which there are similarities or differences in the geolinguistic patterning of syntactic and phonological variables across Britain.

In order to test our hypotheses, we needed a method for asking a balanced sample of native speakers which constructions, out of a set with structurally different forms, were recognisable to them and could be used in their local variety. The constructions tested were designed to exemplify forms which were predicted (on the basis of past observations) to be either possible/favoured or impossible/disfavoured, or to test constructions about which previous research is ambivalent. For example, in order to fully understand the dynamics of the T-to-R phenomenon, a detailed investigation needs to ask whether a /t/ can be realised as a rhotic in a wide range of words with diverse phonological environments (with preceding short and long vowels, with differing metrical structures and so on), and for the NSR we needed to ascertain whether the proximity of subject and verb does indeed affect the possibility of *-s* marking.[10]

Direct questioning of informants about nonstandard grammatical issues may not generate accurate reflection, so the NSR phenomena were tested via speaker judgement tasks in the form of a carefully constructed questionnaire, by means of which informants were asked whether they recognised them as forms used by other people in their locale. This strategy reduces the possibility that the intuitions generated will be subject to what one might term 'social interventions'. However, speaker judgements, while useful for tapping into linguistic phenomena (including constraints on their operation), may also be impacted upon by issues such as audience design, fatigue, memory, ordering effects and prescriptive norms (see Labov 1975, 1996; Trudgill 1986; Schütze 1996; Cowart 1997; Bell 2002; Bucheli & Glaser 2002; Cornips & Corrigan 2005b; Cornips & Poletto 2005; forthcoming; Parrott 2007; Buchstaller & Corrigan 2011a, b). As such, the questionnaire has been designed and collected in order to mitigate these effects as far as practicably possible, thus improving the chances that the intuitions generated are accurate and hence do not fail in the sense of Labov (1996).

Unlike the NSR component of the questionnaire, however, the T-to-R part asked the subjects to reflect directly on the specific feature itself. The NSR sections could

[10] While rich corpus data are available for both north-east England and Scotland in the form of the *Diachronic Electronic Corpus of Tyneside English* (DECTE: http://research.ncl.ac.uk/decte/) and the *Scottish Corpus of Texts and Speech* (SCOTS: www.scottishcorpus.ac.uk/), the frequency of occurrence of tokens of the variables in question can be problematic. Even very large corpora like DECTE often do not provide enough data to fully test linguistic constraints. This is an important finding of Collings (2009), which also examined NSR phenomena. Using a subset of DECTE from the 2007 data set and selecting the entire conversations of 24 speakers, 74 instances of verbal *-s* occurred. Unfortunately, the lexical verbs *be* and *say* dominated, making it impossible to investigate whether verb type (claimed to be critical in other research into this phenomenon) did indeed condition the occurrence of NSR with existentials. Moreover, corpora do not contain robust negative evidence since the rarity of a morphosyntactic construction, in particular, may or may not reflect its perception in a community as acceptable.

'hide' the feature being investigated amongst distractor sentences, but this was not possible for the T-to-R investigation. Indeed, it was necessary to focus on only T-to-R in the questions so that enough candidate lexical items could be tested, and the introductory sections of the questionnaire needed to explain the phenomenon to participants in order for the questions asked to make sense (as explained in the following section). Given this distinction, the tasks used in this component of the questionnaire were rather different. In the T-to-R part, we asked the participants to tell us directly what they themselves think is possible and what is not. Given that we were asking questions about specific lexical items, we felt that it would be problematic to interrogate them about what other people do (as the NSR section of the questionnaire does) because very subtle lexical differences are involved, and it is possible that informants would think themselves unable to make such judgements about the competence of others.

Intuition-based tests have occasionally been disparaged as sources of evidence in phonology. They are also, however, indisputably central to some kinds of phonological investigation. In a minimal pair test, for example (see Labov 1994: 353–4), informants are also asked about their own intuitions directly, since the point is to consciously access their own phonological system. Along the same lines, we believe that it makes little sense to query participants regarding the preferences of others concerning the occurrence of T-to-R in certain words and environments when we want to know exactly what an informant believes is going on in their own system. Indeed, in a detailed investigation of precisely this issue, Dollinger (2012: 76) notes that 'Some researchers have shown that self-reporting might be the best option for low-frequency items.' He further cites the assertion in Bailey *et al.* (1997: 57) that 'self-reports might be more valid and reliable measures of linguistic behavior than linguists have supposed'. Dollinger (2012: 103) concludes that 'Overall, self-reporting should be seriously considered as a legitimate data collection method, especially so for dialectological projects. While some phonetic nuances cannot be operationalized in written format, basic phonemic differences can be fruitfully employed.' Obviously, we concur with this position and thus it informed our questionnaire design.

The questionnaire was, in fact, split into four discrete parts (two syntactic components and two phonological) so as to ensure as much diversity as possible for the participants, and it was given to eight informants in two localities to determine the extent to which the NSR and T-to-R persist/exist there: Hawick, a rural and relatively isolated community in south-east Scotland, and Newcastle upon Tyne, an urban and far from peripheral community in north-east England. Hawick has a population of 14,801 (2001 census), of whom c. 65 per cent are economically active; the Westerhope ward of Newcastle (the part of Newcastle where fieldwork was carried out) has a population of 9,635 (2001 census), of whom 63.7 per cent are economically active (the whole urban region of Newcastle has a population closer to a million). The sample consisted of two informants in four sociolinguistic cells in each locality: two younger females, two older females, two younger males, and two older males. 'Younger' was defined as 15–25 and 'older' as 55+. The fieldwork was done during the summer of 2009, and

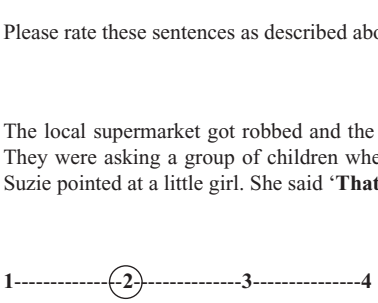


Figure 1. Example of the indirect grammaticality judgment task for the NSR

was conducted and processed by Will Barras, Jonathan Burrows, Marleen Spaargaren and Laura Steventon.[11]

3.1 Data collection instrument for the Northern Subject Rule

As already noted, the NSR task sought indirect judgements from informants as to whether they recognised vernacular linguistic variants as forms used by other people in their locale. The subjects are asked to rate sentences by assigning them a number (between 1 and 4), which corresponds to the verbal descriptors in (8) (see Labov 1996).

(8) 1: This type of sentence would never be used here – it seems very odd.
2: This type of sentence is not very common here but it doesn't seem too odd.
3: I have heard this type of sentence locally but it's not that common.
4: People around here use this type of sentence a lot.

This instrument has the obvious benefit of placing very little prescriptive pressure on informants. Indeed, by asking them to state how frequently vernacular features are being used by others in their community – rather than directly asking whether they themselves use certain dialectal variants – this task gives informants the opportunity to distance themselves from these features. Furthermore, as we have argued elsewhere, indirect grammaticality judgement tasks are relatively simple to convey to informants – once they have mastered the notion of gradable acceptability (Buchstaller & Corrigan 2011a, b). Bearing in mind the reservations voiced by Fasold (1984) and Labov (1996) *inter alia* already noted, they also produce results that are readily quantifiable (Cowart 1997: 72). Figure 1 illustrates a sample sentence of the kind administered in our questionnaire. For instance, if a sentence is used locally but is not very common, an informant would circle 2, as exemplified above.

All sentences to be judged were marked in bold and presented in a short text of two to three sentences in order to embed them contextually and to make them pragmatically more acceptable. Altogether there were 149 sentences (74 experimental sentences, 75

[11] Further details about the fieldwork are available at the project's website (www.lel.ed.ac.uk/dialects/nesps.html), along with some extracts of sociolinguistic interviews which were also collected during the fieldwork, but which are not analysed in the present work, which focuses on perception rather than production data.

fillers), which alternated in randomised order. We divided these sentences into two questionnaires, of which we constructed two randomisations each. Every informant thus completed two questionnaires with a lengthy break in between – half of the informants filled out the first randomisation while the others did the second. Overall, every variable was represented in every condition in at least three sentences. This means, in practice, that every informant rated, for example, three sentences containing an instance of the NSR with the verb *to like* and three with *to want*. Consequently, the mean ratings represented in the tables for the NSR in section 4 are based – at the very minimum – on four people per location each rating three or more sentences containing the variable in the same condition.

3.2 Questionnaire for T-to-R

A similar grammaticality judgement task was devised for T-to-R. The central issue here is: which words (with which type of phonological shape) allow T-to-R to occur? We were explicit about the intention of the questionnaire on this point, as we needed to draw our informants' attention to the feature in question. This was done by enquiring into informants' intuitions about a range of words, each of which was presented in a respelled version of a sentence to provide a possible context for the informant. Because T-to-R is structure preserving, it is quite easy to represent its output orthographically – the rhotic is unambiguously representable as <r> following a long/tense vowel, or <rr> following a short/lax vowel. Because informants were directly asked about the phenomenon in question (unlike for the NSR), the phonological questionnaire asked about their own judgements, using the scale in (9).[12]

(9) 1: I would never pronounce this word with an *r*
2: I can sometimes pronounce this word with an *r*, but I wouldn't do it very often
3: It would be normal for me to pronounce this word with an *r*

Informants were given some detailed context for the judgement task to read, including a brief discussion of T-to-R (largely intended to persuade informants that we were interested in how they actually speak, rather than how they might think they *should*

[12] The questionnaire for T-to-R, including the instructions to informants, is available at the project website: www.lel.ed.ac.uk/dialects/nesps.html. The full questionnaire also included three open questions at its end, which invited informants to reflect further on T-to-R. These did not elicit useful material, and informants' answers are not reported here. The T-to-R part of the questionnaire was asked separately from the NSR part, and was combined with a minimal pair and rhyme test questionnaire not reported on in this article. Classic minimal pair tests have two possible answers, *same* or *different* (again, see Labov 1994: 353–4). This is problematic for cases where subjects vary between two phonological forms, so that a pair of words are sometimes the same or sometimes different (a classic case being FOOT [ʌ]~[ʉ] and GOOSE [ʉ] in Mid-Ulster English). In cases like this, which are common in regional varieties in northern England and Scotland too, a third option *sometimes the same* is desirable. This was implemented in the minimal/rhyme pair part of the questionnaire as a 3-point scale and the same format was retained for the T-to-R questions to maintain consistency.

Can you pronounce *cat* with an *r*?

For example, can you say: *Give that carra bowl of milk.*

[normal spelling: Give that cat a bowl of milk.]

1----------2----------3

Figure 2. Example of the grammaticality judgment task for T-to-R

speak). An example of the fieldworkers' preparatory discussion with participants is given in (10).

(10) In this block you will be asked about the pronunciation of words that are spelled with a *t*. In certain accents, some people sometimes pronounce words that are spelled with a *t* as if they had an *r* . . . These questions are aimed to find out if **you** have this feature in your accent, and, if so, **which words** allow their *t* to be pronounced as an *r*.

Figure 2 illustrates an example of the questions asked of informants. The word *cat* has never been reported as undergoing T-to-R, as (7) shows. It has a very similar phonological shape to *that*, however, which has been reported as possible with the phenomenon, so it may be that previous work has simply missed the possibility that *cat* can undergo the procedure. Given the fact that the process is variable and relatively rare, corpus investigations may not have reported its occurrence though, as it turned out, this option was quite emphatically rejected by our informants as a T-to-R word, as demonstrated in section 4.3.

We tested 72 words. The full list and rationale for their choice will become apparent in section 4.[13]

As will be clear from the above, the precise details of the questionnaire methodology adopted in the morphosyntactic and phonological sections were subtly different but we do not consider this variance to be problematic. We believe that our work shows that questionnaire-based approaches can be suitable for studying both morphosyntax and phonology, but this does not mean that *exactly* the same methods or kinds of questions need to be asked in both cases. Each questionnaire must instead be tailored to the features under investigation.

[13] Given that each word was presented in a different example sentence, there may be an objection that the context for each word was not kept identical and that this might affect our results. The difference in contexts was, however, necessary to allow us to include words belonging to different syntactic categories, and our results show that they were not affected by this: as explained below, *get* was included several times in the questionnaire, and the sentence with *get Ethel* (a very infrequent collocation) was given exactly the same average rating as the sentence with *get about* (a more frequent one).

4 Results

Our results essentially consist of average ratings of the constructions tested in the questionnaire for either the whole group of informants from one locality, or for sociolinguistic subgroups of them. For the NSR, ratings are out of 4 and, for T-to-R, out of 3: the higher the rating, the more acceptable or common the informants felt a particular form to be. When reporting on the two variables, informant responses are represented as average ratings over all questions in the same linguistic condition, for ease of comparison. Significance testing, however, is done on the full information available, namely, on the overall occurrence of ratings – 1, 2, 3 or 4 – by speaker groups or in specific linguistic contexts. We first consider the social and geographical embedding of the two phenomena and then, in sections 4.2 and 4.3, probe the extent to which the linguistic and lexical constraints on them hold, and consider the implications of our results for the analysis of the phenomena.

4.1 Geolinguistic and sociolinguistic results

Informants on both sides of the Scottish–English border recognise the NSR as a feature that is not very common in their locality but which does not strike them as particularly unusual either.[14] Essentially, NSR receives higher ratings in Newcastle (mean rating 2.11) than in Hawick (mean rating 1.98), with a similar spread in both localities (standard deviation 1.121 and 1.215 respectively). The results for T-to-R, on the other hand, reveal that it is accepted as a feature of Tyneside English (the average rating in the Newcastle responses was 1.42 (SD 0.69)), but it is not characteristic of Hawick English/Scots (average rating 1.07 (SD 0.36)). Given that the possible range of ratings is from 1.00 to 3.00, even the Newcastle rating seems low, but this is due to the lexically restricted nature of the phenomenon, discussed further below. The overall rating of 1.07 for Hawick might indicate that T-to-R *is* a feature of this variety to an extent, but an examination of the individual responses suggests that this is probably not the case. Almost all of the positive ratings for T-to-R in Hawick were given by one respondent, H-OF2, who gave a rating of 3 for all questions which contained underlying /r/ (not as a result of T-to-R) in the key word in any environment (e.g. *butter*, *cigarette*, *dart*, *repeat*), and for three questions which did not. Since she appears to have misunderstood the purpose of the exercise, her positive responses in these three latter cases can hardly be trusted. When we remove her positive responses to words with underlying /r/, the average Hawick rating drops to 1.02, suggesting that T-to-R is not, in fact, a feature of the variety. This implies that either the patterns described for Scots by Johnston (1997) and Stuart-Smith (1999), discussed in section 2.2, should not be equated with T-to-R

[14] Childs (2012) investigates the intralinguistic and extralinguistic constraints on the operation of the NSR across an even wider tract of geographical space which includes south-east English varieties as well as those spoken by native speakers in both Hawick and Tyneside. Her results suggest that, while acceptability differs across localities, the overall constraints that impact upon the use of the phenomenon stay stable across geographical space.

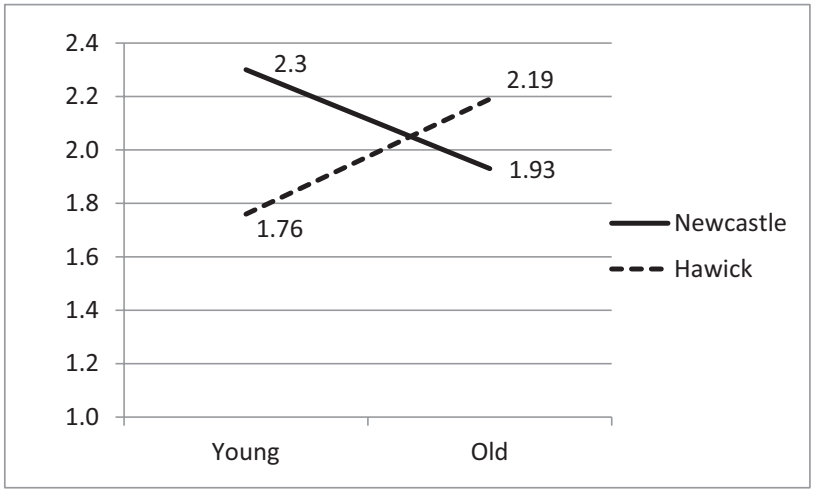
(and are perhaps cases of simple flapping), or it may be that there *is* Scots T-to-R, but that it is not found in Hawick. In either case, it seems clear that the geographical spread of T-to-R simply does not creep far across the Scottish–English border (as Wells assumed, but without empirical evidence). As a consequence of this, the T-to-R results for Hawick are not discussed further, and we concentrate on Newcastle in section 4.3.

Differences between social groups within the Newcastle sample are not striking, which is an interesting finding in itself – T-to-R appears to be relatively stable in the community from our results. There is a significant, if not great, difference between the ratings given by the two age groups: older respondents give a lower average rating (1.30) than younger respondents (1.50).[15] This is largely a consequence of two of the older respondents, N-OF2 and N-OM2, mostly rejecting the possibility of T-to-R in the questionnaire. Likewise, there is a significant but rather small difference between the responses given by males (1.42) and females (1.41), with the difference largely consisting of a slight preference by the males for response 2.[16] In any case, we did not replicate Docherty *et al.*'s (1997) finding that T-to-R is preferred by older women in Newcastle (we are closer to Clark & Watson's 2011 finding for Liverpool that younger speakers use more T-to-R than older ones).

Previous research on the NSR has been ambivalent about the role of age. Beal & Corrigan (2000), comparing data from Newcastle collected between the 1960s and the 1990s, assert that the NSR is still productive in this variety (see also Collings 2009). Other research, however, has questioned the persistence of the rule (Cole 2008). We consider here whether informants representing two different generations give diverse average ratings to sentences containing NSR. If NSR were indeed on its way out of the system, we would expect younger speakers to be less accepting of sentences containing instances of the phenomenon. Diachronic persistence, on the other hand, should manifest itself in stable ratings across the generations. Figure 3 shows the average ratings for younger and older informants in both localities.

While the difference in rating between the two age groups is significant in both varieties, the direction of the constraint is reversed on the two sides of the border. In Newcastle, young informants seem to be more accepting of the phenomenon, since they give a higher rating to sentences containing NSR than the older informants do (2.3 versus 1.93). By contrast, in Hawick, test sentences with NSR appear to be favoured by the older informants (2.19 versus 1.76). Bearing in mind the fact that these figures are based on the intuitions of only eight people per locality, the results shown in figure 3 could be taken to indicate that NSR is gradually falling into disuse in Hawick – since the younger generation seem to find it less acceptable. By contrast, younger speakers in Newcastle seem to embrace NSR more readily than their elders do. If these ratings directly correlate with linguistic production, we would indeed expect to find increasing use of NSR amongst the younger speakers in Newcastle and decreasing ratios in Hawick. We do not have any production results for this phenomenon from Hawick since

[15] Chi-squared (2): 11.0, p = .004.
[16] Chi-squared (2): 8.49, p = .014.



Newcastle: $\chi^2(3)$: 33.462, $p < .001$
Hawick: $\chi^2(3)$: 42.567, $p < .001$

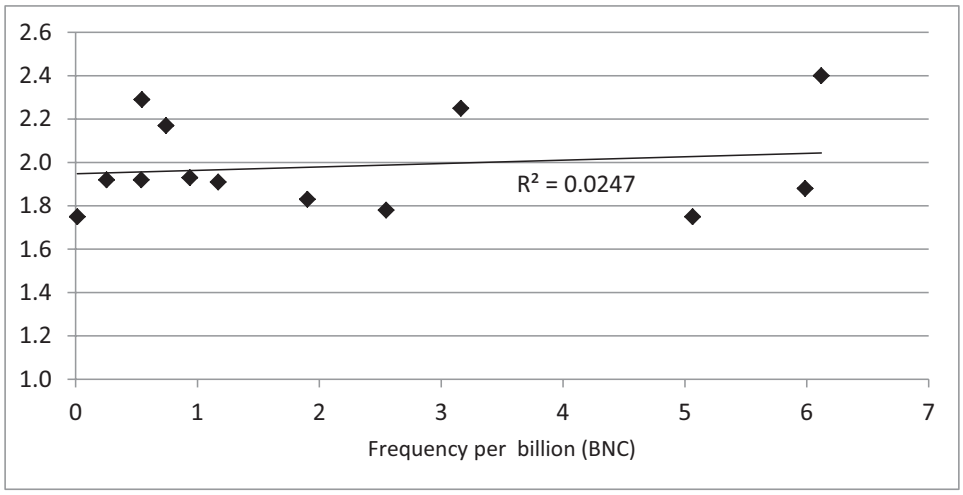
Figure 3. NSR ratings of younger and older informants in Newcastle and Hawick

the feature did not readily occur in the sociolinguistic interviews. However, in related research on Tyneside English, which is based on exactly this kind of data collected from 16 younger and 16 older speakers, it has been found that age is, in fact, not a significant factor in NSR production (see Collings 2009). Hence, Newcastle youth, while maintaining the overall frequency of vernacular *-s* use, rate it as increasingly acceptable. This would seem to suggest at first blush that the NSR in Newcastle is robust and seems to be gaining even wider acceptance. However, our discussion in section 4.2 immediately below, which investigates the acceptability of the NSR in a range of linguistic conditions, potentially casts some doubt on this perhaps over-generalised conclusion. Indeed, we would argue on the basis of the evidence presented here that more research with a larger group of participants is needed to investigate the linguistic contexts in which NSR generates high acceptability ratings.

4.2 Structural linguistic results: NSR

Let us now examine the structural constraints that govern the acceptability of NSR. Firstly, we discuss constraints that have a similar effect in Hawick and Newcastle before moving on to highlight the key differences between the localities with respect to this particular feature.

Importantly, the PSC, according to which subject pronouns tend to favour the NSR only when there is intervening material between the subject and the verb, is not significant, in either Hawick or Newcastle. This accords with findings from several other contemporary dialects employing the NSR (see Pietsch 2005; Adger & Smith 2010; Corrigan *et al*. 2012; Zanuttini & Bernstein 2011: note 9; but also Godfrey



Spearman's Rho Correlation Coefficient Newcastle =.058, p =.251

Figure 4. Correlation of acceptability ratings with lexical frequency in Newcastle

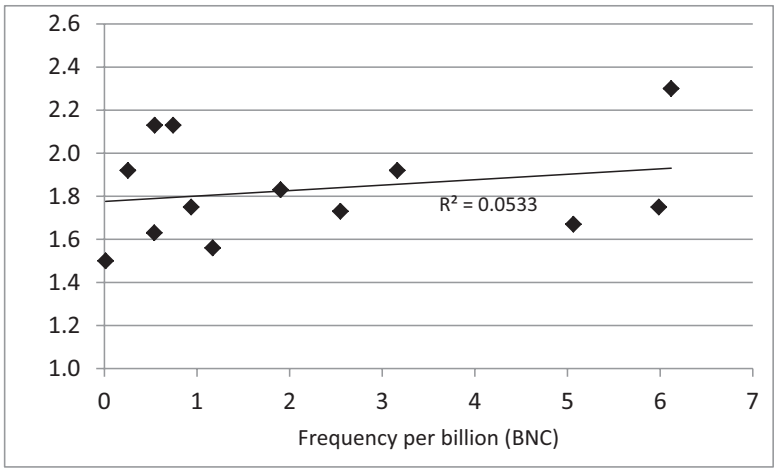
& Tagliamonte 1999).[17] Our informants in Hawick and Newcastle do not seem to differentiate at all between adjacent and non-adjacent pronouns (Newcastle χ^2 (3): 5.943, p = .114, Hawick χ^2(3): .706, p = .872, both n.s.). In related research we have found that the PSC does not, in fact, appear to operate across a range of communities in north-eastern England (see also Buchstaller & Alvanides forthcoming and Childs 2012). Hence, the non-application of this constraint highlighted here does seem to be a relatively generalisable feature across the entire region – at the perceptual as well as at the production level (see Cole 2008 as well as Collings 2009).[18]

The next grammatical constraint investigated concerns the properties of the verb taking the *s*-affix when NSR applies. We first tested for the effect of 15 different lexical verbs on acceptability ratings. However, probably due to the large degree of freedom involved, our results proved inconclusive for both communities (NCL: χ^2(42): 44.171, .380, Hawick: χ^2(42): 54.998, p = .086, n.s.). Next, we tested whether acceptability rates might be conditioned by frequency effects. Figures 4 and 5 plot the rating of sentences containing NSR (on the y-axis) by the lexical frequency of these verbs per 1 billion (1,000 million) words in the *British National Corpus* (on the x-axis).[19] However, as we see in these scatterplots, the ratings for individual verbs and their frequency are not correlated, neither in Hawick nor in Newcastle. Indeed, the correlation coefficient is very low for both Newcastle and Hawick. Thus, as far as our data are concerned, lexical frequency of the verb appears not to be a predictor of NSR acceptability ratings.

[17] According to Pietsch (2005b: 131, 144–5), in contemporary northern English dialects the proximity effect shows up only in coordinations such as *They sing and dances*. However, we found no effect even in those cases.

[18] In future research, we need to test whether this result is supported by a wider range of production and historical data.

[19] *The British National Corpus*, version 3 (BNC XML Edition). 2007. Distributed by Oxford University Computing Services on behalf of the BNC Consortium. URL: www.natcorp.ox.ac.uk.



Spearman's Rho Correlation Coefficient Hawick = 240, p = .261

Figure 5. Correlation of acceptability ratings with lexical frequency in Hawick[20]

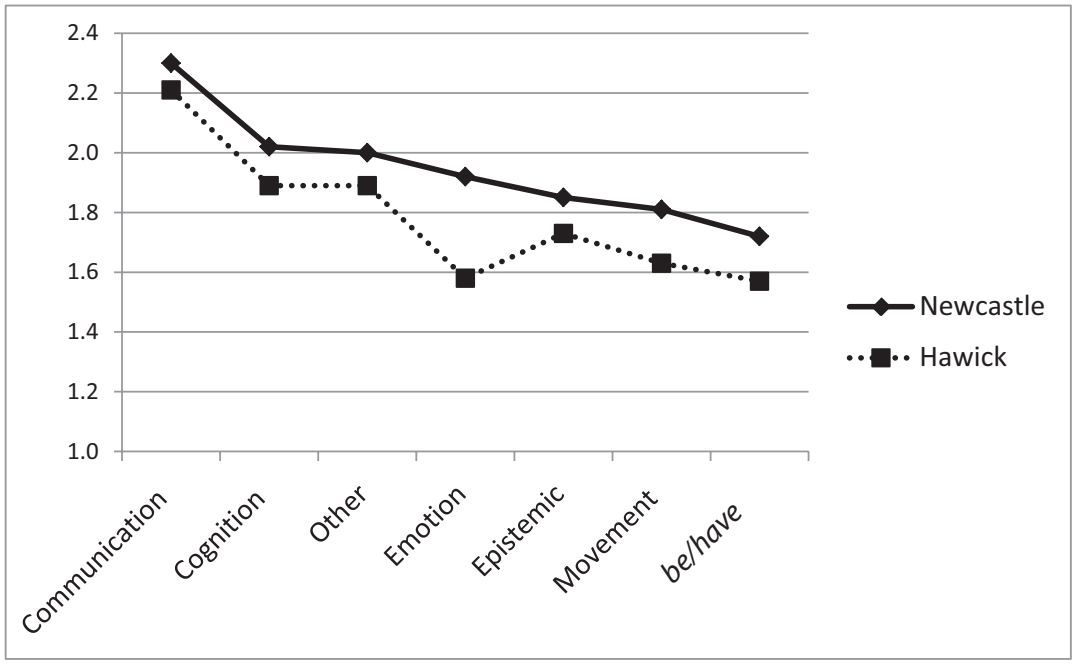
Finally, we investigated whether the type of verb used in the test sentence exerts any influence on the occurrence of the NSR. The literature contains a number of classification systems for lexical verbs (see Comrie 1976, 1985; Tsunoda 1985; Svartvik 1985, *inter alia*). In our investigation, we relied on the model proposed by Huddleston & Pullum (2002), which classifies lexical verbs according to syntactic–semantic criteria. We chose representative verbs from each of the four most frequent categories, namely, verbs of communication (we tested *ask* and *say*), verbs of cognition (*think* and *remember*), and verbs of emotion (*like* and *feel*). We also tested for the extent to which the verbs *eat* and *see* (grouped under the category 'other') exert any influence on NSR acceptability. The potential effects of the lexical verbs *have* and *be* were included as options on account of previous findings by both Godfrey & Tagliamonte (1999) and Smith *et al*. (2007), suggesting that a strong relationship between these verbs and the favouring of NSR were evident.

Figure 6 reveals that verb type did indeed prove to be a very good predictor of NSR acceptability ratings, both north and south of the border. The association between certain verb categories and NSR is significant in both communities.

Hence, in Newcastle and Hawick, verbs of communication favour the acceptance of NSR most. These are followed by verbs of cognition, verbs in the 'other' category, like *eat* and *see*, and verbs of emotion. On the other side of the acceptability spectrum, lexical *be* and *have* favour NSR least in both communities (which is probably why they are seldom reported in connection with NSR phenomena).[21] Moreover, the two

[20] Figures 4 and 5 exclude *be* and *have* on account of their frequency (57,016 and 19,689, respectively, per one million words in the BNC). Their inclusion would thus have made the scatterplots impossible to reproduce. However, the correlation – and hence the p-value – does not improve whether or not we include *be* and *have* (without *be* and *have* for Newcastle, p = .250 and for Hawick p = .258).

[21] Note that, despite the low ratings for *be* and *have* in figure 6, instances of these verbs with NSR can be heard in natural speech production in England and Scotland. (i) and (ii) contain examples with lexical *be* found in a



Newcastle $\chi^2(18)$: 28.915, $p < .05$
Hawick $\chi^2(18)$: 37.970, $p < .01$

Figure 6. NSR ratings in Newcastle and Hawick by verb types

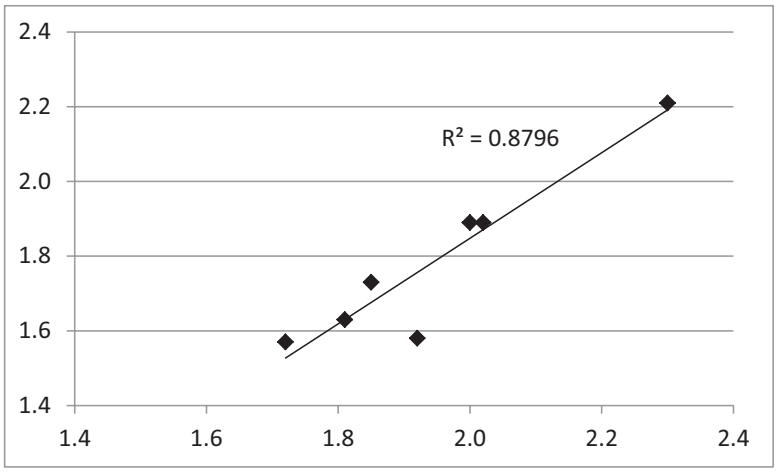
lines representing responses from each community run almost exactly parallel, except for verbs of emotion, which indicates a convergence of responses. We tested for the strength of this correlation by plotting the ratings from Newcastle and Hawick in a scattergram (as the x and the y-axis, respectively).

The close association between the acceptability ratings in the two localities is clearly visible in figure 7. It is also underlined by the high r^2 value as well as the impressive Spearman Correlation Coefficient (.883). This finding leads us to conclude that, yet again, the two communities north and south of the border seem to be conditioned by

single file from the DECTE corpus and (iii) and (iv) are drawn from a conversational turn between a caregiver and child in SCOTS:

(i) yes conditions **is** better (TLS/G51)
(ii) . . . this is what's made me think that my parents **is** broader than we are (TLS/G51)
(iii) No, I, I just, my ears **is** okay (SCOTS/Buckie/F114)
(iv) Your ears **is** okay? (SCOTS/Buckie/F113)

Jennifer Smith (p.c.), whose research generated (iii) and (iv) in SCOTS, notes that lexical *be* is robust in NSR contexts in this variety. This finding, coupled with the fact that corpus examples like (i–iv) can be found comparatively easily after plural nonpronominal NPs, where they generally seem to be disfavoured in speaker judgement data, might be a frequency effect on account of the high rates of occurrence of such lexical verbs in natural speech. It could also be the case that for *be* and *have*, in particular, grammaticality judgements and speaker production diverge because such highly frequent verbs might be differently affected by orthogonal factors. Hence, the violation of the Standard English rule may be more salient with *have* and (perhaps especially) *be* so that they receive a lower acceptability score than other categories of lexical verb.



Spearman's Rho .883, $p < .01$

Figure 7. Correlation between Newcastle and Hawick informants' rating for the occurrence of NSR with different verbal categories

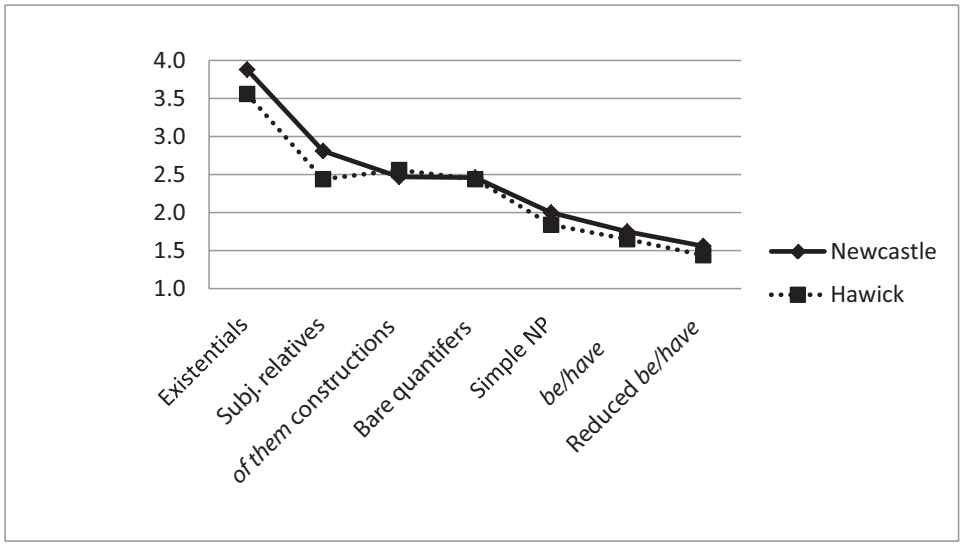
a similar underlying linguistic system with only minor localised differences – in this case the rating for verbs of emotion.

Finally, we investigated the preferences for NSR across a range of different syntactic constructions in both communities. It is important to bear in mind in this regard that the literature varies with respect to definitions of the NSR. Murray's (1873) original conception, for example, does not include relative or existential constructions, nor indeed the effect of lexical *be* and *have*. Large-scale corpus data, have, however, been able to demonstrate a fine-grained constraint hierarchy, with different syntactic constructions exerting a differential effect on the occurrence of verbal *-s* (see Godfrey & Tagliamonte 1999; Wright 2002; Cole 2008). We thus decided to test NSR acceptability across a range of syntactic constructions. All of the types are exemplified in (11a–g) with test sentences from our actual questionnaire. The ratings for each construction are displayed in figure 8.

(11) (a) Existentials – 'There's rats in the garden'
(b) Bare quantifiers – 'Both needs water'
(c) Subject relatives – 'The people who wants them'
(d) *Of them* constructions – 'All of them likes it'
(e) Simple declarative sentences – 'My sister wants orange shoes'[22]
(f) Occurrence of lexical *be* and *have* – 'They was very sad'
(g) Reduction of *be/have* – 'I's few friends'

As one might expect from the results of previous studies on other English vernaculars (Eisikovits 1991; McCafferty 2003; Wright 2002), existentials are most likely to

[22] This category includes simple non-existential declarative sentences with simple NP subjects that are not quantifiers. These sentences can be used as a benchmark for other constructions, which are rated differentially.



Newcastle $\chi^2(18)$: 104.809, ($p < .001$)
Hawick $\chi^2(21)$: 84.391, ($p < .01$)

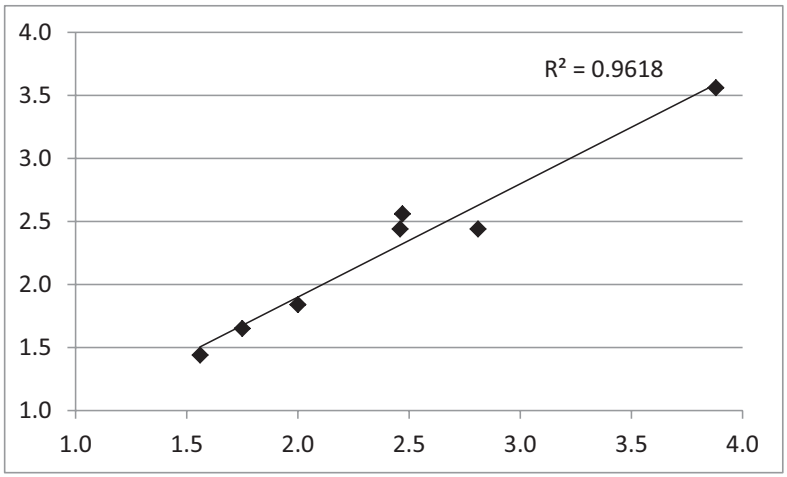
Figure 8. Acceptability rates by Newcastle and Hawick informants for NSR in different types of syntactic construction

trigger NSR in both communities. They are followed in terms of preference by three different constructions, subject relatives (we tested *who* and *that*), bare quantifiers (we tested *both*, *many* and *some*) and *of them*-constructions.[23] In both communities, the NSR sentences that are rated least acceptable contain lexical *be* or *have*, and they generate even lower ratings when reduced forms of these verbs are incorporated in the experimental sentences. This pattern is significant in both communities.[24]

Note again the very close correlation between acceptability ratings in Hawick and Newcastle. The lines representing responses from each community depicted in figure 8 are running almost exactly parallel except for subject relative constructions and existentials. As previously, we decided to test the strength of association between

[23] The *of them*-constructions tested are *both/all/two of them*. As they are headed by a quantifier, it is not obvious that they should be kept distinct from (bare) quantifiers, the way they are in figure 8. In keeping them as distinct variables, we follow the practice of works such as Godfrey & Tagliamonte (1999) and McCafferty (2003), where a difference in relation to NSR was found between the *of them*-construction and (bare) quantifiers. Indeed, in our data, there are some small differences in terms of preference for bare quantifier vs *of them* constructions between Hawick and Newcastle. Thus, while bare quantifiers are just as acceptable as *of them* constructions in Newcastle, *of them* constructions are slightly more acceptable in Hawick (with ratings of 2.56 and 2.44 respectively).

[24] An anonymous reviewer points out that syntactic constructions which have not been included in Murray's (1873) traditional definition of the NSR and which some readers with a narrow view of the concept might also not wish to incorporate (particularly existentials and (reduced) *be/have*) are judged rather extremely. If we take these constructions out of the data set the line in figure 8 is considerably flatter, distinguishing two groups: on the one hand relatives and the two quantifier expressions, on the other hand simple NPs. We acknowledge that including *there*-existentials among the construction types may be controversial, given that the use of third-person singular *-s* with *there* is commonplace in spoken English outside the NSR regions, as Childs (2012) demonstrates. We return to this issue below.



Spearman's Rho .883, $p < .01$

Figure 9. Acceptability rates by Newcastle and Hawick informants for NSR in different types of syntactic construction

Table 1. *NSR ratings for three different subject types in Newcastle and Hawick*

	Conjoined NPs	Full NP	Pronoun
Newcastle	2.45	1.9	1.87
Hawick	2.13	2.08	1.69

Newcastle: $\chi^2(6)$: 18.507, $p < .01$
Hawick: $\chi^2(6)$: 17.194, $p < .01$

the Newcastle and Hawick respondents – in this case, with respect to the full range of construction types. The scatterplot in figure 9 demonstrates that the constraint ranking between these two communities is almost identical. Indeed, the syntactic factors which condition the acceptability of the NSR in Newcastle and Hawick seem to be subject to near identical constraints, with an r^2 of .96 and a Spearman Correlation Coefficient of .883.

The classic NP/pro constraint does hold in both varieties tested in this study and our results show exactly the hierarchy we would have predicted given previous research on the variable: pronouns (other than 3SG) are judged to be less acceptable with verbal *-s* marking than (plural) NPs. However, orthogonal to this rule, we also tested another constraint that has been pointed out in the literature, namely, the conjoined vs single NP constraint. As table 1 shows, these two constraints intersect in slightly different ways in the two communities.

As regards the influence of the type of subject on sentence acceptability, Table 1 demonstrates that the main rating differential in Newcastle lies between conjoined 3SG NPs (such as *My sister and my brother*, 2.45) versus non-3SG subjects (plural NPs,

and the pronouns *I* and *they*, 1.9 and 1.87). In Hawick, on the other hand, the main difference in rating is between NPs of any kind (2.13 and 2.08) versus pronouns (1.69).

4.2.1 Consequences for the analysis of NSR

Consider again the classical conception of the NSR articulated by Murray: 'In the PRESENT TENSE, aa *leyke*, wey *leyke*, yoo *leyke*, thay *leyke*, are used only when the verb is accompanied by its proper pronoun; when the subject is a noun . . . the verb takes the termination {*s*} in all persons' (1873: 211). Much recent work on the syntactic-morphological analysis of this system of agreement concurs that the -*s* on the verb is a non-agreeing form or 'default agreement': Henry (1995), Börjars & Chapman (1998), Adger & Smith (2010), Tortora & den Dikken (2010) (but see Zanuttini & Bernstein 2011). Börjars & Chapman characterise the -*s* as a present tense affix, a characterisation that we agree with. Hence, it is the bare present tense form (*leyke* in Murray's example) which actually shows agreement, while first- or second-person and/or plural are all realized as Ø. It is thus actually misleading to refer to the -*s* in a system observing the NSR as 'triggered by the NP subject': in such a system the -*s* form is the unmarked present tense form, and so is not actually triggered by anything as such.

The absence of the subject proximity constraint immediately rules out applying Börjars & Chapman's (1998) analysis of NSR to the data in Newcastle and Hawick. They argue that the subject pronoun in these dialects, when it is adjacent to the verb, is a prefixed agreement marker. It would thus be an analogue of the French subject pronoun (*je, tu, il, elle, . . .*), which, according to a widely accepted analysis (see Roberts 2010 *inter alia*), is a subject agreement marker, agreeing with a null subject. The absence of -*s* with adjacent pronouns is then because 'they are both inflections of the same type' (Börjars & Chapman 1998: 76). The strongest piece of evidence – in fact, the only supporting data – for this analysis is the subject proximity constraint, i.e. a pronoun separated from the verb cannot be a prefix, therefore it can co-occur with -*s*. But in Hawick and Newcastle, as in several other contemporary dialects, pronouns (other than 3SG) tend strongly not to co-occur with -*s* even when they are separated from the verb.[25]

What is it about pronouns that make them trigger agreement where other NPs don't? Adger & Smith (2010) postulate a feature [pronominal] to be part of the composition of

[25] The analysis argued for in Börjars & Chapman (1998) is problematic for dialects which observe the subject proximity constraint as well. They must assume a system of pronouns in the relevant dialects where the two series are morphologically indistinguishable. One series includes subject pronouns that are prefixes (in the present tense, when adjacent to the verb) and another series which are independent words (in other tenses and when not adjacent to the verb in the present) where the two series are morphologically indistinguishable. More crucially, there is no universal constraint against having agreement marking as separable from tense marking, with, for example, the agreement feature(s) prefixed and tense suffixed. Indeed, that is exactly the situation in French according to the analysis mentioned in the text. In fact, French from this perspective has an agreement prefix combined with a tense suffix and an agreement suffix, in a case like *Nous part-ir-ons*, lit. '1PL-leave-FUT-1PL', i.e. 'We will leave'. As such, the reason why the English dialects in question do not combine -*s* with the putative agreement prefixes is actually not explained.

pronouns but not that of other NPs, which is the real trigger of agreement (realised as Ø) in the NSR system. It seems to us, though, that Occam's Razor would argue against postulating such a feature, given that pronouns have other properties which set them apart from other NPs: in particular, only pronouns make person distinctions and case distinctions, and only pronouns lack lexical content. Furthermore, the strict division between pronouns and other NPs only holds in the idealized version of the relevant dialects. In actual speech communities (Hawick and Newcastle, in our case), non-pronominal plural NP subjects sometimes trigger plural agreement, and pronominal subjects sometimes fail to trigger agreement.

Our findings can shed some light on the question of which morphosyntactic factors determine how good different NP types are as triggers of agreement. We therefore propose that personal pronouns are more likely to trigger agreement than other NPs because they have more formal features of the sort that trigger agreement, being marked for person as well as number (and in the third-person singular, even gender, although this has no effect on agreement in English). Consider again table 1, showing the effect of different NP types on agreement.

The non-pronominal subject NPs make up a scale as follows (where < means 'less likely to trigger agreement' or equivalently 'more likely to occur with *-s*'):

(12) there < quantifier-headed NP,[26] relative pronouns < plural lexical NP

This suggests the following generalisation:

(13) When the subject is formally marked [PL], it triggers plural agreement.

Expletive *there* is not plural in any sense.[27] Quantified subjects like *both* or *many of them* have plural reference, i.e. they are 'semantically plural', but arguably are not formally [PL]. Their plurality derives from the complement (*many of* ***them/the girls***), but the head, and hence the phrase itself, is not formally [PL]. In the case of bare quantifier arguments, as in *Both drink too much*, there is, arguably, a null plural complement *of them*. Relative pronouns (*who*, *which*, or Ø, the latter in *that*-relatives) are also not plural-marked, even when their correlate is plural. But plural lexical NPs are formally [PL] with their feature morphologically realised as plural *-s*. The generalisation (13) is in line with the explanation suggested above as to why

[26] Here, we collapse quantifiers and *of them* constructions (see footnote 23).

[27] It is not obvious how existential sentences with *there* should be viewed, in this scenario. In Standard English *there* does not trigger agreement, but instead the postverbal NP does (*There have been cats in the garden again*). In many varieties of colloquial English, there is no agreement with a postverbal NP, but instead the (auxiliary) verb has the 3SG form *There**'s** cats in the garden*. This may be because *there* triggers 3SG agreement in these varieties or because the auxiliary verb has default 3SG form. We are here suggesting that, in the NSR dialects, it is the latter: there is no agreement with postverbal NP, and the (auxiliary) verb has the non-agreeing present tense form marked by *-s*. A possibly pertinent question, which we have not yet investigated, is whether speakers also accept non-agreement in connection with inversion in sentences such as: ***Is*** *there cats in the garden?*

pronouns are the most likely to trigger agreement, namely, they have more formal agreement-triggering features.[28]

The hypothesis that verbal *-s*, when occurring in constructions with plural subjects in the NSR system, is a present tense suffix encoding no agreement raises the question of what the third singular *-s* actually is. There are two hypotheses: either it is, effectively, a different element, an agreement suffix triggered just by third singular subjects. Alternatively, it is the present tense suffix, appearing because third singular subjects, including third singular pronouns, do not trigger agreement. The latter hypothesis is in line with our idea that agreement is most likely to be triggered by subjects that have formal person and number features, if we adopt the view that third person is, in fact, absence of person, and that singular is absence of plural (as argued by Harley & Ritter 2002, and assumed by Henry 1995 in her account of the NSR in Belfast English).

The fact that coordinations of NP are poor triggers of agreement (i.e. often co-occur with *-s*) is thus predicted by our hypothesis. A coordination of two singular NPs, as in (14), is obviously semantically plural.

(14) [My mother and my father] want**s** it.

However, it is not formally [PL], since neither conjunct is [PL]. The formal features of a coordinated phrase derive from the conjuncts, either from both conjuncts or, in the case of asymmetric coordination, from one of the conjuncts (typically the leftmost one as Johannesen 1998 notes). Hence, the coordination of two NPs should be a poor trigger of plural agreement, naturally, the verb in these contexts should often occur with *-s*.

There is another possible explanation, though, for the frequency of the *-s* form on the verb with cases such as (14): the verb shows standard English third-person singular agreement with one of the conjuncts, so called 'closest conjunct agreement', a phenomenon familiar from many languages (see Bošković 2009).[29] This hypothesis is, furthermore, supported by the fact that conjoined NPs have been reported to trigger verbal *-s* even in non-NSR varieties of English (Cole 2008; Visser 1970).[30]

The choice between the two hypotheses sketched above should become observable by testing coordinations where the person, number and pronominal status of the conjuncts is varied. For example, under the closest conjunct hypothesis, a coordination such as *he*

[28] A problem for generalisation (13) is the observation that plural demonstratives frequently fail to trigger plural agreement (i.e. they occur with *-s*), in the 1990s' subcorpus of DECTE, according to Cole (2008). It is hard to argue that a form such as *these* is not formally marked for plurality.

[29] Cf. Einhorn, who states that: 'If an adjective or participle in Old French qualifies more than one noun, it usually agrees with the nearest one: *pais (M) eteres (F) tantes (F)*. (Rol. 2333) "So many (tantes) lands and countries"' (1974: 29). (Thanks to Richard Waltereit for this reference.) This phenomenon is also found in Modern Spanish, although not as widely as it occurs in Old French; see Bradley & Mackenzie (2004: 55).

[30] This would then be more in line with Cole's (2008) contention (based on a comparison of the DECTE subcorpus from the 1960s with the subcorpus from the 1990s) that NSR is no longer productive in Newcastle. Her conclusion is that if we disregard the high frequency of non-standard verbal *-s* in expletive *there* constructions and also with conjoined NPs (since both are features found more generally in colloquial English), then the remaining instances of NSR are relatively few and can be characterised as more or less fixed constructions.

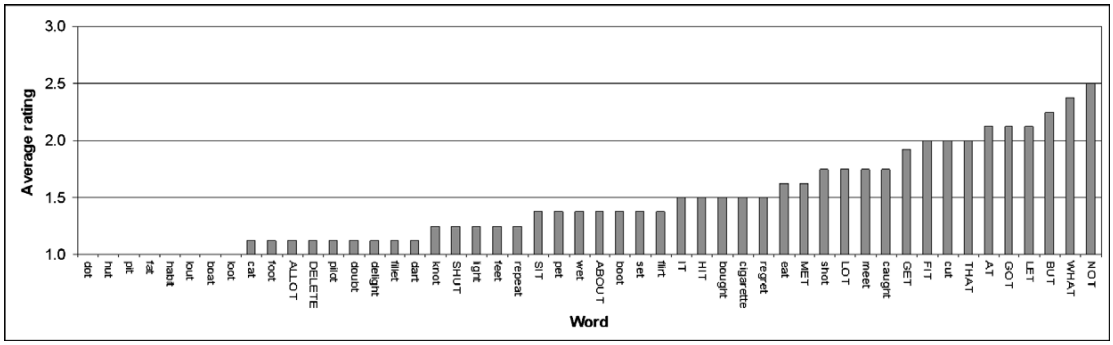


Figure 10. Average T-to-R ratings for word-final /t/ in Newcastle

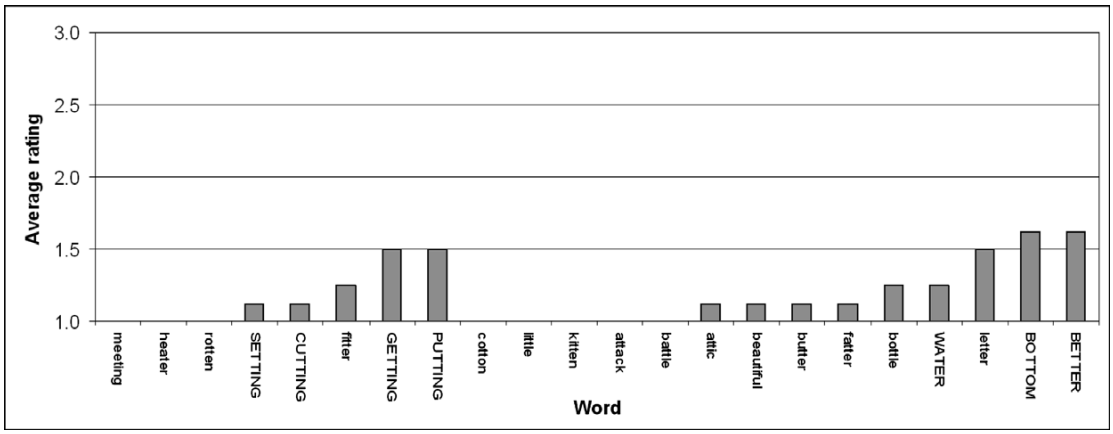


Figure 11. Average T-to-R ratings for word-medial /t/ in Newcastle

and you is predicted to trigger the Ø-form, while *you and he* will trigger *-s*. Under the 'formal features hypothesis', no difference is predicted between the two coordinations. In our first investigation of Hawick and Newcastle we did not include the required variety of coordination types to choose between the two hypotheses. We have recently conducted an investigation into this phenomenon and preliminary results show a weak closest conjunct agreement effect, the properties of which are difficult to determine at the present time. We will return to this question in future research.

4.3 Structural linguistic results: T-to-R

Turning now to the linguistic distribution of T-to-R as revealed in the Newcastle responses, we present first the result for all of the words that we tested, as an initial step in clarifying the linguistic constraints on T-to-R. For ease of presentation, we have split the findings into two figures, both of which show the average rating for a word across all speakers. Figure 10 shows the results for words with word-final /t/ and figure 11 gives those for words with word-medial /t/. Words in which T-to-R has previously been reported, as discussed in (7), are given in uppercase, and in figure 11

polymorphemic words are given first, followed by monomorphemic ones. These two figures thus reveal the full set of words tested for T-to-R. This includes: (i) words which had been previously reported as allowing T-to-R; (ii) words which have not been previously reported to allow T-to-R but which have a similar phonological structure to those which have, such as *cat*, *cut*, *dot*, *knot*, *pit*, *set*, *shot*, *bottle*; (iii) words which have not been previously reported to allow T-to-R and which have a phonological shape which is quite different to those which typically have, such as *boot*, *dart*, *doubt*, *light*, *meet*, *fillet*, *habit* (with long/tense vowels and diphthongs and with unstressed final syllables) and (iv) a few words or groups of words which allowed us to test the effect of phonological form, as explained below.

Figures 10 and 11 reveal that T-to-R was reported by at least one speaker for most of the items in the questionnaire but that there is considerable variation in how respondents judged T-to-R in different lexical items (from an average score of 2.5 for *not* to entirely negative responses for sixteen words). Particularly striking is the fact that words which have previously been reported with T-to-R cluster towards the right-hand side of the graph (and of the two sections of the graph in figure 11) – nine of the ten most highly rated words have been previously reported with T-to-R, and only seven words which have previously been reported with T-to-R have an average rating below 1.5. The range of results raises the question of where to draw the line in terms of confidence in the results. It might be reasonable to claim that *any* positive result means that T-to-R is reliably possible in a particular word; on the other hand, we might expect a little noise in self-reporting and a rating of 1.125 (obtained by words such as *cat*, *delete*, *dart* and *attic*) means that only one informant gave the word a rating of 2 (which is, essentially, the 'maybe' rating), and this is not a resounding result. An average score at or near 2 is compelling, however, as it indicates considerable agreement among (at least a substantial number of) informants that T-to-R is possible, and an average around 1.5 is quite confident, too, especially as one speaker scored 1 for everything (this is N-OF2 – Newcastle Older Female 2 – who clearly aims to indicate that she does not see T-to-R as a feature of her speech), and this brings down the average of all words (equally).[31] Averages between 1.5 and 1.125 indicate a decreasing level of confidence.

The fact that T-to-R is reported as possible in quite a wide range of words (even if we set aside those with very low ratings) suggests either that previous descriptions of the phenomenon are incomplete or that the method employed here produces over-reporting (something which the structure of the responses, as described below, suggests is not the case). T-to-R is reported in some unexpected words, given the phonological description discussed in section 2.2. For example, relatively high average ratings are given for the words *caught* and *meet* (1.75), *eat* (1.625)[32] and *bought* (1.5), all of which have

[31] A comprehensive analysis would penetrate down to the level of the individual in all things, perhaps also assessing the level of confidence with which informants answered (for example, three speakers scored quite high numbers of responses at 3). But this must wait for future work – it would require more space than is available here. The averages that we work with should minimise random noise.

[32] One of the authors (Warren Maguire) testifies that *eat* has also been attested with T-to-R in spontaneous production in Tyneside English.

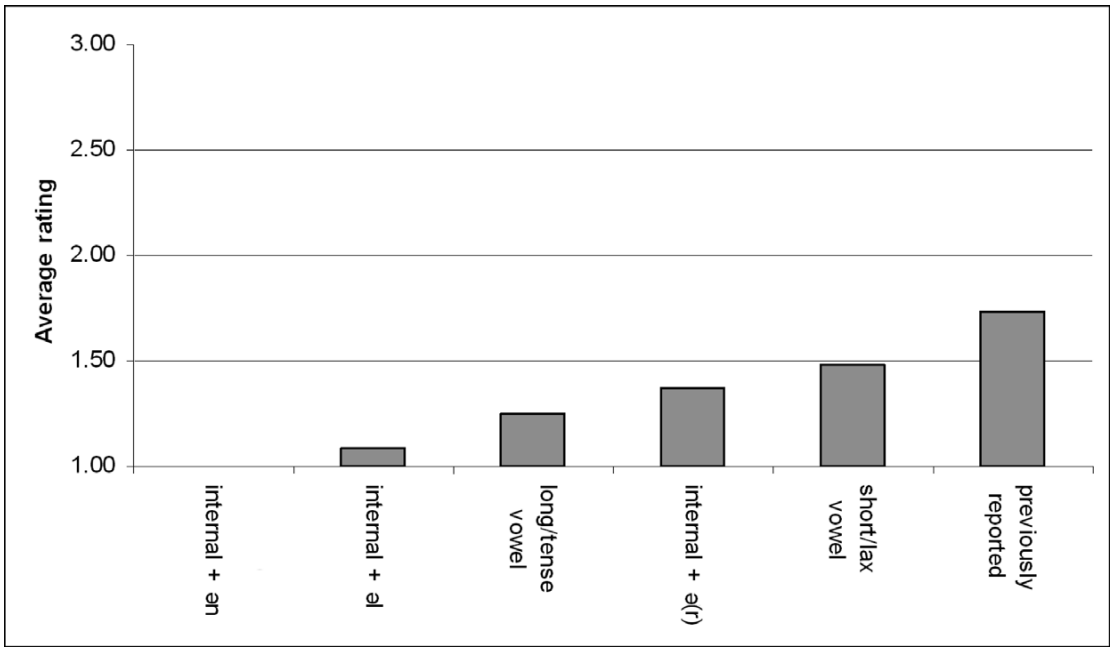


Figure 12. Average T-to-R rating per group

long/tense vowels in Tyneside English, with ratings as high as some words which have been previously reported with T-to-R (e.g. *lot* at 1.75 and *it* at 1.5). Conversely, T-to-R is judged not to be possible (as expected in the light of previous reporting) in the words *pit*, *fat*, *dot* and *hut*, all of which have short/lax vowels (compare the phonologically similar *fit*, *that*, *not* and *cut*, which have high ratings). An obvious question is whether there is any patterning behind the ratings. If there is no patterning, it may be the case that the elicitation method is not producing coherent results. If, on the other hand, patterns are revealed which make linguistic sense (or are, at least, linguistically non-random), then we can be confident that the elicitation method does give us an insight into the constraints on T-to-R. In order to determine which is the case, we compared the average T-to-R rating for words of different types; the results are shown in figure 12. The groups compared are words with:

(15) (a) previous reporting of T-to-R
(b) word-final /t/ preceded by short/lax vowel (as in *fat*)
(c) word-final /t/ preceded by long/tense vowel or diphthong (as in *about*)
(d) morpheme-internal /t/ followed by unstressed /ə(r)/ (as in *better*)[33]
(e) morpheme-internal /t/ followed by unstressed /əl/ (as in *little*)
(f) morpheme-internal /t/ followed by unstressed /ən/ (as in *kitten*)

Figure 12 reveals that phonological environment does play an important role in the acceptability of T-to-R for our Tyneside respondents. For example, a preceding short

[33] We assume that there is no final underlying /r/ here, but that *r*-sandhi can introduce one, on the assumption that *r*-sandhi involves insertion, as the existence of intrusive-*r* implies.

vowel is significantly more conducive to T-to-R than a preceding long/tense vowel or diphthong.[34] In words where intervocalic /t/ is followed by /əl/ and /ən/, T-to-R is strongly dispreferred or impossible, although *bottom* is not similarly rejected. Most strikingly, the group of words which have previously been reported with T-to-R are rated most highly of all,[35] suggesting that there is something special about this group and that our methodology is successful in allowing informants to differentiate as to whether a word allows T-to-R or not. Part of this is explicable in terms of phonological environment – of the words which have previously been reported with T-to-R, 88.5 per cent have a preceding short vowel (compared with 58.5 per cent with a preceding short vowel for the previously unreported group), but this cannot explain the full effect, as a comparison with the 'short vowel' column in figure 12 shows.

A further finding is that word-internal T-to-R is much less likely than word-final. As figure 11 shows, no case of word-internal /t/ achieves a rating above 1.5, apart from *better* and *bottom* with 1.625. This may seem surprising, given that several such words have been reported with T-to-R before. In fact, it concurs with previous reports: word-internal T-to-R is almost always reported as massively dispreferred compared to word-final, all the way from Wells (1982: 370: '[v]ery occasionally the rule applies word-internally') through Docherty *et al*. (1997: 291: T-to-R is found 'very occasionally both morpheme-internally and across morpheme-boundaries') to Clark & Watson (2011: 530: T-to-R is found 'word-medially in only 1.5% of all instances (always in the word 'whatever')'); Asprey (2009) also agrees. This is also clear from another of our results: T-to-R is much more acceptable in *get* (1.916) than in *getting* (1.5).[36] We return to the implications of this in section 4.3.1. The practically total absence of T-to-R preceding /əl/ and /ən/, and the greater acceptability following /ə(r)/ may be due to phonological reasons or may simply be on account of the words chosen – much of the success of /ə(r)/ is due to the word *better* (although *letter* also scored relatively high).

We tested a number of other factors, drawn from relevant discussion in previous literature, which we hypothesised might affect the acceptability of T-to-R. Given that the result of the process is a rhotic, its interaction with other aspects of English rhotic phonology becomes an issue. One question which our methodology can more readily investigate than traditional sociolinguistic interview methods is whether the presence of other rhotics in the nearby phonological environment causes the process to be dispreferred. This is the case in other phenomena. In the *r*-sandhi found in non-rhotic dialects, for example, Jones (1956) claims that *r* is not typically realised in contexts like *roar_ of laughter* or *Victoria_ and Albert* (see Mompeán-Gonzalez & Mompeán-Guillamón 2009) because of the rhotic which is immediately adjacent to the candidate insertion site. Moreover, Hall (2007) claims that the multiple occurrence of an underlying /r/ in a word can lead to the loss of one occurrence on the surface, even

[34] Chi-squared (2): 14.3, $p = .001$ for words with short/lax vowel before word-final /t/ vs all other words.

[35] This difference is highly significant: Chi-squared (2): 89.9, $p < .001$.

[36] *Get* was treated in a special way in our questionnaire, which explains the unusual number in the average rating. This does not affect the point here and is explained immediately below.

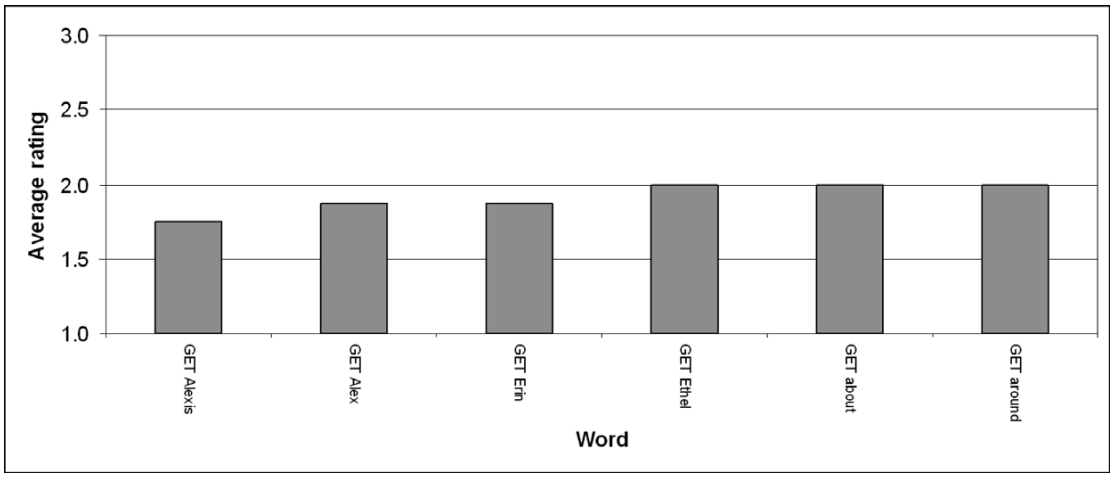


Figure 13. Average T-to-R ratings for phrases with *get*

in rhotic varieties, so that *secretary* is realised as [sɛkətɛri], for example. Both of these phenomena may be related to the 'long-domain resonance' of *r* (Kelly & Local 1986) and raise the question of whether T-to-R might be inhibited in an *r*-ful environment, too (why add further *r*s to a phrase, through the realisation of a /t/ as a rhotic, if multiple occurrence of *r* is disfavoured?). We tested this using the word *get* (one of the words most widely recognised as allowing T-to-R in previous research) followed by four words of similar status, some of which feature /r/ and some of which do not: *Ethel* and *Erin* (infrequent names with similar phonological structure) and *about* and *around* (phonologically similar and frequent prepositions).

Get was also used to test the effect of metrical structure and post-lexically formed feet on the process. As discussed above, Carr (1991) predicts that T-to-R should be favoured if the syllable with /t/ is stressed and can thus function as a foot-head, forming a cross-lexical foot with a following unstressed syllable. This means that T-to-R should occur in *get Alexis*, where the initial unstressed syllable of *Alexis* can form a post-lexical foot with *get*, but not in *get Alex*, where the initial syllable of *Alex* is stressed, and so cannot form a foot with *get*. We included both of these sequences in the questionnaire.[37] The results for every occurrence of *get* are given in figure 13.

Figure 13 shows that there is very little difference between any of the pairs tested: *get Alexis* scores very slightly lower than *get Alex* (1.75 vs 1.875 – the smallest possible difference, involving just one person giving *get Alex* one point more that *get Alexis*). If Carr's claim was correct, *get Alex* should not allow T-to-R at all, let alone be preferred over *get Alexis*. So it seems likely that foot structure is not relevant in this way.[38] The

[37] All this means that *get* occurred in the questionnaire six times (and the score for the word in figure 10 averages over all of these).

[38] The almost equal rejection of the segmentally very similar *attic*, with foot-medial /t/ (average = 1.125), and *attack*, with foot-initial /t/ (average = 1), also confirm that metrical position does not help make word-internal /t/ eligible for T-to-R.

comparison of *get Ethel* with *get Erin* (2 vs 1.875) and *get about* with *get around* (both at precisely 2) implies that an adjacent /r/ has no effect on the likelihood of the process occurring. Additionally, other words with neighbouring /r/ in the questionnaire are no less likely to have a non-negligible T-to-R rating than words without /r/ (as in *cigarette* and *regret*, both with scores of 1.5).

It is clear from the above that T-to-R emerges from our results with the core properties identified in previous work on the phenomenon largely intact, but with their conditions slightly relaxed. We believe that these slight additions to the previously described patterning provide an authentic insight into speakers' knowledge of T-to-R. It is favoured in word-final position, following a short/lax vowel, and it is lexically specific – it is possible/likely in *what* and *fit* but it is not possible in *dot* or *pit*, for example. It seems, however, that the previously reported set of words may need to be expanded, at least for Tyneside English: *cut* (average 2) fits with standard expectations for T-to-R words well, as perhaps does *shot* (1.750); *regret* (1.500) may be more surprising. Furthermore, T-to-R may not be entirely ruled out by a preceding long/tense vowel or diphthong. One of the few words in this category to have been previously reported with T-to-R, *about*, receives a non-negligible but also perhaps not compelling average of 1.375. Other words in this category do better, however.

It may be notable that the only long/tense vowels which produce results with some degree of confidence (1.5 and above) are /ɔ/ and /i/,[39] although there is no obvious phonological rationale for this restriction. It may not be coincidental, however. A study which applied the methodology developed for the current article to investigate T-to-R in Liverpool English, Caffrey (2011), also finds that a few words with non-short/lax vowels allow T-to-R, but the only words with averages of 1.5 or above have /ɔ/ (*caught*, *bought*), /i/ (*feet*, *repeat*), or /aʊ/, as in *about* (which was given the highest possible average score of 3 by Caffrey's informants, as were the following relatively expected set: *lot*, *that*, *at*, *got*, *let*, *what*, *not*, *better*, *bit*, *forget*, *forgot*, *sat*). Caffrey's results further indicate that, while there is a core set of words which are likely to be shared across all varieties of Northern English with T-to-R, the precise inventory of T-to-R words may vary slightly from variety to variety. For example, *hit* and *eat* score 1.5 and 1.625 in Newcastle, but both score 1 (i.e. T-to-R is not possible) in Liverpool; and *shut* and *sit* both score just over 2.9 in Liverpool, but only 1.25 and 1.375, respectively, in Newcastle. This is also compatible with Broadbent's (2008) claim that words like *fit* and *cut* (which score highly in Newcastle at averages of 2) cannot undergo T-to-R in West Yorkshire.

One further issue which has arisen in the T-to-R literature is whether lexical frequency can explain what the set of T-to-R words have in common. Broadbent, for example, asserts that lexical frequency is indeed a crucial part of the picture: '*t*-to-*r* remains in a small group of words because these words are used frequently by ... speakers and because they share phonological shape' (2008: 166). Broadbent ties this in with an exemplar approach to phonology, following work such as Bybee (2001)

[39] We assume in these transcriptions that surface length is predictable from tenseness, following Giegerich (1992).

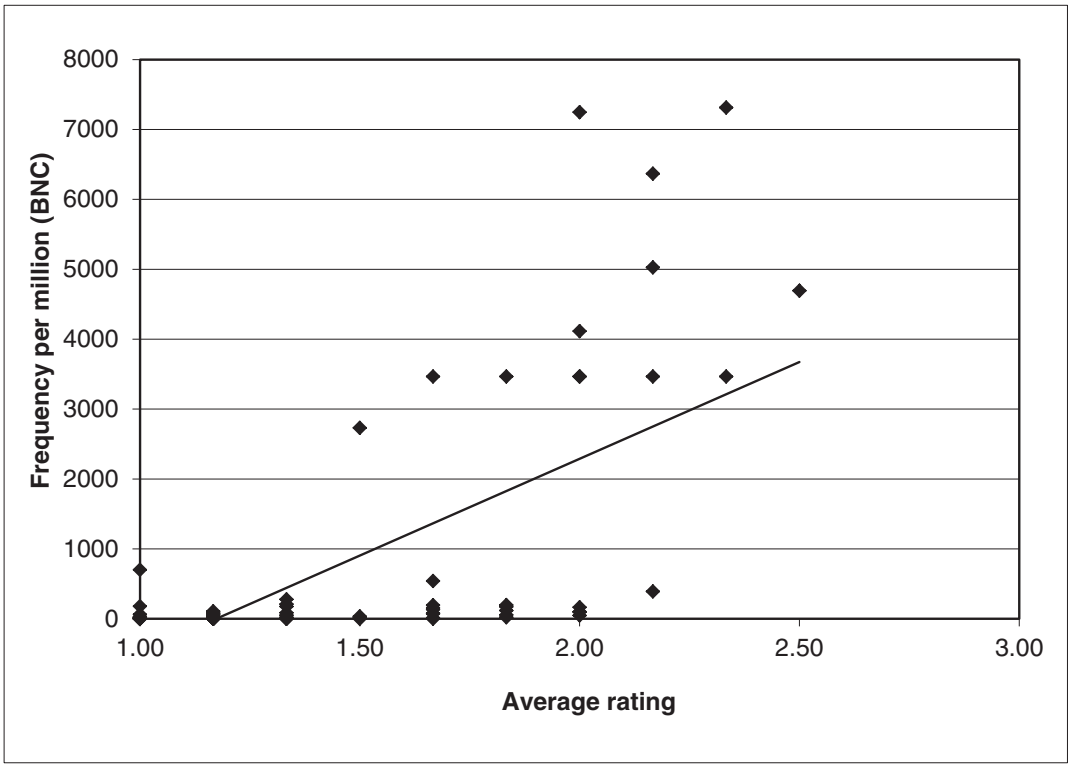


Figure 14. T-to-R rating compared with lexical frequency in the BNC

and Pierrehumbert (2001), claiming that it can explain frequency effects because the exemplar clouds of more frequent words are different and can have different properties to those of infrequent words (something that formal phonology struggles to model). To test this, we compared the average rating per word with its frequency (per million words) in the *British National Corpus* (BNC). Note that the pronoun *it* (average rating 1.5) is largely excluded from the analysis as it was massively more frequent in the BNC than any other word (at 24,508 occurrences per million). The results are shown in figure 14.

The simple correlation between Rating and Lexical Frequency is highly significant (Spearman's Rho .0627, $p < .001$), as the trend-line in figure 14 indicates. Excluding *it* from the analysis for the moment, only one word with a rating of less than 2.00 (*about*, with a rating of 1.375) has a frequency higher than 700 per million (*about* occurs at a frequency of 2730 per million), and it seems that frequency of occurrence can indeed account for which words allow T-to-R. However, we believe that the truth is more complicated than this, and that the simple result of statistical significance hides a picture in which frequency *appears* to explain a phonological pattern, but that this effect disappears on closer inspection (like the parallel situations in Dinkin 2008 and Neilson & Honeybone in preparation). The pattern in figure 14 is rather unusual. If the acceptability of T-to-R simply correlated with frequency, we would expect the average rating of words to rise gradually with frequency, so that words cluster somewhere

around the trend-line. However, the pattern in figure 14 is essentially categorical, not gradient. There is a two-way split in the responses: most words cluster along the bottom of the graph, with broadly comparable frequency (below 1,000 per million) but with a wide range of acceptability, almost stretching from the bottom of the scale to the top (thus there are three words, *cut*, *fit* and *let*, with a rating of 2.00 or more and quite low frequencies, at 165, 56 and 390 per million respectively, with only three words above them in term of acceptability: *but*, *what* and *not*) – for these words, frequency has no effect. There is also a group of words which have high lexical frequency and which are all quite acceptable as T-to-R; these words essentially cluster in the top right-hand corner of the chart (*about*, just discussed, is something of an outlier here but is balanced out by *it*, missing from the chart, which is extremely frequent but only has a rating of 1.5). Frequency thus does not seem to clearly predict the acceptability of T-to-R in a word. It is true that there is a group of words which are all frequent and which all allow T-to-R, but if these are set aside, words with comparable frequencies vary massively in terms of their propensity to undergo T-to-R.

The picture emerging from our results echoes that found by Clark & Watson (2011). They find a similarly categorical pattern in their production data from Liverpool English: there is a set of words in their corpus which allow T-to-R, and all of them are frequent, and there is another set of words which never occur with T-to-R, but which have a wide range of frequencies: there is no gradual increase in terms of the proportion of rhotic realisations of /t/ in words in a T-to-R environment in line with a gradual increase in frequency.[40] Both Clark & Watson's results and ours are deeply problematic for the exemplar explanation: exemplar clouds grow gradually with exposure to exemplars, and predict that gradient patterns will be found. The patterns for T-to-R from both intuition (shown in our results) and production (shown by Clark & Watson) reveal two distinct groups of words in terms of the interaction with frequency, however – which is exactly what is *not* predicted on exemplar assumptions, and is more compatible with formal approaches, which are more accommodating of categorical results.[41] If these assumptions are right, then, as with the discussion of the NSR in section 4.2, lexical frequency is not a crucial factor in explaining the patterning of T-to-R. What it exactly *is* that sets apart the group of words which allow T-to-R is discussed further in section 4.3.1.

[40] As a reviewer points out, even though our study and that of Clark & Watson consider different localities, this similarity in our results suggests both that T-to-R behaves similarly in each place, and also that our questionnaire methodology is successful in tapping into 'speakers' knowledge in a non-trivial way'.

[41] It should be noted that this is not the conclusion that Clark & Watson (2011) draw themselves. In the final section of their article, they seek to reconcile their results with a broadly usage-based approach to phonology by considering the number of collocations for each T-to-R variant in their corpus. This is a fascinating contribution to the debate. However, while we cannot address this point using our methodology, we note here that their argument seems compelling for the two words that they consider (*it*, with a low percentage of T-to-R and a high number of different collocations, and *bit*, with a high percentage of T-to-R and low number of different collocations), but that the effect does not seem to hold for the other T-to-R words. For example, *lot* has practically the same number of collocations as *bit* but is in the middle of the range for likelihood of T-to-R, and *but* is also in the middle of the range for T-to-R likelihood but has the second highest number of collocations.

4.3.1 Consequences for the analysis of T-to-R

T-to-R remains a phonologically fascinating phenomenon. Our results confirm that it is a variable,[42] neutralising, structure-preserving, productive yet lexically specific, cross-lexical process. They also reveal some new detail in its patterning and this combination of characteristics is what makes T-to-R notable. Its properties do not seem easily compatible with either formal phonological models, or with usage-based alternatives.

It is common in formal phonological theory to differentiate between (i) 'early', lexical phonology and (ii) 'late', 'low-level', or phrasal ('post-lexical') phonology – this distinction has been formalised, for example, in rule-based Lexical Phonology (Kiparsky 1982; Hargus & Kaisse 1993), and in Stratal Optimality Theory (Kiparsky 2000; Bermúdez-Otero in preparation). It is also common to attribute specific properties to different types of phonological process along these lines (see, for example, Harris 1989; Coetzee & Pater 2011): early/lexical phenomena are the only ones expected to have exceptions, are where structure preservation is expected to apply, and are restricted to apply only within words. All of these properties derive from the idea that these are lexical phenomena – the lexicon is where exceptionality is expected to reside, only underlying phonological categories exist in the lexicon, and lexical entities are naturally bounded by word-edges. Late/phrasal phenomena have the opposite characteristics, and may thus occur across word boundaries – indeed morpholexical boundaries are not expected to be relevant to this type of phonology in some models, as they are erased by the time that phrasal structure is constructed. T-to-R mixes the properties that are expected of these two basic types of phenomenon: it does not apply across the board and is structure preserving, but it applies across word-boundaries. Carr's (1991) analysis is the first to note this and tries to reconcile the issues. As we discussed above, however, some of Docherty *et al.*'s (1997) and our own results conflict with Carr's assumptions, indicating that his analysis must be flawed.

We have also shown above, on the other hand, that the usage-based analysis proposed by Broadbent (2008), which is couched in a framework where considerations such as those just mentioned may not be seen as important, also faces problems, because its predictions based on frequency of occurrence are not met. We note further here that another aspect of an exemplar-phonological usage-based analysis is also problematic: it might just be that T-to-R is no longer productive and is only or mainly found in stored chunks which were once phrases, such as *get it* or *put it*. Broadbent approves of this position, claiming, for example, that it is compatible with the observation that the most frequent word following a T-to-R /t/ is *it*. This storing of phrase-chunks is to be expected on exemplar assumptions (as Broadbent writes, 'Bybee [2001] . . . assumes that frequent collocations will also be stored in the mental lexicon' (2008: 164)), and it encourages Broadbent to assume that T-to-R is 'no longer a productive process' (2008: 148); she writes that '[i]f we assume that frequent collocations are stored, then we have a way of capturing the intuition that *t*-to-*r* is essentially becoming lexicalised'

[42] The fact that our results range from 'impossible' (1) in some words, to 'uncertain', to 'likely', but never to 'certainly' (3) is most straightforwardly compatible with the idea that the process is variable, not categorical.

(2008: 164). The fact that T-to-R is equally accepted by speakers in a range of contexts, however, is evidence against this: T-to-R in *get Ethel* is just as acceptable as it is in *get about*, and *can you do tharragain?* receives equally high ratings as *we had to firra new tyre* (all scoring an average of 2, despite the likely different frequency of occurrence of the relevant phrases). Clark & Watson's analysis of T-to-R in a spoken corpus also does not find any effect that might confirm this prediction of an exemplar model.

Any full analysis of T-to-R needs to be able to account for all its characteristics. Neither of the phonological approaches to T-to-R just discussed – a formal approach which assumes that T-to-R is a standard phonological rule or an exemplar approach – succeeds in this, and both make predictions which are contradicted by the data. We lack the space here to provide a full analysis of the phenomenon which takes all it properties into account; rather, we close this section by summarising these properties. Our results have been crucial in establishing these facts. Together, they provide a clear challenge to phonological theory. We have shown that T-to-R has the following characteristics:

(16) (a) Synchronic T-to-R is a phenomenon which occurs robustly in intervocalic position, across a word-boundary.
(b) T-to-R is much less likely in word-internal position than it is word-finally, and it is least likely across a word-internal morpheme boundary (it is slightly more likely word-internally if the word is monomorphemic).
(c) It is a variable phenomenon: speakers sometimes produce a rhotic (typically [ɹ] for Tyneside speakers) in the T-to-R environment, and sometimes produce an obstruent (which could be [t, tʔ, ʔ], etc.).[43]
(d) The vowel preceding the target /t/ is more likely to be short/lax than long/tense, to a statistically significant degree.
(e) However, a few words with a preceding long/tense vowel are accepted with T-to-R with a fair degree of confidence (an average of 1.5 and above) and there is evidence of their use in production data.
(f) There seems to be a core set of words, which are widely accepted as T-to-R words (cross-dialectally and in terms of high average scores, of 1.916 or above), including *not*, *what*, *but*, *let*, *get/got*, *at*, *that*; for Tyneside English, our results show that this also includes *fit* and *cut.*
(g) There are other words in which T-to-R is possible, some of which have been noted before (e.g. *it*, *lot*), and some others which have not (e.g. *eat*, *regret*); but there are also many other words with the same phonological structure which do not allow T-to-R.

While no previous analysis accounts for all these observations, we believe that the three main pieces of previous phonological work on T-to-R all offer insights. Carr (1991) emphasises the importance of reconciling its seemingly contradictory characteristics; Broadbent (2008) stresses the importance of recognising that it is heading towards lexicalisation; and Clark & Watson (2011) show that the interaction between T-to-R and frequency of occurrence is complex but worth paying attention to. We note that

[43] That T-to-R is variable is demonstrable from our results, in the fact that the words which allow it most convincingly still only have an average score of around 2, which equates to a speaker 'sometimes' pronouncing the words with a rhotic according to the scale given in the questionnaire.

either T-to-R is a bizarre, lexically specific but cross-lexical process, with a nearly but not completely strict phonological patterning, or a new analytical approach is required.

4.4 Methodological results and their implications

The discussion above shows that the questionnaire-based methodology that has been trialled here reveals results which are robust. They replicate some previous findings from different types of investigation into the NSR and T-to-R. This shows that our findings have a firm base which allows us to draw the sociolinguistic, geolinguistic and structural conclusions that we do above. Our results do not just tell us what we already know, however. Our methodology allows us to probe the phenomena in detail, testing both who recognises and accepts which constraints as part of their dialect, and how the linguistic conditioning on the phenomena pattern precisely, thereby extending our knowledge of them. It is this that has allowed us to consider new theoretical implications, as discussed in sections 4.2.1 and 4.3.1.

Corpus-based work is important and can disprove generalisations made purely on the basis of an author's observations or informal introspection, but it cannot probe the uncommon corners of a phenomenon – the necessary constructions may not occur often enough (or at all) in a corpus, even though they may be grammatically constrained. Corpora cannot tell us what is ungrammatical. A linguistically controlled questionnaire of the type that we have developed, which probes informants' (indirect) grammaticality judgements, can provide such detail. It could *in principle* be, for example, that all words allow T-to-R, but that the proportion of the time that it is realised in most of them is very small. We have shown here that this is not the case. All this bodes well for future work using the same methodology.

A notable feature of our fieldwork, and our commentary on it, is that it combines the investigation of phonology and morphosyntax. This is important for future dialectological work, given that large-scale dialectology needs extensive fieldwork in many localities. It is significant that our methodology produces useful results at both linguistic levels and can thus provide the basis for future combined investigations.

There is little previous work which addresses the study of variation at different linguistic levels. Cheshire *et al*. (2005) is a clear exception, and our results agree with theirs to the extent that we 'found no evidence that there is less [sociolinguistic] variation in syntax than in the morphology or the phonology of a language' (2005: 166). This is noteworthy as some previous work, e.g. Hinskens (1998), had suggested that this might be expected. In our results, there is significant and considerable variation in the NSR in terms of the age of informant; there is less variation in terms of the acceptability of T-to-R in Newcastle. On the other hand, our results are compatible with the general impression that geolinguistic variation at the morphosyntactic and at the phonological level is different in kind. Whereas T-to-R is almost categorically constrained by space (being practically absent in Hawick and variably present in Newcastle), the NSR is governed by subtly different probabilistic constraints in both localities. A possible interpretation of our results is that this feature is spread over a larger area than T-to-R

happens to be, and if phonological dialectology involves more phenomena which are less widespread, this will indeed lead to a wider spectrum of dialectal variation.

5 Conclusion

In this article, we have reported the pilot application of a questionnaire designed to elicit (indirect) grammaticality judgements. While two variants of the questionnaire were required for our phonological and morphosyntactic investigations, both were designed to access linguistic knowledge through participants' consideration of whether a specific pronunciation or sentence could be heard in their speech community. We argue that this approach facilitates comparability across types of features, while at the same time allowing each variant to be analysed rigorously on its own terms.

Overall, we argue that these instruments have been effective in accessing speakers' linguistic knowledge and that they consequently form a helpful addition to the battery of methods for the investigation of variation, especially for less common variants. Our questionnaire-based approach can be tailored to explore specific structural and contextual effects, and hence permits a more nuanced account. The essential commonality of the method across different levels of the grammar also allows the incidence, frequency and sociolinguistic patterning of phonological and morphosyntactic features to be compared much more directly than previously.

However, there is clearly room for development of what is, after all, a preliminary study. While the questionnaire approach has worked well, the instruments require further refinement to ensure both flexibility of application to a wide range of other features, and sufficient depth of analysis of the specific contextual effects which might affect particular variables. In addition, there is a clear need to explore a greater range of individuals with more speakers per cell from a properly structured sample of localities to take some of our findings further. This calls for a larger-scale project, leading to a new Linguistic Atlas of the British Isles, in which broad, initial sampling would be combined with more detailed work on a selection of localities, allowing overview information to be combined with fuller structural detail.

Authors' addresses:
School of English
Leipzig University
Beethovenstrasse 15
04107 Leipzig
Germany
i.buchstaller@uni-leipzig.de

School of English Literature, Language and Linguistics
Percy Building
Newcastle University

Newcastle upon Tyne NE1 7RU
UK
k.p.corrigan@ncl.ac.uk
anders.holmberg@newcastle.ac.uk

Linguistics and English Language
School of Philosophy, Psychology and Language Sciences
University of Edinburgh
Dugald Stewart Building
3 Charles Street,
Edinburgh EH8 9AD
UK
patrick.honeybone@ed.ac.uk
w.maguire@ed.ac.uk

References

Adger, David & Jennifer Smith. 2010. Variation in agreement: A lexical feature-based approach. *Lingua* 120, 1109–34.

Aitken, Adam Jack. 1971. Variation and variety in written Middle Scots. In Adam Jack Aitken, Angus McIntosh & Hermann Pálsson (eds.), *Edinburgh studies in English and Scots*, 177–209. London: Longman.

Anttila, Arto. 2002. Variation and phonological theory. In J. K. Chambers, Peter Trudgill & Natalie Schilling-Estes (eds.), *Handbook of language variation and change*, 206–43. Oxford: Blackwell.

Asprey, Ester. 2008. The sociolinguistic stratification of a connected speech process – the case of the T to R rule in the Black Country. *Leeds Working Papers in Linguistics and Phonetics* 13, 109–40.

Bailey, Guy, Natalie Maynor & Patricia Cukor-Avila. 1989. Variation in subject–verb concord in Early Modern English. *Language Variation and Change* 1, 285–301.

Bailey, Guy, Tom Wikle & Jan Tillery. 1997. The effects of methods on results in dialectology. *English World-Wide* 18, 35–63.

Barbiers, Sjef. 2005. Word order variation in three-verb clusters and the division of labour between generative linguistics and sociolinguistics. In Leonie Cornips & Karen P. Corrigan (eds.), *Syntax and variation: Reconciling the biological and the social*, 233–64. Amsterdam and Philadelphia: John Benjamins,

Beal, Joan & Karen P. Corrigan. 2000. Comparing the present with the past to predict the future for Tyneside English. *Newcastle and Durham Working Papers in Linguistics* 6, 13–30.

Bell, Allan. 2002. Back in style: Reworking audience design. In Penelope Eckert & John R. Rickford (eds.), *Style and sociolinguistic variation*, 139–69. Cambridge: Cambridge University Press.

Bermúdez-Otero, Ricardo. In preparation. *Stratal Optimality Theory*. Oxford: Oxford University Press.

Börjars, Kersti & Carol Chapman. 1998. Agreement and pro-drop in some dialects of English. *Linguistics* 36, 71–98.

Bošković, Željko. 2009. Unifying first and last conjunct agreement. *Natural Language and Linguistic Theory* 27, 455–96.

Bradley, Peter & Ian Mackenzie. 2004. *Spanish: An essential grammar*. London: Routledge.
Broadbent, Judith M. 2008. *t-to-r* in West Yorkshire English. *English Language and Linguistics* 12, 141–68.
Bucheli, Claudia & Elvira Glaser. 2002. The syntactic atlas of Swiss German dialects: Empirical and methodological problems. In Sjef Barbiers, Leonie Cornips & Susanne van der Kleij (eds.), *Syntactic microvariation*. Electronic publication of the Meertens Instituut. www.meertens.knaw.nl/projecten/sand/synmic/
Buchstaller, Isabelle & Seraphim Alvanides. Forthcoming. Employing geographical principles for sampling in state of the art dialectological projects. *Journal of Dialect Geography*.
Buchstaller, Isabelle & Karen P. Corrigan. 2011a. How to make intuitions succeed. In April McMahon & Warren Maguire (eds.), *Analysing variation in English*, 30–48. Cambridge: Cambridge University Press.
Buchstaller, Isabelle & Karen P. Corrigan. 2011b. Judge not lest ye be judged: Exploring methods for the collection of socio-syntactic data. In Frans Gregersen, Jeffrey K. Parrott & Pia Quist (eds.), *Language variation – European perspectives III*, 149–60. Amsterdam: John Benjamins.
Bybee, Joan. 2001. *Phonology and language use*. Cambridge: Cambridge University Press.
Caffrey, Catherine. 2011. T-to-R in Liverpool English. Unpublished MA (Hons) dissertation, University of Edinburgh.
Carr, Philip. 1991. Lexical properties of postlexical rules: Postlexical derived environment and the Elsewhere Condition. *Lingua* 85, 255–68.
Carr, Philip. 1999. Sociophonetic variation and generative phonology: The case of Tyneside English. *Cahiers de Grammaire* 24, 7–15.
Cheshire, Jenny, Viv Edwards & Pamela Whittle. 1989. Urban British dialect grammar. *English World-Wide* 10, 185–225.
Cheshire, Jenny, Paul Kerswill & Ann Williams. 2005. On the non-convergence of phonology, grammar and discourse. In Peter Auer, Frans Hinskens & Paul Kerswill (eds.), *Dialect change: Convergence and divergence in European languages*, 135–67. Cambridge: Cambridge University Press.
Childs, Claire. 2012. Verbal *-s* and the Northern Subject Rule: Spatial variation in linguistic and sociolinguistic constraints. *Proceedings of the International Symposium on Limits and Areas in Dialectology* (*LimiAr). Lisbon, 2011*, 319–44. Lisbon: Centro de Linguística da Universidade de Lisboa.
Clark, Lynn & Kevin Watson. 2011. Testing claims of a usage-based phonology with Liverpool English *t*-to-*r*. *English Language and Linguistics* 15(3), 523–47.
Coetzee, Andries W. & Joe Pater. 2011. The place of variation in phonological theory. In John Goldsmith, Jason Riggle & Alan Yu (eds.), *The handbook of phonological theory*, 401–34. Oxford: Blackwell.
Cole, Marcelle. 2008. What is the Northern Subject Rule? The resilience of a medieval constraint in Tyneside English. In T. Guzmán González & S. G. Fernández-Corugedo (eds.), *Journal of the Spanish Society for Medieval Language and Literature* (SELIM) 15, 91–114.
Collings, Sarah. 2009. A century not out: Exploring a longitudinal corpus of Northern English for changing linguistic trends across 4 generations. Poster presented at the Vacation Scholarship Conference, Newcastle University.
Comrie, Bernard. 1976. *Aspect: An introduction to verbal aspect and related problems*. Cambridge: Cambridge University Press.
Comrie, Bernard. 1985. *Tense*. Cambridge: Cambridge University Press.
Cornips, Leonie & Karen P. Corrigan (eds.). 2005a. *Syntax and variation: Reconciling the biological and the social* (Current Issues in Linguistic Theory 265). Amsterdam and Philadelphia: John Benjamins.

Cornips, Leonie & Karen P. Corrigan. 2005b. Toward an integrated approach to syntactic variation: A retrospective and prospective synopsis. In Leonie Cornips & Karen P. Corrigan (eds.), *Syntax and variation: Reconciling the biological and the social*, 1–30 (Current Issues in Linguistic Theory 265). Amsterdam and Philadelphia: John Benjamins.
Cornips, Leonie & Cecilia Poletto. 2005. On standardising syntactic elicitation techniques. Part I. *Lingua* 115(7), 939–57.
Cornips, Leonie & Cecilia Poletto. Forthcoming. Field linguistics meets formal research: How a microcomparative view can deepen our theoretical investigation. Part II (sentential negation). *Lingua*.
Corrigan, Karen P. 2010. *Irish English*, vol. 1: *Northern Ireland.* Edinburgh: Edinburgh University Press.
Corrigan, Karen P., Richard Edge & John Lonergan. 2012. Is Dublin English 'alive alive oh'? In Bettina Migge & Máire Ní Chíosáin (eds.), *New perspectives on Irish English*. Amsterdam and Philadelphia: John Benjamins, 1–28.
Cowart, Wayne. 1997. *Experimental syntax: Applying objective methods to sentence judgments*. Thousand Oaks, CA: Sage.
de Haas, Nynke K. 2011. Morphosyntactic variation in Northern English: The Northern Subject Rule, its origins and early history. Dissertation. Utrecht: LOT.
Dinkin, Aaron J. 2008. The real effect of word frequency on phonetic variation. *Penn Working Papers in Linguistics* 14, 97–106.
Docherty, Gerard J. & Paul Foulkes. 1999. Derby and Newcastle: Instrumental phonetics and variationist studies. In Foulkes & Docherty (eds.), 47–71.
Docherty, Gerard J., Paul Foulkes, James Milroy, Lesley Milroy & David Walshaw. 1997. Descriptive adequacy in phonology: A variationist perspective. *Journal of Linguistics* 33, 275–310.
Docherty, Gerard J., Dominic Watt, Carmen Llamas, Damien Hall & Jen Nycz. 2011. Variation in voice onset time along the Scottish-English border. *Proceedings of the 17th International Congress of Phonetic Sciences, Hong Kong, August 2011*, 591–4.
Dollinger, Stefan. 2012. The written questionnaire as a sociolinguistic data gathering tool: Testing its validity. *Journal of English Linguistics* 40(1), 74–110.
Einhorn, Elsabe. 1974. *Old French: A concise handbook*. Cambridge: Cambridge University Press.
Eisikovits, Edina. 1991. Variation in subject-verb agreement in Inner Sydney English. In Jenny Cheshire (ed.), *English around the world: Sociolinguistic perspectives*, 235–55. Cambridge: Cambridge University Press.
Fasold, Ralph. 1984. *The sociolinguistics of society*. Oxford: Blackwell.
Filppula, Marku. 1999. *The grammar of Irish English: Language in Hibernian style.* London: Routledge.
Foulkes, Paul & Gerard J. Docherty (eds.). 1999. *Urban voices*. London: Arnold.
Giegerich, H. 1992. *English phonology: An introduction*. Cambridge: Cambridge University Press.
Godfrey, Elizabeth & Sali Tagliamonte. 1999. Another piece for the verbal *-s* story: Evidence from Devon in Southwest England. *Language Variation and Change* 11, 87–121.
Hall, Nancy. 2007. R-Dissimilation in English. MS, California State University, Long Beach. Available at: www.csulb.edu/∼nhall2/.
Hargus, Sharon & Ellen M. Kaisse (eds.). 1993. *Studies in lexical phonology* (Phonetics and Phonology 4). San Diego: Academic Press.
Harley, Heidi & Elizabeth Ritter. 2002. Person and number in pronouns: A feature-geometric analysis. *Language* 78(3), 482–526.

Harris, John. 1989. Towards a lexical analysis of sound change in progress. *Journal of Linguistics* 25, 35–56.
Hazen, Kirk. 1996. Dialect affinity and subject-verb concord: The Appalachian–Outer Banks connection, *SECOL Review* 20, 25–53.
Henry, Alison. 1995. *Belfast English and Standard English.* Oxford: Oxford University Press.
Henry, Alison. 2002. Variation and syntactic theory. In J. K. Chambers, Peter Trudgill & Natalie Schilling-Estes (eds.), *The handbook of language variation and change*, 267–82. Malden, MA: Blackwell.
Hickey, Raymond. 2009. Weak segments in Irish English. In Donka Minkova (ed.), *Phonological weakness in English: From Old to Present-Day English*, 116–29. Basingstoke: Palgrave Macmillan.
Hinskens, Frans. 1998. Variation studies in dialectology and three types of sound change. *Sociolinguistica* 12, 155–93.
Honeybone, Patrick. 2001. Lenition inhibition in Liverpool English. *English Language and Linguistics* 5, 213–49.
Huddleston, Rodney & Geoffrey Pullum *et al.* 2002. *The Cambridge grammar of the English language*. Cambridge: Cambridge University Press.
Hughes, Arthur & Peter Trudgill. 1979. *English accents and dialects: An introduction to social and regional varieties of British English.* London: Edward Arnold.
Johannesen, Janne Bondi. 1998. *Coordination*. Oxford: Oxford University Press.
Johnston, Paul. 1997. Regional variation. In Charles Jones (ed.), *The Edinburgh history of the Scots language*, 433–513. Edinburgh: Edinburgh University Press.
Jones, Daniel. 1956. *The pronunciation of English*, 4th edn. London: Cambridge University Press.
Kallen, Jeffrey L. 1991. Intra-language transfer and plural subject concord in Irish and Appalachian English. *Teanga* 11, 20–34.
Kallen, Jeffrey L. 2005. Internal and external factors in phonological convergence: The case of English /t/ lenition. In Peter Auer, Frans Hinskens & Paul Kerswill (eds.), *Dialect change: The convergence and divergence of dialects in contemporary societies*, 51–80. Cambridge: Cambridge University Press.
Kelly, John & John K. Local. 1986. Long-domain resonance patterns in English. In *Proceedings of IEE Conference on Speech Input/Output: Techniques and applications*, 304–9. London: Institution of Electrical Engineers.
Kiparsky, Paul. 1982. Lexical morphology and phonology. In In-Seok Yang for the Linguistic Society of Korea (ed.), *Linguistics in the morning calm: Selected papers from SICOL-1981* (vol. 1), 3–91. Seoul: Hanshin Publishing Company.
Kiparsky, Paul. 2000. Opacity and cyclicity. In Nancy A. Ritter (ed.), *A review of Optimality Theory*. Special issue, *The Linguistic Review* 17 (2–4), 351–67.
Labov, William. 1975. Empirical foundations of linguistic theory. In Robert Austerlitz (ed.), *The scope of American linguistics: The first golden anniversary symposium of the Linguistic Society of America*, 77–133. Lisse: The Peter de Ridder Press.
Labov, William. 1994. *Principles of linguistic change*, vol. 1: *Internal factors*. Malden, MA, and Oxford: Blackwell.
Labov, William. 1996. When intuitions fail. In Lise M. Dobrin, Kora Singer & Lisa McNair (eds.), *Papers from the 32nd regional meeting of the Chicago Linguistic Society* 32: 76–106. Chicago: Chicago Linguistic Society.
Labov, William, Paul Cohen, Clarence Robins & John Lewis. 1968. *A study of the non-standard English of Negro and Puerto-Rican speakers in New York City*, Cooperative Research Report 3288, vols. I and II, Philadelphia: US Regional Survey.

Llamas, Carmen. 2007. A place between places: Language and identities in a border town. *Language in Society* 36(4), 579–604.
Llamas, Carmen. 2010. Convergence and divergence across a national border. In Carmen Llamas & Dominic Watt (eds.), *Language and identities*, 227–36. Edinburgh: Edinburgh University Press.
Llamas, Carmen, Dominic Watt & Daniel Ezra Johnson. 2009. Linguistic accommodation and the salience of national identity markers in a border town. *Journal of Language and Social Psychology* 28(4), 381–407.
Lodge, Ken R. 1984. *Studies in the phonology of colloquial English*. London: Croom Helm.
Mather, J. Y., H. Speitel & G. Leslie. 1975–86. *The linguistic atlas of Scotland, Scots section*. 3 vols. London: Croom Helm.
McCafferty, Kevin. 2003. The Northern Subject Rule in Ulster: How Scots, how English? *Language Variation and Change* 15, 105–39.
McCafferty, Kevin. 2004. '[T]hunder storms is verry dangese in this countrey they come in less than a minnits notice . . . ': The Northern Subject Rule in Southern Irish English. *English World-Wide* 25, 51–79.
McIntosh, Angus. 1983. Present indicative plural forms in the later Middle English of the North Midlands. In Douglas Gray & Eric Gerald Stanley (eds.), *Middle English studies: Presented to Norman Davis in honour of his seventieth birthday*, 235–54. Oxford: Clarendon.
Miller, James. 1993. The grammar of Scottish English. In James Milroy & Lesley Milroy (eds.), *Real English: The grammar of non-standard dialects*, 99–138. London: Longman.
Mompeán-Gonzalez, Jose A. & Pilar Mompeán-Guillamón. 2009. /r/-liaison in English: An empirical study. *Cognitive Linguistics* 20, 733–76.
Montgomery, Michael. 1994. The evolution of verb concord in Scots. In Alexander Fenton & Donald McDonald (eds.), *Studies in Scots and Gaelic: Proceedings of the third International Conference on the Languages of Scotland*, 81–95. Edinburgh: Canongate.
Montgomery, Michael. 1997. Making transatlantic connections between varieties of English: The case of plural verbal *-s*. *Journal of English Linguistics* 25, 122–41.
Montgomery, Michael & Janet Fuller. 1996. What was verbal *-s* in 19th century African American English? In Edgar W. Schneider (ed.), *Focus on the USA*, 211–30. Amsterdam and Philadelphia: John Benjamins.
Montgomery, Michael, Janet Fuller & Sharon DeMarse. 1993. 'The Black Men has wives and sweet hearts (and third person plural *-s*) jest like the white men': Evidence for verbal *-s* from the written documents on 19th century African American speech. *Language Variation and Change* 5, 335–57.
Murray, James A. H. 1873. *The dialect of the southern counties of Scotland*. London: Philological Society.
Neilson, Jimmi & Patrick Honeybone. In preparation. On (the absence of) frequency effects in phonology: A cautionary tale from TH-fronting in Glasgow. MS, University of Edinburgh.
Orton, Harold, Michael V. Barry, Wilfried J. Halliday, Philip M. Tilling & Martyn F. Wakelin. 1962–71. *Survey of English dialects*, 4 vols. (each in 3 parts). Leeds: E. J. Arnold.
Parrott, Jeffrey K. 2007. Distributed morphological mechanisms of Labovian variation in morphosyntax. PhD dissertation, Georgetown University.
Petyt, Keith. 1985. *Dialect and accent in industrial West Yorkshire*. Amsterdam: John Benjamins.
Pierrehumbert, Janet. 2001. Exemplar dynamics: Word frequency, lenition and contrast. In Joan L. Bybee & Paul L. Hopper (eds.), *Frequency and the emergence of linguistic structure*, 137–57. Amsterdam: John Benjamins.
Pietsch, Lukas. 2005. 'Some do and some doesn't': Verbal concord variation in the north of the British Isles. In Bernd Kortmann, Tanja Herrmann, Lukas Pietsch & Susanne Wagner (eds.),

A comparative grammar of British English dialects: Agreement, gender, relative clauses, 125–209. Berlin: Mouton.
Poplack, Shana & Sali A. Tagliamonte. 1989. There's no tense like the present: Verbal *-s* inflection in early Black English. *Language Variation and Change* 1, 47–84.
Roberts, Ian. 2010. Varieties of French and the null-subject parameter. In Theresa Biberauer, Anders Holmberg, Ian Roberts & Michelle Sheehan (eds.), *Parametric variation: Null subjects in minimalist theory*, 303–27. Cambridge: Cambridge University Press.
Rupp, Laura. 2006. The scope of the Northern Subject Rule. In M. Vliegen (ed.), *Variation in linguistic theory and language acquisition* (Proceedings of the 39th Linguistics Colloquium), 295–304. Oxford: Peter Lang.
Schendl, Herbert. 2000. The third person present plural in Shakespeare's First Folio: A case of interaction of morphology and syntax? In Christiane Dalton-Puffer & Nikolaus Ritt (eds.), *Words, structure, meaning, function: A festschrift for Dieter Kastovsky*, 263–76. Berlin: Mouton de Gruyter.
Schütze, Carson T. 1996. *The empirical base of linguistics: Grammaticality judgments and linguistic methodology*. Chicago: University of Chicago Press.
Shorrocks, Graham. 1998. *A grammar of the dialect of the Bolton area*, part 1: *Introduction, phonology*. Frankfurt am Main: Peter Lang.
Smith, Jennifer, Mercedes Durham & Laura Fortune. 2007. 'Mam, ma troosers is fa'in doon!' Community, caregiver and child in the acquisition of variation in Scottish dialect. *Language Variation and Change* 19(1), 63–99.
Stoddart, Jana, Clive Upton & John Widdowson. 1999. Sheffield dialect in the 1990s: Revisiting the concept of NORMs. In Foulkes & Docherty (eds.), 72–89.
Stuart-Smith, Jane. 1999. Glasgow: Accent and voice quality. In Foulkes & Docherty (eds.), 203–22.
Svartvik, J. 1985. *On voice in the English verb*. Berlin: Mouton de Gruyter.
Tagliamonte, Sali A. 1998. *Was/were* variation across the generations: View from the city of York. *Language Variation and Change* 10, 153–91.
Tagliamonte, Sali A. 2001. Comparative sociolinguistics. In J. K. Chambers, Peter Trudgill & Natalie Schilling-Estes (eds.), *The handbook of language variation and change*, 729–63. Malden, MA, and Oxford: Blackwell.
Tollfree, Laura. 1999. South East London English: Discrete versus continuous modelling of consonantal reduction. In Foulkes & Docherty (eds.), 163–84.
Tortora, Christina & Marcel den Dikken. 2010. Subject agreement variation: Support for the configurational approach. *Lingua* 120, 1089–1108.
Trousdale, Graeme & David Adger (eds.). 2007. *English dialect syntax*. Special issue of *English Language and Linguistics* 11(2).
Trudgill, Peter. 1986. *On dialect: Social and geographical perspectives.* Cambridge: Cambridge University Press.
Tsunoda, Tasaku. 1985. Remarks on transitivity. *Journal of Linguistics* 21, 385–96.
Viereck, Wolfgang. 1966. *Phonematische Analyse des Dialekts von Gateshead-upon-Tyne, Co. Durham*. Hamburg: Cram, de Gruyter.
Visser, Fredericus Theodorus. 1963–73. *An historical syntax of the English language*, 4 vols. Leiden: Brill.
Watt, Dominic & Lesley Milroy. 1999. Patterns of variation and change in three Newcastle vowels: Is this dialect levelling? In Foulkes & Docherty (eds.), 25–46.
Watt, Dominic, Carmen Llamas & Daniel Ezra Johnson. 2010. Levels of linguistic accommodation across a national border. *Journal of English Linguistics* 38(3), 270–89.
Wells, J. C. 1982. *Accents of English*, 3 vols. Cambridge: Cambridge University Press.