The Spoken British National Corpus 2014

Design, compilation and analysis

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A thesis submitted to Lancaster University

for the degree of Doctor of Philosophy in Linguistics

September 2017

Contents

Abstract

The ESRC-funded Centre for Corpus Approaches to Social Science at Lancaster University (CASS) and the English Language Teaching group at Cambridge University Press (CUP) have compiled a new, publicly-accessible corpus of spoken British English from the 2010s, known as the Spoken British National Corpus 2014 (Spoken BNC2014). The 11.5 million-word corpus, gathered solely in informal contexts, is the first freely-accessible corpus of its kind since the spoken component of the original British National Corpus (the Spoken BNC1994), which, despite its age, is still used as a proxy for present-day English in research today.

This thesis presents a detailed account of each stage of the Spoken BNC2014's construction, including its conception, design, transcription, processing and dissemination. It also demonstrates the research potential of the corpus, by presenting a diachronic analysis of 'bad language' in spoken British English, comparing the 1990s to the 2010s. The thesis shows how the research team struck a delicate balance between backwards compatibility with the Spoken BNC1994 and optimal practice in the context of compiling a new corpus. Although comparable with its predecessor, the Spoken BNC2014 is shown to represent innovation in approaches to the compilation of spoken corpora.

This thesis makes several useful contributions to the linguistic research community. The Spoken BNC2014 itself should be of use to many researchers, educators and students in the corpus linguistics and English language communities and beyond. In addition, the thesis represents an example of good practice with regards to academic collaboration with a commercial stakeholder. Thirdly, although not a 'user guide', the methodological discussions and analysis presented in this thesis are intended to help the Spoken BNC2014 to be as useful to as many people, and for as many purposes, as possible.

Acknowledgements

This work would not have been possible without the help, support and generosity of many people around me. First and foremost, I have been very lucky to have had as my supervisor Tony McEnery. He pushed me to break through the many mental barriers I inflicted upon myself, and I will take with me many of the wisdoms he has imparted on me. I must also single out Andrew Hardie, who in many ways was my unofficial second supervisor. I am grateful for all the support and guidance he has given me throughout my studies. Together, it was Tony and Andrew who recruited me to work on this project, and I am extremely grateful for this and all other opportunities they have afforded me.

I am also very grateful to the rest of the Spoken BNC2014 research team. Claire Dembry at Cambridge University Press has been a brilliant colleague and friend, providing inspiration and support throughout the project. Her team at CUP, including Olivia Goodman, Imogen Dickens, Sarah Grieves and Laura Grimes, did much of the front-line work on the project and I am truly grateful for their cooperation and expertise. Vaclav Brezina at Lancaster University has also helped me greatly over the last four years as a collaborator on this and several other projects.

I have many reasons to thank both the ESRC-funded Centre for Corpus Approaches to Social Science (CASS) and the Department of Linguistics and English Language (LAEL) at Lancaster University. Many at CASS have had a hand in my professional and personal development during the course of this work, including: Jennifer Hughes, Amelia Joulain-Jay, Amanda Potts, Mark McGlashan, Ruth Avon, Sheryl Prentice and Paul Baker. I am grateful to many of the academic staff at LAEL, including: Jonathan Culpeper, who as my confirmation panellist provided very useful feedback; Sam Kirkham, who provided insights from phonetics so readily; and the department's administrative staff, who provided excellent support. My thanks also extend to Matty Robinson and Gavin Brookes, who proofread much of this thesis.

As I approached the final months of writing up this thesis, I moved to Cambridge to start working at Cambridge Assessment English. I am grateful to colleagues there who supported me while I balanced my new role with my remaining PhD work.

One of my favourite hobbies is performing at the theatre. I am grateful to the members of several theatre groups – Lancaster University Theatre Group, Lancaster Amateur Dramatic and Operatic Society, About Theatre, the Morecambe Warblers and, most recent, Cambridge Operatic Society – who welcomed me and allowed me to blow off steam in some glitzy musical.

I am also indebted to friends who have shown an interest in my work, argued with me about language, and most importantly motivated me to keep going – thank you most of all to Matthew Bosley, Gavin Brookes, Mathew Gillings and Niall Curry.

Finally, I must thank my parents – Janet and Geoff – for providing love and support during difficult periods of this work, and always being there to listen. I am also grateful to the rest of my family for their enduring enthusiasm, interest and pride in my work. This thesis is dedicated to my family, with love.

Robbie Love
Cambridge, UK
September 2017

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1 Introduction

1.1 Overview

The ESRC-funded Centre for Corpus Approaches to Social Science (CASS)[1] at Lancaster University and the English Language Teaching group at Cambridge University Press (CUP) have compiled a new, publicly-accessible corpus of present-day spoken British English, gathered in informal contexts, known as the Spoken British National Corpus 2014 (Spoken BNC2014). This is the first publicly-accessible corpus of its kind since the spoken component of the original British National Corpus, which was completed in 1994, and which, despite its age, is still used as a proxy for present-day English in research today (e.g. Hadikin 2014; Rühlemann & Gries 2015). The new corpus contains data gathered in the years 2012 to 2016. As of September 2017 it is available publicly via Lancaster University's CQPweb server (Hardie 2012), with the underlying XML files downloadable from late 2018. It will subsequently form the spoken component of the larger British National Corpus 2014, the written component of which is also under development. The Spoken BNC2014 contains 11,422,617 million words of transcribed content, featuring 668 speakers in 1,251 recordings.

The BNC2014's predecessor, the British National Corpus (henceforth BNC1994), is one of the most widely known and used corpora. No orthographically transcribed spoken corpus compiled since the release of 10-million-word spoken component of the BNC (henceforth Spoken BNC1994) has matched it in either its size or availability. Unsurprisingly, the corpus linguistics community has, for some time, used the Spoken BNC1994 as a proxy for 'present-day' spoken British English. That this 'go-to' dataset is over twenty years old at the time of writing is a problem for current and future research that needed to be addressed with increasing urgency.

The collaboration between CASS and CUP to build the Spoken BNC2014 came about after some years of both centres working individually on the idea of addressing this situation by compiling a new corpus of spoken British English which could, in some way, match up to the Spoken BNC1994. Claire Dembry at CUP had collected two million words of new spoken data

[1] The research presented in this thesis was supported by the ESRC Centre for Corpus Approaches to Social Science, ESRC grant reference ES/K002155/1.

for the Cambridge English Corpus[2] in 2012, trialling the public participation method which was used, along with the data itself, in the Spoken BNC2014 (see Section 3.2.5, p. 31). Meanwhile, Tony McEnery and Andrew Hardie at Lancaster had been planning to compile a new version of the British National Corpus and, by 2013, had recruited (a) me, to start investigating methodological issues in compiling spoken corpora, and (b) Vaclav Brezina, to bring insights to the project based on his use of the Spoken BNC1994 to explore sociolinguistic research questions. Early in 2014, both CASS and CUP agreed, upon learning of each other's work, to pool resources and work together to build the 'Lancaster/Cambridge Corpus of Speech' (LCCS) which, within a few months and with the blessing of Martin Wynne at the University of Oxford, was renamed the Spoken British National Corpus 2014 (Spoken BNC2014). The Spoken BNC2014 will become the spoken subcorpus of the planned British National Corpus 2014 – the written component is being compiled by Abi Hawtin with the support of CASS and CUP, and is due for release in 2018.

The aim of this thesis is to present an account of the design, compilation and analysis of the Spoken BNC2014, making clear the most important decisions the research team made as we collected, transcribed and processed the data, as well as to demonstrate the research potential of the corpus. The underlying theme of this thesis is the maximisation of the efficiency of spoken corpus creation in view of practical constraints, with a focus on principles of design as well as data and metadata collection, transcription and processing. As is not unusual in corpus construction, compromises had to be made throughout the compilation of this corpus; these are laid out transparently. Furthermore, this thesis describes the innovative aspects of the Spoken BNC2014 project – notably including the use of PPSR (public participation in scientific research, Shirk et al. 2012), the introduction of new speaker metadata categorisation schemes, and consideration of the difficulty of speaker identification at the transcription stage – among others. While the thesis does not function as a Spoken BNC2014 'user guide',[3] it is a thorough account of the careful decisions that were made at each stage of development, and should be read by users of the corpus.[4]

The compilation of the Spoken BNC2014 was, as stated, a collaborative research project undertaken by CASS and CUP. It was a group effort, and, in addition to my own work, this thesis accounts for decisions made and work completed in collaboration with a team of researchers of which I was a member. Other members of the main research team – those who,

[2] http://www.cambridge.org/us/cambridgeenglish/better-learning/deeper-insights/linguistics-pedagogy/cambridge-english-corpus (last accessed September 2017).

[3] See Love et al. (2017b) for the BNC2014 user manual and reference guide.

[4] Several of the major themes of the thesis are captured in the Spoken BNC2014 citation paper (Love et al. 2017a), which serves as a summary of the project.

aside from myself, made decisions which shaped the course of the compilation process – were Vaclav Brezina, Andrew Hardie and Tony McEnery (from Lancaster), and Claire Dembry and Laura Grimes (from Cambridge). In this thesis, I use singular and plural pronouns systematically: first person singular pronouns are used when discussing work which was conducted solely by me, while first person plural pronouns and third person reference to "the Spoken BNC2014 research team" are used when reporting on decisions I made with the research team.

1.2 Research aims & structure

The aims of the Spoken BNC2014 project are:

(1) to compile a corpus of informal British English conversation from the 2010s which is comparable to the Spoken BNC1994's demographic component;
(2) to compile the corpus in a manner which reflects, as much as possible, the state of the art with regards to methodological approach; and, in achieving steps (2) and (3);
(3) to provide a fresh data source for a new series of wide-ranging studies in linguistics and the social sciences.

The structure of this thesis is perhaps different to most, as its focus is expressly methodological – it comprises a series of methodological explorations, followed by one chapter which contains linguistic analysis. Because of this, the standard approach to a thesis, where one reviews all relevant literature at the beginning and subsequently outlines a methodological approach that accounts for the entire project, does not fit my purpose. Accordingly, I decided to adopt a thematic approach, addressing each stage of the compilation of the corpus in the chronological order in which they occurred. Following a general and over-arching Literature Review (Chapter 2), which reviews the use of the Spoken BNC1994 and other relevant corpora for linguistic research, the thesis is divided into the following chapters:

- Chapter 3: Corpus design

This chapter covers general principles of spoken corpus design including recruitment, metadata and audio data. A major theme of this chapter is the extent to which the Spoken BNC1994 and other relevant corpora have been compiled using a principled as opposed to opportunistic approach, and our decision to embrace opportunism (supplemented by targeted interventions) in the compilation of the Spoken BNC2014.

- Chapter 4: Transcription

This chapter discusses the development of a bespoke transcription scheme for the Spoken BNC2014. It justifies the rejection of automated transcription before describing how the Spoken BNC2014 transcription scheme elaborates and improves upon that of its predecessor. It also demonstrates the interactivity between stages of corpus compilation; the transcription scheme was designed to be mapped automatically and unambiguously into XML at a later stage in the construction of the corpus.

- Chapter 5: Speaker identification

This chapter reflects upon the transcription stage of the project, investigating the accuracy with which transcribers were able to assign speaker ID codes to the utterances transcribed in the Spoken BNC2014 – i.e. 'speaker identification'. Its aim is to draw attention to the difficulty of this task for recordings which contain several speakers, and to propose ways in which users can avoid having potentially inaccurately assigned speaker ID codes affect their research.

- Chapter 6: Corpus processing and dissemination

This chapter discusses the final stages of the compilation of the Spoken BNC2014, describing the conversion of transcripts into XML; the annotation of the corpus texts for part-of-speech, lemma and semantic category; and the public dissemination of the corpus.

- Chapter 7: Analysing the Spoken BNC2014

This chapter aims to demonstrate the research potential of the Spoken BNC2014 by comparing (a sample of) it to the Spoken BNC1994 in a study of bad language. This study aims to reveal indications that the frequency, strength and social distribution of bad language may have changed or remained stable between the 1990s and 2010s in spoken British English. Adopting the approach to bad language proposed by McEnery (2005), I analyse a large set of bad language words (BLWs) and demonstrate the comparability of the Spoken BNC2014 with its predecessor.

Finally, Chapter 8 (the conclusion) summarises the thesis and discusses the major successes and limitations of my work on the project, before suggesting future work which could extend the research capability of the corpus.

Before discussing how the Spoken BNC2014 was built, I will contextualise the use and popularity of the original British National Corpus, and argue how no corpus since its spoken component has matched the Spoken BNC1994 in terms of several key strengths which appear to have made it as widely used as it has been. This is the aim of the next chapter.

2 Literature review

2.1 Introduction

This Literature Review aims to contextualise the situation which has arisen whereby the collection of a second Spoken British National Corpus is necessary. It introduces the Spoken British National Corpus 1994 and discusses its uses in the field of linguistics. It also presents the case for compiling a second edition now. What it does not do is discuss existing corpora in terms of design, data collection, transcription or any other feature of corpus construction which has informed the methods for the compilation of the Spoken BNC2014 – relevant literature on these topics will be introduced, where appropriate, in each of the methodological chapters which follow the Literature Review.

Corpus linguistics is "a relatively new approach in linguistics that has to do with the empirical study of 'real life' language use with the help of computers and electronic corpora" (Lüdeling & Kytö 2008: v). A well-known problem afflicting corpus linguistics as a field is its tendency to prioritise written forms of language over spoken forms, in consequence of the drastically greater difficulty, high cost and slower speed of collecting spoken text:

> A rough guess suggests that the cost of collecting and transcribing in electronic form one million words of naturally occurring speech is at least 10 times higher than the cost of adding another million words of newspaper text. (Burnard 2002: 6)

Contemporary online access to newspaper material means that this disparity is likely to be even greater today than in 2002. The resulting bias in corpus linguistics towards a "very much written-biased view" (Lüdeling & Kytö 2008: vi) of language is problematic if one takes the view that speech is the primary medium of communication (Čermák 2009: 113), containing linguistic variables that are important for the accurate description of language, and yet inaccessible through the analysis of corpora composed solely of written texts (Adolphs & Carter 2013: 1). Projects devoted to the compilation of spoken corpora are thus relatively few and far between (Adolphs & Carter 2013: 1).

In the next section I introduce one of the few widely accessible spoken corpora of British English, the spoken section of the British National Corpus (henceforth the Spoken BNC1994).

This is, to this day, heavily relied upon in spoken English corpus research. I show that this is due to the scarcity and lack of accessibility of spoken English corpora that have been developed since; the Spoken BNC1994 is still relied upon today as the best available corpus of its kind, despite its age. This, as I will show in Section 2.2, is a problem for current and future research, and, along with the other problems outlined, it is presented as the main justification for producing a new spoken corpus – the Spoken BNC2014. I then consider the types of research for which the Spoken BNC2014 will likely be used by summarising the most prominent areas of spoken corpus research that have arisen over the last two decades (Section 2.3). I also show that there are limitations in such previous research that provide evidence of the problems outlined above, and that the publicly-accessible Spoken BNC2014 aims to considerably improve the ability of researchers to study spoken British English. I conclude by outlining the main research aims of the thesis (Section 2.4).

2.2 The Spoken British National Corpus 1994 & other spoken corpora

2.2.1 The Spoken BNC1994

The compilation of the Spoken BNC2014 is informed largely by the BNC1994's spoken component (see Crowdy 1993, 1994, 1995), which is "one of the biggest available corpora of spoken British English" (Nesselhauf & Römer 2007: 297). The goal of the BNC1994's creators was "to make it possible to say something about language in general" (Nesselhauf & Römer 2007: 5). Thus its spoken component was designed to function as a representative sample of spoken British English (Burnard 2007). It was created between 1991 and 1994, and was designed in two parts: the demographically-sampled part (c. 40%) and the context-governed part (c. 60%) (Aston & Burnard 1998).

The demographically-sampled part[5] – henceforth the Spoken BNC1994DS – contains informal, "everyday spontaneous interactions" (Leech et al. 2001: 2). Its contributors (the volunteers who made the recordings of their interactions with other speakers) were "selected by age group, sex, social class and geographic region" (Aston & Burnard 1998: 31). 124 adult contributors made recordings using portable tape recorders (Aston & Burnard 1998: 32), and in most cases only the contributor was aware of the recording taking place. Contributors wore the recorders at all times and were instructed to record all of their interactions within a period of between two and seven days. The Spoken BNC1994DS also incorporates the Bergen Corpus of London Teenage Language (COLT), a half-million-word sample of spontaneous conversations among teenagers between the ages of 13-17, collected in a variety of boroughs and school

[5] Also known as the 'conversational part' (Leech et al. 2001: 2).

districts in London in 1993 (Stenström et al. 2002). In the XML edition of the BNC1994 hosted by Lancaster University's CQPweb server (Hardie 2012), the Spoken BNC1994DS contains five million words of transcribed conversation produced by 1,408 speakers and distributed across 153 texts.

The context-governed part[6] – henceforth the Spoken BNC1994CG – contains formal encounters from institutional settings, which were "categorised by topic and type of interaction" (Aston & Burnard 1998: 31). Unlike the Spoken BNC1994DS, the Spoken BNC1994CG's text types were "selected according to *a priori* linguistically motivated categories" (Burnard 2000: 14): namely *educational and informative*, *business*, *public or institutional* and *leisure* (Burnard 2000: 15). Because of the variety of text types and settings involved, the data collection procedure varied; some conversations were recorded using the same procedure as the DS, while recordings of some conversations (e.g. broadcast media) already existed. The Spoken BNC1994CG contains seven million words produced by 3,986 speakers and distributed across 755 texts.

Despite certain weaknesses in design and metadata, which I discuss in Section 3.2.2 (p. 23), the Spoken BNC1994 has proven a highly productive resource for linguistic research over the last two decades. It has been influential in the areas of grammar (e.g. Rühlemann 2006, Gabrielatos 2011, Smith 2014), sociolinguistics (e.g. McEnery 2006, Saily 2006, Xiao & Tao 2007), conversation analysis (e.g. Rühlemann & Gries 2015), pragmatics (e.g. Wang 2005, Cappelle et al. 2015, Hatice 2015), and language teaching (e.g. Alderson 2007, Flowerdew 2009), among others, which are discussed in further detail in Section 2.3.2. Part of the reason for the widespread use of the BNC1994 is that it is an open-access corpus; researchers from around the world can access the corpus at zero cost, either by downloading the full text from the Oxford Text Archive,[7] or using the online interfaces provided by various institutions including Brigham Young University (*BNC-BYU*,[8] Davies 2004) and Lancaster University (*BNCweb*,[9] Hoffmann et al. 2008). Yet it is undoubtedly the unique access that the Spoken BNC1994 has provided to large-scale orthographic transcriptions of spontaneous speech that has been the key to its success. Such resources are needed by linguists, but are expensive and time consuming to produce and hence are rarely accessible as openly and easily as is the BNC1994.

[6] Also known as the 'task-oriented part' (Leech et al. 2001: 2).

[7] Accessible at: http://ota.ox.ac.uk/desc/2554 (last accessed September 2017).

[8] Accessible at: http://corpus.byu.edu/bnc/ (last accessed September 2017).

[9] Accessible at: http://bncweb.lancs.ac.uk/bncwebSignup (last accessed September 2017).

2.2.2 Other British English corpora containing spoken data

Other corpora of spoken British English exist which are similarly conversational and non-specialized in terms of context. Although they have the potential to be just as influential as the Spoken BNC1994DS, they are much harder to access for several reasons. Some have simply not been made available to the public for commercial reasons. The Cambridge and Nottingham Corpus of Discourse in English (CANCODE), for example, forms part of the Cambridge English Corpus, which is a commercial resource belonging to Cambridge University Press and is not accessible to the wider research community (Carter 1998: 55). Other corpora are available only after payment of a license fee, which makes them generally less accessible. For instance, Collins publishers' WordBanks Online (Collins 2017) offers paid access to a 57-million-word subcorpus of the Bank of English[10] (containing data from British English and American English sources, 61 million words of which is spoken); the charges range, at the time of writing, from a minimum of £695 up to £3,000 per year of access. Likewise, the British component of the International Corpus of English (ICE-GB), containing one million words of written and spoken data from the 1990s (Nelson et al. 2002: 3), costs over £400 for a single, non-student license.[11]

Some other corpora are generally available, but sample a more narrowly defined regional variety of English than 'British English'. For instance, the Scottish Corpus of Texts and Speech (SCOTS) (Douglas 2003), while free to use, contains only Scottish English and no other regional varieties of English from the British Isles. Its spoken section, mostly collected after the year 2000, is over one million words in length and contains a mixture of what could be considered both *conversational* and *task-oriented* data. It serves as an example of a corpus project that aimed to produce "a publicly available resource, mounted on and searchable via the Internet" (Douglas 2003: 24); the SCOTS website[12] allows users immediate and free access to the corpus. It appears to be the first project since the Spoken BNC1994 to encourage use of the data not only by linguists but by researchers from other disciplines too:

> It is envisaged that SCOTS will be a useful resource, not only for language researchers, but also for those working in education, government, the creative arts, media, and tourism, who have a more general interest in Scottish culture and identity. (Douglas 2003: 24)

[10] https://www.collinsdictionary.com/wordbanks (last accessed September 2017).

[11] http://www.ucl.ac.uk/english-usage/projects/ice-gb/iceorder2.htm (last accessed September 2017).

[12] http://www.scottishcorpus.ac.uk/ (last accessed September 2017).

This suggests that some work has taken place since the compilation of the BNC1994 that has, at least in part, been able to bridge the gap of open-access, spoken, British English corpus data between the early 1990s and the present-day.

More recently, the British Broadcasting Corporation (BBC) undertook a language compilation project that rivalled the Spoken BNC1994 both in size and range of speakers – the BBC Voices project (Robinson 2012). BBC Voices is "the most significant popular survey of regional English ever undertaken around the UK" (BBC Voices 2007), and was recorded in 2004 and 2005 by fifty BBC radio journalists in locations all over the UK. All together over 1,200 speakers produced a total of 283 recordings. The only public access to the data (hosted by the British Library's National Sound Archive)[13] is to the recordings themselves. Users can freely listen to the BBC Voices recordings online, but no transcripts exist. Since this project seems similar to the Spoken BNC1994, it could be said that the most convenient way of producing a successor would simply be to transcribe the BBC Voices recordings and release them as a corpus. However, there are several differences between the Spoken BNC1994 and the BBC Voices project which make this solution inadequate. Firstly, the BBC Voices project is a dialect survey and not a corpus project (Robinson 2012: 23); the aim of its compilers was to search for varieties of British English that were influenced by the widest range of geographic backgrounds as possible, including other countries (BBC Voices 2007). Furthermore, the aim of BBC Voices was not only to record samples of the many regional dialects of spoken English, but also to capture discourses about language itself. The radio journalists achieved this by gathering the recordings via informal interviews with groups of friends or colleagues, and asking specific questions (BBC Voices 2007). This, then, is not naturally occurring language in the same sense as the Spoken BNC1994DS, and so these conversations are not comparable. Finally, even if a corpus of BBC Voices transcripts did exist, it would already be a decade old.

In this section I have introduced several spoken corpora of British English which have been compiled since the release of the Spoken BNC1994, and discussed restrictions with regards to the accessibility, appropriateness or availability of the data. These restrictions appear to have translated into a much lower level of research output using these datasets. As a crude proxy for the academic impact of these corpora, I searched in Lancaster University's online library system for publications which mention them. At the time of writing, a search for CANCODE retrieves 54 publications; WordBanks Online only 45; ICE-GB 300; SCOTS 34; and BBC Voices 101. By contrast searching for the BNC1994 identifies 3,000 publications. While an admittedly rough rule of thumb, this quick search shows that even though conversational, non-specialized spoken

[13] http://sounds.bl.uk/Accents-and-dialects/BBC-Voices (last accessed September 2017).

corpora that may be just as useful as the Spoken BNC1994DS have been compiled since 1994, their limited availability, and/or the expense of accessing them, has meant that the Spoken BNC1994 remains the most widely used spoken corpus of British English to date.

2.2.3 Summary and justification for the Spoken BNC2014

It is clearly problematic that research into spoken British English is still using a corpus from the early 1990s to explore 'present-day' English. The reason why no spoken corpus since the Spoken BNC1994 has equalled its utility for research seems to be that no other corpus has matched all four of its key strengths:

i. orthographically transcribed data
ii. large size
iii. general coverage of spoken British English
iv. (low or no cost) public access

Each of the other projects mentioned above fails to fulfil one or more of these criteria. For example, CANCODE is large and general in coverage of varieties of spoken British English, but has no public access; while the SCOTS corpus is publicly-accessible, but contains only Scottish English. The BBC Voices project, while general in coverage, is not transcribed. The Spoken BNC2014 is the first corpus since the original that matches all four of the key criteria.

The point has been made that the age of the Spoken BNC1994 is a problem. The problem of the Spoken BNC1994's continued use would be lessened if it were not still treated as a proxy for present-day English – i.e. if its use were mainly historical – but this is not the case. For researchers interested in spoken British English who do not have access to privately held spoken corpora this is unavoidable; the Spoken BNC1994 is still clearly the best publicly-accessible resource for spoken British English for the reasons outlined. Yet, as time has passed, the corpus has been used for purposes for which it is becoming increasingly less suitable. For example, a recent study by Hadikin (2014), which investigates the behaviour of articles in spoken Korean English, uses the Spoken BNC1994 as a reference corpus of present-day English. Appropriately, Hadikin (2014: 7) gives the following warning:

> With notably older recordings [than the Korean corpora he compiled] […] one has to be cautious about any language structures that may have changed, or may be changing, in the period since then.

In this respect, Hadikin's (2014) work typifies a range of recent research which, in the absence of a suitable alternative, uses the Spoken BNC1994 as a sample of present-day English. The dated nature of the Spoken BNC1994 is demonstrated by the presence in the corpus of references to public figures, technology, and television shows that were contemporary in the early 1990s:

(1) Oh alright then, so if John Major gets elected then I'll still [unclear][14] (BNC1994 KCF)

(2) Why not just put a video on?[15] (BNC1994 KBC)

(3) Did you see The Generation Game?[16] (BNC1994 KCT)

It is clear, then, that there is a need for a new corpus of conversational British English to allow researchers to continue the kinds of research that the Spoken BNC1994 has fostered over the past two decades. This new corpus will also make it possible to turn the ageing of the Spoken BNC1994 into an advantage – if it can be compared to a comparable contemporary corpus, it can become a useful resource for exploring recent change in spoken English. The Spoken BNC2014 project enables scholars to realise these research opportunities as well as, importantly, allowing *gratis* public access to the resulting corpus.

2.3 Review of research based on spoken English corpora

2.3.1 Introduction

In this section I discuss the types of linguistic research that will likely benefit from the compilation of the Spoken BNC2014 by reviewing the most common trends in relevant published research between 1994 – when the Spoken BNC1994 was first released – and 2016. In section 2.3.2, I review research published in five of the most prominent journals in the field of corpus linguistics – research that mainly required open-access spoken corpora, or at least spoken corpora with affordable licences, in order to be completed. In section 2.3.3, I assess the role of spoken corpora in the development of English grammars, a process in which the question of availability to the public is irrelevant in some cases as the publisher allows the authors access to spoken resources they possess. I conclude that there are limitations in the research, caused by the

[14] John Major was Prime Minister of the United Kingdom between 1990 and 1997.

[15] The VHS tape cassette, or 'video', was a popular medium for home video consumption in the 1980s and 1990s before the introduction of the DVD in the late 1990s.

[16] The Generation Game was a popular British television gameshow which was broadcast between 1971 and 2002.

problems outlined in the previous section, which could be addressed by the compilation of the Spoken BNC2014.

2.3.2 Corpus linguistics journals

The aim of this section is to critically discuss a wide-ranging selection of published research based on spoken corpora (of conversational British English and other language varieties). The purpose of this is to discuss the extent to which:

(a) spoken corpora have been found to be crucial to the advancement of knowledge in a range of areas of research;
(b) there are avenues of research that could be 'updated' by new spoken data; and, therefore,
(c) there is reason to compile a new corpus of modern-day British English conversation.

In the case of the Spoken BNC1994, Leech (1993: 10) predicted that the corpus would be particularly useful for "linguistic research, reference publishing, natural language processing by computer, and language education". This section aims to assess how this corpus, and other corpora containing spoken data, has actually been put to use in published research. To do this I searched the archives of five of the most popular journals which publish research in corpus linguistics[17] (the dates in parentheses refer to the year in which the journals were established):

- *International Computer Archive of Modern and Medieval English (ICAME) Journal* (1979-)
- *Digital Scholarship in the Humanities (DSH) Journal* (formerly *Literary and Linguistic Computing*) (1986-)
- *International Journal of Corpus Linguistics (IJCL)* (1996-)
- *Corpus Linguistics and Linguistic Theory (CLLT) Journal* (2005-)
- *Corpora Journal* (2006-)

For the *ICAME* and *DSH* journals, I considered only the volumes that were published from the year 1994 and onwards; for the other three journals I searched all volumes. I chose 1994 as the starting point because it is year that the BNC1994 was completed and began to be made publicly

[17] By selecting only the output of five journals from the years 1994-2016, I am ignoring the many other outlets, including monographs, edited collections and conference proceedings, that contain original spoken corpus research. The purpose of this choice is simply to illustrate the ways in which existing spoken corpora have been used, and to attempt to predict the types of research for which the Spoken BNC2014 may be used.

available for research (Burnard 2002: 10). Since the Spoken BNC1994 was "the first corpus of its size to be made widely available" (Burnard 2002: 4), corpus research into spoken language prior to the BNC1994's publication used smaller bodies of data that were harder to access from outside their host institution. Such research, therefore, is harder to verify and compare to more recent spoken corpus studies, and so 1994 was the most appropriate place to start my search.

I retrieved papers that draw upon spoken corpora containing conversational data, omitting those that drew upon data which would be considered exclusively task-oriented (in Section 3.1, p. 22, I explain the rationale behind our choice to gather only conversational data for the Spoken BNC2014). However, articles that draw upon corpora containing both types (e.g. the Spoken BNC1994) were included. Likewise, I included research that used a mixture of spoken and written corpora; the findings from the spoken data were considered relevant to my aim (I found that many articles use corpora of written and spoken data together as a whole). The following review is based upon the research of a total of 140 papers, published by the five journals between the years 1994-2016. As shown in Table 1, this represents 14.23% of all articles (excluding editorials and book reviews) published by these journals in this period, and the highest relative frequency of articles selected for this review was generated by *Corpus Linguistics and Linguistic Theory* (20.93%).

Table 1. Proportion of selected articles relative to the total number of articles published by each journal between 1994 and 2016.

Journal	**Freq. selected articles**	**Freq. articles (1994-2016)**	**% of all articles (1994-2016)**
ICAME	23	125	18.40
DSH	7	707	0.99
IJCL	69	372	18.55
CLLT	27	129	20.93
Corpora	14	114	12.28
Total	140	1447	14.23

Firstly, it is evident that spoken data has been relied upon in a considerable proportion of (corpus) linguistic research; based on the research articles retrieved in my search, much appears to have been said about the nature of spoken language. Secondly, it appears that research is dominated by the English language; 117 out of the 140 studies use at least one corpus containing some variety of English. Of these, 77% use British English data. It is not clear whether this reflects in part the early domination of British English in the field of English Corpus Linguistics (ECL) (McEnery & Hardie 2012: 72), or whether these journals happen to favour publishing research which includes British English data, or both. Despite this, there has been considerable research on spoken corpora of other languages, including:

- Belgian Dutch (Grondelaers & Speelman 2007)
- Brazilian Portuguese (Berber Sardinha et al. 2014)
- Columbian Spanish (Brown et al. 2014)
- Danish (Henrichsen & Allwood 2005, Gregersen & Barner-Rasmussen 2011)
- Dutch (Mortier & Degand 2009, Defranq & de Sutter 2010, van Bergen & de Swart 2010, Tummers et al. 2014, Rys & de Cuypere 2014, Hanique et al. 2015)
- Finnish (Karlsson 2010, Helasvuo & Kyröläinen 2016)
- French (Mortier & Degand 2009, Defranq & de Sutter 2010)
- German (Karlsson 2010, Schmidt 2016)
- Korean (Kang 2001, Oh 2005, Kim 2009, Hadikin 2014)
- Mandarin Chinese (Tseng 2005, Xiao & McEnery 2006, Wong 2006)
- Māori (King et al. 2011)
- Nepali (Hardie 2008)
- Norwegian (Drange et al. 2014)
- Russian (Janda et al. 2010)
- Slovene (Verdonik 2015)
- Spanish (Sanchez & Cantos-Gomez 1997, Butler 1998, Trillo & García 2001, de la Cruz 2003, Biber et al. 2006, Santamaría-García 2011, Drange et al. 2014)
- Swedish (Henrichsen & Allwood 2005, Karlsson 2010)

Overall, the studies can be categorised into several general areas of linguistic research, including, most prominently (numbers in brackets indicate frequency):

- cognitive linguistics (6),
- discourse analysis/conversation analysis (15),
- grammar (59),
- language teaching/language acquisition (9),
- lexical semantics (17),
- sociolinguistics (17).

Other less frequently occurring linguistic sub-disciplines include pragmatics (e.g. Ronan 2015), morphology (e.g. Moon 2011) and – emerging only recently (since 2014) – phonetics (e.g. Fromont & Watson 2016), as well as methodological papers about corpus/tool construction (e.g. Andersen 2016, Jacquin 2016, Schmidt 2016). Together, these areas seem to generally match with the predictions of Leech (1993). However, it is apparent that the findings of some groups of papers work together coherently towards some shared goal, whereas others appear to select one aspect of language and report on its use, filling gaps in knowledge as they are identified. Starting with those which do appear to have achieved coherence, I will describe this difference with examples.

The first area which does appear to produce sets of research that link clearly between one another is the application of corpus data in cognitive/psycho-linguistic research. Interestingly this is an area for which Leech (1993) did not predict spoken corpora such as the Spoken BNC1994 would be of use. Articles reporting in this area of research did not become prominent in the journals considered here until the second half of the 2000s. Typically, these studies present comparisons of traditionally-elicited data with frequency information from large representative corpora. For example, Mollin (2009) found little comparability between word association responses from psycholinguistic elicitation tests and collocations of the same node words in the BNC1994. She concluded that despite the value of elicitation data, it can say "little about language *production* apart from the fact that it is a different type of task" (Mollin 2009: 196). Likewise, McGee (2009) carried out a contrastive analysis of adjective-noun collocations using the BNC1994 and the intuitions of English language lecturers, generating similar results. It seems that the shared goal of investigating the relationship between elicitation and corpus data is the driving motivation for both pieces of research, irrespective of domain or topic.

A similar claim can be made of language teaching. It seems that the overarching effort is to assess the extent to which corpus data can be used in the teaching of language. Because of this clearly defined aim, it is not difficult to see how individual studies relate to one another. Grant (2005) investigated the relationship between a set of widely attested so-called 'core idioms' and their frequency in the BNC1994, finding that none of the idioms occurred within the top 5,000 most frequent words in the BNC1994. She concluded, however, that corpus examples of idioms would be useful in pedagogy to better equip learners for encountering idiomatic multi-word units and the common contexts in which they occur (Grant 2005: 448). Likewise Shortall (2007) compared the representation of the present perfect in ELT textbooks with its occurrence in the spoken component of the Bank of English. He found that textbooks did not adequately represent the actual use of the present perfect (based on corpus frequency), but that "pedagogic considerations may sometimes override" this reality for the purpose of avoiding over-complication in teaching (Shortall 2007: 179). Though these studies do select individual features, both investigations appear to contribute convincingly towards a shared goal.

Other streams of research do not appear to have such explicitly stated shared applications; however, the broader value of the research is implicitly understood by the research community. For example, it seems that the study of spoken grammar is very popular (42% of the articles in my review). These articles tend to produce findings about a variety of seemingly unrelated features, filling gaps in knowledge about grammar. There is less of an explicitly stated shared purpose than the previous areas described. For example, research papers based on the BNC1994 have analysed features such as adjective order (Wulff 2003), *-wise* viewpoint adverbs (Cowie 2006), pre-verbal gerund pronouns (Lyne 2006), the *get*-passive (Rühlemann 2007), embedded clauses (Karlsson 2007), future progressives (Nesselhauf & Römer 2007), progressive passives (Smith & Rayson 2007), quotative *I goes* (Rühlemann 2008), linking adverbials (Liu 2008), catenative constructions (Gesuato & Facchinetti 2011), dative alternation (Theijssen et al. 2013), satellite placement (Rys & de Cuypere 2014) and pronouns (Timmis 2015, Tamaredo & Fanego 2016).

Likewise, research papers that address sociolinguistic variation seem to report on a wide range of features. For example, using the Spoken BNC1994's own domain classifications, Nokkonen (2010) analysed the sociolinguistic variation of *need to*. Säily (2011) considered variation in terms of morphological productivity, while the filled pauses *uh* and *um* were investigated in both the BNC1994 and the London-Lund Corpus (Tottie 2011). Evidently there is little relation between studies such as these, at least in terms of their results.

The motivation behind choosing a particular feature appears to be that of gap-filling; finding some feature of language that has yet to be investigated in a certain way and laying claim to the 'gap' at the beginning of the article. Take, for example, the opening paragraph of Nesselhauf and Römer (2007: 297, emphasis added):

> While the lexical-grammatical patterns of the future time expressions *will*, *shall* and *going to* have received a considerable amount of attention, particularly in recent years […] the patterns of the progressive with future time reference (as in *He's arriving tomorrow*) have hardly been empirically investigated to date. […] In this paper, we would like to contribute to **filling this gap** by providing a comprehensive corpus-driven analysis of lexical-grammatical patterns of the progressive with future time reference in spoken British English.

Here the justification for the study is simply that the future progressive has been the subject of little research thus far. Although there is no explicit discussion of how the investigation of the future progressive would contribute valuably to some body of knowledge about grammar, it is clear in this and the other studies considered that a broader understanding of language is being contributed to by this work.

2.3.3 Grammars

A limitation of my study of journal articles is that I only considered research articles from five journals, published since 1994. It could be that my observation of largely isolated pieces of grammatical research, for example, is more a characteristic of journal publication rather than the state of affairs for research on spoken grammar. In this respect, it is important to consider how larger, potentially more comprehensive bodies of grammatical research have used spoken corpus data as evidence. In this section I take three recently published English language grammars and discuss their use of spoken corpora.

- The Cambridge Grammar of the English Language (Huddleston & Pullum 2002)

This is a "synchronic, descriptive grammar of general-purpose, present-day, international Standard English" (Huddleston & Pullum 2002: 2). It drew upon the intuitions of its contributors, consultations with other native speakers of English, dictionary data, academic research on grammar and, most relevantly, corpus data (Huddleston & Pullum 2002: 11). However, according to Huddleston and Pullum (2002: 13), it used:

- The Brown corpus (American English),
- The LOB corpus (British English),
- The Australian Corpus of English (ACE), and
- The *Wall Street Journal* Corpus.

None of these corpora contain spoken data. Aside from the lack of availability of spoken resources (the BNC1994 had not been released to scholars outside of the UK until after the grammar was in final draft), Huddleston and Pullum (2002: 12) justify their bias towards written data by claiming that speech is prone to error, and thus "what speakers actually come out with reflects only imperfectly the system that defines the spoken version of the language". For them, producing an accurate description of English is problematized by attempting to screen out the "slips and failures of execution" of spoken language (Huddleston & Pullum 2002: 12). In their view, written data, with its "slow rate of composition" (Huddleston & Pullum 2002: 12) is superior for the description of grammatical facts because it represents the intended message of the writer more directly.

This "written-biased view" (Lüdeling & Kytö 2008: vi) of corpus data is not only grounded in the dearth of available spoken corpora, but more prominently in judgements about the superiority of writing as a source of corpus evidence. Despite this, Huddleston and Pullum (2002: 13) claim to have provided a description "that is neutral between spoken and written English". Such a stance on the inferiority of spoken language data is reminiscent of the grammars of the 1970s and 1980s which, according to McEnery and Hardie (2012: 84), viewed speech as "a debased form of language, mired in hesitations, slips of the tongue and interruptions".

- The Cambridge Grammar of English (Carter & McCarthy 2006)

The view of some that a spoken grammar "is only present in some bastardised form" (as reported by McEnery & Hardie 2012: 85) sharply contrasts with that of Brazil (1995), whose "courageous and innovative" book, *A Grammar of Speech*, presented a grammar that placed speech "in central position" (John Sinclair, foreword, in Brazil 1995: xiv). Not only was spoken grammar said to be entirely distinct from existing grammars of written English, but it did away with the notion of the sentence and framed spoken language within the context of "pursuing some useful communicative purpose" (Brazil 1995: 2).

Though Brazil's view has since been described as an "opposite extreme" (McEnery & Hardie 2012: 85) of that of Huddleston and Pullum (2002), the *Cambridge Grammar of English* (Carter & McCarthy 2006) did ensure that spoken English was given fair consideration. Not only did it recognise the importance of spoken corpus data as evidence of language use, but it provided a "useful characterisation…of the distinctive features of spoken grammar" (McEnery & Hardie 2012: 86). To do this Carter and McCarthy (2006) used the five-million-word Cambridge and Nottingham Corpus of Discourse in English (CANCODE), which, as described in Section 2.2.2, is hosted privately by Cambridge University Press, their publishers. They acknowledged that:

> grammar…varies markedly according to context…whether [speakers] are at a dinner party, in a classroom, doing a physical task, in a service transaction in a shop, or telling a story. (Carter & McCarthy 2006: 3b)

This reflects an approach that, while still separating written grammar from spoken grammar, ensures that the latter's pervasiveness in life is not ignored. In this light it may be viewed as a compromise between the approaches of Huddleston and Pullum (2002) and Brazil (1995). Perhaps more importantly, it may be viewed as an illustrative example of a comprehensive, coherent selection of observations about English that is based on spoken corpus data and which contrasts to the research published in corpus linguistics journals.

- The Longman Grammar of Spoken and Written English (LGSWE) (Biber et al. 1999)

Biber et al. (1999) used the 40-million-word *Longman Spoken and Written English* corpus to inform their grammar of English. This is another example of work undertaken by authors who had access to privately hosted material. Their corpus contains nearly four million words of British English conversation as well as 2.5 million words of American English conversation and six million words of non-conversational speech (Biber et al. 1999: 25). The LGSWE claimed that grammatical differences between speech and writing "are largely a matter of degree rather than absolute distinctions" (McEnery & Hardie 2012: 87):

> The extensive linguistic differences between the conversational extracts and the science extract reflect the fundamental influence of register on grammatical choice. When speakers switch between registers, they are doing very different things with language. The present grammar therefore places a great deal of emphasis on register differences. (Biber et al. 1999: 24)

Rather than posing speech and writing as separate domains, Biber et al. (1999) sought to present grammar as a continuum of registers, among which there are speech-like and writing-like grammatical features. According to McEnery and Hardie (2012: 88), the LGSWE and Carter and McCarthy (2006) helped to achieve a shift from debates about a separate spoken grammar towards a description of English grammar that is "both flexible and dynamic" in respect to its use in both written and spoken contexts, though the views of Huddleston and Pullum (2002) still stand in opposition to this view.

2.4 Summary

I have described the state of affairs in terms of recently published research that uses spoken corpus data. The purpose of this is to identify the areas where I and the rest of the Spoken BNC2014 research team aim for the corpus to be most productive, and it seems that there are many. Many of the papers in my study of journal articles relied on access to corpora that was either free or affordable according to the researchers' budgets. Given the scarcity of data and lack of accessibility of spoken corpora and that research into British English, that often uses the outdated Spoken BNC1994 as a proxy for present-day English, appears to dominate, the production of the Spoken BNC2014 is a justifiable task for the improvement of such streams of research. Furthermore, it seems that spoken corpora have had success in the production of English grammars both in terms of informing comprehensive collections of research as well as helping to shape the theoretical direction of enquiry with regards to the nature of spoken language. The compilation of the Spoken BNC2014 has the potential to contribute to this very productively by providing a resource with which a new, up to date grammar of English can be published.

I have made the case that the Spoken BNC2014 – a new, publicly available, spoken corpus of conversational British English – is a resource that is in high demand and will likely help to improve several areas of linguistic research. What follows in this thesis is a critical discussion of the methodological decisions made with regards to the compilation of the Spoken BNC2014, followed by an analysis of the corpus, which aims to demonstrate its research potential. The first stage in the compilation of the Spoken BNC2014 was to make several decisions with regards to its design, and this is the focus of the next chapter.

3 Corpus design

3.1 Introduction

In this chapter, I focus on methodological issues of spoken corpus compilation with relation to corpus design, including general principles of design, recruitment, metadata and audio data. I consider them together because in this context, as I will show in the sections that follow, each of these areas of decision are governed by and in turn govern each other. Section 3.2 addresses design and speaker recruitment, assessing the extent to which the Spoken BNC1994 and related corpora have been compiled using a principled as opposed to opportunistic approach, and discussing our decision to embrace opportunism. Section 3.3 discusses metadata, showing how the approach to metadata collection taken by the Spoken BNC2014 has substantially improved the richness of speaker and text metadata available to users when compared to the Spoken BNC1994. It also discusses the new schemes for categorising age, linguistic region and socio-economic status which I have introduced for the Spoken BNC2014 metadata. Section 3.4 addresses audio data, justifying our decision to have contributors make recordings using their own smartphones rather than audio recording equipment provided by the research team – an innovation in spoken corpus compilation. By doing so we could facilitate the aforementioned opportunistic approach to data collection which required no training for contributors prior to recording.

3.2 Design & speaker recruitment

3.2.1 'Demographic' corpus data

In terms of corpus design, a key decision we made early on in the creation of the Spoken BNC2014 was to collect data which occurred only in informal contexts – i.e. data which would be comparable to the Spoken BNC1994DS. The rationale for gathering recordings from this single type of situational context is simply that I have noted there to exist greater use of, and demand for, conversational data. Researchers who wish to study spoken British English occurring in specific contexts, especially relatively public contexts, are able to collect their own, specialized corpora. Moreover, some such specialized corpora have been released publicly by their creators and are available to researchers with an interest in the defined context in question; examples include:

- the British Academic Spoken English Corpus (BASE), which contains university lectures and seminars (Thompson & Nesi 2001);
- the Cambridge and Nottingham Business English Corpus (CANBEC; Handford 2007);
- the Characterizing Individual Speakers (CHAINS) corpus, which represents a variety of speech styles (Cummins et al. 2006);
- the Nottingham Health Communication Corpus (Adolphs et al. 2004); and,
- the Vienna-Oxford International Corpus of English (VOICE), which comprises face to face interactions between speakers of English as a lingua franca (Seidlhofer et al. 2013).

So, researchers with an interest in context-governed English speech already have options open to them. However, a general corpus of informal speech, in private contexts, is harder to collect due to the requirements of size and demographic spread, and the difficulty of the context to access – and therefore, in consequence, it is much more in demand in the research community.

Another corpus design decision we faced was what we should do about the known shortcomings of the Spoken BNC1994DS. Most importantly, certain issues exist in the Spoken BNC1994DS in terms of its speaker metadata; it has been criticised for the "often unhelpful" and inconsistent availability of speaker metadata (Lam 2009: 176). Indeed, Burnard (2002: 7) admits that the classifications used to categorise speakers are sometimes "poorly defined" and "partially or unreliably populated". The sections that follow are dedicated to the Spoken BNC2014 research team's attempts to improve upon this situation.

3.2.2 Design of the Spoken BNC1994DS

As mentioned, there are known issues with regards to the design of the Spoken BNC1994DS. In this section, I explore these by discussing the three main categories of speaker metadata (gender, age and socio-economic status) that were gathered for the Spoken BNC1994DS, and the conflict between the aim for representativeness of design on the one hand and the practical constraints of what it is possible to achieve in reality on the other. This includes comparing the proportion of Spoken BNC1994 data collected for each of these demographic categories with the distribution of those categories in the 1991 UK census.

Every corpus compilation project is, by definition, a sampling project (Biber 1993: 243). The appropriateness of the sample depends on factors including the purpose of the research and the domain within which the data is being collected. In the case of the Spoken BNC1994DS, the demographic categories were divided into two types: "selection criteria" and "descriptive criteria" (Burnard 2002: 6). The selection criteria are the gender, age, socio-economic status and region of the speakers. The descriptive criteria were those which were not controlled during the collection of the data but which were recorded for information; these included the domain and type of speech recorded (Burnard 2002: 6).

The aim of the compilers of the Spoken BNC1994 was to enable research "for a wide variety of linguistic interests" (Wichmann 2008: 189). Part of this aim was to assemble a corpus that was as representative as possible of the language variety under investigation, i.e. "the language production of the population of British English speakers in the United Kingdom" (Crowdy 1993: 259). Hunston (2008: 60) defines representativeness as:

> the relationship between the corpus and the body of language it is being used to represent.

This implies that the compiler(s) of a representative corpus must have a good idea of the make-up of the body of language in the first place. This is a point acknowledged earlier by Biber (1993: 243), who claims that "a thorough definition of the target population" is one of the most important considerations when selecting a representative sample. Otherwise, a faithful relationship between the sample and the target population (i.e. representativeness) cannot be formed. The ease of this varies depending on the size of the population from which the sample is to be taken. For investigations of well-defined, specific domains of language (e.g. a small set of parliamentary speeches about a particular topic; see Love & Baker 2015), it is sometimes possible to collect all instances of the language used, and thus the corpus comprises the whole target population and is fully representative. On the other hand, the Spoken BNC1994 was sampled from a much larger domain of language. This presents a problem for those who doubt whether it is possible to identify the features of a domain sufficiently for a corpus to be able to claim representativeness of the whole (e.g. Nevalainen 2001; see also Crowdy 1993: 259). How can a corpus be 'representative' of 'the spoken British English language' if one cannot accurately say what does and does not constitute 'the spoken British English language'? This is a problem which, I argue, means that true representativeness is best thought of solely as an ideal (see Čermák 2009: 119), towards which corpus compilers should orient their designs, but not expect to reach in practice – especially not in the case of large national corpora.

Before the Spoken BNC1994 was completed, Crowdy (1993: 257) claimed that:

> **representativeness is achieved** by sampling a spread of language producers in terms of age, gender, social group, and region, and recording their language output over a set period of time. (emphasis added)

However, a compromise was clearly made between what would maximize representativeness and what was possible in practice. As Burnard (2002: 5) points out, “no-one could reasonably claim that the corpus was statistically representative of the whole language”, although he is clear that the combination of criteria for selection and description would at least encourage proportionality between, and variability within, the demographic groups (Burnard 2002: 6) – the component groups of each selection criterion were predetermined, and target proportions were assigned for each.

Table 2 shows how each demographic group from the Spoken BNC1994’s selection criteria were populated, according to the proportion of words produced by speakers.

Table 2. Proportions of words in Spoken BNC1994 assigned across each of the three selection criteria (adapted from Burnard 2000: 13).

Selection criterion	Demographic group	% words
Gender	Male	41.14
	Female	58.47
	Unknown	0.38
Age	0-14	6.30
	15-24	15.71
	25-34	20.16
	35-44	19.96
	45-59	22.76
	60+	15.08
Socio-economic status	AB	32.41
	C1	26.08
	C2	25.69
	DE	14.91
	Unknown	0.88

Without knowing how these groups were populated by all British English speakers in the early 1990s, it is difficult to tell how representative the distributions in Table 2 are. Comparing these proportions against population data from the 1991 UK census (the closest census to the time of the Spoken BNC1994’s compilation), the census data appears at least to indicate the state of the whole at the time.

The census data, as compared to the distribution of the selection criteria from Table 2, are shown in Figure 1 for gender and Figure 2 (overleaf) for age.[18] There is a fairly sizable gender imbalance favouring females in the BNC1994 data (58.5% female to 41.1% male). In terms of balance, this is problematic; however, Figure 1 shows that in the census data this imbalance does occur, albeit to a lesser extent (51.6% female to 48.4% male). So, while the design of the Spoken BNC1994DS is skewed in favour of females, a completely equal word count for both genders would have also failed to represent the UK population at the time.

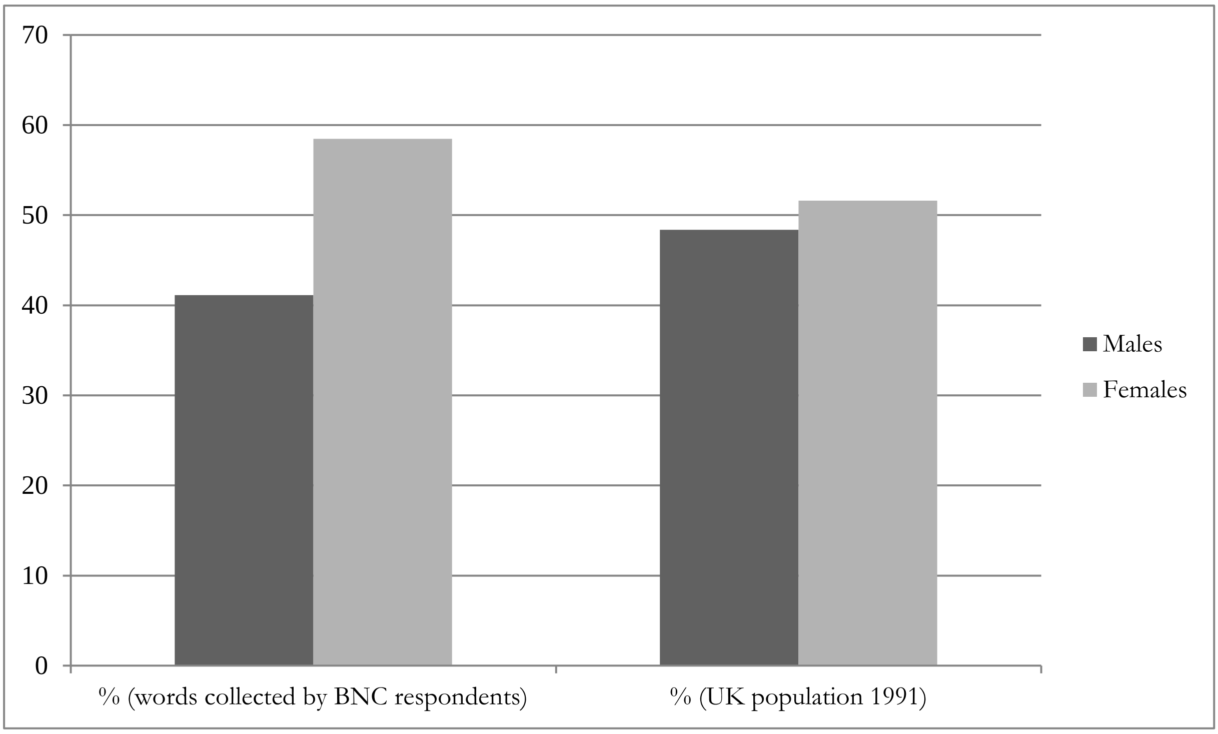


Figure 1. Comparison of gender distribution between the Spoken BNC1994 speakers (Burnard 2000: 13) and the UK (England, Wales and Scotland) population of "present residents: in households" in 1991 (NOMIS wizard query).

Moving to age (Figure 2, overleaf), the difference between that of the Spoken BNC1994 and the census data appears to be much greater than that of gender. While the highest proportion of speech is contained in the 45-59 category, the peaks in the census data occur at the youngest (0-14) and highest (60+) age categories. The largest disparity falls within the 0-14 category, whereby access to children and young teenagers as speakers was limited.

[18] Comparable socio-economic status data was unavailable so only gender and age comparisons were possible.

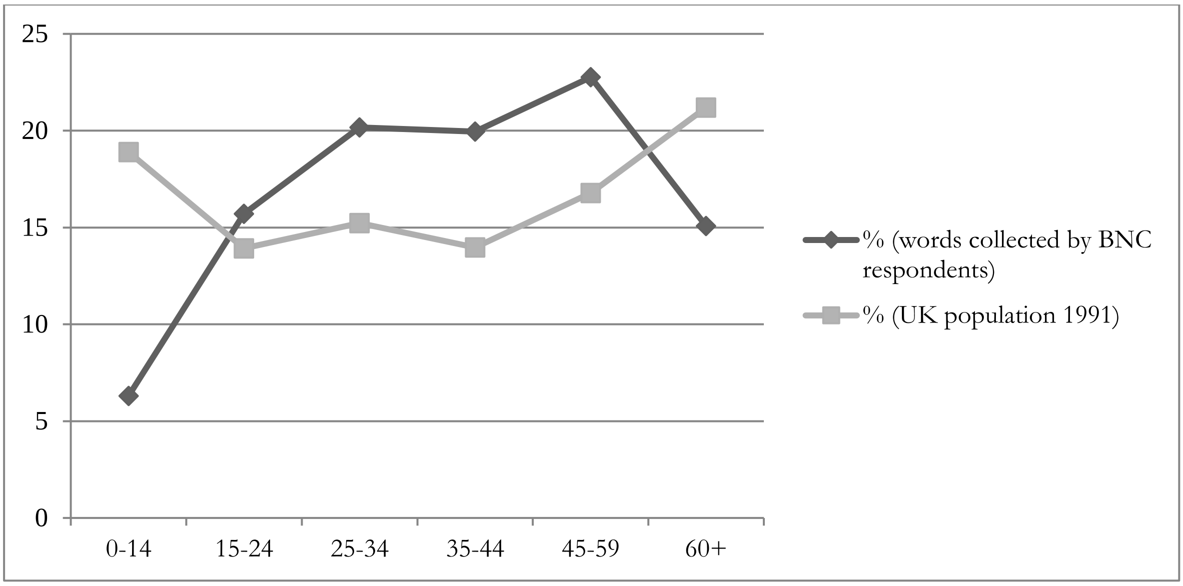


Figure 2. Comparison of age distribution between the Spoken BNC1994DS speakers (Burnard 2000: 13) and the UK (England and Wales only) population in 1991 (NOMIS wizard query).

In summary, males, children, and the elderly appear to have been underrepresented at the time. Despite creating a sampling frame for the selection criteria, the priority in practice seems to have been to collect as much data as possible and to accept the consequent imbalances in the corpus across the demographic groups. This may sound like a careless strategy, but I argue that this was the only reasonable approach given the costs associated with collecting spoken data. Furthermore, some researchers would go on to craft smaller subcorpora of the data, which were more balanced according to given metadata categories (e.g. BNC 64, Brezina & Meyerhoff 2014). This means that, despite imbalances across the corpus as a whole, it was still possible to analyse demographic groups of equal size if one was able and willing to work with a smaller data set. Making use of a geological metaphor, the Spoken BNC1994 can be viewed as containing a small 'core' of data with evenly balanced demographic categories, and a larger 'mantle' of additional data which, when combined with the core, produces a large but not balanced corpus.

3.2.3 Speaker recruitment in the Spoken BNC1994

For the Spoken BNC1994, the ACORN market research group was enlisted to recruit speakers (Crowdy 1993: 260). 38 locations (in England, Scotland, Wales and Northern Ireland, Rayson et al. 1997) were selected using "random location sampling procedures" (Crowdy 1995: 225). These were grouped into 12 regions as illustrated in Figure 3 (overleaf). According to Crowdy (1993: 260), the 12 sampling points (spread across three "supra-regions" – *North, Midlands* and *South*), were assigned as follows:

1. North
2. Yorkshire and Humberside
3. East Midlands
4. East Anglia
5. South East
6. Greater London
7. South West
8. Wales
9. West Midlands
10. Lancashire
11. Northern Ireland
12. Scotland

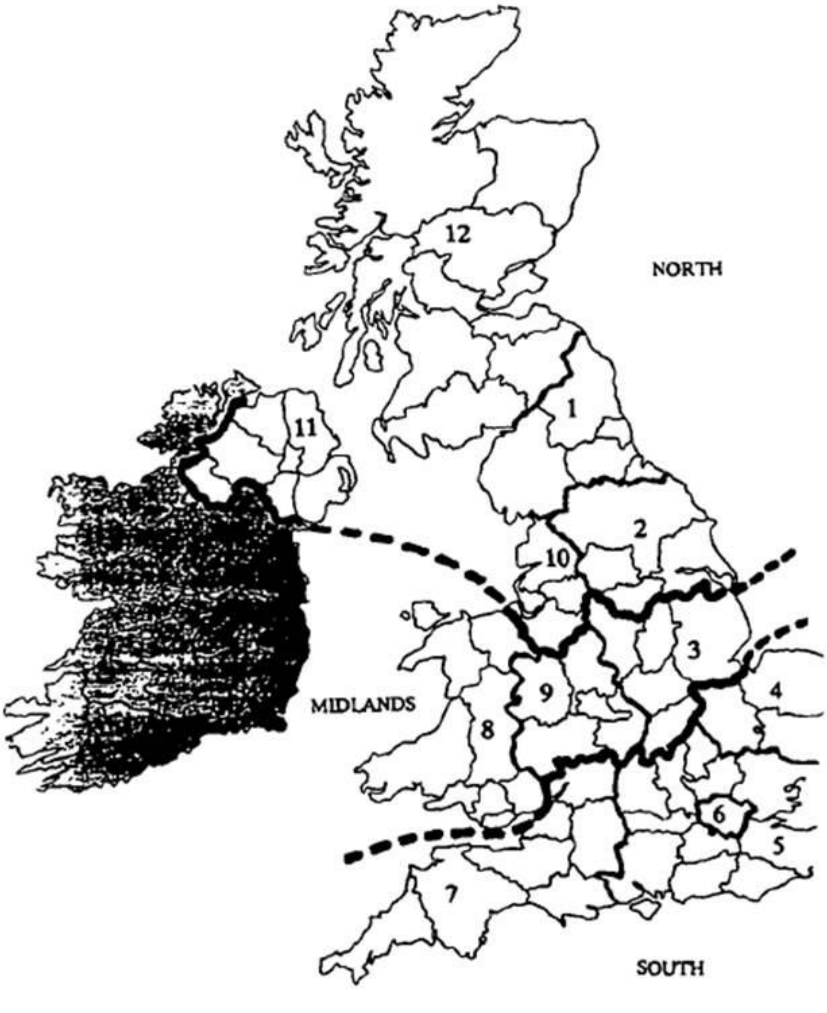


Figure 3. The Spoken BNC1994DS's geographic regions (reproduced from Crowdy 1993: 260).

Furthermore, the contributors (124 in total) were recruited in "equal numbers of men and women, equal numbers from each of the six age groups, and equal numbers from each of the four social classes" (Burnard 2000: 12). These contributors went on to make recordings containing a total of 1,408 speakers (including the contributors themselves). The demographic balance of the majority of speakers – those who were not recording the conversations – was not controlled. This approach is therefore largely opportunistic; beyond a small, balanced core of contributors, the Spoken BNC1994 research team accepted the recordings as they came, and in doing so accepted any associated imbalances in the demographic make-up of the speaker word counts.

3.2.4 Design & recruitment in other spoken corpora

Although it was clearly of interest for the Spoken BNC2014 research team to pay most attention to the approach to design taken by the compilers of the Spoken BNC1994, I want to touch upon what is known about the design of some other relevant spoken corpora. Table 3 (overleaf) summarises eight other spoken corpus compilation projects, focussing on whether a principled or an opportunistic approach to data collection was used. This shows that a variety of approaches have been taken with regards to spoken corpus design. Most of the corpora (CASE, CorCenCC, FOLK, ICE-GB, SCOTS and Wordbanks Online) have been designed using a principled approach, with a strict sampling frame established before data collection began. At least two (CorCenCC and SCOTS), however, appear to have supplemented this approach with opportunistic data collection, although explicit discussion of this is hard to come by in the available documentation for the corpora under review in Table 3. The only explicit discussion of opportunism I could find was by Douglas (2003: 34): "opportunism, although often a necessary evil, is not necessarily indefensible so long as the collection method itself is transparent".

Examples of opportunism which are more obvious, but not explicitly framed as such, can be found. BBC Voices took a similar approach to the Spoken BNC1994 with regards to recruiting a balanced selection of contributors who would go on to produce recordings with anyone of their choosing. Furthermore, the SBCSAE attempted to capture a representative sample of American English from across the entire country, but its small size (250,000 words) makes it seem unlikely that a representative sampling frame could have been adopted; given the great linguistic diversity of English in the United States, a quarter of a million words does not appear to afford sufficient opportunity to capture that diversity.

Table 3. Approach to corpus design taken by the compilers of a variety of spoken corpora.

Spoken corpus	Variety/type/time	Approach to corpus design	Reference(s)
BBC Voices	British English, casual group interviews, 2000s	Balance according to the region of the BBC journalists making the recordings. No sampling frame for representativeness of speakers thereafter, according to any features. "Decisions about whom to record did, however, take into account a desire to capture well establish local varieties" (Robinson 2012: 24).	Robinson (2012)
CASE Corpus of Academic Spoken English	English as a Lingua Franca, academic Skype conversations, 2010s	Pre-determined sampling frame established. Students of the project researchers conducted and participated in the recordings with their academic peers.	Diemer et al. (2016)
CorCenCC National Corpus of Contemporary Welsh	Welsh, variety of interaction types, 2010s	Carefully designed sampling frame. However, a mixture of targeted recruitment of volunteers and public crowdsourcing via a smartphone app (see Section 3.2.6).	Knight et al. (2016)
FOLK Research and Teaching Corpus of Spoken German	German, variety of interaction types, 2010s	Strict sampling frame. Priority is variety of interaction types. "FOLK also attempts to control for some secondary variables, like regional variation, sex and age of speakers, in order to achieve a balanced corpus." (Schmidt 2016: 398)	Schmidt (2016)
ICE-GB International Corpus of English - Great Britain	British English, variety of interaction types, 1990s	Strict sampling frame. The small size of the corpus (one million words) implies that contributors were recruited directly rather than via a public participation campaign.	Nelson et al. (2002); UCL Survey of English Usage (2016)
SBCSAE Santa Barbara Corpus of Spoken American English	American English, variety of interaction types (primarily casual conversation), 1990s	Clear attempt to sample according to a variety of regions, but it seems unlikely that a strict sampling frame for other speaker metadata categories was used.	Du Bois et al. (2000-5)
SCOTS Scottish Corpus of Texts and Speech	Scots and Scottish English, variety of interaction types, 2000s (mostly)	Sampling frame, supplemented by opportunistic approaches. "Although opportunistic corpus building has often been dismissed, and in some cases with justification, as being unscientific and unrepresentative, it can be a pragmatic, and if treated cautiously, an illuminating point of entry." (Douglas 2003: 34)	Douglas (2003); SCOTS (2013)
Wordbanks Online Bank of English	Mostly British English, variety of interaction types, 2000s (mostly)	Balanced subset of the COBUILD (Collins Birmingham University International Language Database) corpus – retrospective sampling of an existing corpus.	Collins (2017)

3.2.5 General approach to design in the Spoken BNC2014

It seems, then, that the pragmatic approach taken by the Spoken BNC1994 research team has had to be followed by some others too, though they have followed the approach by default rather than in an explicit fashion. In this section, it is my aim to make explicit our decision to take an approach which is almost entirely opportunistic in nature, and to explain why it is not, in the case of the Spoken BNC2014, a "necessary evil" (Douglas 2003: 34), but rather an optimum approach to contemporary spoken corpus compilation.

Reflecting on the Spoken BNC1994's approach to design and representativeness described above, it was clear to us that using the corpus as a template sampling frame for the sake of comparability was an unreasonable aim. Even if we had taken this approach – carefully selecting speaker and recording types which matched with those in the Spoken BNC1994DS – it is known that two or more corpora collected using the same sampling frame are not guaranteed to be entirely comparable (Miller & Biber 2015). Instead, we set out to collect a corpus under conditions which would not constrain us to perfectly match the Spoken BNC1994DS. A new corpus of conversational L1 British English was to be collected, but it was not to be a contemporary carbon copy of the original. However, we did adopt similar principles to those of the BNC1994, including acceptance of the data that became available, while monitoring the levels of the demographic categories to be alerted to any imbalances that were severe. This is what I call an 'opportunistic approach' to data collection. If any such 'holes' in the data began to appear, we attempted to address these by targeting those specific groups of people – variously through Facebook and Twitter advertisement campaigns, student recruitment campaigns at universities, and press releases which targeted speakers of a particular age, or from a certain geographical region (see Section 3.2.6). The resulting data set (see Love et al. 2017b) represents an improvement in balance when compared to the Spoken BNC1994 – some categories are well balanced (e.g. northern vs. southern speakers) and some categories are better populated than they would have been had we not monitored the numbers and targeted specific social groups (e.g. elderly speakers). However, there are some effective interventions and some less effective interventions – one intervention we made to address an issue had no appreciable impact, hence there is a major trough being the dearth of speakers from Scotland, Wales and Northern Ireland in the corpus. Yet this lack is acceptable as spoken corpora of English spoken by people from these countries have been collected and made available since the release of the Spoken BNC1994. The previously mentioned SCOTS (Douglas 2003) contains approximately one million words of Scottish English speech – most of which was collected in the 2000s. The Bangor Siarad corpus (Deuchar et al. 2014) contains 450,000 words of bilingual Welsh-English spontaneous speech collected between 2005 and 2008. ICE-Ireland (Kallen & Kirk 2008) comprises approximately 300,000 words of spoken data collected from speakers of Northern Irish English in the mid-1990s to early 2000s. Hence much as the COLT corpus helped to balance off the data in the BNC1994, so these corpora could be used with the same function with the BNC2014. What is important is the production of an 'English English' spoken corpus. As discussed in Section 2.2 (p. 7), no comparable corpus containing 'English English' has been made publicly available since the Spoken BNC1994DS; and so we prioritized collecting data for England, as that is where the greatest need lay.

This prioritization of England does mean that the Spoken BNC2014 is not a properly balanced corpus if taken as a whole. Yet, as noted, it was no more designed to be so than the Spoken BNC1994 was. Our resolution is to explicitly facilitate the analysis of the Spoken BNC2014 both as a full, unbalanced version (maximising the virtue of size), and also as the "core" on its own (a smaller, balanced subcorpus derived from the whole corpus). The core subcorpus, developed initially for the BNC SDA (secondary data analysis) project (Reichelt 2017), contains an approximately equal number of tokens within each category for each of the following criteria: gender, age, socio-economic status, and English region. Users of the corpus in Lancaster University's CQPweb server are able to move between the entirety of the corpus and the core subcorpus as they wish, so that they can select whichever fits better with the purpose at hand. The core/non-core status of different segments of the corpus will also be coded as metadata in the XML-format release of the data (see Chapter 6, p. 128). Similarly, users interested in varieties of English spoken on the Celtic fringes of the UK can use other corpora to supplement the Spoken BNC2014 for this purpose.

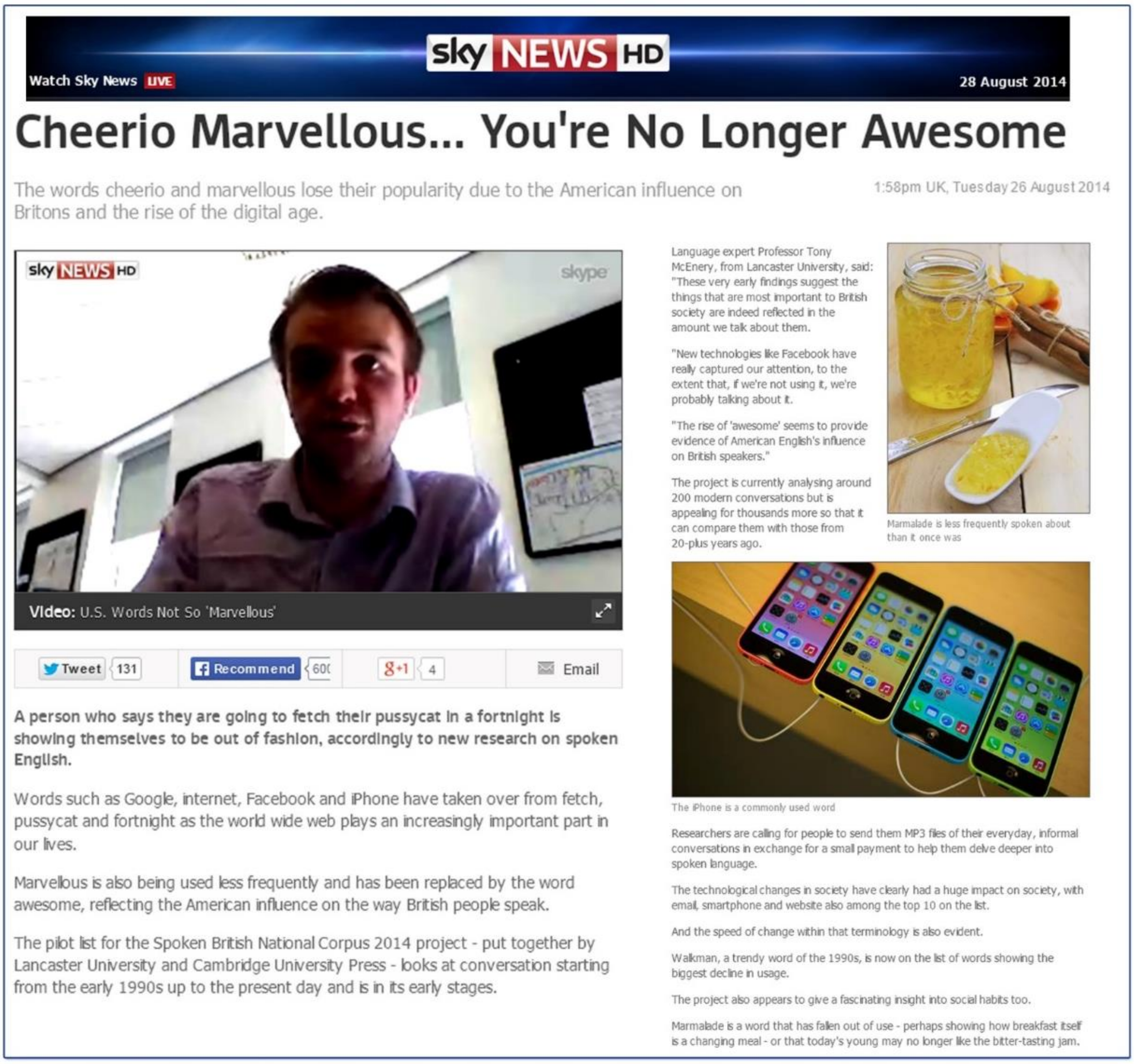
The alternative, principled approach – drawing up a sampling frame and actively seeking out recordings from particular groups of speakers – might well have produced a more representative or balanced corpus, but would, at the very least, have undoubtedly taken much longer to produce.[19] That would have worked against our aim to produce a corpus that can – for a while – be plausibly accepted as a proxy for present-day British English. It would also have been prohibitively time consuming and expensive to do this, which with a fixed level of resource available would necessarily lead to the end-result corpus being smaller by perhaps an order of magnitude.

[19] We found that that certain groups (e.g. NS-SEC groups 6 and 7, see Section 3.3.5) were less forthcoming with data than others, despite contributors being paid for providing us with recordings. Therefore, it is not guaranteed that a principled approach would produce a more balanced corpus, if some groups of the population are largely unwilling to contribute, even with the offer of payment.

3.2.6 Speaker recruitment in the Spoken BNC2014

Section 3.2.2 clearly shows that the Spoken BNC1994's careful demographic balancing of only the contributors (in lieu of balancing all of the speakers) does not produce a balanced corpus. Nor was it ever likely to; the 124 contributors would have encountered any combination of speakers during their recording slots, and had the total number of speakers distributed equally across age, gender, socio-economic status and region it would have been miraculous. With this in mind, the Spoken BNC2014's opportunistic approach to data collection (the merits of which have already been established in Section 3.2.5) went a step further than the Spoken BNC1994DS by applying no controlling mechanism to the demographic spread of contributors in the first place. Rather than recruit a market research company to carefully select a balanced core of contributors, one of the most innovative features of the Spoken BNC2014 is the use of PPSR (public participation in scientific research) for data collection (see Shirk et al. 2012). Anyone who was interested in contributing recordings to the Spoken BNC2014 was directed to a website which described the aims of the project and included a contact form to allow them to register their interest in contributing data. People who registered interest were contacted by the Cambridge team via email with further instructions. The primary method of capturing public attention was a series of national media campaigns in 2014 and 2015 (see e.g. Figure 4, overleaf). Using an initial two-million-word subcorpus collected by Cambridge University Press in 2012, I produced lists of words which had increased (e.g. *awesome*) and decreased (e.g. *marvellous*) in relative frequency to the greatest extent between the Spoken BNC1994DS and the 2012 data. These lists were written into press releases which proved very popular in the national UK press, and provided the most substantial intake of new contributors that the Cambridge team received.

In addition to the national media campaigns, we also participated in public engagement events such as the Cambridge University *Festival of Ideas* (Dembry & Love 2014) and the UK Economic and Social Research Council's *Festival of Social Sciences* (McEnery et al. 2014, Love 2015), where we shared early findings from a subset of the corpus and encouraged audiences to participate.



Cheerio Marvellous... You're No Longer Awesome

The words cheerio and marvellous lose their popularity due to the American influence on Britons and the rise of the digital age.

1:58pm UK, Tuesday 26 August 2014

A person who says they are going to fetch their pussycat in a fortnight is showing themselves to be out of fashion, accordingly to new research on spoken English.

Words such as Google, internet, Facebook and iPhone have taken over from fetch, pussycat and fortnight as the world wide web plays an increasingly important part in our lives.

Marvellous is also being used less frequently and has been replaced by the word awesome, reflecting the American influence on the way British people speak.

The pilot list for the Spoken British National Corpus 2014 project - put together by Lancaster University and Cambridge University Press - looks at conversation starting from the early 1990s up to the present day and is in its early stages.

Language expert Professor Tony McEnery, from Lancaster University, said: "These very early findings suggest the things that are most important to British society are indeed reflected in the amount we talk about them.

"New technologies like Facebook have really captured our attention, to the extent that, if we're not using it, we're probably talking about it.

"The rise of 'awesome' seems to provide evidence of American English's influence on British speakers."

The project is currently analysing around 200 modern conversations but is appealing for thousands more so that it can compare them with those from 20-plus years ago.

Marmalade is less frequently spoken about than it once was

The iPhone is a commonly used word

Researchers are calling for people to send them MP3 files of their everyday, informal conversations in exchange for a small payment to help them delve deeper into spoken language.

The technological changes in society have clearly had a huge impact on society, with email, smartphone and website also among the top 10 on the list.

And the speed of change within that terminology is also evident.

Walkman, a trendy word of the 1990s, is now on the list of words showing the biggest decline in usage.

The project also appears to give a fascinating insight into social habits too.

Marmalade is a word that has fallen out of use - perhaps showing how breakfast itself is a changing meal - or that today's young may no longer like the bitter-tasting jam.

Figure 4. Example of an online news article reporting on early findings from the Spoken BNC2014.

This does not mean that attempts to boost the number of speakers of a given demographic group were not made later on in the data collection stage. As mentioned in Section 3.2.5, some supplementary targeted recruitment was conducted when the research team identified 'holes' in the data. Methods included using targeted social media advertisements (e.g. targeting Facebook users from Cardiff), press releases specific to a particular social group (e.g. "Mum's the word…both then and now")[20] or by contacting colleagues from universities in

[20] http://languageresearch.cambridge.org/spoken-british-national-corpus/bnc2014-news/369-mum-s-the-word-both-then-and-now (last accessed September 2017).

sought after locations and asking them to spread word of the project. For example, the following email was circulated among linguistics students at the University of Glasgow in January 2016:[21]

> Dear students
>
> Imagine yourself sitting around with your friends or family, having a chat. You probably do this quite a lot, and it probably doesn't take that much effort.
>
> Now, imagine being paid to do just that!
>
> I am writing on behalf of Lancaster University and Cambridge University Press to offer you the opportunity to earn money by recording the audio of conversations between yourself and your friends or family.
>
> The idea is very simple – use your phone to record yourself chatting with whoever you choose, send the recordings to us, and earn up to £500 (at a rate of £18 per hour of recording)!
>
> The recordings will be transcribed and included in the Spoken British National Corpus 2014, which is a massive corpus of conversations from across the UK. While we have so far gathered lots of recordings from England, Scotland is lacking – so this is your chance!
>
> To register, and for more information, click the above link and follow the instructions.
>
> If you have any questions about the project, please contact corpus@cambridge.org
>
> Many thanks, and best wishes
> Robbie Love

Another recruitment method was designed to encourage eligible students from the Department of Linguistics and English Language (LAEL) at Lancaster University to make recordings while they were visiting home during the 2015 Christmas holiday. To do this I set up a bespoke 'LAEL Spoken Language Ambassadors' webpage with Cambridge University Press[22] and circulated a link to the webpage among students. This allowed us to specify types of speakers in whom we were most interested at the time (e.g. "We are particularly interested in employing Spoken Language Ambassadors who can make recordings with elderly people – perhaps a grandparent or other family member").

The recruitment of speakers for the Spoken BNC2014 can be characterised as a process of two stages. The first stage was, as described above, the recruitment of participants who would

[21] I am grateful to Professor Marc Alexander of the University of Glasgow for circulating this message among his students.

[22] http://languageresearch.cambridge.org/index.php?option=com_content&view=article&id=403&Itemid=362

record their conversations – the contributors. The second stage was for the contributors to choose people to record conversations with – speakers.[23] While the Cambridge team maintained direct contact with the contributors, it was not the case that they had direct contact with the speakers themselves. Instead, speakers were to receive all sufficient information about the project from the contributors. The design of this collection process (see Figure 5) is such that it placed great responsibility on the contributors, who were to mediate between both the researcher and the speakers. As described in the next two sections, this included:

- obtaining informed consent and gathering demographic metadata from the speakers;
- sending all data and recordings to the researcher at the end of the collection period; and in very few cases,
- being available for a post-data collection interview with the researcher (see below).

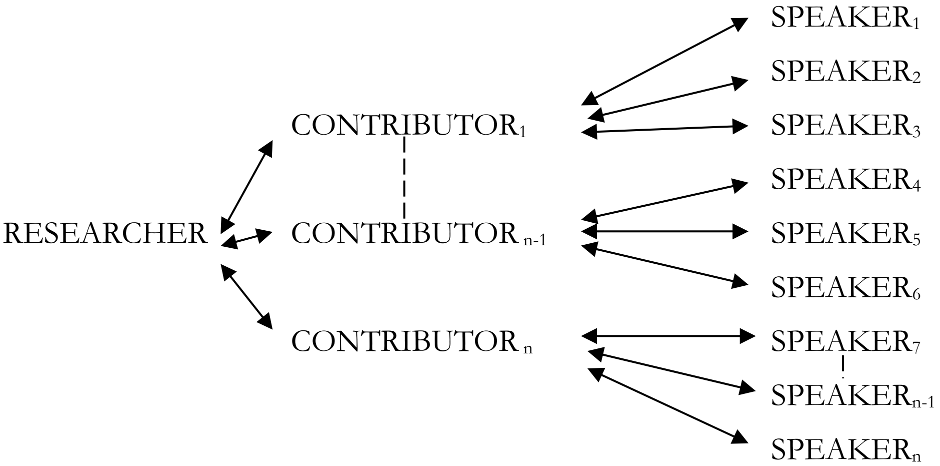


Figure 5. The relationship between researcher, contributor and speaker when compiling a spoken corpus (double-headed arrows indicate contact between the linked parties; dotted lines indicate that *n* is a theoretically unknown number that is only known in practice).

Because of the importance of the contributors to the success of the project, we incentivized participation in the Spoken BNC2014 by offering payment of £18 for every hour of recording of a sufficient quality for corpus transcription, and, importantly, submission of all associated consent forms and full speaker metadata (see Section 3.3.4). All speakers were required to give informed consent prior to recording, and contributors took responsibility for making recordings and for gathering consent and metadata from all speakers they recorded. We used this opportunity to gather metadata from each individual speaker directly, via the contributors, since

[23] In most cases contributors were also speakers in the recordings.

no contact was made between the research team and the speakers with whom the contributors chose to converse. To ensure that all information and consent was captured, no payments were made to contributors until all metadata, consent forms and related documentation was fully completed for each recording.[24]

For almost all contributors, participation in the project ended upon receipt of payment. However, to learn more about the experience of making recordings for the Spoken BNC2014, I invited three of the contributors (close family members of mine) to take part in interviews which were conducted after their participation in the data collection process was complete.[25]

As an indication of the modern-day utility of PPSR as a methodological approach to linguistic research, it is relevant to note two other research projects which have adopted this method. The National Corpus of Contemporary Welsh (Corpws Cenedlaethol Cymraeg Cyfoes, CorCenCC),[26] led by Dawn Knight at Cardiff University, has developed a smartphone application for the crowdsourcing of Welsh language conversational recordings which will be included in the corpus. The second project is English Dialects,[27] led by Adrian Leemann at the University of Cambridge, which in 2017 launched a smartphone app, prompting users to select how they pronounce certain words, contributing to a national database of contemporary dialect data.

3.3 Speaker and text metadata

3.3.1 Introduction

As discussed in Sections 3.2.5 and 3.2.6, the Spoken BNC2014 research team opted for an opportunistic approach to corpus design and the recruitment of speakers. A further decision we had to make concerned the metadata we were to collect about (a) the speakers and (b) the recordings themselves. The collection of metadata is an extremely important step in the compilation of a spoken corpus, as it affords the creation of subcorpora which can be defined according to different features of the speakers (e.g. age) or conditions of the recordings themselves (e.g. number of speakers in the conversation). I henceforth refer to the former type as 'speaker metadata' and the latter as 'text metadata'. For the latter, I use the word 'text' rather than 'recording' because the process of transcription does produce text representations of the

[24] All data is stored and analysed in compliance with the UK Data Protection Act 1998.

[25] These contributor interviews were recorded and transcribed for later reference (see Appendix A, p. 207 and Appendix B, p. 210). The guide sheet I used in these interviews can be found in Appendix C (p. 213). Excerpts from these interviews are used in Section 3.3.5 of this chapter and in Section 7.3.2 (p. 155).

[26] http://www.corcencc.org/ (last accessed September 2017).

[27] http://www.cam.ac.uk/research/news/do-you-say-splinter-spool-spile-or-spell-english-dialects-app-tries-to-guess-your-regional-accent (last accessed September 2017).

original spoken discourse (see Chapter 4, p. 77). Users of the corpus encounter the data in text form, and so it is logical to conceive of the data as such.

3.3.2 Metadata in the Spoken BNC1994

Turning again to the Spoken BNC1994, it is useful to consider the lessons learnt with regards to the practicalities of collecting the speaker and text metadata. Before the full corpus was compiled, Crowdy (1993) ran a small pilot study, using only 14 recruits, and investigated a series of issues that would inform decisions made in the compilation of the Spoken BNC1994. The speaker metadata categories that Crowdy (1993: 265) collected in his pilot study are:

- Gender
- Age (exact age for contributors and approximation for speakers)
- Race (only for contributors)
- First language or language variety (for other speakers; all contributors were native British English speakers)
- Occupation (for contributors and for speakers where known)
- Education (only for contributors)
- Social group (based on interview)
- Relationship to person recording
- Other (only for contributors, based on interview)
- Dialect (exact for contributors and estimation for speakers)

The text metadata categories are:

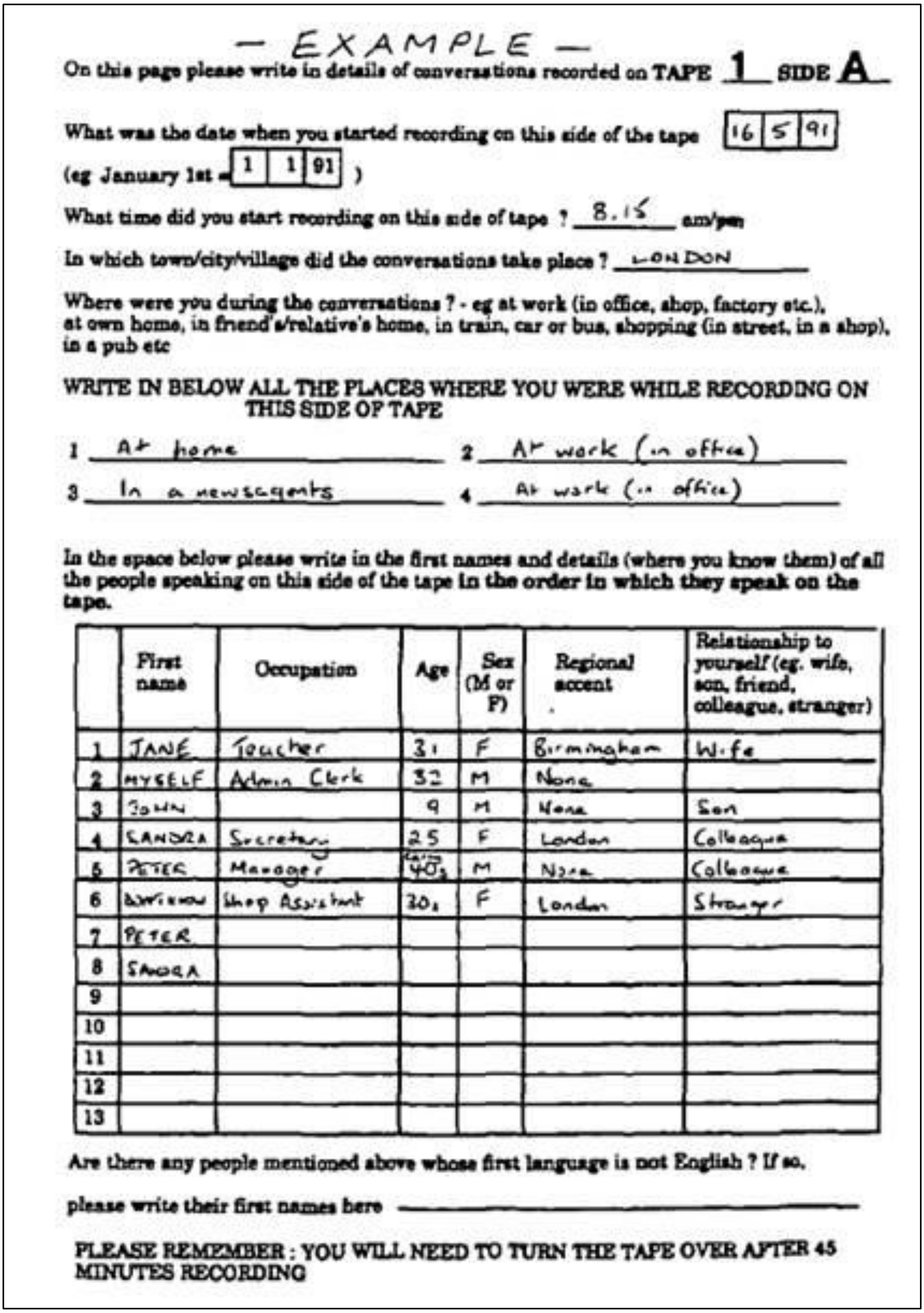
- Date
- Location of recording (this was then classified into a region for analytical use)

Contributors were evidently interviewed at some stage of the data collection process – presumably at the point at which they would return the recording equipment and tapes to the research team (see Section 3.4.2) – allowing further collection of speaker metadata.

Importantly, the responsibility to record the metadata was placed solely on contributors – the participants who recorded the conversations. Rather than asking speakers to provide their own information, the contributors were asked to note metadata about the people they recorded, based on their own knowledge. This was done using the conversation log (Figure 6, overleaf), which shows that the information was expected to be provided by contributors on behalf of speakers. This approach meant that if categories like *age*, *education* or *occupation* were not known to the contributors, then they either guessed (e.g. by writing '*30+*' or '*50+*', Crowdy 1993: 265), or simply omitted this information. Other categories, like *race*, for example, were only recorded for the contributors, because "it was felt that the person recording could not be expected to make judgements about the race of other participants" (Crowdy 1993: 265). Therefore, information about the race of all speakers other than the contributors was not collected.

It is my presumption that the reason for not asking speakers to provide metadata themselves was to avoid intrusiveness. Bearing in mind the surreptitious approach adopted in Spoken BNC1994DS, whereby "in many cases the only person aware that the conversation is being taped is the person carrying the recorder" (Crowdy 1993: 260), the benefit of this was that speakers were not inconvenienced further by having to provide personal information. The disadvantage of this approach, and perhaps one of the main explanations for the holes in the Spoken BNC1994's demographic metadata (Burnard 2002: 7), is that there was too much opportunity for linguistically useful speaker metadata simply not to be recorded. Even though the approach of Crowdy (1993) was to ask recruits to record data without informing speakers until afterwards, the speakers still had to give (retrospective) consent (Crowdy 1993: 261), and so there does seem to have been an opportunity for speakers to provide their own personal information. In terms of ethics, the surreptitious approach to data (and metadata) collection is no longer acceptable in UK social science research; the ethics procedures adopted by the Spoken BNC2014 research team are discussed in the next section.

It is my belief that relying on the contributors' knowledge of speakers in the way described above contributed to the attested gaps in the demographic categories in the Spoken BNC1994 (Burnard 2002). This could have occurred if the contributor did not know all of the information about each speaker they encountered, or if the contributor failed to collect information about some of the speakers they encountered in the first place.



— EXAMPLE —

On this page please write in details of conversations recorded on TAPE 1 SIDE A

What was the date when you started recording on this side of the tape | 16 | 5 | 91 |

(eg January 1st - | 1 | 1 | 91 |)

What time did you start recording on this side of tape ? 8.15 am/pm

In which town/city/village did the conversations take place ? LONDON

Where were you during the conversations ? - eg at work (in office, shop, factory etc.), at own home, in friend's/relative's home, in train, car or bus, shopping (in street, in a shop), in a pub etc

WRITE IN BELOW ALL THE PLACES WHERE YOU WERE WHILE RECORDING ON THIS SIDE OF TAPE

1 At home 2 At work (in office)

3 In a newsagents 4 At work (in office)

In the space below please write in the first names and details (where you know them) of all the people speaking on this side of the tape in the order in which they speak on the tape.

	First name	Occupation	Age	Sex (M or F)	Regional accent	Relationship to yourself (eg. wife, son, friend, colleague, stranger)
1	JANE	Teacher	31	F	Birmingham	Wife
2	MYSELF	Admin Clerk	32	M	None	
3	JOHN		9	M	None	Son
4	SANDRA	Secretary	25	F	London	Colleague
5	PETER	Manager	Early 40s	M	None	Colleague
6	UNKNOWN	Shop Assistant	30s	F	London	Stranger
7	PETER					
8	SANDRA					
9						
10						
11						
12						
13						

Are there any people mentioned above whose first language is not English ? If so,

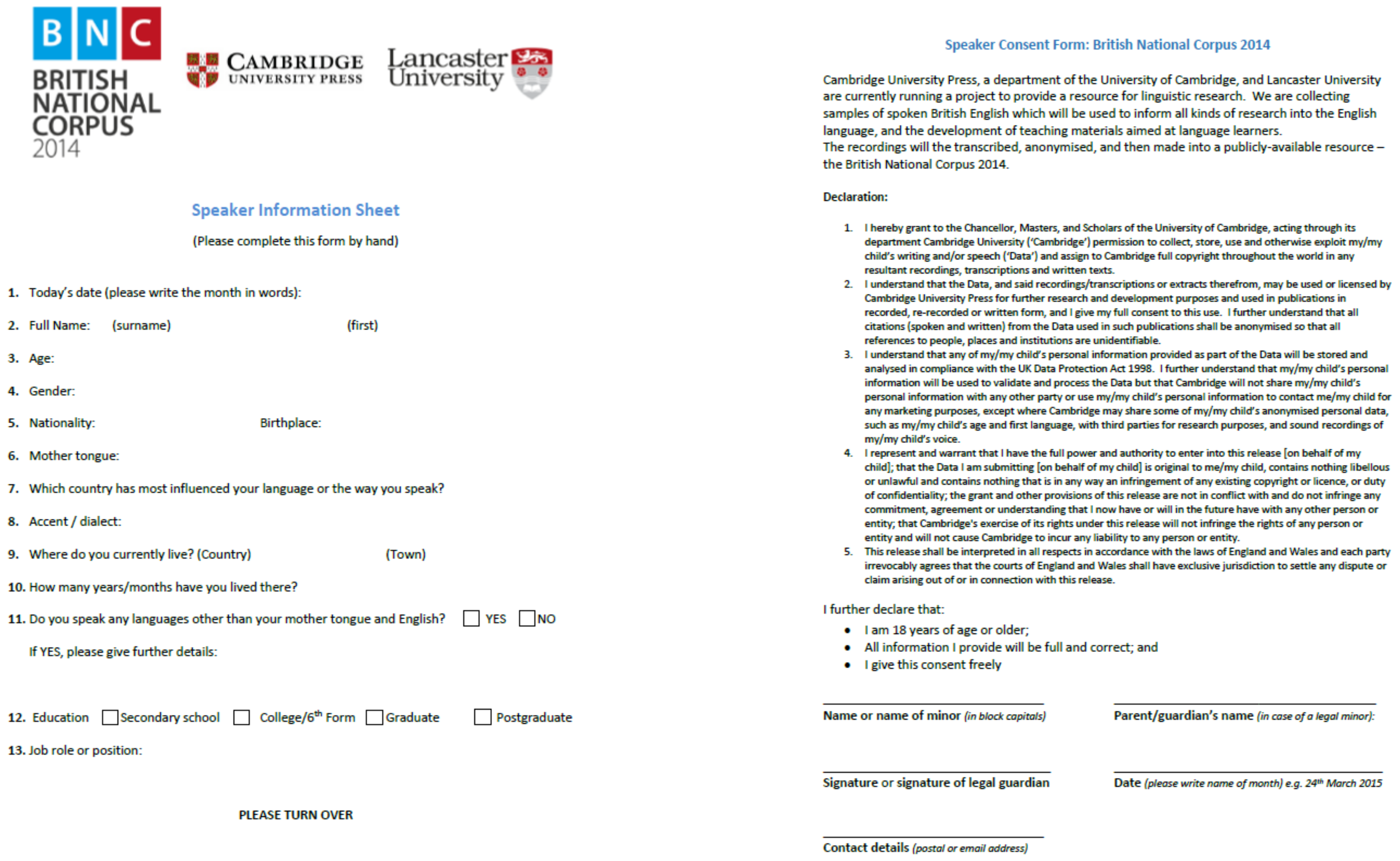
please write their first names here ________________

PLEASE REMEMBER : YOU WILL NEED TO TURN THE TAPE OVER AFTER 45 MINUTES RECORDING

Figure 6. Example of conversation log given to contributors in the Spoken BNC1994DS (reproduced from Crowdy 1993: 260).

3.3.3 Metadata collection in the Spoken BNC2014: procedure and ethics

In the Spoken BNC2014, we aimed to improve on the yield and precision of BNC1994 metadata by having all speakers who were recorded provide their own metadata instead. Contributors were provided with copies of the 'Speaker Information Sheet' (Figure 7 overleaf), and were instructed to have each speaker fill out a copy and return it to the contributor. The opportunity for this arose since all speakers had to individually sign a consent form anyway; and so the speaker metadata form was incorporated into the giving of consent, according to the ethics procedures of the Lancaster-CUP collaboration. This ties into the ethical issue of informed consent (Adolphs & Carter 2013: 10); as mentioned, the Spoken BNC1994DS was collected surreptitiously; the people who spoke with the contributors were (mostly) unaware that they were being recorded until they were informed afterwards, and asked to give consent (Burnard 2007). Nowadays, ethical principles in academic research dictate that all speakers must give informed consent before data collection commences (Adolphs & Carter 2013: 10), and that such consent includes "how recordings are to take place, how data is presented and outlines the research purposes for which it is used" (Adolphs & Carter 2013: 10). This corresponds with the British Association for Applied Linguistics' recommendations for good practice (BAAL 2000: 2), which state clearly that "deception is unacceptable", as well as Lancaster University's Faculty of Arts and Social Science (FASS) code of practice, which requires "appropriate informed consent" (FASS 2009: 6). This situation is reflected in non-academic practice too; CUP, a publishing body and therefore a commercial stakeholder of the project, must abide by similar procedures and has a legal team which advises for example on compliance with the UK Data Protection Act 1998. We decided that the easiest approach was to have Cambridge draft the consent form with their legal team, and for the consent of the speakers to be given directly to Cambridge. Cambridge then drafted a memorandum of understanding with Lancaster for the provision of the corpus texts.



BNC BRITISH NATIONAL CORPUS 2014

CAMBRIDGE UNIVERSITY PRESS

Lancaster University

Speaker Information Sheet

(Please complete this form by hand)

1. Today's date (please write the month in words):
2. Full Name: (surname) (first)
3. Age:
4. Gender:
5. Nationality: Birthplace:
6. Mother tongue:
7. Which country has most influenced your language or the way you speak?
8. Accent / dialect:
9. Where do you currently live? (Country) (Town)
10. How many years/months have you lived there?
11. Do you speak any languages other than your mother tongue and English? □ YES □ NO

    If YES, please give further details:

12. Education □ Secondary school □ College/6th Form □ Graduate □ Postgraduate
13. Job role or position:

PLEASE TURN OVER

Speaker Consent Form: British National Corpus 2014

Cambridge University Press, a department of the University of Cambridge, and Lancaster University are currently running a project to provide a resource for linguistic research. We are collecting samples of spoken British English which will be used to inform all kinds of research into the English language, and the development of teaching materials aimed at language learners.
The recordings will the transcribed, anonymised, and then made into a publicly-available resource – the British National Corpus 2014.

Declaration:

1. I hereby grant to the Chancellor, Masters, and Scholars of the University of Cambridge, acting through its department Cambridge University ('Cambridge') permission to collect, store, use and otherwise exploit my/my child's writing and/or speech ('Data') and assign to Cambridge full copyright throughout the world in any resultant recordings, transcriptions and written texts.
2. I understand that the Data, and said recordings/transcriptions or extracts therefrom, may be used or licensed by Cambridge University Press for further research and development purposes and used in publications in recorded, re-recorded or written form, and I give my full consent to this use. I further understand that all citations (spoken and written) from the Data used in such publications shall be anonymised so that all references to people, places and institutions are unidentifiable.
3. I understand that any of my/my child's personal information provided as part of the Data will be stored and analysed in compliance with the UK Data Protection Act 1998. I further understand that my/my child's personal information will be used to validate and process the Data but that Cambridge will not share my/my child's personal information with any other party or use my/my child's personal information to contact me/my child for any marketing purposes, except where Cambridge may share some of my/my child's anonymised personal data, such as my/my child's age and first language, with third parties for research purposes, and sound recordings of my/my child's voice.
4. I represent and warrant that I have the full power and authority to enter into this release [on behalf of my child]; that the Data I am submitting [on behalf of my child] is original to me/my child, contains nothing libellous or unlawful and contains nothing that is in any way an infringement of any existing copyright or licence, or duty of confidentiality; the grant and other provisions of this release are not in conflict with and do not infringe any commitment, agreement or understanding that I now have or will in the future have with any other person or entity; that Cambridge's exercise of its rights under this release will not infringe the rights of any person or entity and will not cause Cambridge to incur any liability to any person or entity.
5. This release shall be interpreted in all respects in accordance with the laws of England and Wales and each party irrevocably agrees that the courts of England and Wales shall have exclusive jurisdiction to settle any dispute or claim arising out of or in connection with this release.

I further declare that:

- I am 18 years of age or older;
- All information I provide will be full and correct; and
- I give this consent freely

Name or name of minor *(in block capitals)*

Parent/guardian's name *(in case of a legal minor):*

Signature or **signature of legal guardian**

Date *(please write name of month) e.g. 24th March 2015*

Contact details *(postal or email address)*

Figure 7. The Speaker Information Sheet/consent form used in the Spoken BNC2014.

The gathering of metadata directly from speakers appears to have achieved its intended goal. Comparing the number of words which populate the 'unknown' groups of the main demographic categories in the Spoken BNC1994DS with the Spoken BNC2014 (Table 4),[28] there has been a considerable improvement as evidenced by the reduction in the percentage of words in these groups in the new corpus.

Table 4. Number of words categorised as 'unknown' or 'info missing' for the three main demographic categories in the Spoken BNC1994DS and the Spoken BNC2014.

Demographic category	**Group: 'unknown'/ 'info missing'**	**Spoken BNC1994DS**	**Spoken BNC2014**
Age	Frequency	698,045	84,978
	% of corpus	13.92	0.74
Gender	Frequency	624,857	0
	% of corpus	12.46	0.00
Socio-economic status	Frequency	1,910,794	386,896
	% of corpus	38.10	3.39

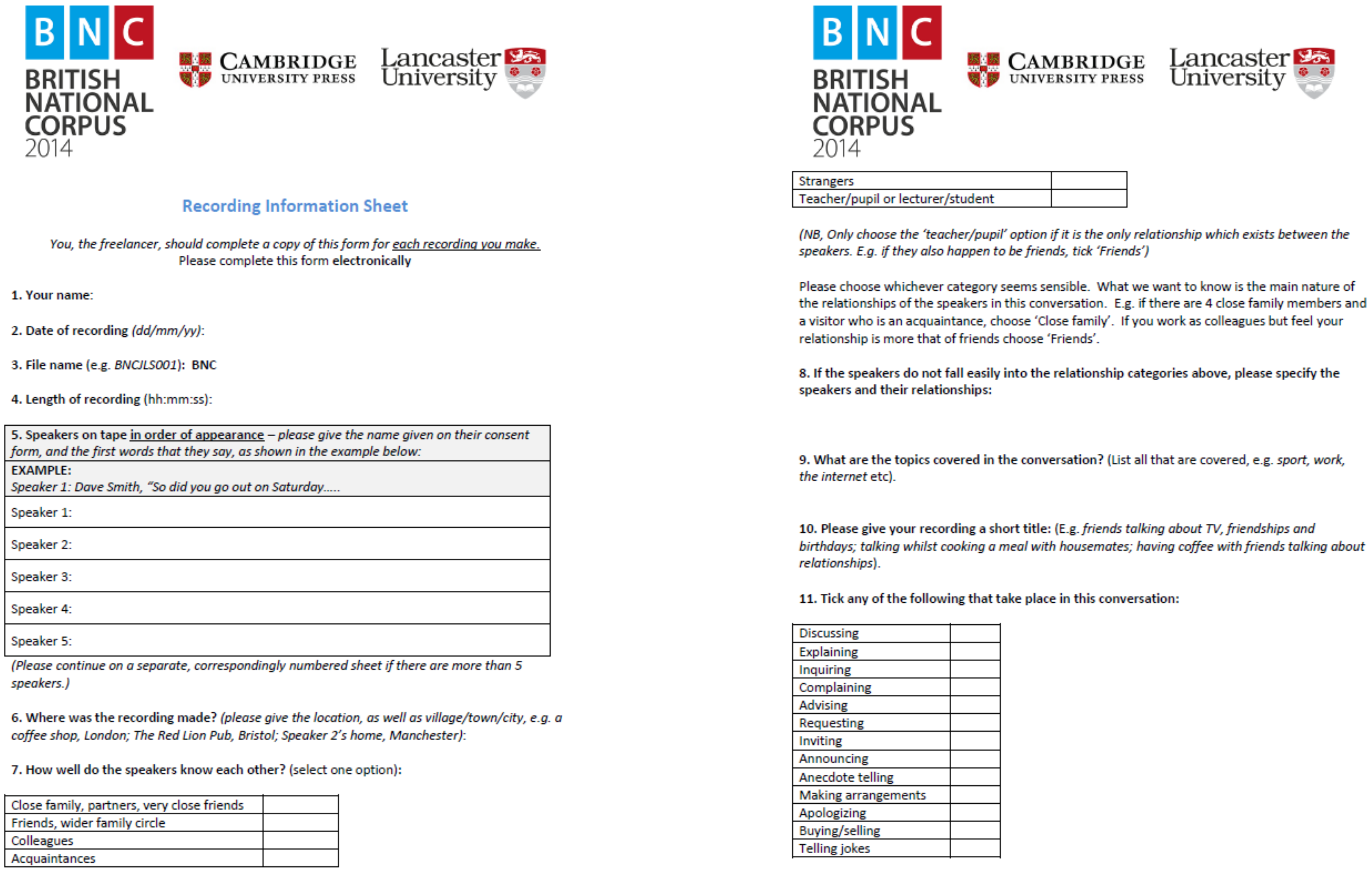
This substantial improvement is an indication of the success of the new approach to data collection; the speakers are accounted for with metadata much more richly in the Spoken BNC2014. This new approach does, however, mean that there exists an unavoidable and yet unignorable difference in the data collection procedures of the two Spoken British National Corpora: speakers in the new corpus were aware that they were being recorded, while their predecessors were mostly not. Clearly, this does affect the kind of interaction it was possible to collect in the Spoken BNC2014 when compared to its predecessor; the conversations we recorded were conducted as pre-arranged 'recording sessions', where the activity of holding a conversation was, at least to begin with, the focus. The surreptitious approach of the Spoken BNC1994 produced recordings of conversations which were much more likely to be incidental encounters. The effect of this difference on the discourse itself is difficult to predict, but my study of bad language (Chapter 7, p. 142) does go some way towards allaying fears that this difference renders the corpora incomparable. Research into the effect(s) that this methodological difference may have had on the discourse gathered in both corpora would be welcome.

Another ethical issue which is addressed in the consent form is anonymity. Burnard (2002: 4) describes difficulty in finding the best way to anonymize data without compromising its "linguistic usefulness". Like informed consent, anonymity must be promised to participants, and Hasund's (1998) account of anonymization procedures in the compilation of the COLT corpus

[28] See Love et al. (2017b) for a full set of word count tables for the Spoken BNC2014.

proves useful in this context. She notes that "anonymization of names has been especially important in research involving sensitive information" (Hasund 1998: 15), and that the difficulty of anonymization is that there is "no unified approach to the issue", but that complete anonymization appears to be the norm (Hasund 1998: 14). Thus, the data most definitely required modification, but in a way that did not affect the findings of subsequent corpus analyses. Such modifications included changing "references to people or places" (Baker 2010: 49), and are described in the next chapter. In sum, the ethical approach of the Spoken BNC2014 research team was to ensure that informed consent was gained and anonymity assured, without compromising the naturalness of the subsequent recordings beyond what was out of our control. These are important considerations to make in ensuring that the recorded speech is as "genuinely naturally occurring" (Adolphs & Carter 2013: 11) as reasonable.

The second form we provided to contributors was the 'Recording Information Sheet' (Figure 8, overleaf). This asked for information which would go on to be used as text metadata in the corpus, as well as a table which asked contributors to write the first turn that each speaker spoke in each recording they made. The purpose of this was to aid transcription; it allowed transcribers to find an example of each speaker's voice in the recording as identified by someone who was present for the recording and likely to be familiar with each of the speakers' voices (see Chapter 4, p. 77, for more information on transcription). This was a method which I had devised with transcribers at Lancaster in the early pilot stage of the project. The Recording Information Sheet also shows that we collected much more text metadata than the Spoken BNC1994 team did; the speaker and text metadata categories are summarized in the next section.



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Recording Information Sheet

You, the freelancer, should complete a copy of this form for each recording you make.
Please complete this form **electronically**

1. Your name:

2. Date of recording *(dd/mm/yy)*:

3. File name (e.g. *BNCJLS001*): **BNC**

4. Length of recording (hh:mm:ss):

5. Speakers on tape in order of appearance – *please give the name given on their consent form, and the first words that they say, as shown in the example below:*
EXAMPLE: *Speaker 1: Dave Smith, "So did you go out on Saturday.....*
Speaker 1:
Speaker 2:
Speaker 3:
Speaker 4:
Speaker 5:

(Please continue on a separate, correspondingly numbered sheet if there are more than 5 speakers.)

6. Where was the recording made? *(please give the location, as well as village/town/city, e.g. a coffee shop, London; The Red Lion Pub, Bristol; Speaker 2's home, Manchester)*:

7. How well do the speakers know each other? (select one option):

Close family, partners, very close friends	
Friends, wider family circle	
Colleagues	
Acquaintances	
Strangers	
Teacher/pupil or lecturer/student	

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(NB, Only choose the 'teacher/pupil' option if it is the only relationship which exists between the speakers. E.g. if they also happen to be friends, tick 'Friends')

Please choose whichever category seems sensible. What we want to know is the main nature of the relationships of the speakers in this conversation. E.g. if there are 4 close family members and a visitor who is an acquaintance, choose 'Close family'. If you work as colleagues but feel your relationship is more that of friends choose 'Friends'.

8. If the speakers do not fall easily into the relationship categories above, please specify the speakers and their relationships:

9. What are the topics covered in the conversation? (List all that are covered, e.g. *sport, work, the internet* etc).

10. Please give your recording a short title: (E.g. *friends talking about TV, friendships and birthdays; talking whilst cooking a meal with housemates; having coffee with friends talking about relationships*).

11. Tick any of the following that take place in this conversation:

Discussing	
Explaining	
Inquiring	
Complaining	
Advising	
Requesting	
Inviting	
Announcing	
Anecdote telling	
Making arrangements	
Apologizing	
Buying/selling	
Telling jokes	

Figure 8. Recording Information Sheet used in the Spoken BNC2014.

3.3.4 Speaker & text metadata collection procedures in the Spoken BNC2014

As mentioned, unlike in the Spoken BNC1994, speakers in the Spoken BNC2014 provided their own metadata. This gave us the flexibility to collect a larger set of metadata than was collected in the earlier corpus. The following sections introduce the items of metadata that are recorded for each speaker in the corpus. Following this is a discussion section which covers the methodological approach taken with regards to three of the speaker metadata categories: age, linguistic region and socio-economic status.

NAME

This was retained only for the purpose of communication between the team at Cambridge and the contributors. All names were converted into unique speaker ID codes to maintain de-identification (the removal or coding of identifiable information for public use, while retaining such information privately, Ribaric et al. 2016) before the transcripts were sent to Lancaster for processing (see Chapter 6, p. 128). The term 'de-identification' refers to the same process that has hereforeto often been labelled 'anonymization'.

AGE

A free-text box prompting speakers to provide their age. See Section 3.3.5 for discussion of age categorization.

GENDER

Gender was collected in a similar way to Crowdy (1993), but with the omission of the 'M or F' prompt, which was replaced by a free-text box. In light of "the complexity and fluidity of sex and gender categories" (Bradley 2013: 22), I wanted to avoid presupposing that all participants would willingly describe their gender in this binary fashion. However, all speakers did report their gender as either "female" or "male", which we code as F or M respectively. A third classification, 'n/a (multiple)', is used only for groups of multiple speakers (e.g. in attributing vocalisations such as laughter when produced by several speakers at once).

NATIONALITY

A free-text box prompting speakers to provide their nationality. Although useful, this was not used to exclude ineligible speakers from the corpus; we chose to define "British" as speakers whose L1 (or one of their L1s in the case of multi-lingualism) is British English, rather than speaker nationality.

BIRTHPLACE

A free-text box prompting speakers to provide their birthplace.

MOTHER TONGUE

A free-text box prompting speakers to provide their L1. Only ten speakers feature in the corpus who reported an L1 other than (British) English. The recordings in which they featured were not excluded from the corpus, because these speakers interacted with speakers of L1 British English, and the contribution of the non-L1 British English speakers was not substantial.

MOST INFLUENTIAL COUNTRY ON LANGUAGE

A free-text box prompting speakers to report the country/countries that they believe have been most influential on their L1 use.

ACCENT/DIALECT

A free-text box prompting speakers to report their own accent/dialect. See Section 3.3.5 for details on how the answers were converted into linguistic region categories.

CURRENT LOCATION & DURATION OF STAY THERE

Free-text boxes prompting speakers to provide the town and country in which they currently live, followed by the number of years/months that they have lived there.

ADDITIONAL LANGUAGES

Speakers were prompted to list any languages spoken in addition to British English.

EDUCATION LEVEL

Tick-boxes prompting speakers to select their highest level of education.

OCCUPATION

A free-text box prompting speakers to report their current occupation. See Section 3.3.5 for details on how the answers were converted into socio-economic status categories.

The metadata categories pertaining to the texts were established using information provided in the Recording Information Sheet:

NUMBER OF SPEAKERS

This was established by counting the number of speakers listed by the contributor on the Recording Information Sheet.

RECORDING LOCATION

A free-text box prompting contributors to report the location in which the recording was made. Unlike the Spoken BNC1994, where contributors kept recording over the length of a whole day and so gathered data in several locations per recording session, the recording procedure for the Spoken BNC2014 (see Section 3.4.3) assumed that each recording would take place in only one location.

RELATIONSHIP BETWEEN SPEAKERS

A tick-box list prompting contributors to characterise how well the speakers know each other. Although the options provided represented a range of social relationships (see Figure 8, p. 45), the design of the corpus was explicitly geared towards family and friends i.e. conversations between speakers who already knew each other quite well. Overall, 1,209 recordings (96.6% of all recordings in the Spoken BNC2014) were conducted between close family, friends or colleagues. By contrast, only seven recordings were conducted between speakers who were indicated by the contributor to be strangers.

CONVERSATION TOPICS

A free-text box prompting contributors to list each topic covered in the conversation.

TITLE OF RECORDING

A free-text box prompting contributors to give the recording a short title, characterising the setting and purpose of the conversation.

CONVERSATIONAL ACTS

A tick-box list prompting contributors to identify the conversational acts which have taken place in the recording.

3.3.5 Age, linguistic region & socio-economic status: discussion

Many of the speaker and text metadata categories collected required no further categorisation once keyed into a metadata spreadsheet from the Speaker Information Sheet.

These items of speaker and text metadata are entirely self-reported; the wording in which the speakers provided this information is reproduced verbatim in the corpus metadata and documentation without attempts to schematize or standardize. However, three of the groups which are of particular sociolinguistic interest (age, linguistic region and socio-economic status) required further work to prepare the metadata for the creation of relevant subcorpora. In the case of age, this was an issue of the form of the metadata and corpus comparability. In the case of linguistic region and socio-economic status, this information could not be collected from speakers directly but had to be inferred from the available speaker metadata.

Age

Speaker age in the Spoken BNC1994 is categorized according to the following brackets:

0-14
15-24
25-34
35-44
45-59
60+
Unknown

For the sake of corpus comparability, I endeavoured to categorize as many of the BNC2014 speakers in the same way. For most of the speakers in the Spoken BNC2014 (10,129,083 words of the corpus) the exact age is available as freeform speaker metadata (e.g. '27'), meaning that categorization according to the BNC1994 scheme was possible for those speakers. However, 133 speakers in the Spoken BNC2014 did not provide exact age; they were part of a 2012 pilot study which, rather than recording the exact age of these speakers, recorded age according to the following brackets:

0-10
11-18
19-29
30-39
40-49
50-59

60-69
70-79
80-89
90-99
Unknown

It was only after the 2012 pilot collection that we decided to start collecting the exact age of speakers. This meant that the reclassification of this pilot data according to the BNC1994 scheme is difficult. Nonetheless, I endeavoured to ensure that as many of these speakers as possible could be categorized into the older scheme for the sake of comparability. For those in the 50-59 category and above, the Spoken BNC1994DS 45-49 and 60+ categories can subsume them, which accounts for 26 speakers.[29] The remaining 107 speakers cannot be recategorized into the old groupings, because of overlaps between the categories. The modern 19-29 category, for example, straddles the boundary between the older 15-24 and 25-34 categories, and so the 19-29-year-old speakers who were not instructed to provide their exact age cannot be placed in either with certainty. One workaround, proposed by Laws et al. (2017), is to place half of the sum of tokens from each of the straddling categories (11-18 / 19-29 / 30-39 / 40-49) into the relevant categories from the older scheme. So, the frequency of instances of a given query as produced by, for example, the 30-39 group in the Spoken BNC2014 would be divided equally between the 25-34 and 35-44 groups for comparison with the 1990s data. The limitation of this is that it is, in essence, guesswork; the contribution of a 39-year-old speaker has a 50% chance of being analysed into the 25-34 category, and the resulting research risks losing validity.

An alternative workaround, which I have adopted for the final CQPweb release, is to facilitate a restricted query option which places the 107 affected speakers into the 'Unknown' group of the older age scheme. The limitation of this approach is that over one million words of Spoken BNC2014 data are excluded from age comparisons with the Spoken BNC1994, but the benefit is that the remaining data does represent the age of speakers accurately. The older age scheme is thus available in the final release of the BNC2014, along with the newer categorization scheme, which itself facilitates more sophisticated apparent-time analysis of the new data; the revised scheme starts with a primary division at 18/19 (18 being the latest age of school-leaving in the UK) and then subdivides the resulting juvenile/adult sections into decades (as closely as possible).

[29] Likewise, speakers in the modern 0-10 category without exact age could have been added to the older 0-14 category; however none of the 0-10 speakers were in the pilot study and so exact age records are available for them anyway.

Linguistic region

As described in Section 3.2.3, the compilers of the Spoken BNC1994 collected recordings from three supra-regions: *North, Midlands* and *South*. In the BNC (XML edition) on Lancaster University's CQPweb server, it is possible to search for transcripts of recordings that were collected in these supra-regions. The only other affordance for filtering according to regional variation is by way of the *Dialect/Accent* category, the metadata for which was collected by the contributors on behalf of other speakers in the corpus, but unreliably; looking at the metadata in the 'spoken restrictions' section of BNCweb, only 1,763 out of 5,352 speakers (32.9%) have been assigned to an accent/dialect category. I attempted to improve upon this by inviting speakers to provide their own assessment of accent/dialect.[30] This section describes the decisions made with regards to the geographical categorization of the speakers' region in the Spoken BNC2014. It should be noted that the provision of such a categorisation, which is based solely on the metadata, is not intended to replace or prevent work which aims to classify the geography of speakers based upon the linguistic evidence contained in the corpus. On the contrary, such investigations are welcomed, and would help to describe the current state of affairs of dialectal variation in the UK. The categorisation scheme described in this section should be viewed as my way of facilitating the immediate sociolinguistic analysis of the corpus through the lens of dialect, in much the same way as the other categories I have already discussed (e.g. gender and age). In other words, the aim of this is to allow users of the Spoken BNC2014 to search the corpus according to the speaker metadata category of dialect, making comparisons between the language use of, for example, northerners and southerners.

To approach this topic, it should be acknowledged that analysing a corpus according to regional metadata is an exercise in imperfect sampling (see Section 3.2.2) that is further problematized by reliance upon an imperfect approximation of the truth (regional categorisation). According to Kortmann and Upton (2008: 25), "the concept of 'dialect area' as a fixed, tidy entity is ultimately a myth". Even though the categorisation of region is "convenient in terms of structure, and…helpful to the user who wishes to understand regional differences" (Kortmann & Upton 2008: 24), it assumes that dialectal varieties are spoken by a geographically fixed set of people who are socially homogeneous and, furthermore, consistent in their speech. This, of course, is not true, and the term that Kortmann and Upton (2008: 25) prefer is a "continuum".

[30] Though I would usually consider it bad form to conflate the terms 'accent' and 'dialect', I felt this was necessary for the task of eliciting from speakers their self-assessment of linguistic regional identity.

Despite this, the analysis of regional variation in spoken corpora is popular (e.g. Clopper & Pisoni 2006, Wong & Peters 2007, Grant 2010, Grieve et al. 2011, Szmrecsanyi 2011, 2013, Dembry 2011, Grieve 2014, Levin 2014). It is clear, then, that there is a motivation to allow users of the Spoken BNC2014 to be able to analyse the data according to the geographical identity of the speakers. Because of this, we chose to collect metadata for this information, and the functionality to be able to analyse the corpus based on this metadata.

In Section 3.3.4 I listed the speaker metadata we collected which includes objective geographical information: *birthplace* and *current location*. One option in terms of using this data for the creation of regional subcorpora is simply to make either or both of these available for restricted query in CQPweb. The problem with this approach relates to the treatment of geographic classification as a linguistically relevant feature, as was the case with the original Spoken BNC1994: is it true that the birthplace of every speaker in the corpus is related to the variety of English that they use? By the same token, is it true of the speakers' current location? Using *birthplace* as a linguistically relevant category of comparison is problematic because some speakers may not associate their linguistic identity with the place in which they were born. They may not have lived in that place at all. One of the contributors who I interviewed was born in County Durham, but grew up in Yorkshire and then moved to Newcastle later in life. She said that:

> my place of birth bears absolutely no relation to how I speak because I wasn't brought up there; I was transported immediately somewhere else and brought up in a completely different place. (Appendix B, p. 211)

Without this sort of knowledge, it is reasonable to expect that analysis could be undertaken that would erroneously consider this speaker to exemplify the speech of County Durham.

Likewise, *current location* is problematic because the extent to which it influences dialect likely depends upon many variables, including the length of time the speaker has lived there, and where they have come from in the first place (see Chambers 1992). Even with recording the *duration of stay at current location* it is difficult to estimate how long a speaker needs to have lived in a particular place before their speech can be considered part of that linguistic community. Chambers (1992: 680) poses that "dialect acquirers make most of the lexical replacements they will make in the first two years", but this appears to be a fairly crude yardstick.

Generally speaking, then, the problem here relates to linguistic application; which – birthplace or current location – is to be taken as a proxy for the linguistic region of the speaker, if the pretence for analysing speakers according to region is a sociolinguistic one? What is a linguistic region? It seems that even though collecting birthplace and current location provides the means of making a good guess, it does not necessarily provide the best way of describing the dialect of all speakers. This means that splitting the corpus by speaker region, based solely upon this metadata, would be a difficult task. In the next section, I discuss possible solutions to this problem before describing the approach that was subsequently taken in the Spoken BNC2014.

Self-reported dialect

The obvious solution is to use the responses to the *accent/dialect* prompt instead, allowing speakers to self-report their own linguistic variety. This takes inspiration from the British Library's Evolving English WordBank,[31] which contains recordings of speakers from all over the world who visited a British Library exhibition. Speakers were asked to "give details as to what they felt their voice reflected about their geographic and educational background" (Robinson 2015).[32] Even though this project did also use evidence from the audio recordings themselves to help identify the accent of speakers, it does seem that in some cases this use of perceptual data alone was sufficient. For example, a speaker who was born in the north-east, lived in the north-east at the time of recording, and described her *accent/dialect* as "Geordie" would be well-served by this approach; the term "Geordie" can be understood, without controversy, to refer to speakers from an area in the north-east of England centred by Newcastle-upon-Tyne. However, some responses in my early pilot study for this project did make this task more difficult. Either:

(a) speakers did not respond to the accent/dialect prompt; or,
(b) they provided geographically vague answers such as "Northern", or "Southern"; or;
(c) they provided a contradictory answer (e.g. "Mixed Northern/Somerset/RP").

Similar responses were found in the Evolving English WordBank. While many speakers used popular terms like "Scouse", others used terms like "neutral" or "posh" (Robinson 2015);[33] in the case of the Evolving English WordBank project, some non-geographical terms could, however, be attributed to the prompt that asked speakers to describe their voice based on both geographical *and* educational factors.

So, based upon the British Library's Evolving English VoiceBank, the option of relying upon self-identification of regional dialect does not appear to be perfect due to the "mismatch

[31] http://sounds.bl.uk/Accents-and-dialects/Evolving-English-WordBank/ (last accessed 23 December 2015).

[32] Personal communication, 23rd January 2015.

[33] Personal communication, 23rd January 2015.

between what…respondents are going to report and the dialect areas that linguists have defined" (Montgomery 2015).[34] Despite the above limitations, the advantage of this approach over using birthplace/current location as a proxy for linguistic region is that the speakers themselves have the opportunity to define their dialect; therefore, it may be the most reliable way of representing this category.

- Location data (do not attempt to categorise dialect)

Another option would simply be to avoid classifying the speakers according to linguistic region altogether, and rather allow such classifications to arise from analysis of the corpus rather than the metadata. (Montgomery 2015)[35] adopted this view:

> Might it just be better to use the location data you have (if you have it), and simply group the speakers according to larger official geographies such as region? This might be a better plan than using perceptual boundaries, for example, as these are impacted on by many non-linguistic factors […]. Rather than pre-judging where speakers might fit onto a dialect map, it might just be best to state where your recordings are from and let dialectologists assess regions based on them, rather than claiming that your speakers are from these dialect areas in the first place.

Though this method minimizes potential for inaccurate interpretation of speaker metadata, it would reduce the functionality of the Spoken BNC2014 when released in CQPweb, since, as discussed above, previous research has shown that the pre-determined regional classification of speakers as a searchable feature is valuable to users of spoken corpora. Furthermore, the provision of this metadata would not prevent dialectologists from creating their own categories, based upon the linguistic evidence in the data. Montgomery suggests using the location data instead; this could either mean *current location* (i.e. where the speaker resides) or *location of recording*. The problem with the former is explained above, and the problem with the latter is that contributors made recordings in a variety of locations including while abroad on holiday; there is no necessary relationship between the location of recording and linguistic identity in the Spoken BNC2014.

[34] Personal communication, 29th January 2015.

[35] Personal communication, 29th January 2015.

- Location during acquisition of L1 British English

Another solution is to use the place where the speaker lived when they acquired English as a child. This would have aimed to fill a gap in the metadata collected in the Spoken BNC2014; if, for some, *birthplace* is too early to capture the best description of speaker region, and *current location* is too late for others, then perhaps the location where L1 British English was acquired would be more informative. Even though childhood language acquisition takes place "in the midst of a highly variable input" (Stanford 2008: 567), it is the time where a "coherent linguistic identity" is formed. It seems that, in addition to *birthplace* and *current location*, verifying the L1 variety of the speakers, by asking them for the place where they grew up, would at least provide an account of dialect influence that is applicable to a higher proportion of speakers than what was achieved in the pilot study. The problem with this approach, however, is that it suffers from the same limitation as the other location based descriptors; a lot of people move around throughout their lives, and some speakers may have lived in several places throughout childhood. Ultimately, this information was not collected from the Spoken BNC2014 speakers.

Upon reviewing the options available to us, I recommended to the Spoken BNC2014 research team that we offer self-reported dialect as the regional classification scheme in the corpus, facilitating regional comparison as an in-built feature of the Spoken BNC2014. I have shown how none of the objective metadata categories give a convincing sense of speaker identity, whereas the self-reported dialect metadata, although subjective, do exactly that, in addition to facilitating work on perceptual dialectology.

Having decided this, the next step was to decide how to categorise self-reported dialect according to geographical regions in the UK, so that users of the corpus can group speakers together. As described in Section 3.3.2, the Spoken BNC1994DS does contain metadata about the accent/dialect of speakers, but unreliably so (only a third of speakers were assigned to a dialect category). For those speakers about which this metadata does exist, the categorisation scheme in the BNC (XML edition) is listed in Figure 9 (overleaf):

Canada
German
East Anglia
French
Home Counties
Humberside
Irish
Indian subcontinent
Lancashire
London
Central Midlands
Merseyside
North-east Midlands
Midlands
South Midlands
North-west Midlands
Central northern England
North-east England
Northern England
Scottish
Lower south-west England
Central south-west England
Upper south-west England
European
American (US)
Welsh
West Indian
Other or unidentifiable

Figure 9. Dialect categories used in the Spoken BNC1994DS.

These categories present several issues:

- Some geographic areas contain too many distinctions while others do not appear to contain enough or any at all. For example, there are three variant categories of "south west England" but "Lancashire" and "Merseyside" appear to be the only categories that account for any region in the north-west of England.
- Likewise, there is no way of making a generalisation based on speaker dialect descriptions which are too general. For example, if a speaker had reported their dialect as "northern", the category in which they would have been placed is unclear ("Northern England" and "Central northern England" are hard to distinguish).
- There appear to be many categories for non-British English varieties, which seem unnecessary given the aim for the corpus to contain British English speakers only.

In reflection of this, it seemed necessary to produce a new classification scheme for the categorisation of birthplace and dialect in the Spoken BNC2014, which improves upon the original by assigning divisions more evenly across the UK and ensuring that as many speakers as possible are assigned to the highest level of specificity as possible. I approached this task by reviewing a range of relevant literature. These sources informed the decisions made when creating the new categorisation scheme which, like many other features of the Spoken BNC2014, strike a balance between comparability with, and improvement upon, the original corpus.

One approach would be to use the Office for National Statistics' categorisation scheme for the Government Office regions, which includes twenty categories and has been in use in the Labour Force Survey since 1992:

(1) Tyne & Wear

(2) Rest of North East

(3) Greater Manchester

(4) Merseyside[36]

(5) Rest of North West

(6) South Yorkshire

(7) West Yorkshire

(8) Rest of Yorkshire & Humberside

(9) East Midlands

(10) West Midlands Metropolitan County

(11) Rest of West Midlands

(12) East of England

(13) Inner London

(14) Outer London

(15) South East

(16) South West

(17) Wales

(18) Strathclyde

(19) Rest of Scotland

(20) Northern Ireland. (ONS 2014: 41)

More recently, the Office for National Statistics adopted a simplified scheme, the *Nomenclature of Territorial Units for Statistics* (NUTS) statistical regions of the UK. These were created in 1994 and, while Scotland, Wales, and Northern Ireland were taken as entire regions, England was divided into several regions by the John Major government and which were, until 2011, used to define the Government Offices for the English Regions. Despite being abolished in 2011, the regions have been used for statistical analysis by the Office for National Statistics in national surveys such as the Labour Force Survey and the Annual Population Survey since the year 2000, and continue to be used now (ONS 2013, 2014). The regions are:

(1) North East

(2) North West

[36] Despite appearing in the list, "Merseyside is generally included in the North West region in published data" (ONS 2014: 41), meaning that only twelve categories are used in most surveys.

(3) Merseyside[37]

(4) Yorkshire & Humberside

(5) East Midlands

(6) West Midlands

(7) Eastern

(8) London

(9) South East

(10) South West

(11) Wales

(12) Scotland

(13) Northern Ireland. (ONS 2014: 41)

The advantage of the NUTS scheme over its predecessor is that it would open the door for possible alignment between the corpus data and contemporary UK population data which is collected by the Office for National Statistics. Furthermore it is simple and easy for the end-user to interpret.

Other available schemes include that of the British Library's Sound and Moving Image Catalogue,[38] which categorises the Survey of English Dialects by using county names to categorise speaker dialect. According to Robinson (2015),[39] this is "appropriate given the network of that survey", but problematic for the end-user since, for example, they are unlikely to use the term "Lancashire" to search for speakers from Liverpool.[40] The British Library's more recent Evolving English WordBank project (mentioned above) used different layers of category detail depending upon the clarity of the metadata. Robinson (2015)[41] states that "popular descriptors" such as *Scouse* were mapped onto a *Liverpool* category, but less clear cases were assigned to a broader *North West* category. Such broad categories were adopted from the English regions of the NUTS categorisation scheme. The benefit of this approach is that even if, for whatever reason, there is ambiguity in the metadata, every speaker is categorised to the highest level of accuracy as possible; this maximises the proportion of speakers in the corpus that can be used for the kinds of sociolinguistic investigations that dialect categorisation aims to facilitate.

[37] The same caveat applies as previous.

[38] http://cadensa.bl.uk/uhtbin/cgisirsi/?ps=44yLgcHIBg/WORKS-FILE/0/49 (last accessed 23 December 2015).

[39] Personal communication, 23rd January 2015.

[40] Liverpool was a part of the county of Lancashire when the Survey of English Dialects was compiled. The county of Merseyside was later established in 1972.

[41] Personal communication, 23rd January 2015.

Turning to dialectology, Trudgill (2000: 152) presents a map of "modern English dialect areas" in England, which contains the following regions:

North-east
Central North
Central Lancashire
Humberside
Merseyside
North-west Midlands
Central Midlands
North-east Midlands
West Midlands
East Midlands
South Midlands
East Anglia
Upper South-west
Central South-west
Lower South-west
Home Counties

These are said to represent "the main dialect and accent areas of modern English" (Trudgill 2000: 151). Trudgill (2000: 151) adds that:

> a number of the regions are basically the areas dominated demographically, and therefore culturally and linguistically, by certain large cities and conurbations:
>
> North-east: Newcastle
> Merseyside: Liverpool
> North-west Midlands: Manchester
> West Midlands: Birmingham
> Central South-west: Bristol
> Home Counties: London
>
> Some other areas also have smaller cities as their focal points:

> Central Lancashire: Blackburn
> Humberside: Hull
> North-east Midlands: Lincoln
> Upper South-west: Gloucester
> Lower South-west: Plymouth
> East Anglia: Norwich. (Trudgill 2000: 151)

These examples help to show how Trudgill forms this categorisation scheme; however, it is not clear to what extent accent as opposed to dialect is taken into account to inform these distinctions, and vice versa. Furthermore, the north-west of England appears to have been shared between the "Central North" and "North-west Midlands" categories, as evidenced by Manchester's membership in the latter. This seems to deviate from the NUTS scheme, which does at least contain a "North West" category, and even the original Spoken BNC1994's inclusion of "Lancashire".

Overall, I recommended to the Spoken BNC2014 research team a multi-layered use of the NUTS categorisation scheme. This combines the benefit of potential government data alignment, as described above, with the British Library's approach, which appears to have successfully dealt with a variety of inputs. Taking this into account, Figure 10 (overleaf) shows the categories used to represent self-reported dialect in the Spoken BNC2014.

Based on speakers' free-text answers to the question of what variety of English they speak, each speaker is assigned to a category in each of the four levels in Figure 10, overleaf ("global", "country", "supraregion" and "region"). The assignments depend upon how much could be inferred from their self-reported response. I wrote a PHP[42] script to recognise the variant and colloquial names for British dialects,[43] and assign them to the relevant categories, with the aim of maximizing specificity (in other words, to 'get as much out of' the metadata as possible, while allowing speakers to describe themselves in their own words). For example, a speaker who entered 'Geordie' would be assigned to: (Level 1 – UK; Level 2 – English; Level 3 – North; Level 4 – North-East). A speaker who entered 'Northern' would be assigned to: (Level 1 – UK; Level 2 – English; Level 3 – North; Level 4 – Unspecified). Thus, a level 4 analysis would exclude a self-reported 'northern' speaker and place them in the 'unspecified' category, because the specific region of the north to which they refer (if any) is not known. It should also be noted

[42] http://php.net/manual/en/intro-whatis.php

[43] I am grateful to Andrew Hardie of Lancaster University for his guidance and support with PHP scripts.

that analysing the data at the third level ("supra-region") facilitates comparison with the regional classification in the Spoken BNC1994 – although, as mentioned, the latter is itself not unproblematic.

(1) Global	(2) Country	(3) Supra-region	(4) Region
UK	English	North	North-East
			Yorkshire & Humberside
			North West (not Merseyside)
			Merseyside
		Midlands	East Midlands
			West Midlands
		South	Eastern
			South-West
			South-East (not London)
			London
	Scottish	Scottish	Scottish
	Welsh	Welsh	Welsh
	Northern Irish	Northern Irish	Northern Irish
Non-UK	Irish	Irish	Irish
	Non-UK	Non-UK	Non-UK
Unspecified	Unspecified	Unspecified	Unspecified

Figure 10. Birthplace and dialect categories used in the Spoken BNC2014.

Other self-reported dialect descriptions proved harder to classify, since they could not be clearly assigned to a particular geographical region. For example, some speakers provided the term 'posh'. According to Montgomery (2015),

> for 'Posh', it is clear that most people think of the South East, but not everyone does, so it's not possible to simply link the two.[44]

Likewise, even the term 'Received Pronunciation' cannot be said to necessarily refer to the south-east of England, since it is a "supra-regional accent model" which "plays only a very minor part in the analysis of regional varieties" (Kortmann & Upton 2008: 24). The only thing that

[44] Personal communication, 29th January 2015.

could be done with such non-geographically referential dialect terms was to assign them to one of the 'Unspecified' categories.

In summary, speakers used a free-text box in the Speaker Information Sheet to enter a description of their own dialect (e.g. "Geordie", "Northern", etc.). The self-reported dialect of speakers has then been coded according to a four-level classification scheme (Figure 10), the fourth level of which is drawn from the UK government's *Nomenclature of Territorial Units for Statistics* (NUTS). The scheme therefore does not arise from considerations of linguistic classifications of the UK (cf. Trudgill 2000) but rather geopolitical ones. This choice of scheme reflects our principle that the pre-selection of categories for sociolinguistic analysis should not impose assumptions of linguistic patterns upon the corpus but ought rather to allow the data to reveal such patterns. While it might have been preferable for us to develop a categorization and then train the speakers to use it, this would clearly have been infeasibly time-consuming. But self-reported dialect data is not without its own virtues: it is, for instance, of great value to researchers interested in perceptual dialectology (e.g. Montgomery 2012). Moreover, it will be possible (in principle at least) to assign regional-dialect classifications to the recorded speakers according to objective, linguistic criteria at some later point. But it is generally *not* possible to facilitate perceptual dialectology research other than by asking the speakers what variety of English they believe they speak. So, while one driver for my decision to gather self-report data on dialect was practical, another was principled – I wanted to gather from the speakers information that could not be easily inferred, or inferred at all, from their data at a later date: the variety of British English they believed themselves to speak.

Socio-economic status

The final speaker metadata category that required inference from the information provided is socio-economic status. In the Spoken BNC1994, socio-economic status was estimated from occupation, based on the categories of the National Readership Survey's Social Grade demographic classification system (Table 5, overleaf), which has been used to produce an accepted source of UK demographic data in the market research industry for over half a century (Collis 2009: 2). Although this classification system is based solely on the occupation of the Chief Income Earner (CIE) of the household, there is, according to the NRS (2014), "a strong correlation between income and social grade" which appears to exemplify the system's "discriminatory power" as an indicator of status. As a result it has been used by Ipsos MediaCT, one of the UK's largest market research companies, since the 1970s (Collis 2009: 2).

Table 5. National Readership Survey Social Grade classifications (NRS 2014).

Code	**Description**
A	Higher managerial, administrative and professional
B	Intermediate managerial, administrative and professional
C1	Supervisory, clerical and junior managerial, administrative and professional
C2	Skilled manual workers
D	Semi-skilled and unskilled manual workers
E	State pensioners, casual and lowest grade workers, unemployed with state benefits only

In the National Readership Survey, Social Grade is established based on the answers to a set of "detailed questions" about the occupation of the respondent (NRS 2014). The same is true of Ipsos MORI, where market research questions concern:

- the occupation of the CIE,
- the type of organisation he or she works for,
- job actually done,
- job title/rank/grade,
- whether the CIE is self-employed,
- the number of people working at the place of employment, and;
- whether the CIE is responsible for anyone, together with confirmation of qualifications. (Collis 2009: 3)

This is interesting given that, of these, only the occupation of the speakers in the Spoken BNC1994 was collected in the metadata. It seems, then, that Social Grade in the Spoken BNC1994 was estimated based only on the name of the occupation of speakers, without taking into account any of the other details.

The system that was used to classify speakers in the Spoken BNC1994 was thus neither of the government socio-economic classifications (SECs) that were used at the time by the Office for National Statistics (ONS).[45] The first of these standards, in use since 1913, was the Social Class based on Occupation (SC) (Stuchbury 2013b). Outside the ONS, it was used by the

[45] The Office for National Statistics (ONS) is the government agency responsible for carrying out, among other research projects, the periodic census of the UK population (Rose & O'Reilly 1998: ii).

Departments of Health; Work and Pensions; Education and Skills; and Environment and the Regions, and the Northern Ireland Office's Policy Planning and Research Unit, as well as academic studies largely based in health and mortality (Rose & Pevalin 2005: 9).

Table 6. Social Class based on Occupation (SC) (Stuchbury 2013b).

Social classes	**Description**
I	Professional occupations
II	Managerial and technical occupations
III N	Skilled non-manual occupations
III M	Skilled manual occupations
IV	Partly-skilled occupations
V	Unskilled occupations

The SC system (Table 6) presents "a hierarchy in relation to social standing or occupational skill" (Rose & Pevalin 2005: 10), which appears similar to how Social Grade favours "professional status and qualifications rather than purchasing power" (Collis 2009: 4). This seems, then, to match the conception of classification desired in the Spoken BNC1994. However, unlike Social Grade, it can only be applied to the working population (Collis 2009: 4); there is no equivalent to the 'unemployed' section of Social Grade category E.

The second government classification in use at the time (since 1951) was the Socio-economic group (SEG) (Stuchbury: 2013a). The SEG system (Table 7, overleaf), offers much more detail, and is viewed as "a better measure than Social Class for social scientific purposes" (Stuchbury 2013a). It was used by academics, who preferred SEG to SC because "they perceived it as closer to a sociological conception of class than SC" (Rose & Pevalin 2005: 9). However, unlike SC, "SEG is not ordinally ranked" (Stuchbury: 2013a), meaning that it does not claim to evaluate the population based on hierarchical social standing. Conceptually, this does not match the aims of the Spoken BNC1994, as described in Section 3.3.2, given that the aim of classifying speaker occupation was to make an evaluation based on a hierarchy of socio-economic status. It is perhaps, then, understandable that the market research approach to social stratification, which accounts for both of these things, was favoured over both the SC and SEG at the time.

Table 7. Socio-economic group (SEG) (Stuchbury 2013a).

Socio-economic categories	**Description**
1.1	Employers in industry, commerce, etc. - large establishments
1.2	Managers in central and local government, industry, commerce, etc. - large establishments
2.1	Employers in industry, commerce, etc. - small establishments
2.2	Managers in industry, commerce, etc. - small establishments
3	Professional workers - self-employed
4	Professional workers - employees
5.1	Ancillary workers and artists
5.2	Foremen and supervisors - non-manual
6	Junior non-manual workers
7	Personal service workers
8	Foremen and supervisors - manual
9	Skilled manual workers
10	Semi-skilled manual workers
11	Unskilled manual workers
12	Own account workers (other than professional)
13	Famers - employers and managers
14	Farmers - own account
15	Agricultural workers
16	Members of armed forces
17	Inadequately described and not stated occupations

In 2001, an ESRC review of the existing Office for National Statistics social classifications (Rose & O'Reilly 1998) prompted the SC and the SEG to be replaced by the single National Statistics Socio-economic Classification (NS-SEC), due to "conceptual and operational deficiencies" (Rose & O'Reilly 1998: 3) in the SC and SEG. SC was criticised on the grounds that its hierarchical conceptual basis "in fact reflected an outmoded 19th century view of social structure, which can be traced directly to eugenicist ideas" (Rose & Pevalin 2005: 10). SEG, in turn, was said to rely on "outmoded distinctions – skill and the manual/non-manual divide" which "reflected women's positions in the social structure very inadequately" (Rose & Pevalin 2005: 11).

The NS-SEC attempts to address these deficiencies. The nine main categories of classification are described in Table 8.

Table 8. The nine major analytic classes of the *NS-SEC* (ONS 2010c).

NS-SEC	Description
1	*Higher managerial, administrative and professional occupations:*[46]
1.1	Large employers and higher managerial and administrative occupations
1.2	Higher professional occupations
2	Lower managerial, administrative and professional occupations
3	Intermediate occupations
4	Small employers and own account workers
5	Lower supervisory and technical occupations
6	Semi-routine occupations
7	Routine occupations
8	Never worked and long-term unemployed
*	*Students/unclassifiable*

The NS-SEC, which is now the government standard (it was used for the 2001 and 2011 censuses as well as the Labour Force Survey, ONS 2015: 125), appears to combine the analytic simplicity of SC with the inclusivity of SEG; it is said to have high rates of continuity with its predecessors (91% and 88% respectively; Rose & O'Reilly 1998: 7). Furthermore, addressing the moral criticisms of its predecessors, Rose & O'Reilly (1998: 4) are clear that the NS-SEC is "a nominal measure […]. Ordinality…should not be assumed and analyses should be performed by assuming nominality". Users are encouraged to allow the relationships observed in the data to be used for such interpretations, rather than the classification of the metadata itself. Compared in turn to Social Grade, the full version of the NS-SEC (from which the analytic version is derived) is much more detailed and, therefore, may allow for a more sensitive analysis of the relationship between socio-economic categories and language use. In addition, since this is the present-day government standard for the Office for National Statistics, it has the potential to add value to the Spoken BNC2014 for corpus linguists due to its compatibility with a range of government

[46] Category 1 is not in and of itself an analytic category; rather it comprises analytic categories 1.1 and 1.2, which can be merged to form category 1.

datasets. Because of this, the NS-SEC appears to be much more worthy of consideration for use in spoken British English corpora than SC and SEG were in the 1990s.

Based on this, I recommended to the Spoken BNC2014 research team that we code speakers for socio-economic status using both the National Readership Survey's Social Grade and the Office for National Statistics' NS-SEC; this facilitates the comparison of speakers between the Spoken BNC2014 and the Spoken BNC1994DS using Social Grade, and affords the benefits of the NS-SEC described above.

After deciding to provide coding of speakers for both schemes, a method for doing so had to be set in place. Methodologically, Social Grade and NS-SEC differ in terms of how estimations of socio-economic status are made. Turning first to the NS-SEC, this scheme does not make classifications directly from the name of occupations. Instead, it is fed by the Standard Occupational Classification (SOC),[47] which is "a multi-purpose common classification of occupations" in the UK, and which classifies jobs according to "skill level and skill content" (ONS 2010d). It is used, for example, by the Health and Safety Executive, for the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR) in the workplace (HSE 2011). As such, SOC is derived from occupation, but does not in and of itself evaluate job titles according to status. SOC simply groups them into categories such as "Design Occupations" (ONS 2010d: 118) and "Information Technology and Telecommunications Professionals" (ONS 2010d: 61), for example, and assigns each job a code according to its category. The function of NS-SEC is to further categorise the SOC codes according to the groups presented in Table 8 above. The advantage of using the 'analytic' layer of NS-SEC, as opposed to its other more detailed layers, is that all that is required to assign a speaker to a socio-economic status category is a SOC code (ONS 2015: 125) (ergo the title of the speakers' occupation). At this level alone, the Office for National Statistics claims an 88% rate of accuracy (ONS 2010b: 20).[48] Furthermore, this conversion of (a) occupation into SOC code and (b) SOC code into NS-SEC analytic group can be achieved using online tools, the *Occupation Coding Tool* (ONS 2010a) and *NS-SEC Coding Tool* (ONS 2010e), hosted by the Office for National Statistics.

With regards to Social Grade, in Section 3.3.2 I noted that the Spoken BNC1994 used only the name of the occupation to estimate socio-economic status under this system. Although this seems inadequate compared to the approach of the National Readership Survey (2014), I do think that probing for further details about the employment status and workplace relations of speakers in the Spoken BNC2014 would be an undesirable intrusion. This is especially true when

[47] The most recent version of SOC was published in 2010 and is referred to as SOC2010 (ONS 2010).

[48] Adding more information (namely *employment status* and *size of organisation*) increases this to 99% (ONS 2010b: 20); however, in the same light as Social Grade, asking for information beyond *occupation* seems intrusive.

it is considered that such information would have to have been collected using a questionnaire (the Speaker Information Sheet), whereas the NRS and Ipsos MORI collect this data using interviews. As a result, and in keeping with the approach of the Spoken BNC1994, we agreed that Social Grade in the Spoken BNC2014 should also be estimated based on the title of the occupation alone. Rather than separately categorising the Spoken BNC2014 speakers' occupations into Social Grade, I proposed that the Social Grade codes should be automatically derived from the speakers' NS-SEC codes – the reason for this being that there is no objective tool available for the classification of occupations according to Social Grade; in terms of consistency of judgement it was better to automate the Social Grade classification process by mapping the NS-SEC codes onto the Social Grade codes. No formal standard has been established for translating either of these schemes to the other, but in the interests of comparability I have proposed an automatic mapping from NS-SEC to Social Grade so that both schemes can be analysed in the Spoken BNC2014 (Table 9, overleaf). The result is that each speaker in the Spoken BNC2014 has been assigned both an NS-SEC and Social Grade socio-economic status code.

Table 9. Mapping between the NS-SEC and Social Grade assumed for Spoken BNC2014 speaker metadata.

NS-SEC	Description		Social Grade	Description
1	*Higher managerial, administrative and professional occupations:*	MAPS ON TO…	A	Higher managerial, administrative and professional
1.1	Large employers and higher managerial and administrative occupations			
1.2	Higher professional occupations			
2	Lower managerial, administrative and professional occupations		B	Intermediate managerial, administrative and professional
3	Intermediate occupations		C1	Supervisory, clerical and junior managerial, administrative and professional
4	Small employers and own account workers			
5	Lower supervisory and technical occupations		C2	Skilled manual workers
6	Semi-routine occupations		D	Semi-skilled and unskilled manual workers
7	Routine occupations			
8	Never worked and long-term unemployed		E	State pensioners, casual and lowest grade workers, unemployed with state benefits only
*	*Students/unclassifiable*			

3.4 Collection of audio data

3.4.1 Introduction

As mentioned in Section 3.2.6, one of the most innovative features of the Spoken BNC2014 is the use of PPSR (public participation in scientific research) for data collection (see Shirk et al. 2012). The design, recruitment and metadata collection procedures have been shown to contribute towards a public participation model, and the audio recording procedure is no exception. This section discusses the Spoken BNC2014 research team's decision to ask contributors to make recordings using the in-built audio recording feature of their smartphones.

3.4.2 Audio recording in the Spoken BNC1994

Crowdy (1993) conducted a set of investigations about the process of recording the data in the Spoken BNC1994DS. These included estimating the average number of words of conversation that is spoken per hour; addressing practical problems that might be encountered during collection; and assessing whether the recordings would be of good enough quality for accurate transcription (Crowdy 1993: 261). Crowdy (1993: 261) reported that audio recording was unproblematic and that contributors "were able to carry out the task successfully". Contributors to the Spoken BNC1994 used analogue recording devices, the recordings from which were subsequently digitised (Crowdy 1994: 15). For the pilot study, contributors collected over 100 hours of recordings; however, Crowdy (1993: 261) estimated that only 60 hours of those recordings were actually of sufficient quality for transcription, due to poor recording conditions or "quite lengthy periods when no conversations are taking place". He did not indicate if he intended to improve on this percentage in the compilation of the full corpus. Regardless, it seems that for approximately 40% of recordings to be unusable is a reducible waste of time for participants and researchers alike. Turning to the good quality recordings, Crowdy estimated that the pilot gathered a total of 400,000 words, with an average yield of 7,000 words per hour (Crowdy 1993: 262). This went on to inform the predictions that were made about the number of speakers required to gather enough data for the full corpus.

3.4.3 Audio recording in the Spoken BNC2014

Selecting the recording equipment

In this section, I describe the selection of the audio recording equipment which contributors were instructed to use for the Spoken BNC2014. The first decision of the team was that recordings would be made in audio format only. Although there is an increasing desire for spoken corpora that "move beyond text and language as conventionally conceptualised"

(Adolphs et al. 2015: 61), our goal was to create a corpus that is comparable to the Spoken BNC1994DS. Therefore, we made no attempt to record conversations as video rather than just audio, or to record any other live contextual data – for example the GPS position of the smartphones (see Adolphs et al. 2015). Video recording equipment that does not heavily compromise the unobtrusiveness of the recording event (and, therefore, the likelihood of the data being as natural as possible) has yet to become available at low expense (Adolphs & Carter 2013: 147), and we did not have the time to develop a bespoke smartphone application for recording any other data.

The second decision we made was that all data would be recorded digitally. This differs from the Spoken BNC1994DS, which used analogue recording devices, and required the transfer of recordings from cassette tape to digital tape (Crowdy 1994: 15). Since then, digital recording technology has become more widely available at reasonable cost, and nowadays the ease of recording large amounts of data onto SD and micro-SD cards, or directly onto smartphones, and then transferring them onto a computer, means that it was possible to record conversations directly in digital format at low cost. This was intended to make it easier and quicker to prepare the recordings for transcription once the recording process was complete.

As described throughout this chapter, each feature of the Spoken BNC2014's design serves a public participation model (Shirk et al. 2012). Given the general availability of digital audio recorders as an in-built capability of smartphones and other widely used consumer devices, one way of realising this approach is to ask contributors to use their own smartphones to make recordings for the corpus. If possible, this would greatly reduce the cost associated with arranging for the recordings, as we would not need to purchase equipment, distribute it, train contributors to use it and collect it back from them. Furthermore, it would make participation less onerous than it would be if we were to use equipment such as Dictaphones.

To assess the feasibility of this approach, I arranged a direct comparison between a traditional audio recording device – a Dictaphone – and smartphones. In an early stage of the project, two volunteers were provided with a Dictaphone, and another two were instructed to use the audio recording feature of their own smartphones. If the two contributors' smartphones were to prove just as suitable for the purpose as the Dictaphone, there would be no need for the Spoken BNC2014 research team to provide equipment in the first place, and the PPSR approach to corpus compilation would be supported. Though I introduce this comparison presently, I discuss the findings which relate to the ability to transcribe the recordings in the next chapter (p. 77); this is a methodological investigation that affects both the recording and transcription stages together, and further supports Adolphs and Carter's (2013: 7) assertion that all stages of spoken corpus compilation "interact and influence each other".

My Dictaphone of choice was the Zoom H1 Handy Recorder. This is a portable audio recorder with a retail price (as of 2014, when this evaluation was made) of £70. It is bi-directional, meaning that it can be placed in the middle of the recording location and record audio in two opposite directions at once. It is small, lightweight, and can be connected to a computer by a USB cable for the transfer of audio files, which can be recorded in either WAV or MP3 format. It was chosen because it represents a typical audio recording device that one would find for use in social science research (e.g. participant interviews).

Two volunteers were supplied with the Zoom H1 Dictaphone, while the other two used their own smartphones. They were instructed to make recordings, as convenient, over a two week period, and at the end of the period I asked for feedback on the ease of use of the equipment. The responses from the volunteers suggested no difference in ease of use between either the Dictaphone or smartphones; the smartphones were no harder or less convenient to use than the Dictaphones. Furthermore, there was no difference in the quality of the resulting audio recordings for the purpose of orthographic transcription, as discussed in the next chapter. As a result, the Spoken BNC2014 research team was confident that the smartphone approach to data collection would be successful, and all contributors to the Spoken BNC2014 were instructed to use the in-built audio recording feature in their smartphones to make recordings.

One area of linguistic research which is likely to be excluded by this approach is phonetics. It is likely that only some, but not many, of the recordings produced by smartphones will be of sufficient quality for accurate phonetic analysis.[49] The Spoken BNC2014 research team accepts this exclusion, since phonetics is not one of the main areas of research in spoken corpus linguistics (see Section 4.2, p. 77). While I am of course entirely open to phoneticians making use of the corpus if they wish and so far as they can (e.g. Brown et al. 2014, Fromont & Watson 2016), most phonetic research typically requires both (i) access to high-quality audio recordings and (ii) full phonetic transcription. Requirement (i) has been excluded presently and requirement (ii) will be excluded in Section 4.2 (p. 77).

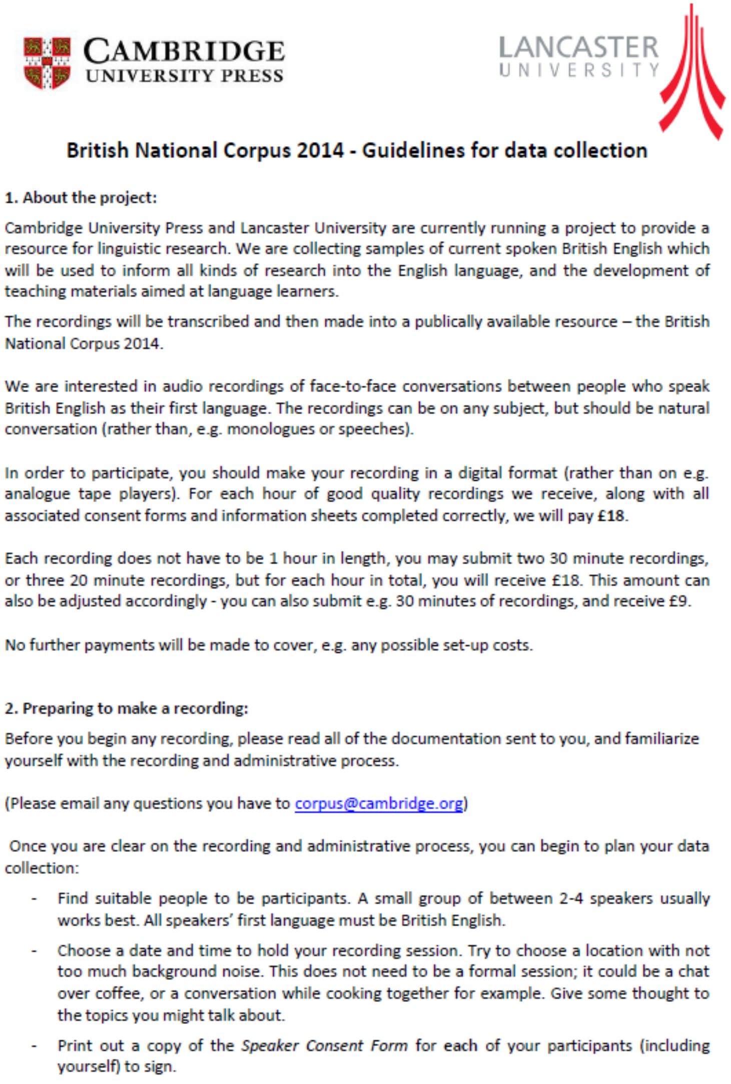
The audio recording procedure in the Spoken BNC2014

Aside from being instructed to make recordings using their smartphones, Spoken BNC2014 contributors were given lots of additional guidance from the Cambridge team. Each contributor was provided with a 'Guidelines for Data Collection' document (Figure 11, overleaf),

[49] I am grateful to Sam Kirkham of Lancaster University for his advice on this topic.

which provided instruction on preparation, recording procedures, data transfer and payment, as well as a 'Frequently Asked Questions' document (Appendix D, p. 215), which provided further detail about the recording and data transfer procedures. Contributors were instructed to make recordings in MP3 format (the standard format for most smartphone recording devices), and they were encouraged to make their recordings in locations where the space around the interlocutors was fairly quiet, for example household interactions or conversations in quiet cafes. However, contributors were not 'disallowed' from recording at any time or place, since we did not want to anticipate the production of bad recordings, and advise contributors against making them, before finding out whether they would be useable. Contributors were given no restriction on the number of speakers they could hold their conversations with at any given time; although a recommendation of between two and four speakers was given, and an in-depth investigation of the effect of the number of speakers on transcription difficulty is provided in Chapter 5 (p. 102). In addition, we did not want to impinge more than necessary upon the spontaneity of the recording sessions by governing too heavily over features such as conversational topic, although a list of suggestions was provided. Finally, it was stressed to contributors that under no circumstances could they make recordings surreptitiously, and that all speakers in the conversation must be aware that recording is taking place beforehand (see Section 3.3.3).

Overall, the data collection procedure relied heavily upon modern technology: smartphones (to make the recordings), computers (to upload the recordings from the smartphones) and a file transfer service such as Dropbox (to send the recordings to the Spoken BNC2014 research team for transcription). It could be said that this approach therefore risks excluding members of the UK population who are less familiar with computers and the associated data collection procedure, and skews the pool of speakers in the corpus in favour of the tech-savvy. In the early stages of the project, just after we had launched our first press release (see Section 3.2.6), I received a phone call from an elderly lady who criticised our approach for this reason. She claimed that she was interested in the project, but did not own a smartphone or a computer and so felt excluded from being able to participate. My response to her concern was that it is only the contributors, and not the rest of the speakers, who needed to be able to use this technology. The lady who called me did not need to have access to the technology herself to participate as a speaker in the corpus – all she needed was to find someone who did have access to the technology, perhaps a friend or relative, who was prepared to take on the role of contributor and make a recording with her.



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British National Corpus 2014 - Guidelines for data collection

1. About the project:

Cambridge University Press and Lancaster University are currently running a project to provide a resource for linguistic research. We are collecting samples of current spoken British English which will be used to inform all kinds of research into the English language, and the development of teaching materials aimed at language learners.

The recordings will be transcribed and then made into a publically available resource – the British National Corpus 2014.

We are interested in audio recordings of face-to-face conversations between people who speak British English as their first language. The recordings can be on any subject, but should be natural conversation (rather than, e.g. monologues or speeches).

In order to participate, you should make your recording in a digital format (rather than on e.g. analogue tape players). For each hour of good quality recordings we receive, along with all associated consent forms and information sheets completed correctly, we will pay **£18**.

Each recording does not have to be 1 hour in length, you may submit two 30 minute recordings, or three 20 minute recordings, but for each hour in total, you will receive £18. This amount can also be adjusted accordingly - you can also submit e.g. 30 minutes of recordings, and receive £9.

No further payments will be made to cover, e.g. any possible set-up costs.

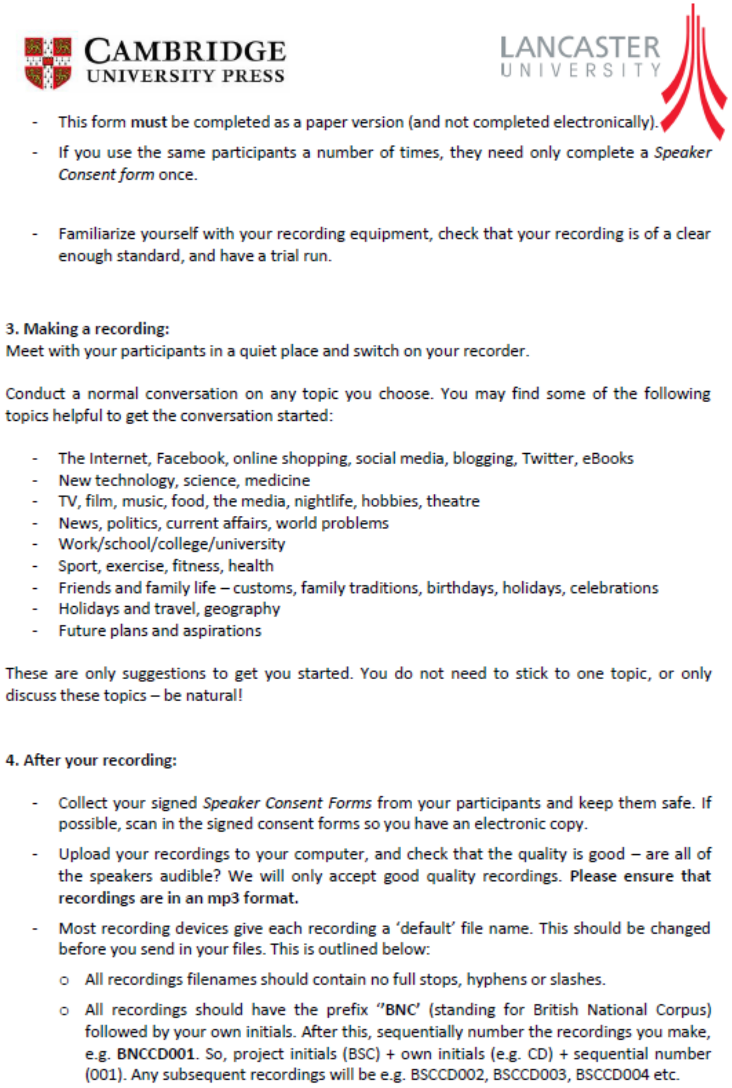
2. Preparing to make a recording:

Before you begin any recording, please read all of the documentation sent to you, and familiarize yourself with the recording and administrative process.

(Please email any questions you have to corpus@cambridge.org)

Once you are clear on the recording and administrative process, you can begin to plan your data collection:

- Find suitable people to be participants. A small group of between 2-4 speakers usually works best. All speakers' first language must be British English.
- Choose a date and time to hold your recording session. Try to choose a location with not too much background noise. This does not need to be a formal session; it could be a chat over coffee, or a conversation while cooking together for example. Give some thought to the topics you might talk about.
- Print out a copy of the *Speaker Consent Form* for **each** of your participants (including yourself) to sign.



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- This form **must** be completed as a paper version (and not completed electronically).
- If you use the same participants a number of times, they need only complete a *Speaker Consent form* once.

- Familiarize yourself with your recording equipment, check that your recording is of a clear enough standard, and have a trial run.

3. Making a recording:
Meet with your participants in a quiet place and switch on your recorder.

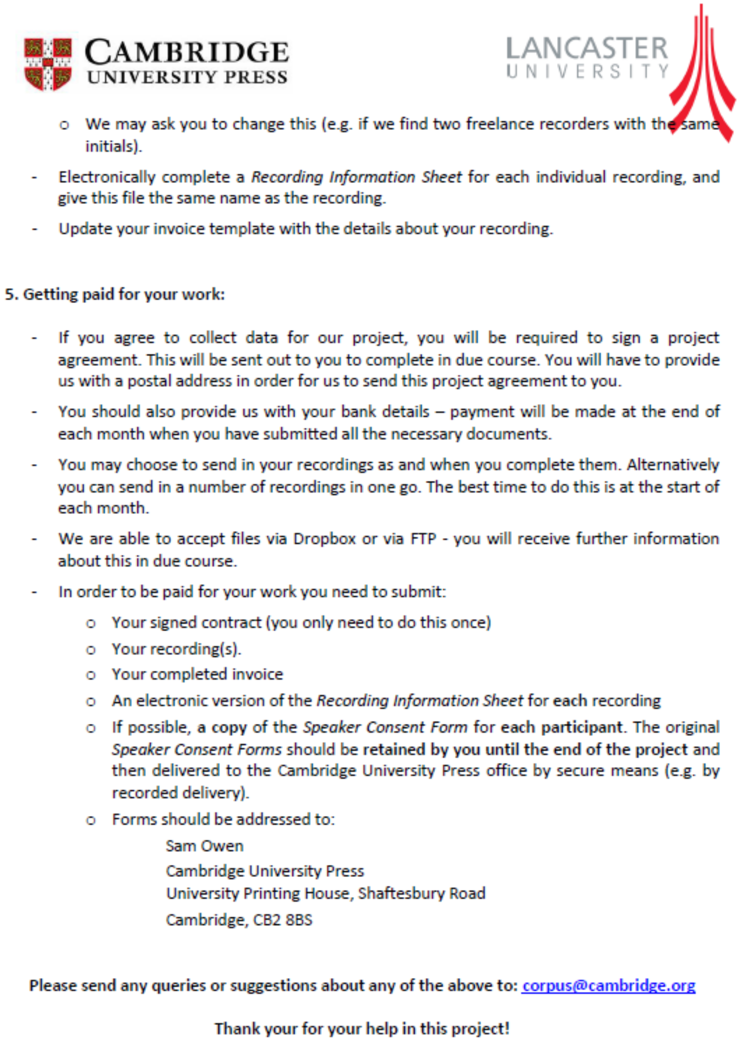
Conduct a normal conversation on any topic you choose. You may find some of the following topics helpful to get the conversation started:

- The Internet, Facebook, online shopping, social media, blogging, Twitter, eBooks
- New technology, science, medicine
- TV, film, music, food, the media, nightlife, hobbies, theatre
- News, politics, current affairs, world problems
- Work/school/college/university
- Sport, exercise, fitness, health
- Friends and family life – customs, family traditions, birthdays, holidays, celebrations
- Holidays and travel, geography
- Future plans and aspirations

These are only suggestions to get you started. You do not need to stick to one topic, or only discuss these topics – be natural!

4. After your recording:

- Collect your signed *Speaker Consent Forms* from your participants and keep them safe. If possible, scan in the signed consent forms so you have an electronic copy.
- Upload your recordings to your computer, and check that the quality is good – are all of the speakers audible? We will only accept good quality recordings. **Please ensure that recordings are in an mp3 format.**
- Most recording devices give each recording a 'default' file name. This should be changed before you send in your files. This is outlined below:
  - All recordings filenames should contain no full stops, hyphens or slashes.
  - All recordings should have the prefix **''BNC'** (standing for British National Corpus) followed by your own initials. After this, sequentially number the recordings you make, e.g. **BNCCD001**. So, project initials (BSC) + own initials (e.g. CD) + sequential number (001). Any subsequent recordings will be e.g. BSCCD002, BSCCD003, BSCCD004 etc.



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  - We may ask you to change this (e.g. if we find two freelance recorders with the same initials).

- Electronically complete a *Recording Information Sheet* for each individual recording, and give this file the same name as the recording.
- Update your invoice template with the details about your recording.

5. Getting paid for your work:

- If you agree to collect data for our project, you will be required to sign a project agreement. This will be sent out to you to complete in due course. You will have to provide us with a postal address in order for us to send this project agreement to you.
- You should also provide us with your bank details – payment will be made at the end of each month when you have submitted all the necessary documents.
- You may choose to send in your recordings as and when you complete them. Alternatively you can send in a number of recordings in one go. The best time to do this is at the start of each month.
- We are able to accept files via Dropbox or via FTP - you will receive further information about this in due course.
- In order to be paid for your work you need to submit:
  - Your signed contract (you only need to do this once)
  - Your recording(s).
  - Your completed invoice
  - An electronic version of the *Recording Information Sheet* for each recording
  - If possible, a copy of the *Speaker Consent Form* **for each participant**. The original *Speaker Consent Forms* should be **retained by you until the end of the project** and then delivered to the Cambridge University Press office by secure means (e.g. by recorded delivery).
  - Forms should be addressed to:

    Sam Owen
    Cambridge University Press
    University Printing House, Shaftesbury Road
    Cambridge, CB2 8BS

Please send any queries or suggestions about any of the above to: corpus@cambridge.org

Thank your for your help in this project!

Figure 11. Guidelines for Data Collection document which was provided to Spoken BNC2014 contributors.

3.5 Chapter summary

This chapter has covered several aspects of the Spoken BNC2014's compilation, which are linked thematically by principles of design. I have shown how our adoption of PPSR (Shirk et al. 2012) has informed each stage of the data and metadata collection process. Firstly, I justified a replication of the Spoken BNC1994DS's opportunistic approach to data collection, arguing that it is the only reasonable approach in the context of preparing the corpus fast enough to represent, at least for a while, 'present-day' language. In terms of speaker recruitment, I have described a very different approach to the Spoken BNC1994DS; rather than recruit participants privately, we employed several strategies to promote the project to the public. With regards to metadata, I have shown that allowing speakers to provide their own information gave us the opportunity to collect a much richer set of speaker metadata when compared to the BNC1994. Furthermore, I have described several innovations with regards to the classification of speaker metadata (e.g. linguistic region) which aim to improve analytic power while retaining comparability with the BNC1994. I have also described how the data recording stage has been improved when compared to the Spoken BNC1994 by virtue of advancements in technology that have occurred over the last two decades. I have justified our decision to instruct contributors to use smartphones to make recordings (this is discussed from the perspective of transcription in the next chapter), and shown how the use of modern technology need not exclude participants for whom access to such technology is limited.

At this stage in the compilation of the corpus, the Cambridge team received the recordings from participants (alongside all metadata and consent forms), and the contributors were paid for their work. The next stage was to convert the audio recordings into an electronically-searchable format – and so began the process of manual human transcription.

4 Transcription

4.1 Introduction

This chapter explores the transcription of the audio data collected for the Spoken BNC2014. Transcription of the Spoken BNC2014 recordings was undertaken by a team of transcribers employed by Cambridge University Press. They were trained according to a bespoke transcription scheme developed for this project (see Appendix J, p. 224). In this chapter, I discuss the considerations we made about the transcription of the Spoken BNC2014 recordings, including: whether to use human or automated transcription (Section 4.2); general principles of orthographic transcription (Section 4.3); shortcomings of the Spoken BNC1994 transcription scheme (Section 4.4); main features of the new Spoken BNC2014 scheme (Section 4.5); and the transcription process (Section 4.6). As I will show, the Spoken BNC2014 research team approached transcription with a view not only to facilitate comparability with the Spoken BNC1994, but also to adopt optimal practice with regards to the ease and consistency of transcription.

4.2 Transcription: human vs. machine

Transcription is "the transfer from speech to writing" (Kirk & Andersen 2016: 291). In the compilation of a spoken corpus, the complete transcription of all recordings is clearly an indispensable step for the exploitation of the data gathered (Schmidt 2016: 404); indeed, the sole aim of our efforts on the Spoken BNC2014 project was to produce a corpus of transcribed texts.[50] In terms of the transcription of the Spoken BNC1994, the first two questions that Crowdy (1994) poses in his account of the Spoken BNC1994's transcription system are "who is the transcription for?" and "how will it be used?" (Crowdy 1994: 25), foregrounding the importance of *purpose* when transcribing spoken data. Similarly, our starting point was to employ a level of "standard orthographic" transcription (Leech et al. 2001: 12) that was simple and easy to implement. Like the Spoken BNC1994, the main aim of the Spoken BNC2014 is to facilitate the quantitative study of "morphology, lexis, syntax, pragmatics, etc." (Atkins et al. 1992: 10), allowing users to search for "particular features or patterns" and view them "in concordanced form" (Crowdy 1995: 228). Similarly, Kirk and Andersen (2016: 293) state that spoken corpora

[50] Although I intend in future to pursue funding to prepare the original recordings for public release.

have enabled studies of “orthography, lexis, morphology, syntax and discourse markers”. An orthographic transcription serves the needs of research in these areas. I do, though, explicitly exclude the study of phonetics (segmental or prosodic) from the list of areas that the corpus caters for. In addition to high-quality audio recordings (as discussed in Section 3.4, p. 70), most phonetic research typically requires access to full phonetic transcription; this was not a possibility given (a) the approach of the project to use smartphones to make recordings and (b) the additional costs associated with a highly detailed transcription scheme.

The next decision to be made related to the method of transcription: would human transcribers have to produce the transcripts manually, as is the status quo for spoken corpora, or would there nowadays be a method available for the automation of this task? The Spoken BNC1994DS was “the largest collection of conversational language ever to be assembled” (Leech 1993: 12), and its size made transcription a “laborious human process” (Leech 1993: 12). In 2010, Baker (2010: 49) claimed that, despite technological advances in the transcription of spontaneous conversation, “there is no widely available machine that can listen to a recorded conversation and produce an orthographic…transcript of it”; as of 2017, however, software is available that is said to perform this task. I decided to investigate whether the software may perform accurately enough to replace the human transcriber, in whole, and for the automated transcription to produce texts good enough for linguistic analysis. Transcription is “undeniably the most important bottleneck in corpus compilation” (Schmidt 2016: 404), and so if automated, the costs and speed associated with the production of the Spoken BNC2014 would be greatly reduced. One example of such automated speech recognition technology is Trint. To test the state of the art of this technology, I signed up for a free, trial account with Trint, which is “a text-powered toolkit for transcribing, searching and editing media online” (Trint 2015). Among other features, Trint automatically produces transcripts which are time-aligned to their original audio files, and provides an interactive editing tool to correct any inaccuracies in the transcription. As of 2017, Trint is still in Beta mode, and its creators are very clear that the tool works best with good audio quality recordings, advising users to use “good microphones”, and that the tool “might not get heavy accents” (Trint 2015).

These warnings aside, I uploaded an audio file of a conversation to Trint which I had recorded with seven close relatives. This recording had been originally made for a separate investigation (see Section 5.5.3, p. 111), where I refer to the recording as the ‘gold standard’; I shall use the same name here. The following is an extract from a transcript of this recording which I produced manually:

- Transcript produced manually by human (the 'gold standard' transcript) (see Appendix E, p. 216):

<4> you don't have to grandma do you want some orange?
<1> you don't have to if you don't want to
<6> will you taste it first?
<1> [laugh]
<5> <OL> oh yeah (.) see how strong it is
<6> nice
<7> orange orange orange orange orange
<2> <OL> do you want some <name F>?
<7> <OL> just a bit just a little bit dear (.) thank you (.) that's bucks fizz of course isn't it?
<4> yeah (.) it is
<7> once you put the orange to it actually
<2> you want some?
<5> oh go on then
<4> you want some?
<6> have you have you started recording?

After uploading the gold standard recording to Trint, a full transcript was available to export as a Word document within thirty minutes. Although the time alignment and editing capabilities of the tool were very good, the accuracy of transcription appeared to be very low, as shown in the Trint equivalent of the same extract:

- Transcript produced automatically by Trint (see Appendix F, p. 218):

[00:00:36] You don't have to come up to any one that is easy for. Me to go spiders to be nice to horror in Joralemon a.. And that box which of course you do if you want to do it you are used to it actually.

[00:00:56] Oh go on. You want to thank you. You started recording.

It is clear that the difference in quality between the manual and automatic transcripts is great; it is difficult to tell that they refer to the same passage of audio recording. The Trint transcript may well be of decent enough quality for the purpose of subtitling, for example, but the quality is not good enough for linguistic analysis.

To make the task easier for Trint, I selected a recording of a conversation recorded between only two speakers (borrowed again from the speaker identification study; see Chapter 5, p. 102). Even this could not be handled accurately by Trint, as exemplified by the following extracts.

- Transcript produced manually by human (see Appendix G, p. 219):

8: so why have they cancelled? <clears throat>

9: <cough> well <unclear=we had> <cough> erm <.> we had it down for tomorrow night and a reserve as Saturday night

8: mm

9: but she looked at the weather and it's meant to be raining apparently and said it's been non-stop said it's been raining there for the last week and said all the fields and everything are really soggy

8: mm

9: now whether it'll dry out on Saturday is another matter cos I

0:00:30.7

think it's

8: in the woods

9: around the house and the fields erm <.> because having had that con=

8: <unclear=00.40>

9: having had that conversation I think erm <unclear=00.45> it's meant to rain again on Wednesday and Thursday so anyway that's what we're doing <pause=7>

8: okay

0:00:58.0

9: we didn't have any plans did we?

8: no <unclear=1.01>

9: yeah

8: that's fine <unclear=1.07>

- Transcript produced automatically by Trint (see Appendix H, p. 221):

> [00:00:01] And. So I can talk to him. Well we have an. We had it down for tomorrow night on a reserve a Saturday night river. But look the weather is meant to be raining apartment until it's been non-stop. They have been running there for the last week until all fields and everything are really soggy and you know whether a drug Gonzalez nominatives I think there's loads. Around the house in the fields.
>
> [00:00:35] Right. To.
>
> [00:00:39] Because I'm a by long time have a conversation I think I'm Those who is meant to run again on Wednesday and Thursday it's over. Anyway. I saw them.
>
> [00:00:53] The. Did I cry.
>
> [00:00:59] No bounds we were not allowed to. Yeah. And one little hold on is only an hour.

Aside from the inaccuracy of transcription of the original linguistic signal, another issue exemplified by both samples is Trint's poor ability to separate turns according to the speakers who produced them.

I also ran a sample of this recording through the CMU Sphinx framework,[51] which is state of the art speaker recognition software. Aside from speaker recognition, this framework facilitates automated transcription. The output was similarly poor in quality (see Appendix I, p. 223),[52] providing further evidence of the persisting difficulty of automatic spoken corpus transcription.

It seems, then, that Baker's (2010) claim still holds true for spoken corpus data; full automatic transcription is still not possible for the type of data I have presented the systems with: messy, conversational speech which is not necessarily dyadic. Of course, it is not the case that Trint was entirely incapable of the task. I could have noted the type of recording that Trint performed well with – excellent quality audio, with two speakers (or, preferably, monologic speech), and no background noise – and decided to gather only that type of recording to fit the

[51] This is implemented in the online Dartmouth Linguistic Annotation (DARLA) system: http://darla.dartmouth.edu/index (last accessed September 2017).

[52] I am grateful to Sam Kirkham at Lancaster University for his assistance with the speaker recognition software.

goal of using automated transcription. Clearly, though, this approach would have starved the corpus of exactly the type of data we set out to capture. It was obvious to us that fully automated transcription was not an option for the Spoken BNC2014.

One alternative to fully automated transcription (a "utopian" endeavour, in the words of Schmidt 2016: 413) would be to combine elements of automated transcription with manual work. This was explored by Schmidt (2016: 413-4), who leads the research team responsible for the Research and Teaching Corpus of Spoken German (FOLK). He examined, in addition to speech recognition software, "the automatic detection of silences for a first pre-segmentation of the audio signal" (Schmidt 2016: 413). He found that silence detection works well, but only for recordings of good quality, with little background noise and involving no more than two speakers. This may be useful for the FOLK once the technology improves to cope better with more speakers; the FOLK corpus contains texts from a variety of conversational settings, including lectures, business meetings, etc. This approach is not as useful for the Spoken BNC2014, due to the homogeneity of conversational type and the fact that recordings were captured in pre-arranged 'sessions'; there are few long periods of silence in the Spoken BNC2014 recordings.

The only other alternative to automated transcription – manual transcription by human – is a slow, expensive process that is liable to error (Baker 2010: 49). For example, forms that may be considered "erroneous or disfluent" (but, nonetheless, representative of the language under investigation) may be inadvertently and unwantedly 'corrected' during the transcription process (see Gilquin & De Cock 2013: 15). Furthermore, it is known that there are "inconsistencies and anomalies" in the transcription of the Spoken BNC1994 (Leech et al. 2001: 12). Despite this, there are ways of minimizing the cost and time of transcription while also serving the needs of most researchers who are interested in this type of data. As Atkins et al. (1992: 10) recommend, transcribing recordings in the form of an "idealized 'script' (like a screenplay or drama script)…is sufficient for a wide variety of linguistic studies". This means that speech phenomena which require a higher level of transcriber inference, such as "false starts, hesitation, non-verbal signals", will generally be normalized/disregarded at the transcription stage (Atkins at al. 1992: 10). Aside from cost and time reduction, another benefit of this approach is that transcriptions should be easily readable and familiar for all end-users (Atkins et al. 1992: 10), whether experienced researchers or laypeople.

4.3 Approach to human transcription

With it clearly established that human transcription was still the only feasible approach, the next stage was to look ahead and decide which encoding standard would be used for the corpus texts which result from the transcription stage – the choice of encoding standard would inform the development of the transcription scheme itself. Many differing standards exist in corpus linguistics for the transcription of audio data, including (as reviewed by Andersen 2016): the AHDS (Arts and Humanities Data Service) guide (Thompson 2005), CHAT (codes for the human analysis of transcripts; MacWhinney 2000), the CES (Corpus Encoding Standard; Ide 1996), the ICE (International Corpus of English) standard (Nelson 2002), the NERC (Network of European Reference Corpora)/COBUILD conventions (Payne 1995), and the Santa Barbara School conventions (Du Bois et al. 1993). Another system, which uses Extensible Markup Language (XML), is the Text Encoding Initiative (TEI; Burnard & Bauman 2013). It is the TEI which was used to encode the BNC1994, although the transcription scheme itself (Crowdy 1994) comprised simpler tags which were (eventually) converted into the TEI format.

In the interests of comparability, the Spoken BNC2014 research team chose to encode the corpus in a version of XML which is, by and large, a much-simplified version of the TEI (Hardie 2014b). Although XML encoding is a topic dealt with in Section 6.2 (p. 128), it is relevant to explore its relationship with transcription here. Despite the 'modest' level of XML employed (Hardie 2014b; discussed in Section 6.2), XML is a somewhat cumbersome format for direct data entry, and is also rather difficult to teach to non-specialist audio transcribers. It is also challenging to check for accuracy by eye. From the outset, then, we knew that, while our goal was to release a canonical version of the corpus in XML, this would not be the system used for transcription. Instead, we designed the transcription scheme to be human-friendly, while making sure that all of its elements could be unambiguously mapped to XML at a later stage. For that reason, the original transcripts were to use short, easy-to-type codes for its features. As the recordings were transcribed by the Cambridge team, the transcripts were sent in batches to the Lancaster team. I then used a set of automated conversion scripts to translate the transcripts into XML – at the same time applying a series of further automatic checks on the correct use of the transcription conventions that were not possible prior to conversion to a structured document (for detail on this stage of the compilation process see Section 6.2, p. 128). As mentioned, this approach was by no means an innovation – the transcription scheme presented by Crowdy (1994) for the Spoken BNC1994 was likewise converted to SGML (and, later, XML) in the released BNC1994.

With this approach in mind, the next decision to be made related to the precise nature of the scheme for orthographic transcription to be employed, including the specific conventions which would be captured therein. This can be a highly consequential matter, as it affects the time taken for transcription, and thus the cost and therefore the possible size of the corpus (see Schmidt 2016). The key requirement is for a robust transcription scheme that, critically, minimizes the level of transcriber inference that is needed – that is, the number of "interpretive choices" (Bucholtz 2000: 1441) that a transcriber must make about potentially ambiguous speech phenomena; disagreement between transcribers, caused by poorly defined transcription conventions, is "one of the main problems of transcribing" (Garrard et al. 2011: 398). Speech phenomena which require a higher level of transcriber inference, such as "false starts, hesitation, non-verbal signals" (Atkins et al. 1992: 10), take more time to transcribe, and even more time to achieve consistency within each transcriber's work and across transcribers (see Cook 1990). It is obvious that choosing a highly detailed set of narrow transcription conventions "will inevitably result in a higher degree of variation and less consistency, complicating corpus queries and automated processing such as part-of-speech tagging" (Sauer & Lüdeling 2016: 424; see also Thompson 2005). We aimed, therefore, to normalize or disregard these phenomena at the transcription stage as far as we could, while still serving most of the needs of most of our intended users.

Defining such a robust scheme meant that all of the issues likely to be encountered by transcribers had to be explored, and decisions made about how to deal with them, before full scale transcription commenced. The concerns that we had about transcription were by no means unique to the Spoken BNC2014. As mentioned, another contemporary spoken corpus compilation project is the FOLK (Schmidt 2016). This has been compiled with similar attention paid to issues of transcription. Concerning the transcription of the FOLK, Schmidt (2016: 404-5) identified the following requirements:

i. The transcription convention to be used should be familiar to and accepted by a large audience;
ii. The convention should not be geared towards a specific research interest. It should also not require the transcribers to take more interpretative decisions than necessary;
iii. The transcription tool to be used should support this convention, allow easy manual alignment of recordings with transcriptions and directly produce data suitable for integration into a database;

iv. Both convention and tool should be easy to learn and apply and minimize the likelihood of genuine transcription errors.

The FOLK's transcription scheme includes highly detailed features such as "the precise measurement of pauses longer than 0.2 seconds, a detailed marking of overlapping speech, [and] a transcription of audible breathing" (Schmidt 2016: 406). Although (as will become evident) the Spoken BNC2014's scheme is, overall, much simpler,[53] the principles listed above generally match our aims. Concerning requirement (i), I have already established how our transcription conventions were designed to be mapped to XML, which is a well-established encoding language in corpus linguistics. For (ii), the case has been made that the Spoken BNC2014 is intended to be used for a wide range of purposes, and our aim for minimal ambiguity has been established. Requirement (iii) is not fully relevant to the Spoken BNC2014 since the preparation of the audio files is not within the scope of this project. Nor did we use a bespoke transcription tool, as discussed in Section 4.6. With regards to integration, however, the point made in requirement (iii) is relevant; Section 6.2 (p. 128) covers the conversion of the resulting transcripts into a format which is readable by CQPweb. Finally, requirement (iv) is fulfilled by the Spoken BNC2014's use of a set of simple and unambigious transcription conventions (and a quality control procedure, which is introduced in Section 4.6).

When considering the specific features that might be captured by the Spoken BNC2014 transcription scheme, I found that Atkins et al. (1992: 11-12) provide a useful source of recommendations on this topic. These recommendations include: beginning each turn with an identifying encoding of the speaker; marking inaudible segments; normalizing numbers and abbreviations; and producing a "closed set of permissible forms" for the transcription of dialect and non-standard words. Atkins et al. (1992: 11-12) also advise careful thought about the extent to which punctuation should represent written conventions, and suggest that faithful and precise transcription of overlapping speech is costly; thus, an evaluation of the value and utility of including both punctuation and overlaps should be made before transcription begins.

Similarly, with regard to functional and non-functional sounds (also known as filled pauses, or more informally *um*s and *ah*s), Atkins et al. (1992) note that classifying these speech sounds according to discourse function requires a high level of inference on the part of the

[53] It is not the purpose of this comparison to negatively evaluate the approach of the FOLK's compilers. Schmidt (2016: 414) does note, however, that "it is debatable whether a detailed transcription of breathing furnishes the majority of users with any useful information, and one might also question the decision to precisely note the start and end of each overlap". When I visited the Institute for German Language in December 2015 to exchange information with the FOLK research team, it is fair to state that both parties were impressed by how the transcription of national spoken corpora could be defined so differently and for such different purposes.

transcriber. Therefore, "a large set of orthographic representations" (Atkins et al. 1992: 12) of speech sounds, rather than their possible functional mappings, should be added to the transcription scheme. That is, transcribers should be instructed to select a transcription for each *um* or *ah* based only on its sound form, and should not attempt to imbue meaning into the transcription of these non-lexical sounds (e.g. by providing pragmatic annotation). Rather, Atkins et al. (1992) suggest that the interpretation of such sounds should be left to researchers who choose to investigate these phenomena with access to the recordings at a later date. This recommendation can be seen as a specific case of Crowdy's (1994: 25) more general principle that researchers should use the transcript as a "baseline" and that analysis beyond the scope of a simple orthographic transcription should be undertaken by those researchers who wish to "analyse the text in more detail".

Admittedly, such additional analysis is not immediately possible in the initial release of the corpus, because we have not been able to de-identify the audio recordings from the Spoken BNC2014 within the scope of the present project (de-identification being necessary to preserve speakers' privacy). However, I will in future pursue further funding to de-identify and release the original recordings, thus enabling functional analysis of speech features currently transcribed without any pragmatic/discourse classification. The benefit of an approach which omits any features requiring inferential decisions by the transcribers is not merely theoretical; rather, we have practical evidence of its usefulness. As will be elaborated in Section 4.5, during the pilot phase of our work, I undertook an experiment in which transcribers were asked to annotate any segment of an utterance containing reported direct speech (that is, material that the speaker is quoting from elsewhere) during their transcription of the audio. The transcribers reported that this task was not difficult. However, when their work was compared to a standardised transcript, they were found to have marked less than a third of qualifying clauses. I saw that requiring transcribers to include detailed analytic distinctions either leads to low quality results, or necessitates a high level of *post hoc* correction by a linguist. An alternative is to employ only linguists for the job of transcription – but they would be unlikely to be sufficiently trained typists, and typically cost more, both of which have consequences for productivity. None of these outcomes was desirable or affordable. I was, therefore, convinced of the need to make the transcription scheme exclude not only the annotation of quoted speech but also any other type of additional annotation that would require the input of a linguist – though, as noted, such additions to the basic transcription will of course be welcome after the release of the audio data (using, for example, the pragmatic annotation scheme described by Kirk 2016).

4.4 The Spoken BNC1994 transcription scheme

Given the above points, our first decision was to avoid simply re-using the Spoken BNC1994 transcription scheme (Crowdy 1994). The reason for this is that Crowdy's (1994) account of the Spoken BNC1994 transcription conventions is by no means comprehensive; only sixteen features are identified and the entire scheme is less than two thousand words in length. Furthermore, not enough examples are provided to eliminate ambiguity, and some of the examples which are provided are transcribed inconsistently. For example, full stops and commas are to be used to mark "a syntactically appropriate termination or pause in an utterance, approximating to use in written text", and an ellipsis to mark "a longer pause – up to 5 seconds" (Crowdy 1994: 27). But in practice, the examples include uses of full stops and commas in positions that *would not* license a punctuation mark in written English, as shown in below, suggesting that the full stop/comma versus ellipsis rule was not followed by transcribers in a consistent manner:

> <2> I think it's always, deceptive on days like this because its, overcast and [er]
> […]
> <2> But, but er, he's…just broken away from his girlfriend and [<unclear>]
> <1> [Oh has] he, oh. Well he seemed happy enough when he called. (Crowdy 1994: 28)

Furthermore, the Spoken BNC1994 scheme states that question marks are to be used to indicate "questioning" utterances (Crowdy 1994: 28), but this is not done consistently in the examples provided, as in for instance:

> <1> It's a funny old day isn't it.
> <2> Mm it's not cold is it? (Crowdy 1994: 28)

It thus seemed appropriate not to apply the 1994 scheme again without thorough review. This is not to imply that the original scheme is wrong; many of the recommendations, I believe, are sensible. However, considering examples such as those above, we were concerned that the transcription scheme as it was did not give enough detail about enough features to maximally ensure inter-transcriber consistency (see Garrard et al. 2011). So, instead:

i. we conducted a critical evaluation of the Crowdy (1994) scheme, identifying which features should be retained, abandoned or adapted;

ii. we reviewed evidence from other work on spoken corpus transcription published since the Spoken BNC1994's compilation, with a focus on spoken components of the Cambridge English Corpus as well as recent work at Lancaster University on the Trinity Lancaster spoken learner corpus (Gablasova et al. 2015);

iii. I conducted a small pilot study to test some of the proposed features in practice.

The resulting transcription scheme can be found in Appendix J (p. 224).

4.5 The Spoken BNC2014 transcription scheme: main features

This section discusses some of the main features of the Spoken BNC2014 transcription scheme, paying attention to those features which arose based upon steps (i)-(iii) listed above. Steps (i) and (ii) were conducted through discussions with the rest of the research team. To facilitate step (iii), I was granted six working days of transcription time of two professional transcribers at the Centre for Corpus Approaches to Social Science (CASS) at Lancaster University. They were provided with audio files collected during an early pilot study, and provided with a proposed transcription scheme. This allowed me to test some of the proposed features and evaluate whether they should be included in the final version of the transcription scheme (see Appendix J, p. 224). At the end of each day during this period, I met with the transcribers to discuss their progress and note the issues they had encountered.

It should be noted that the examples given in this section are in the format of the corpus texts as they were originally transcribed, and not how they appear either in XML – the format in which the corpus texts will be released in 2018 (see Section 6.4, p. 136) – or in the CQPweb interface (see Section 6.4 and Love et al. 2017b). As noted above, the transcripts were later converted into XML; more detail on this stage of the project is provided in Section 6.2 (p. 128).

In consequence, while (as previously noted) I do describe some of the human-friendly conventions used in transcription below, these conventions are not used in the text of the corpus itself; instead, the actual corpus text contains the canonical XML. The transcription scheme is, then, part of my record of how the corpus was created. It is not exclusively a guide for users. We make it available to users of the corpus in order to make the decisions discussed above absolutely transparent, but also in the hope that it may prove useful as a point of departure for other researchers working on the creation of spoken corpora of this kind.

The main features are detailed below, with examples from the transcription scheme where appropriate.

- Encoding of speaker IDs

As in Crowdy (1994: 26), each speaker was given a unique numeric label (a speaker ID, e.g. '<0022>'), which was consistent for every recording in which they featured. This differed from Gablasova et al. (2015), which encoded speakers according to their role in the speech situation, rather than according to their individual identity. Since numbers that were spoken in recordings were transcribed in word form (see Appendix J, p. 224), numerical forms were used only for the purpose of labelling the speakers, and therefore could be further encoded automatically after transcription. Transcribers were also given the facility to indicate cases where they were not fully confident in their identification of the speaker who produced a given turn, but could provide a best guess. Speaker identification – the accuracy with which speaker ID codes are assigned to turns in a transcript – is a previously unexplored issue in research on spoken corpora, and Chapter 5 (p. 102) is devoted to its investigation.

- De-identification

Crowdy (1994: 28) used de-identification to ensure that "any reference that would allow an individual to be identified is omitted from the transcription". Given the ethical importance of anonymity (see Section 3.3.3, p. 41) this is a general principle that I wished to maintain in the Spoken BNC2014 transcription scheme. The first decision made with regards to this issue was to avoid using automatic methods to de-identify speakers once the transcripts had already been produced – transcribed names, for example, could have been replaced with equivalent but fictitious names. This is strongly recommended against by Hasund (1998: 14) in her account of anonymization procedures in the COLT:

(a) Automatic replacement will wrongly affect:
 - first names of public persons (actors, singers, etc.)
 - inanimate objects with person names (computer games, etc.)
 - nouns, adjectives, verbs, etc. that overlap in form with names (untagged corpora only);

(b) Speakers sometimes use names creatively to make puns, alliteration, rhymes, etc., the effects of which would partly or completely be destroyed by replacements;

(c) Automatic replacement is complicated by instances where the pronunciation of a name is initiated, but not completed, by a speaker (e.g. Cha= instead of Charlie).

Because of this, I recommended that the de-identification of names should be integrated into the process of transcription, rather than conducted post-hoc. In the case of de-identification as a part of the transcription scheme, Hasund (1998: 15) notes that "first names are usually not deleted, but replaced" by fictional names or codes. Indeed, in Gablasova et al. (2015), the names of (non-famous)[54] people are de-identified completely with the tag <*name*>. This was adapted for the Spoken BNC2014 to also include the gender of the name (where interpretable), which is a similar procedure as adopted in the Bank of English (Clear 1997, cited in Hasund 1998: 15). The following example from a Spoken BNC2014 transcript contains the name of a female:

> <0326> I dunno what to what to do for <name F>'s birthday

Transcribers were instructed, in the case of names that are used for both males and females (e.g. 'Sam' for 'Samantha' or, equally, 'Samuel'), to use the tag '<name N>', unless the gender of the referent could be inferred from the context (i.e. use of pronouns). The inclusion of gender was a crude attempt to acknowledge that "names…carry a certain amount of social and ethnic information" (Hasund 1998: 13), which could be retained without compromising anonymity. However, we decided that coding names to the extent of including supposed ethnic information (based on statements like "'Ruben', 'Rebecca', and 'Miriam' are typical Jewish names", Hasund 1998: 19) would be too unreliable to include in the transcription scheme. Pilot testing indicated that the addition of gender in the de-identification tag would be a successful addition to the Spoken BNC2014. Of the 380 times the '<name>' tag was used, only seven instances (1.8%) had not been tagged for gender.

Aside from names, transcribers were instructed to use de-identification tags for other personally identifiable information, including addresses and phone numbers (Crowdy 1994: 28, Hasund 1998: 13), and locations or institutions that seem unique to the speaker in some way. Newly emerging personal identifiers (relative to the BNC1994) such as email address and social media username were also included in the de-identification procedure:

> <0325> <OL> yeah someone called <soc-med> follows me it's like co= no because I was reading through basically what happens is I was then I found like a confession thing and I was just reading through all of them

[54] Despite the attested difficulty in consistently distinguishing between the names of famous and non-famous people (Hasund 1998: 20), we encouraged transcribers to avoid anonymizing the names of celebrities, fictional characters etc. who are considered to be in the public domain.

- Minimal use of punctuation

The BNC1994 scheme required transcribers to "identify 'sentence-like' units" (Crowdy 1994: 26), and mark the boundaries with a full stop, comma, question mark or exclamation mark (Crowdy 1994: 27). This appears to have allowed too much room for interpretation on the part of transcribers; it seems unlikely that transcribers would agree consistently on the difference between a boundary that requires a full stop as opposed to a comma or exclamation mark. Furthermore, this approach presupposes a view of transcription which attempts to mould the spoken signal into traditional conventions of written language. Although transcription is, by definition, a process of converting speech into writing (Kirk & Andersen 2016: 295), it is my view that features of speech should be represented in transcription as much as reasonable, relative to time and cost constraints. Our approach to sentence boundaries was to avoid having the transcribers decide how to mark them by not marking them at all. Instead of treating discourse boundaries as the spoken equivalent to full stops, commas, etc., interruptions to the flow of speech were treated simply as pauses, with no preconceived relationship to punctuation. Short pauses (up to 5 seconds) were marked with '(.)' and long pauses (more than 5 seconds) were marked with '(…)', as exemplified below:

> <0618> yeah (.) okay because you see I thought the same about when Cameron got in again I thought holy shit I don't know anybody who's voted for this arse
>
> <0405> Fanta is orange already (...) oh sh=

The only feature of written punctuation that was retained in the Spoken BNC2014 transcription scheme is the question mark. Unlike full stops, commas and semi-colons, which all mark (different types of) discourse boundary, question marks are solely used to mark questions. As such it is reasonable to expect that the problem described above does not apply to question marks too – provided a clear definition of the contexts in which they should be used is provided to transcribers. As noted above, consistent and unambiguous exemplification was not provided to the transcribers of the Spoken BNC1994, and so I sought inspiration from other sources. Turning again to the Trinity Lancaster Learner Corpus transcription scheme (Gablasova et al. 2015), I noted that it allows question marks only for the grammatical surface form of a question. In English, grammatically-formed interrogatives can be grouped into three categories: *yes/no questions, wh-questions* and *tag questions* (Börjars & Burridge 2010: 108-115). Below is an example of each question type from the Spoken BNC2014:

Yes/no question:

<0202> and I want to fuck you so (.) sorry did that make you feel awkward?

Wh-question:

<0202> what time is it now?

Tag question:

<0619> it's quite nice in this window isn't it?

In pilot testing, the transcribers were confident in identifying fully grammatically-formed questions in the forms of these three main varieties. However, using question marks *only* for such forms appeared too restrictive for the transcription of the pilot data; the transcribers observed that there were many more cases where they were confident that a question was being asked, but without using a fully grammatical interrogative form. These included questions expressed incompletely (with some surface form(s) omitted), or questions expressed in declarative form with audible rising intonation. The transcribers provided examples of both types during pilot testing:[55]

Incompletely formed interrogative structures:

(i) ah is it lovely and warm there Dylan? **getting dried off?**

(ii) pardon?

(iii) mm yeah exactly sorry?

Declarative structures functioning as questions:

(i) so he has someone there who does all this then?

(ii) how many years have we lived here? **two and a half years?**

(iii) we're talking mains?

These all clearly function as questions, without taking on full interrogative forms. The transcribers reported that it was easier to transcribe examples such as these with question marks than it was to exclude them, while spending time checking that only fully formed interrogatives were being coded. It appears that allowing transcribers the freedom to use intuitive criteria for the coding of question marks, rather than purely structural criteria, adds useful detail to the

[55] In examples which contain more than one question, the one which exemplifies the question type is emboldened.

transcription while apparently reducing transcriber effort. Based on this, I recommended that a broad definition of question marking was used in the Spoken BNC2014 transcription scheme; in the scheme we have included examples of both grammatical interrogatives and other forms which serve a question function (described as 'statement with obvious rising intonation').

- Overlaps

The Spoken BNC1994 marked overlaps using square brackets (and curly brackets where two overlaps occur at once), as in the following example from Crowdy (1994: 26):

<1> So she was virtually a [a house prisoner]
<2> [house {bound}]
<3> {prisoner}

Here the words 'a house prisoner' and 'house bound' would have been spoken at the same time. Subsequently, 'bound' and 'prisoner' would also have overlapped. This level of detail – marking the exact position of the overlap – does not seem necessary for the majority of analyses that use spoken corpora (see Section 2.3, p. 12). Crowdy (1994: 26) claims that such a system "has a minimal effect on the speed of transcription" – this may be the case, but the Spoken BNC2014 research team was concerned that such a complicated overlap marking scheme would jeopardize inter-transcriber consistency. We agreed that overlaps would be dealt with differently in the new corpus. One option would have been to adopt the opposite extreme and simply avoid marking them altogether, as in Gablasova et al.'s (2015) scheme, which does not mark overlaps at all; this is understandable given that (a) all conversations in the Trinity Lancaster spoken learner corpus contain only two speakers, and (b) learner corpus research tends to be interested in vocabulary and grammar rather than conversational discourse.

Rather than adopt this approach, we set out to simplify the BNC1994 overlap scheme rather than eradicate it entirely, developing a convention which was less likely to be applied inconsistently. Pilot testing showed that it was possible to capture the general progression of the conversation without cluttering the document with broken utterances and parentheses. Parentheses were replaced with a lone overlap tag ('<OL>'), which is placed at the beginning of any turn which overlaps with a previous turn. No record of the location of the overlap, relative to the previous turn, is made. Using the Spoken BNC2014 scheme, Crowdy's (1994: 26) example would look like this:

<0001>	so she was virtually a a house prisoner
<0002>	<OL> house bound
<0003>	<OL> prisoner

- Filled pauses
  The Spoken BNC1994 scheme provided a list of twelve 'vocalized pauses':

  ah, aha, ee, eh, er, erm, ha, hey, mhm, mm, oh, ooh. (Crowdy 1994: 27)

These were intended to be the only permissible orthographic forms for filled pauses, and were to be identified in the audio files by transcribers by use of phonetic information provided in the scheme. While it is difficult to assess the extent to which meaningful distinctions were maintained between the audio signal and these orthographic forms, what is clear is that other forms did get transcribed and are included in the Spoken BNC1994. There are 126 instances of 'em', 359 instances of 'hmm' and 57 instances of 'mmm', for example. Furthermore, Andersen (2016: 334) found great variability in the orthography of filled pauses in existing spoken corpora, observing, for example, that "it seems very unlikely that all the forms *ehm*, *erm*, *uhm* and *umm* systematically represent four distinct pronunciations". It was clear to us that a better attempt at standardization should be made – for the sake of research which depends upon the faithful transcription of shorter vocalizations (e.g. Tottie 2011). Andersen (2016: 343) recommends that there should be some limit on the orthographic forms of filled pauses to "a categorically justified minimum".

With this in mind, we produced a shortened list of eight filled pause sounds, and, in addition to phonetic guidance, provided information about the common discourse function of each sound (Table 10, overleaf). To avoid a variety of deviant forms entering the corpus, we instructed transcribers to map each sound they encountered to the most appropriate orthographic form from Table 10. For example, the spellings 'mmm', 'mm-mm' and 'mm-hm' are all to be captured by the form 'mm'. The intended effect is maximized inter-transcriber consistency and, therefore, maximized corpus query recall caused by the conflating of orthographic variants of very similar filled pause sounds.

Table 10. List of permissible filled pauses in the Spoken BNC2014 transcription scheme.

What it sounds like	**How to write it**
Has the vowel found in "f**a**ther" or a similar vowel; usually = realisation, frustration or pain	ah
Has the vowel found in "r**oa**d" or a similar vowel; usually = mild surprise or upset	oh
Has the vowel in "b**e**d" or the vowel in "m**a**de" or something similar, without an "R" or "M" sound at the end; usually = uncertainty, or 'please say again?'	eh
A long or short "er" or "uh" vowel, as in "b**i**rd"; there may or may not be an "R" sound at the end; usually = uncertainty	er
As for "er" but ends as a nasal sound	erm
Has a nasally "M" or "N" sound from start to end; usually = agreement	mm
Like an "er" but with a clear "H" sound at the start; usually = surprise	huh
Two shortened "uh" or "er"-type vowels with an "H" sound between them, usually = disagreement; OR, a sound like the word "ahah!"; usually = success or realisation	uhu

- Non-linguistic vocalizations

The Spoken BNC1994 transcription scheme includes 'non-verbal sounds' (Crowdy 1994: 27), which are encoded in the following format, where the duration in seconds (in this example, '10') is included, if longer than five:

<nv>laugh</nv>(10)

Acting in the interests of reducing ambiguity and maximizing consistency, we removed the duration feature from this convention and simplified the tag format, replacing '<nv>' and '</nv>' with square brackets. Thus, the same non-linguistic vocalization in our scheme would be transcribed as:

[laugh]

Furthermore, we assessed the list of permissible non-linguistic vocalisations. In the Spoken BNC1994 scheme, these include *cough, sneeze, laugh, yawn* and *whistling* (Crowdy 1994: 27). In addition to these, we added *gasp, sigh* and *misc* – a miscellaneous category allowing transcribers to include any non-linguistic vocalisation which cannot be described easily. In addition to these, in pilot testing there were some instances of singing that caused difficulty for the transcribers. The easiest solution was simply to introduce the new tag '[sing=LYRICS]' to distinguish such cases from normal speech (where 'LYRICS' is replaced by the words which are sung). The *sing* tag also accounts for instances of unclear, yet tuneful, speech – i.e. the singing of a melody with no words. In these cases, 'LYRICS' is replaced by a question mark.

- A transcription feature trialled and rejected: quotative speech marking

So far, I have introduced some of the main features of the Spoken BNC2014 transcription scheme – all of which are features which the research team adapted from those in the 1994 scheme. As mentioned in Section 4.3, one new feature which I had been interested in introducing was quotative speech marking. Quotatives are "reported direct speech elements that convey what someone said or thought at a different moment in time" (Terraschke 2013: 59). This is a feature that is not considered by Atkins et al. (1992), or by Crowdy (1994),[56] but one which, based on intuition and the experience of making the pilot recordings, seemed to be pervasive enough to warrant investigation. In the words of Bakhtin, "in real life people talk most of all about what others talk about" (1981: 338, cited in Clift & Holt 2007: 1), and I was interested in making a distinction between (a) the language of the speaker and (b) language which is reported. Specifically, I refer only to direct speech/thought, which is any representation of speech/thought which is presented as verbatim,[57] rather than paraphrased indirectly (Leech & Short 1981: 318, cited in Keizer 2009: 846). Adapting Leech and Short's example (quoted by Keizer 2009: 846), the distinction is demonstrated as follows:

1 (direct):	he said I'll come back here to see you again tomorrow
2 (indirect):	he said that he would return there to see her the following day

[56] Crowdy (1994) did use the tag '<read>' (terminated by '</>') to indicate passages that were read aloud from written texts by speakers. However, this tag did not extend to all reported speech.

[57] Whether direct reported speech is a verbatim account of the original utterance is an interesting avenue of research itself. Clift and Holt (2007: 6) claim that "'reported speech' is somewhat of a misnomer".

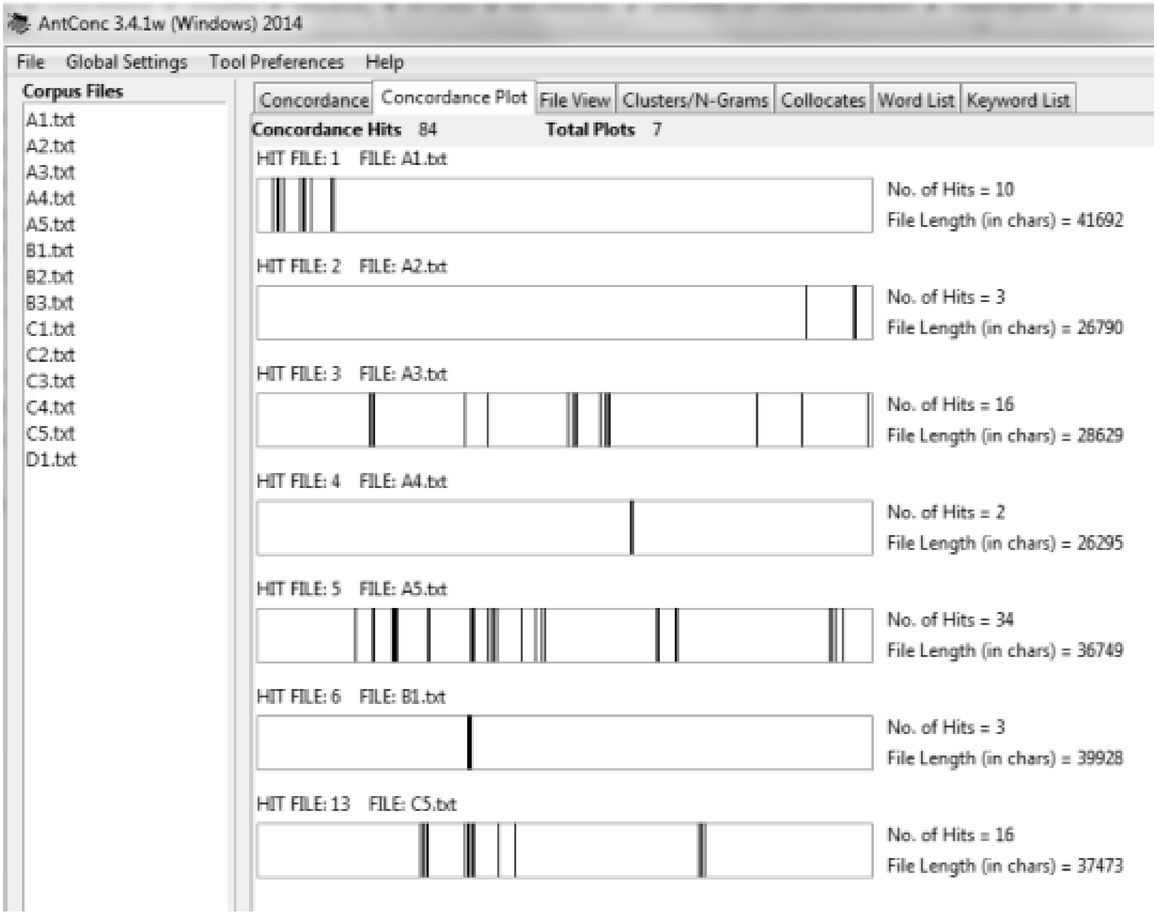
If these occurred in a corpus recording, the addition of quotative marking in the transcription scheme would not affect example 2 (indirect), but would affect example 1 (direct). The example may be transcribed as:

1: he said [quote="I'll come back here to see you again tomorrow"]

Pilot testing aimed to assess the ease with which such marking, using the '[quote=XXX]' format, could be added to such instances of direct speech or thought representation. I assessed whether such marking could be added to the transcription scheme in a way which meant it was likely that this marking could be carried out consistently.

The transcribers reported that the addition of quotative speech marking was generally unproblematic and did not cause many cases of ambiguity. Despite this, the quotative speech marking was used in only half of the transcripts produced. Furthermore, rather than occurring evenly across these transcripts, the distribution of these tags within these transcripts appears to have varied greatly. The concordance plot of the search term '[quot=' (Figure 12, overleaf) in the pilot transcripts shows that in pilot transcript A5, for example, there is a relatively high density of quotative marking but that in transcript B1 (which is a similar length) there are only three in the entire transcript. If this transcription feature had been used in the Spoken BNC2014 itself, and the findings of the pilot testing were replicated, it would suggest one of two things. Either: reported direct speech is not as pervasive in spoken language as previously reported (cf. Clift & Holt 2007: 1; Terraschke 2013: 59), or: not all instances of reported direct speech had been coded at the transcription stage in the first place. Because of the many ways in which direct speech can be reported (see Keizer 2009), assessment of accuracy is difficult. However, concordance analysis of the verb *said* reveals at least 40 occurrences out of 130 (30.8%) which appear to function as reporting verbs, but which had not been transcribed as quotative speech. This compares to the 35 instances which had been tagged (26.9%).[58] It appears that, at least in the case of *said,* quotative marking often was not coded in the transcription when it should have been. As a result, I recommended to the Spoken BNC2014 research team that we omit the coding of quotative content from the transcription of the corpus. Upon the release of the corpus XML files, researchers who are interested in reported speech will be welcome to mark up the transcripts themselves.

[58] *Said*, of course, has functions other than reporting direct speech and so it was not expected that all 130 instances would qualify for quotative marking in the first place.



Corpus Files
A1.txt
A2.txt
A3.txt
A4.txt
A5.txt
B1.txt
B2.txt
B3.txt
C1.txt
C2.txt
C3.txt
C4.txt
C5.txt
D1.txt

```
Concordance Hits  84          Total Plots  7
HIT FILE: 1   FILE: A1.txt    No. of Hits = 10   File Length (in chars) = 41692
HIT FILE: 2   FILE: A2.txt    No. of Hits = 3    File Length (in chars) = 26790
HIT FILE: 3   FILE: A3.txt    No. of Hits = 16   File Length (in chars) = 28629
HIT FILE: 4   FILE: A4.txt    No. of Hits = 2    File Length (in chars) = 26295
HIT FILE: 5   FILE: A5.txt    No. of Hits = 34   File Length (in chars) = 36749
HIT FILE: 6   FILE: B1.txt    No. of Hits = 3    File Length (in chars) = 39928
HIT FILE: 13  FILE: C5.txt    No. of Hits = 16   File Length (in chars) = 37473
```

Figure 12. Concordance plot of '[quot=' tags in the pilot corpus (displayed in AntConc, Anthony 2014).

4.6 The Spoken BNC2014 transcription process

In the previous section, I introduced some of the main features of the Spoken BNC2014 transcription scheme. The entire scheme can be found in Appendix J (p. 224). As with other aspects of the corpus compilation process (e.g. data collection), many of its features represent the delicate balance we sought between backwards-compatibility with the Spoken BNC1994, and optimal practice in the context of the new corpus. Aside from the development of the scheme itself, the research team had to ensure to their best ability that the quality of transcription was consistent throughout the period in which we received recordings from contributors. Quality control was, therefore, what formed the basis of the transcription process.

As the audio files were received by the Cambridge team from contributors, checks were conducted to ensure that the quality was clear enough for good orthographic transcription. The checks, which were conducted manually, involved listening to samples of each audio file and assessing the quality of the audio; the best files had a clear audio signal with minimal disruptive background noise. Audio files which passed the checks were then sent in batches to a team of twenty transcribers who had each been trained to use the transcription scheme described above. Transcribers were in regular contact with the Cambridge team to discuss and clarify any areas of uncertainty, and they were able to reject further audio recordings if previously undetected quality issues were discovered.

Transcribers used Microsoft Word to transcribe the audio files. This did mean that they were required to type each tag manually each time a given tag was called upon. Although this did run the risk of the occurrence of typing errors, the combination of a thorough quality control process (see below), followed by automated error detection and correction (see Section 6.2, p. 128), meant that any errors in the typing of tags do not feature in the Spoken BNC2014 XML files.

Early in the project, I organised a workshop with the transcribers, which gave them the opportunity to meet each other and discuss any concerns with regards to the transcription of the audio files. Before the workshop, I had sent each of the transcribers a short recording conducted between myself and four family members, and asked them to transcribe the recording using the (proposed) transcription scheme. I compared the resulting transcripts and presented the results of my analysis at the workshop, drawing attention to inconsistencies in the transcription of features such as fillers, discourse markers, unclear tags, unintelligible tags, overlap tags, question marks and hyphens. This proved to be a useful exercise in standardisation, as the transcribers' attention was drawn to some of the areas where inter-transcriber inconsistency may occur.

Before the transcriptions were sent to the Lancaster team (as Microsoft Word documents), the Cambridge team undertook a quality control process. After each recording was transcribed, the transcript was put though two stages of checking – audio-checking and proofreading – before being sent to Lancaster for processing. At the audio-checking stage, a randomly-selected 5% sample of the recording was checked against the transcript for linguistic accuracy. If errors were found, the entire recording was checked. After this, the entire transcript was proofread for errors in the transcription conventions (without reference to the audio).

Despite this checking, complete accuracy of transcription cannot, of course, be assumed – even though the scheme has been limited to a basic, orthographic level of transcription. The same can be said of the transcription workshop described above. It is very unlikely that one day spent together will have entirely eradicated all cases of inconsistency; I do not believe that any amount of time spent together, however long, would achieve this. It is unavoidable that the involvement of twenty human transcribers (as was the case in the production of the Spoken BNC2014) will lead to certain inconsistencies of transcription decisions. Our extended and elaborated transcription scheme enabled us to minimize – but we would not claim to eradicate –

such inconsistency. Indeed, it would be naïve to assume the latter. For example, let us consider the variant pronunciations of the tag question *isn't it*, as represented orthographically by *isn't it*, *ain't it*, *innit*, etc. The transcription scheme lists these as permissible non-standard forms, and, ideally, we would therefore expect each instance of the tag question to have been faithfully transcribed using the spelling variant that matches the actual pronunciation. But in practice, it is very unlikely that a match between non-standard orthography and precise phonetic quality was achieved consistently, both within the transcripts of a given transcriber and indeed between transcribers. As such, we encourage users to consider the data not as a definitive representation of the original speech event, but rather to bear in mind that the transcriptions have been produced under the constraints of what we now believe to be the natural, terminal limit of consistency between human transcribers. Furthermore, we explicitly facilitate the exploration of possible inter-transcriber inconsistency by including 'transcriber code' as a text metadata category (see Section 3.3.4, p. 46). Users of the Spoken BNC2014 can create subcorpora of corpus texts according to which transcriber produced them, and compare across transcribers to check whether the feature(s) under exploration appear to be affected by any inconsistencies.

4.7 Chapter summary

In this chapter, I have addressed various issues with regards to the transcription of the Spoken BNC2014. I have shown that, despite improvements in relevant technology in the years between the compilation of the Spoken BNC1994 and its successor, there was no choice available to the research team other than to conduct human transcription – much in the style of previous spoken corpora. With automated transcription rejected, I laid out the principles which guided the development of the Spoken BNC2014 transcription scheme, taking inspiration from the Spoken BNC1994 (Crowdy 1994) as well as contemporary spoken corpus projects (Gablasova et al. 2015, Schmidt 2016). These principles include the use of a transcription scheme which was easy for non-linguist transcribers to use, caters for a wide range of linguistic disciplines, and produced transcripts in a format which could be unambiguously mapped to XML at a later stage. Furthermore, the scheme represents a basic 'layer' of orthographic transcription, the complexity of which is encouraged to be increased by those who may wish to access the XML files (and, eventually, the recordings) to conduct detailed annotation of pragmatic features, for example.

I then discussed several of the main features of our scheme, explaining the extent to which they were adapted from the BNC1994 scheme, and noting their performance in pilot testing, where appropriate. Finally, I discussed the wider transcription process for the Spoken

BNC2014, which was conducted by the Cambridge team, and touched upon the issue of inter-transcriber inconsistency, which is bound to have occurred given the nature of this process.

Inter-transcriber inconsistency is not only something that affects the transcription of the linguistic content itself. Another task of the transcribers was to accurately identify which speaker produced each of the transcribed turns, using speaker ID codes as introduced in the present chapter. Before describing the next stage of the Spoken BNC2014 compilation process (Chapter 6, p. 128), it is worth exploring the difficulty of 'speaker identification' – and this is the topic of the next chapter.

5 Speaker identification

5.1 Introduction

As described in Section 3.4.3 (p. 70), the audio recordings for the Spoken BNC2014 were provided remotely by contributors from across the UK. They were then transcribed by a group of twenty transcribers who were employed by the Cambridge team and trained by me (see previous chapter). This chapter investigates one issue in the transcription of the Spoken BNC2014 recordings: *speaker identification*. In Section 5.2, I describe speaker identification in more detail and discuss the importance of this issue. Given the lack of previous literature on this topic in the field of corpus linguistics, I begin with a summary of my pilot study on this topic (Section 5.3), and the subsequently formed Research Questions for the present set of studies (Section 5.4) – the 'main studies'. In Section 5.5, I discuss the methodological approaches taken to the various studies, which are labelled main studies (A) and (B). I then present the findings (Section 5.6), and discuss the extent to which they may affect research to be undertaken with the Spoken BNC2014 (Section 5.7), taking into account factors such as individual speaker variation, and the potential for automated speaker identification or the use of phonetic expertise to assist in this task. In Section 5.8, I confirm that speaker identification is likely to have been carried out with a considerable level of inaccuracy for Spoken BNC2014 recordings which contain several speakers, and offer a practical way of substantially mitigating the potential effect of this problem.

5.2 Speaker identification

In Chapter 4 (p. 77), I discussed how the Spoken BNC2014 research team designed the transcription scheme with maximal inter-transcriber consistency in mind. As explained in that chapter, it is my belief that we have reached what is, within the constraints placed on the Spoken BNC2014 project by time and money, the limit of human transcription consistency. However, the discussion in Chapter 4 referred only to the transcription of the linguistic content and transcription conventions. Another important aspect of spoken corpus transcription has no bearing on the accuracy of the transcription of linguistic content itself (i.e. what was said), but relates to the identification of the speaker that produced the transcribed turn (i.e. who said it) – in other words, the degree of confidence with which transcribers could identify the speaker responsible for each turn. As mentioned in Chapter 4, this aspect of transcription, which I call ‘speaker identification’, was carried out in the transcription of the Spoken BNC2014 by way of speaker ID codes, which are unique to each individual speaker in the corpus:

```
<0211> I haven’t met you

<0216> oh hi
```

The above example – shown in transcription format rather than canonical XML (see Section 6.2, p. 128) – demonstrates how two speakers, in this case ‘0211’ and ‘0216’, are distinguished in the corpus transcript. The uniqueness of the codes is crucial for the purpose of distinguishing the speakers during transcription, and subsequently for the organization of the corpus according to categories of demographic metadata (including age, gender, socio-economic status, etc. – see Section 3.2, p. 22), since each code corresponds to the metadata of an individual speaker in the corpus.

When the transcribers assigned a code to a turn, they had three options available to them, which related to extent to which they were confident in their assignments:

(1) CERTAIN
   - mark the turn using a speaker ID code (e.g. ‘<0211>’); or,

(2) BEST GUESS
   - mark the turn using a ‘best guess’ speaker ID code (e.g. ‘<0211?>’); or,

(3) INDETERMINABLE
   - mark the turn according to the gender of the speaker (i.e. ‘<M>’ or ‘<F>’) or show that many speakers produced a turn (i.e. ‘<MANY>’).

The ‘certain’ codes occurred when the transcribers selected an individual speaker as the producer of an individual turn – this is the ‘standard’ scenario, so to speak. The ‘best guess’ code was intended for those turns where the transcribers struggled to select an individual speaker with certainty, but felt able to provide a less confident ‘best guess’. ‘Indeterminable’ codes occurred when the transcribers were so uncertain that they were unable to provide a ‘best guess’, but could at least provide the gender of the voice they heard.

As will be described in the rest of this chapter, speaker identification can prove very difficult for transcribers – so difficult that, in certain circumstances, transcribers regularly and obliviously get it wrong. This has ramifications for the utility of existing spoken corpora; the usefulness of spoken corpora for sociolinguistic comparisons of different speaker groups, for example, is compromised if the accurate identification of speakers cannot be guaranteed. This is newsworthy because it is the speaker ID codes in the corpus that allow users to carry out sociolinguistic investigations, comparing the language of speakers according to demographic metadata, such as gender, age, or socio-economic status (see for instance Baker 2014; Xiao & Tao 2007; McEnery & Xiao 2004). It has been shown that making sociolinguistic generalisations based on corpus data is something which may be subject to distortion, if corpus encoding does not support meaningful exploration of the data (Brezina & Meyerhoff 2014). If there was reason to believe that a substantial number of speaker identifications in the corpus might be inaccurate, there are further worrying implications for the reliability of existing and future studies which depend upon dividing spoken corpora according to categories of demographic metadata. This being the case, it is essential to attempt to estimate the likely extent of faulty speaker identification in the Spoken BNC2014.

The existence of the above 'layers' of speaker identification code types is necessitated by this difficulty. Speaker identification is worth investigating because, in practice, there are two unavoidable deficiencies in the transcription of audio recordings: transcribers' lack of familiarity with (a) the speakers, and (b) the context in which the conversations occurred. Both of these deficiencies occur because the transcribers were not present at any of the recording sessions, and, furthermore, the likelihood of any individual transcriber being personally familiar with any of the speakers in the recordings (and thus being able to recognise their voice) was effectively zero.[59] With no memory of the interaction or familiarity with the speakers to rely upon, the transcribers had to guess the speaker of each turn as best they could, as well as transcribing the linguistic content and adhering to the transcription conventions (see Appendix J, p. 224), throughout. Either or both of these deficiencies could lead to inaccuracies in speaker identification. There was a possibility that the transcriber will have either unknowingly got it wrong, or knowingly encountered difficulty and be forced to make an uncertain guess.

It is worth noting that I do not consider this to be a worrying issue in all contexts of transcription. Speaker identification can reasonably be considered as unlikely to be an issue in some circumstances, including:

(1) when there are only two speakers; or,

(2) when the speakers have highly contrasting voice qualities.

[59] The transcribers stated that they did not personally know any of the speakers in any of the recordings that they transcribed.

In either of these scenarios it would be understandable for speaker identification to be considered reasonably straightforward. In (1), turn-taking would help to distinguish speakers, if nothing else. In (2), differences in gender, age, and/or accent, among other things, would greatly assist the process of identifying the speakers apart, while speaker identification should be particularly accurate when (1) and (2) combine (for example, a dyad between one male and one female speaker).

Although maximal accuracy and inter-rater agreement with regards to the transcription of linguistic content are typically explicit aims in corpus compilation (see Section 4.3, p. 83), speaker identification appears to have been treated as a non-issue, until now; it appears, for example, to have been neglected in the documentation about the corpora reviewed in Section 3.2.4 (p. 29) – e.g. CASE (Diemer et al. 2016), SCOTS (Douglas 2003) – as well as the Spoken BNC1994 (Crowdy 1994). This is perhaps because of a reliance on the two factors discussed above, although in the case of the Spoken BNC1994, at least, there was no restriction on the number of speakers that could feature in a given interaction. The problem with a reliance on these factors is that, while they are common, they are not the only possible circumstances for the transcription of audio recordings. There are as yet unmentioned circumstances which, in theory, would most likely hinder speaker identification, namely:

(3) when there are more than two speakers; and/or,
(4) when the differences in voice quality between two or more speakers are not sufficient to tell them apart.[60]

This chapter aims to show that when (3) and (4) occur, the identification of speakers is actually a very difficult task, and to suggest what may be done to mitigate the effect of its difficulty. Rather than address both these points explicitly, I will investigate only (3). The reason for this is that these two points are related – the more speakers, the more likely it is that two (or more) voices will sound similar enough to each other to cause confusion. My aim is to establish the worst-case scenario: how inaccurate is speaker identification in Spoken BNC2014 recordings with the highest number of speakers?

[60] Of course, the quality of the audio recording could also blur the distinction between voice qualities, if poor. Given our efforts to avoid the use of poor quality audio recordings (see Section 4.6, p. 94), I do not consider it relevant in this context.

5.3 Pilot study

None of the previous work that we consulted when developing the transcription scheme (see Section 4.3, p. 83) had recognized the issue of speaker identification. I deemed it important to try to anticipate the severity of this issue as early into the compilation of the Spoken BNC2014 as possible, and so the initial step in this investigation was to conduct a pilot study. I used some data which I collected specifically for this pilot study, as well as one of the early Spoken BNC2014 recordings. This was followed by a second investigation, later in the data collection stage, which asked further questions, based on the suggestions of the pilot. This chapter discusses the pilot study first followed by the later set of main studies.

For the pilot, I collected a small corpus of recordings – approximately 5.5 hours of audio data, which were gathered in the style of the recordings that would be gathered for the Spoken BNC2014. These recordings, 14 in total, contained data from 32 speakers, and amounted to 47,000 words. They were transcribed by two transcribers at the Centre for Corpus Approaches to Social Science (CASS) at Lancaster University. With the help of the transcribers, I conducted three small studies with regards to speaker identification.

5.3.1 Pilot study (A): Certainty (pilot study recordings)

The first investigation assessed the certainty of speaker identification in the pilot transcripts. I define certainty of speaker identification as the confidence of the transcriber that a specific speaker produced a turn. I found that turns were assigned a 'certain' speaker ID code only 68.31% of the time. 'Best guess' codes occurred 6.26% of the time, while 'indeterminable' codes were used for 25.43% of the turns. Importantly, I found that, recording by recording, the percentage of turns that were assigned 'indeterminable' codes very clearly increased with the number of speakers in the recording (Figure 13, overleaf). Based on this finding, I decided that a further study should investigate speaker identification when it is likely to be most difficult for the transcribers; i.e. in recordings with a high number of speakers.

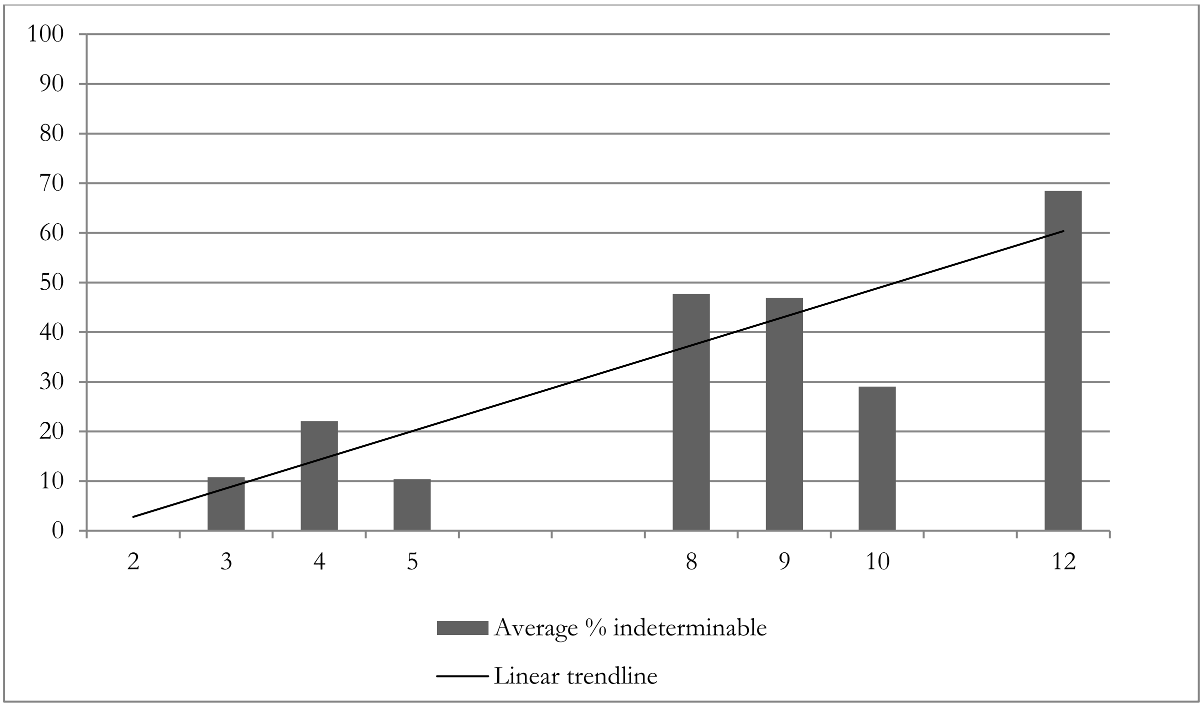


Figure 13. Proportion of indeterminable speaker identification in the pilot study corpus according to the number of speakers per recording.

5.3.2 Pilot study (B): Certainty (Spoken BNC2014 recording)

Since data collection of the Spoken BNC2014 itself had begun during the pilot phase, I selected a recording from the Spoken BNC2014 which featured nine speakers,[61] and had it transcribed at Lancaster. Comparing the two Lancaster transcripts of this recording with the Cambridge transcript, the Lancaster transcribers were unable to replicate the level of certainty with which the speaker ID numbers had been assigned in the Cambridge transcript. In the Lancaster transcripts, there were far fewer 'certain' codes and far more 'indeterminable' codes than in the Cambridge version. This implied that speakers in the original Spoken BNC2014 recording had been assigned to turns in the Cambridge transcript even when, in reality, speaker identity was far from clear.

5.3.3 Pilot study (C): Inter-rater agreement (Spoken BNC2014 recording)

According to Garrard et al. (2011: 398), disagreement between transcribers "is usually a sign that some aspect of the transcription process requires re-examination". Although their claim refers to the transcription of the audio signal – as discussed in Chapter 4 (p. 77) – the principle applies just as well to speaker identification. I was keen to find out where (if at all) disagreement

[61] The maximum number of speakers per recording at the time; later, we would receive a recording from a group of 12 speakers.

occurred. The third investigation in the pilot study was designed to assess inter-rater agreement. This assessed the extent to which, when provided with the same recording, the Lancaster transcribers agreed with the Spoken BNC2014 coding, and each other, on speaker identification across all turns. For example, if the Cambridge transcript marked a turn as speaker '<0211>', did the Lancaster transcribers assign speaker '<0211>' to the same turn? I found that the Lancaster transcribers were unable to agree with the coding of the Cambridge transcript, nor of each other's transcripts, for any more than 50% of the turns which had been assigned a speaker ID code. In other words, the coding of the Spoken BNC2014 transcript appears to have been coded for speaker ID in a way that was not replicable by the Lancaster transcribers.

However, I did find that, when the Lancaster transcribers assigned a different speaker ID number to a turn in the original transcript, there was at least very high agreement for speaker gender (99.4%), suggesting that even if the code was contested, the gender was very likely to be consistently assigned. As a result of this finding, and as described in Section 4.5 (p. 88), it was agreed that the Spoken BNC2014 transcription scheme would mandate the use of gender codes (either <*M*> or <*F*>) as a minimum level of identification, resulting in the speaker coding system introduced in Section 5.2 above. I concluded that speaker identification in the Spoken BNC2014 recording was most likely done by a consistent use of a 'best guess' classification that was not explicitly noted in the transcript, and that the low level of agreement between the Lancaster transcribers and the Cambridge transcript was at least suggestive that speaker identification accuracy is likely to be low.

5.4 Research Questions

Based on the pilot study, the main studies described in this chapter are designed to estimate the accuracy of speaker identification in Spoken BNC2014 recordings which contain the higher numbers of speakers in the corpus. The reason for this approach, as mentioned, is that a higher number of speakers, logically, lends itself to a higher chance of at least two of the voices sounding like each other. This chapter aims to address the following research questions:

RQ1. What is the certainty and inter-rater agreement among Cambridge transcribers for a Spoken BNC2014 recording that features a high number of speakers?

RQ2. What is the accuracy (as well as certainty and inter-rater agreement) among Cambridge transcribers for a gold standard recording that features a high number of speakers?

The methodological approach to these questions is discussed in the next section.

5.5 Methodological approach

5.5.1 Introduction

Evidence from the pilot study on this issue of speaker identification suggests that transcribers tend to assign their 'best guess' speaker to a given turn – resulting in inaccurate speaker identification in cases where they guess incorrectly. The assessment of certainty and inter-rater agreement proved revealing in the pilot stage, and so I decided to conduct another investigation into certainty and inter-rater agreement, but this time with a larger selection of the Cambridge transcribers themselves, rather than Lancaster's transcribers. This first investigation – main study (A) – corresponds with RQ1.

Main study (A) is designed to be a useful first step, since the pilot study also showed that the assessment of certainty and inter-rater agreement alone is not sufficient to make a confident enough estimate of the accuracy of speaker identification in the Spoken BNC2014. Based on this, later in the data collection stage of the project, I ran a larger investigation with the aim to assess accuracy directly – main study (B) – which corresponds with RQ2. This, in theory, is a more difficult task, because it requires intimate knowledge of the identity of the speakers in the recording(s) and the ability to recognise and distinguish their voices. This is never usually the case in full-scale spoken corpus projects, where speakers are unknown to the transcriber. In other words, it would require comparing the Spoken BNC2014 transcribers' efforts at speaker identification of the same recording with a 'gold standard', that is, with an existing transcript of the same recording in which all speaker identifications are known to be correct. The only way one might create one would be to submit a transcript back to the contributor of the recording, and ask them to correct the speaker identification using their personal and contextual knowledge. While not impossible, this would be difficult given the size of the corpus and the number of individual contributors. Furthermore, this carries the hazard that their memory may fail them, of course, so even this would not necessarily lead to 100% reliable speaker identification. Thus, there is no simple way to compare the assignment of speaker ID codes in the Spoken BNC2014 texts to a set of 'correct answers', since no such set can be made readily available. Accuracy of speaker identification in the corpus is, therefore, difficult to ascertain directly.

Because of this, I decided to replicate these conditions by making a recording with speakers I was very familiar with and then transcribing the recording myself. Knowing the purpose of the task also allowed me the possibility of taking notes immediately after the interaction to aid memory. In this situation, I expected, with very high accuracy, to have correctly identified the speakers of every turn. While not being a 'true' gold standard (the recording does not feature in the corpus), it did seem good enough a substitute to facilitate the investigation of accuracy; unlike pilot studies (B) and (C), one would have access to the 'correct answers'. The findings from such a study could help to predict the accuracy with which the Spoken BNC2014 transcribers had coded speakers in the most difficult of recordings – those with several speakers.

To summarise, I devised two new studies which, while not directly measuring speaker identification accuracy in Spoken BNC2014 transcripts, do aim to provide a very clear idea of how likely it is that the transcribers identified speakers accurately. The first (main study A) replicates the pilot studies into certainty and inter-rater agreement for an actual Spoken BNC2014 recording, while the second (main study B) directly assesses accuracy in a 'gold standard' recording. Sections 5.5.2 and 5.5.3 provide more detail on the methodological approach to these studies.

5.5.2 Main study (A): a Spoken BNC2014 recording

The first investigation addresses certainty and inter-rater agreement for a recording that had been gathered for inclusion in the Spoken BNC2014. This is intended to provide as close an estimation of accuracy for a text that features in the corpus, with the obvious caveat of not having access to the 'correct answers'. It was carried out by comparing the Spoken BNC2014 transcribers with each other in terms of speaker identification of an audio recording from the corpus. The recording contains six speakers, and was added to the workload of twelve of the transcribers. They were not informed that they would all transcribe the same recording, or that the recording was being used for test purposes. This means that, at the time that they transcribed the recording, the transcribers should have treated it in the same way as all of the other Spoken BNC2014 recordings. Seven transcripts (henceforth 'test transcripts') were returned in time for inclusion in this study, and they were compared to the original transcript in a similar way to pilot studies (B) and (C). I used these transcripts to facilitate the following assessments:

A1: Certainty of speaker identification in a Spoken BNC2014 recording

This assessed the average confidence of the transcribers regarding their identifications. This was done by calculating the average proportion of turns in the eight transcripts (the seven test transcripts plus the original transcript) that were marked with 'certain' speaker ID codes, as opposed to other speaker ID code types.

A2: Inter-rater agreement of speaker identification in a Spoken BNC2014 recording

This assessed the extent to which the eight transcripts agreed regarding the speaker identification of each turn in the original Spoken BNC2014 transcript. To facilitate this part of the investigation, each transcript had to be aligned with one another, so that the assignment of speaker ID codes could be compared for each turn (see Appendix K, p. 251).

5.5.3 Main study (B): the gold standard recording

The second study sacrifices the use of a recording that was made for inclusion in the corpus, in favour of a custom-made gold standard recording, produced in such a way that a set of 'correct answers' for speaker identification could be created.[62] In this way, as well as assessing certainty and inter-rater agreement, the second investigation can assess accuracy (but with the caveat of using a recording that does not feature in the Spoken BNC2014).

I created a gold standard transcript by recording and transcribing a conversation between myself and seven other speakers, who are all members of my family and very familiar to me. Including me, there were five male and three female speakers (see Table 11, overleaf). I made the recording during breakfast on Christmas Day, 2014. The speakers were sitting around a dining room table, and I had placed my smartphone in the middle of the table to make the recording. This set up – a conversation between close family members – is typical of Spoken BNC2014 recordings (72.8% of recordings are conducted between 'close family, partners, very close friends') and, therefore, I deemed this a good choice of context for the gold standard recording.

[62] See Appendix L (p. 292) for a comparison of the recordings used in main studies (A) and (B).

Table 11. Speaker metadata for the gold standard recording.

Speaker ID	Gender	Age	Dialect (1)	Dialect (2)	Dialect (3)	Dialect (4)
1	F	20-29	UK	England	North	North-East
2	M	50-59	UK	England	South	Unspecified
3	M	20-29	UK	England	South	Unspecified
4	M	20-29	UK	England	North	North-East
5	M	20-29	UK	England	North	North-East
6	F	80-89	UK	England	North	Yorkshire & Humberside
7	M	20-29	UK	England	Unspecified	Unspecified
8	F	50-59	UK	England	North	Unspecified

By transcribing the conversation myself, I could guarantee as close to 100% accurate speaker identification as possible, given the possibility of random human error;[63] it is my belief that, during the transcription of this recording, I could identify and distinguish the voices of the eight participants with ease. To make this task easier, I could have video recorded the conversation. However, my aim was to transcribe a conversation gathered under as similar circumstances as possible as the other Spoken BNC2014 recordings. Using a video recorder, which intrudes even further on the situation than an audio recorder does, would introduce a variable that is not accounted for in any of the corpus recordings; the naturalness of the conversation would not be comparable to the other recordings. The only new variable that the gold standard recording allowed, by necessity, was my presence as a participant in the conversation.

I then gave the recording I used to create the original gold standard transcript to the Spoken BNC2014 transcribers, and compared the speaker identifications in the resulting transcripts to my version, as well as repeating the assessments of certainty and inter-rater agreement from the first study, for sake of comparison with the Spoken BNC2014 recording from study (A). In this case, the transcribers were informed that this recording was part of an investigation, rather than a standard recording,[64] and I retrieved eight test transcripts in time to feature in this analysis, along with feedback about the difficulty of the task (see Appendix M, p. 259). I used these transcripts to facilitate the following investigations:

[63] For the purposes of this investigation, it is assumed that the speaker identification in the original gold standard transcript is indeed 100% accurate, since this is as close to100% as possible.

[64] My presence as a participant in the conversation, and subsequent discussion of the project during the recording, made it obvious that this was not a standard corpus recording; it was thus impossible to pretend otherwise.

B1: Certainty of speaker identification in a gold standard recording

This assessed the average confidence of the transcribers regarding their identifications. This was based on calculating the average proportion of turns in the eight test transcripts (excluding the gold standard transcript itself) that were marked with 'certain' speaker ID codes, as opposed to other speaker ID codes types.

B2: Inter-rater agreement of speaker identification in a gold standard recording

This assessed the extent to which the eight test transcripts (excluding the gold standard transcript itself) agreed regarding the speaker identification of each individual turn in the gold standard recording.

B3: Accuracy of speaker identification in a gold standard recording

This assessed the extent to which each of the eight test transcripts individually matched the speaker identification of each individual turn in the original gold standard transcript.

5.6 Results

In this section, I present the results of the two studies into speaker identification in the Spoken BNC2014 and gold standard transcripts.

5.6.1 Main study (A1): Certainty in a Spoken BNC2014 recording

Table 12 (overleaf) shows the proportion of turns coded as 'certain', 'best guess' and 'indeterminable' in each of the eight transcripts of the Spoken BNC2014 recording, where *T00* is the original corpus transcript, and *T01-T07* are the seven test transcripts collected for this investigation. This shows that, across all transcripts, certain speaker identification is very high, while the two other code types are rarely used. The average certainty level of 98.2% is much higher than that reported in the pilot study (68.3%). In turn, the 'best guess' code occurs in only two transcripts, and the 'indeterminable' codes in only four, with much lower levels of use than those reported in the pilot study (6.3% and 25.4% respectively). This is interesting, given that the pilot study considered fourteen transcripts of different recordings, ten of which contained fewer speakers than the six featured in the Spoken BNC2014 recording considered here. Such high levels of certainly were only achieved in the pilot study for recordings that contained only two speakers.

Table 12. Distribution of code types in the Spoken BNC2014 transcripts.

Transcript	Total turns	Certain		Best guess		Indeterminable	
		Freq.	**%**	**Freq.**	**%**	**Freq.**	**%**
T00	592	582	98.3	9	1.5	1	0.2
T01	453	453	100.0	0	0.0	0	0.0
T02	508	479	94.3	27	5.3	2	0.4
T03	535	535	100.0	0	0.0	0	0.0
T04	269	269	100.0	0	0.0	0	0.0
T05	618	580	93.9	0	0.0	38	6.1
T06	517	511	98.8	0	0.0	6	1.2
T07	489	489	100.0	0	0.0	0	0.0
Ave.			98.2		0.9		1.0

It seems, then, that the Spoken BNC2014 transcribers were more confident when assigning speaker ID codes for the six-speaker Spoken BNC2014 recording than the Lancaster transcribers were for most the recordings in the pilot study.

5.6.2 Main study (A2): Inter-rater agreement in a Spoken BNC2014 recording

After the turns were aligned (see Appendix K, p. 251), a total of 727 turns were eligible for the assessment of inter-rater agreement of speaker ID codes between the eight transcripts. Across the eight transcripts, the 727 turns were assigned a total of 5,816 codes. As stated in Section 5.2 above, transcribers assigned one of three main types of code to each turn they transcribed – 'certain', 'best guess' or 'indeterminable' (*male, female,* or *many*). To assess inter-rater agreement, I had to decide the grounds upon which to compare the assignment of these code types to determine what constituted agreement as opposed to disagreement. To this end, I decided to merge the 'certain' and 'best guess' codes so that, for example, a turn that was assigned 'certain' speaker ID code '4' in one transcript, and 'best guess' code '4?' in another, would count as agreeing. After all, both transcripts nominated speaker '4' as most likely to have produced the turn; I deemed the difference in confidence irrelevant for the purposes of distinguishing generally between agreement and disagreement. The three 'indeterminable' codes, *male, female* and *many*, were not merged, since, unlike the 'certain'/'best guess' distinction, they are mutually exclusive in their reference to the speaker(s) of a given turn.

Another issue that had to be dealt with prior to the analysis of inter-rater agreement was how to treat the many turns which were transcribed in some, but not all, of the eight transcripts. As described in Appendix K (p. 251), the gaps in the transcripts where such turns did not appear (revealed when the transcripts were aligned) were assigned the code 'X'. This indicated that, since turns had occurred in these positions in at least one of the other transcripts, turns that could have been transcribed in these positions were erroneously absent. Because of this, they were included as a type of speaker ID code in the inter-rater agreement analysis, and allowed to contribute to levels of (dis)agreement with as much value as the other codes.

Table 13 summarises the code types considered in the inter-rater agreement analysis, and their distribution in the Spoken BNC2014 transcripts. Using Fleiss' formula to assess the "extent of agreement" (Fleiss 1971: 379) on a turn by turn basis, the eight transcripts agreed, on average, to the extent of 51.8% across the 727 turns. The resulting Kappa coefficient[65] of this agreement is 0.40, meaning that the observed agreement did occur with more than chance probability, but with only "fair" strength (Landis & Koch 1977: 165). It seems, then, that while the certainty for the speaker ID coding of this recording is very high, the transcribers did not actually agree with each other in their coding to anywhere near the same extent. While this does not measure accuracy, such a low level of agreement means that, for many of the turns, one, or some, or perhaps even all, of the transcribers are likely to have selected the wrong speaker ID code.

Table 13. Total distribution of code types for the eight Spoken BNC2014 transcripts.

Code type	Freq.	%
1 or 1?	806	13.9
2 or 2?	448	7.7
3 or 3?	1,046	18.0
4 or 4?	979	16.8
5 or 5?	616	10.6
6 or 6?	39	0.7
M	33	0.6
F	9	0.2
many	5	0.1
X	1,835	31.6
Total	5,816	100.0

5.6.3 Main study (B1): Certainty in the gold standard recording

Turning to the gold standard study, Table 14 (overleaf) shows the proportion of turns coded as 'certain', 'best guess' and 'indeterminable' in each of the eight transcripts of the gold standard recording, where *T00* is the gold standard transcript and *T01-T08* are the eight test transcripts collected for this investigation.

[65] See Appendix N (p. 294) for more detail about inter-rater agreement statistics.

Table 14. Distribution of code types in the gold standard transcripts.

Transcript	Total turns	Certain		Best guess		Indeterminable	
		Freq.	**%**	**Freq.**	**%**	**Freq.**	**%**
T00	775	775	100.0	0	0.0	0	0.0
T01	631	630	99.8	1	0.2	0	0.0
T02	656	503	76.7	138	21.0	15	2.3
T03	715	524	73.3	135	18.9	56	7.8
T04	699	326	46.6	0	0.0	373	53.4
T05	683	669	98.0	13	1.9	1	0.1
T06	536	535	99.8	0	0.0	1	0.2
T07	723	632	87.4	0	0.0	91	12.6
T08	648	617	95.2	0	0.0	31	4.8
Ave.			85.2		4.7		9.0

Like the Spoken BNC2014 recording, this shows that the Spoken BNC2014 transcribers assigned the speaker ID codes in the gold standard recording with a level of certainty that is (a) very high, and (b) much higher on average than the pilot study transcripts. Again, the Cambridge transcribers seem to have been highly confident in the assignment of speaker ID codes. However, the transcribers could not produce the gold standard transcripts with the same level of certainty (or consistency) as the Spoken BNC2014 transcripts, with an average of 85.2% certainty, as opposed to 98.1% (Table 14). Thus, it seems that the gold standard recording caused more uncertainty than the Spoken BNC2014 recording. This could be because there are more speakers in the gold standard recording, which would accord with the suggestion from the pilot study that the more speakers there are, the harder it is for the transcribers to confidently identify them. Furthermore, the lower level of certainty could have been influenced by the transcription of this recording being conducted 'non-blind' (see Section 5.5.3); it is possible that the transcribers, knowing that this recording was provided for an investigation into transcription, were more cautious about speaker ID assignment. Nonetheless, 85.2% is still very high, despite a high level of individual transcriber variation which will be discussed in Section 5.7.1.

5.6.4 Main study (B2): Inter-rater agreement in the gold standard recording

Using the same method as study (A2), I used Fleiss' Kappa (1971) to assess the inter-rater agreement of the gold standard transcripts. The only difference in the approach of study (B2) as opposed to (B1) is that I have excluded the gold standard transcript from this analysis, in order to make the findings comparable to study (A2). The reason for this is that, as explained in Section 5.5.3, there was no gold standard transcript for the Spoken BNC2014 recording. As such, all transcripts, including the original corpus file, were considered equal in terms of potential for inaccuracy. With the gold standard recording, it is known that the gold standard transcript is correct, whereas the gold standard test transcripts were produced under as similar conditions as possible to the Spoken BNC2014 test transcripts. Thus, it is fairer to exclude the gold standard transcript for now and return to it in the assessment of accuracy in study (B3).

The distribution of gold standard code types considered in the analysis of inter-rater agreement in the remaining eight test transcripts is shown in Table 15. Using Fleiss' agreement formula (Fleiss 1971: 379) on a turn by turn basis, the eight transcripts agreed to an average extent of 51.5%, across the 775 turns. The resulting Kappa coefficient of this agreement is 0.46, meaning that the observed agreement did occur with more than chance probability but with "moderate" strength (Landis & Koch 1977: 165). In general terms, this means that, like the Spoken BNC2014 recording, the inter-rater agreement for the gold standard recording does not match the certainty with which the speaker ID codes were assigned.

Table 15. Total distribution of code types for the eight gold standard test transcripts.

Code type	Freq.	%
1 or 1?	834	13.5
2 or 2?	302	4.9
3 or 3?	303	4.9
4 or 4?	637	10.3
5 or 5?	699	11.3
6 or 6?	755	12.2
7 or 7?	393	6.3
8 or 8?	787	12.7
M	491	7.9
F	75	1.2
many	2	0.0
X	922	14.9
Total	6,200	100.0

This aside, there are interesting observations to make when comparing the two recordings. Even though the observed agreement is slightly lower than that of the Spoken BNC2014 recording, the Kappa coefficient is higher. This is because there were more speakers in this recording, and thus the probability of the transcribers agreeing by chance alone was lower. The result of taking this into account is that the observed agreement is considered more remarkable, despite being lower in raw terms. That the agreement for these transcripts is stronger than the Spoken BNC2014 transcripts is unexpected, considering that the certainty is lower. It seems, then, that despite being less certain in their judgements, the transcribers were at least more agreeable in their decision making.

5.6.5 Main study (B3): Accuracy in the gold standard recording

In this section, I compare each of the eight test transcripts individually with the gold standard. By treating the gold standard as a set of 'correct answers', a two-rater inter-rater agreement analysis of each test transcript/gold standard pair can be considered a measurement of accuracy. The gold standard transcript contains 775 turns for which I had assigned a specific speaker ID code during transcription. Like the inter-rater agreement investigations, I merged the 'certain' and 'best guess' codes so that any 'best guess' codes in the test transcripts would be considered to agree with their corresponding 'certain' codes in the gold standard, thus contributing to accuracy. This meant that there were twelve individual speaker ID code categories for which (dis)agreement could occur between the gold standard and the test transcripts. These are listed in Table 16.

Table 16. Categories of speaker ID code for which agreement between the gold standard and test transcripts could occur.

Category no.	Category name
1	Speaker 1 (including best guess)[66]
2	Speaker 2 (including best guess)
3	Speaker 3 (including best guess)
4	Speaker 4 (including best guess)
5	Speaker 5 (including best guess)
6	Speaker 6 (including best guess)
7	Speaker 7 (including best guess)
8	Speaker 8 (including best guess)
9	Indeterminable (male)
10	Indeterminable (female)
11	Indeterminable (many)
12	No code

Since there are twelve categories of potential (dis)agreement, the level of agreement between two transcripts expected by chance alone is 1/12 (see Carletta 1996: 3). Table 17 (overleaf) shows the

[66] When calculating inter-rater agreement, I allowed 'best guess' codes to be counted as attempts to identify individual speakers, and therefore were included in the assessments. The same is true of the present assessment of accuracy, since the principle behind this analysis is largely the same; this is an assessment of inter-rater agreement, but between pairs of coders (the gold standard transcript + each test transcript in turn) rather than all coders considered together.

percentage of observed agreement for each test transcript when compared with the gold standard transcript. Using these and the expected agreement level of 1/12 together in Cohen's formula (Cohen 1960), I calculated the Kappa coefficients for each pair. These are also shown in Table 17.

Table 17. Inter-rater agreement (i.e. accuracy) of speaker identification between the test transcripts and the gold standard transcript.

Test transcript	**Eligible turns**	**Matching turns**	%	**Kappa coefficient**
T01	775	332	42.8	0.43
T02	775	532	68.6	0.69
T03	775	446	57.5	0.58
T04	775	314	40.5	0.35
T05	775	620	80.0	0.78
T06	775	275	35.5	0.30
T07	775	584	75.4	0.73
T08	775	499	64.4	0.61
Total	6,200	3,602	58.1	0.54

This shows that the accuracy of speaker identification across the eight test transcripts was achieved at an average of 58.1%, meaning that over two fifths of the turns in the test transcripts were assigned the wrong speaker ID code. The Kappa coefficient of 0.54 confirms that this level of accuracy is higher than it would have been by chance alone, to a "moderate" degree (Landis & Koch 1977: 165).

5.7 Discussion: what does this mean for the Spoken BNC2014?

So far, I have shown that, for a Spoken BNC2014 recording featuring six speakers, certainty of speaker identification was very high (A1), while inter-rater agreement was fair (A2). I have also shown that, for a gold standard recording featuring eight speakers, certainty of speaker identification was very high (B1), while inter-rater agreement was moderate (B2). Finally, accuracy of speaker identification of the gold standard recording is less than 60% (B3). The final step of this investigation is to establish what these findings mean for the Spoken BNC2014. To do this, I first want to consider three points: inter-rater variation, the potential for automatic speaker identification, and the use of phonetic expertise.

5.7.1 Individual transcriber variation

In Section 5.6.3, I noted the observed variation in certainty between the transcribers with regards to speaker identification in the gold standard recording (study B1). Furthermore, the standard deviation of accurately matching turns across the eight transcripts in study (B3) is 122 from the mean, which is 450.25. This accords with the wide range of results observed in Table 17, which shows that accuracy varied greatly between transcribers. Clearly, then, some transcribers were more confident than others, and some did perform much better than others, and this variation should not be ignored. One factor which may have contributed to the observed variation is that the test transcripts of the recordings used in this investigation were made early in the lifetime of the project, before the transcription training day (see Section 4.6, p. 98). At the point of transcription, the transcribers had not had the opportunity to share practices and discover differences in their approach to transcription which could later be addressed.

Another reassuring point is that speaker identification codes which have been inaccurately assigned are not entirely useless by being incorrect. As mentioned in Section 5.3, one of my pilot studies showed that gender at least is highly likely to be retained even when the wrong speaker ID code is attributed. Comparing all codes which indicated gender in the gold standard test transcripts (i.e. either a numerical code or the indeterminable *M/F* codes) to the gold standard transcript, I found that 98.3% of the test transcript codes matched the gender of the gold standard codes (Cohen's Kappa 0.97; "almost perfect" agreement, Landis & Koch 1977: 165). Furthermore, repeating the same task for the age range of the speakers in this recording (either 20-29, 50-59, or 80-89), the test transcripts matched 89.1% of the gold standard codes (Cohen's Kappa 0.84; "almost perfect" agreement, Landis & Koch 1977: 165). So, even with variation in accuracy, it is highly likely that the transcribers could accurately identify the gender and age of speakers even if the speaker ID code itself was coded incorrectly. Given the importance of such features for sociolinguistic investigation, these results are reassuring.

5.7.2 Automated speaker identification

I have been fortunate enough to be able to discuss my work on speaker identification with many colleagues at conferences and research seminars. By far the most frequent question I have received has asked why this job (assigning speaker ID codes to turns) cannot be done automatically, using speech recognition software, or with input from an expert in phonetics. Indeed, automating this part of the transcription process (and indeed, the entire transcription process; see Section 4.2, p. 77) would, if done well, not only solve the issue of speaker identification accuracy but also those of inter-rater (dis)agreement and consistency. While I have already disregarded the possibility of fully automating transcription for spoken corpus data, I aimed to confirm whether speaker identification could at least be assisted by automated methods. To investigate this, I:

- tested the gold standard recording with an online automatic transcription tool; and,
- sought the expertise of a phonetician.

In Section 4.2 (p. 77), I used Trint to show that fully automatic transcription of spoken corpus audio data is still not viable, at least with commonly available tools. However, while it does not perform speaker identification itself, it does attempt to separate each turn, offering a labelling feature to assign speaker ID codes manually to the automatically detected turns. As shown in that section, due to the audio quality of the gold standard recording, which contains background music and other interfering noises (which is typical of Spoken BNC2014 recordings), the accuracy of transcription was poor. Even with this poor transcription quality, it may be the case that Trint can at least separate turns accurately, which may aid the manual identification of speakers. As such, it is Trint's ability to differentiate between turns that I was interested in assessing.

Let us return to the outputted extracts from Section 4.2 (see Appendix E, p. 216, and Appendix F, p. 218, for full transcripts).

- Gold standard transcript:

<4> you don't have to grandma do you want some orange?
<1> you don't have to if you don't want to
<6> will you taste it first?
<1> [laugh]
<5> <OL> oh yeah (.) see how strong it is
<6> nice
<7> orange orange orange orange orange
<2> <OL> do you want some <name F>?
<7> <OL> just a bit just a little bit dear (.) thank you (.) that's bucks fizz of course isn't it?
<4> yeah (.) it is
<7> once you put the orange to it actually

<2> you want some?

<5> oh go on then

<4> you want some?

<6> have you have you started recording?

- Trint transcript:

[00:00:36] You don't have to come up to any one that is easy for. Me to go spiders to be nice to horror in Joralemon a.. And that box which of course you do if you want to do it you are used to it actually.

[00:00:56] Oh go on. You want to thank you. You started recording.

Problems with transcription accuracy aside, the extracts show that Trint was also unable to identify many of the individual turns that are included in the original transcript. In fact, it is almost impossible to recognise that the Trint transcript refers to the same section of recording as the original transcript; only by listening to the recording while reading the transcripts does it become clear that some linguistic units, which were produced by different speakers, have been transcribed within the same turn. Clearly, Trint is not able to deal with this sort of data. Therefore, it would not be possible to use an output from Trint to help assign speaker ID codes.

5.7.3 The use of phonetic expertise

Subsequently, with entirely automated transcription and assisted speaker identification disregarded, I aimed to address comments from colleagues about the possibility of using phonetic expertise to assist with speaker identification. I once again sought evidence from a phonetician[67] for this task. I sent him a five minute extract from the gold standard audio recording, as well as the corresponding extract from its original transcript, with all ID codes removed, apart from the first of each speaker's turn (see Appendix O, p. 261). I instructed him to use whatever method he deemed appropriate to assign speaker ID codes to the transcript. The phonetician simply chose to listen to the recordings, rather than use any specialised computer equipment. Based on his experience in phonetics, it is reasonable to claim that he would have a higher-than-average ability to analyse speech and distinguish voices.

[67] I am grateful to Sam Kirkham of Lancaster University for his assistance with this task.

Because I used only a five-minute extract of the gold standard recording, I re-calculated the accuracy of the test transcripts, compared to the gold standard transcript only for the relevant section, using Cohen's Kappa (1960) for two-rater inter-rater agreement. I then compared the phonetician's transcript to the gold standard to find out how it performed against the test transcripts (Table 18).

Table 18. Accuracy of the phonetician's transcript compared to the gold standard test transcript extracts.

Transcriber	Eligible turns	Matching turns	%	Kappa coefficient
Phonetician	156	122	78.21	0.76
T01	156	72	46.15	0.41
T02	156	102	65.38	0.62
T03	156	84	53.85	0.50
T04	156	41	26.28	0.20
T05	156	123	78.85	0.77
T06	156	46	29.49	0.23
T07	156	126	80.77	0.79
T08	156	93	59.62	0.56
Total	**1,404**	**809**	**57.62**	**0.5**

Table 18 shows that the phonetician's 78.2% accuracy score (with a Kappa of 0.76, representing "substantial" agreement, Landis & Koch 1977: 165) is above average when compared to the same extract in the test transcripts. However, it is not better than all test transcripts, with T05 and T07 scoring higher Kappa measures. Although a crude measure, this mini investigation does suggest that employing a phonetician to work on transcription of the corpus would not necessarily have ameliorated the problems identified in this chapter.

5.8 Affected texts and solutions implemented

The investigations presented in this chapter have shown that the Spoken BNC2014 transcribers performed speaker identification with high levels of confidence for recordings containing both six and eight speakers. Inter-rater agreement for both recordings, and accuracy for the latter, is, on the other hand, relatively low – low enough that, should these texts be used for sociolinguistic purposes, researchers run a reasonable risk of observing effects which are caused not by true language variation but by erroneously-identified speakers.

The severity of this risk depends on several factors. Firstly, it is reassuring that – whether they chose the correct code or not – the Cambridge transcribers selected codes with the correct gender almost always, and the correct age most of the time. So, researchers who are only interested in gender and age are likely to be fine. Furthermore, it must also be remembered that the clear majority of recordings used for the Spoken BNC2014 feature only two or three speakers (texts featuring two or three speakers comprise three quarters of the corpus; see Table 19, overleaf). Although these were not investigated, I am confident, based on the principles discussed in Section 5.2, that speaker identification is likely to have been conducted with acceptably high accuracy.

Table 19. Frequency of corpus texts per number of speakers per recording in the Spoken BNC2014.

No. of speakers per recording	No. of Spoken BNC2014 texts	Cumulative percentage
two	622	49.72
three	335	76.50
four	198	92.33
five	54	96.64
six	25	98.64
seven	11	99.52
eight	2	99.68
nine	3	99.92
twelve	1	100.00

With regards to the remaining quarter of the corpus, although the main studies in this chapter only considered recordings featuring six and eight speakers, I argue, for the sake of caution, that researchers should think carefully about whether they should include Spoken BNC2014 texts which contain four or more speakers when conducting sociolinguistic research – especially work which looks at social groups (other than gender and age which, as shown, are likely to have been assigned with high levels of accuracy, regardless of whether the speaker ID code was assigned correctly). The reason for this is simple: until more research is done to account for recordings containing every available number of speakers, the 15% of the corpus comprising four-speaker texts seems too large a portion to risk encouraging research which may later be proven invalid. Although not investigated here, the same recommendation should, in my view, be applied to the Spoken BNC1994; considering the issues with the transcription scheme discussed in the previous chapter, and known shortcomings with regards to metadata as it is (Section 3.2, p. 22), it is difficult to believe that inaccurate speaker identification is a problem which does not affect the Spoken BNC1994 to some extent. Furthermore, this recommendation should apply to other spoken corpora, unless video data or other direct observations are available to help inform the speaker assignments.

To encourage user awareness of speaker identification in the Spoken BNC2014, we documented this issue clearly in the BNC2014 user guide (Love et al. 2017b). Furthermore, we introduced specific features to both the text-level and utterance-level metadata. Starting with text metadata, we recommend that users who require speakers to be attributed accurately use the restricted query function in CQPweb (or, equivalently, appropriate pre-processing of a downloaded copy of the XML-formatted corpus) to exclude texts containing four or more speakers. To facilitate this, 'number of speakers' is a text metadata category in CQPweb, which allows restricted queries to be performed on any combination of texts, according to the number of speakers (see Section 3.3.4, p. 46).

In addition, we made visible in the CQPweb interface the transcription convention for speaker confidence level. The purpose of this is to caution users of the corpus against blindly assuming that all of the speaker ID codes in the corpus texts have been assigned accurately. In the example below, for instance, the transcriber has indicated that they were not fully certain of which speaker produced the second turn, but that their best guess is speaker S0514 (the '[??]' indicator of low confidence shown here represents an underlying XML attribute-value pair; see Section 6.2, p. 128).

S0511: well what happens in the sessions?
S0514$^{[??]}$: there was some watching videos and stuff (BNC2014 SFQE)

Though this measure does not actually improve the accuracy of speaker identification, it does promote user awareness of potential issues with it. Furthermore, this utterance-level attribute data makes it possible to restrict corpus queries to exclude those turns with low confidence in speaker identification. In total, 29,369 utterances (2.45% of utterances; 170,806 tokens) fall into the low confidence category.

5.9 Chapter summary

This chapter has addressed speaker identification – the confidence with which spoken corpus transcribers can attribute a speaker ID code to each transcribed turn. In the context of the Spoken BNC2014, I have established that this can be a difficult task, and I have attempted to estimate the severity and extent of cases where it is likely that speaker identification has not been performed accurately.

Pilot studies on this topic showed that confidence in speaker identification is likely to decrease as the number of the speakers in the recording increases, but that, overall, the freelance Spoken BNC2014 transcribers employed by Cambridge tended to be more confident than the linguistically-trained transcribers at Lancaster, who volunteered their time from other transcription projects to take part in the pilot.[68]

The main studies described in this chapter aimed to focus in on the Cambridge transcribers' performance on recordings featuring many speakers, i.e. the logical worst case scenario for the task of speaker identification. In response to RQ1, main study (A) showed that confidence in speaker ID attribution for the selected Spoken BNC2014 recording was very high (98.2% of turns). It also showed, however, that inter-rater agreement between transcribers for the same recording was only 'fair' in strength (51.8% agreement).

In response to RQ2, main study (B) showed that, for the gold standard recording, both inter-rater agreement and accuracy relative to a gold standard set of answers are relatively low. While I was unable to directly assess the accuracy of speaker identification in actual Spoken BNC2014 transcripts, I could assess accuracy for the gold standard; 58.1% accuracy with 'moderate' strength agreement.

If representative of all recordings which feature several speakers (four or more, as discussed in the previous section), then it is possible that 294 of the Spoken BNC2014 texts (23.5%) contain a level of inaccuracy of speaker identification which should not be ignored. I have discussed the implementations made in the corpus user guide, metadata and interface to ensure that this potential inaccuracy can be taken into account by users:

- the potential for inaccurate speaker identification is clearly and comprehensively documented in the corpus user guide (Love et al. 2017b);
- users of the corpus have the option to exclude from any given analysis the utterances or transcripts which are most likely to have fallen victim to poor speaker identification; and,
- uncertain speaker identification is visualized in the CQPweb interface for the Spoken BNC2014.

While it is my belief that this chapter has made an important contribution in establishing speaker identification as a feature of spoken corpus transcription which should be given more attention, more work should be done to establish the importance of this issue in the Spoken

[68] I am grateful to Ruth Avon and Alana Jackson for their assistance with the pilot.

BNC2014 and other existing spoken corpora. In future, the investigations presented in this chapter should be repeated on a larger sample of Spoken BNC2014 texts, representing all available numbers of speakers featured in each recording, as well as texts from other spoken corpora. Furthermore, a review should be conducted to identify previous research which has relied upon potentially inaccurate speaker identification, to assess whether the findings from any such studies would be altered if texts prone to the misidentification of speakers during transcription were to be ignored. The Spoken BNC1994, for example, should be revisited in this light given the existing known issues of metadata and transcription discussed elsewhere in this thesis.

As the Spoken BNC2014 audio recordings were transcribed, the Cambridge team sent the resulting Microsoft Word documents to me in batches. At this stage, these batches of transcripts had to be converted into XML, and the metadata gathered by Cambridge had to prepared for use as well. The XML files then had to be annotated and indexed into CQPweb (Hardie 2012) for public release as a corpus. The processing of the transcripts and their public release are the topics covered in the next chapter.

6 Corpus processing and dissemination

6.1 Introduction

This short chapter explores the work done to convert a large set of orthographic transcripts into the Spoken BNC2014 – a usable, publicly-accessible corpus of spoken British English conversation, with rich and searchable speaker and text metadata. The chapter is divided into three sections, which each address a stage of this process. Section 6.2 explores the conversion of the transcripts – Microsoft Word documents – into Extensible Markup Language (XML). Section 6.3 discusses how the XML files were annotated for part-of-speech (POS), lemma and semantic categories. Finally, Section 6.4 discusses the initial release of the corpus via CQPweb (Hardie 2012), and the planned release of the XML files and metadata.

6.2 XML conversion

The Spoken BNC2014 transcripts were sent to me by the Cambridge team in batches of Microsoft Word documents. The first stage of the subsequent corpus processing was to convert the Word documents into plain text format. Not only did this strip away any unwanted formatting which may have remained after (or, in the case of Microsoft Word 'comments', been created by) quality control procedures, but it also presented the first opportunity for standardisation; all transcripts were saved using the same character encoding (UTF-8; Pike & Thompson 1993). This would aid the later conversion of the text files into XML by ensuring that all characters were encoded in the same way.

At this point, the transcripts were ready for conversion into XML. The two established standard formats for corpus data interchange and archiving are (a) plain text and (b) plain text enhanced with markup using XML (see Hardie 2014b). Transcripts of spoken data almost always include features in addition to the actual words of the text (e.g. indicators of utterance boundaries), and thus XML is the appropriate choice of format. As discussed in Section 4.3 (p. 83), a number of systems for the use of XML in corpus encoding have been proposed as standards. These include the Text Encoding Initiative (TEI; see Burnard and Bauman 2013) and the Corpus Encoding Standard (CES; see Ide 1996). The former of these was used for (and developed alongside) the BNC1994. However, as argued by Hardie (2014b), these standards are fairly top-heavy and require much more extensive and detailed XML markup than is either necessary or useful for the vast majority of corpus linguistic research. For that reason, rather than use TEI, we opted to follow the recommendations of Hardie (2014b) for the use of a 'modest' level of XML. We made use of the XML tags and attributes noted by Hardie (2014b: 94-101) as having become more-or-less established as *de facto* standard – most of which are in fact also part of TEI and CES; we made additions to this set of codes only where our transcription scheme (Appendix J, p. 224) required it. For instance, utterances are marked up with <*u*> tags, and each utterance has a *who* attribute, containing the unique ID code of the speaker. These are exactly as described by Hardie (2014b), and originate in TEI. However, we also added a *whoConfidence* attribute, which records the transcriber's level of confidence in the speaker attribution (based upon the investigations presented in the previous chapter), as well as a running count of the line number in each text. Furthermore, the text headers in the corpus use a notably simpler (and more flatly organised) set of metadata tags than TEI/XML, each element being generated automatically, on a mostly one-to-one basis, from some column of the metadata tables originally collected alongside the recordings.[69] Both the header and body tags are listed in full in the corpus documentation (Love et al. 2017b), which also includes a full *Document Type Definition* (DTD) covering all elements and attributes (see Appendix P, p. 262, for a list of the main tags from the transcription scheme, in pre- and post-XML conversion formats).

As noted in Section 4.3 (p. 83), rather than transcribing the Spoken BNC2014 audio files directly into XML, the transcription scheme was designed using simple, human-friendly tags which could later be converted into the 'modest' XML described above. This was done using a PHP[70] script, which I used to automatically convert the codes from the transcription scheme format into the appropriate XML, as well as inserting all other necessary header and body tags.[71] The script was run on each text in the corpus. Figure 14 (overleaf) is a line-by-line comparison of an excerpt from a corpus text in both pre- (left column) and post- (right column) XML conversion format. This demonstrates some of the features of XML in which the corpus texts have been encoded. As mentioned, each utterance is enclosed by <*u*> tags, and the attributes for line number (*n*), speaker ID code (*who*) and, where relevant, confidence (*whoConfidence*), are visible. Line 3 of the XML column includes both versions of the *unclear* tag: 'unclear word, guessed by transcriber' (<*unclear*>*into*</*unclear*>), and 'unclear word, no guess' (<*unclear*/>). Finally, line 8 shows how the de-identification tags (see Section 4.5, p. 88) were elaborated in XML in the form of a tag (*anon*) containing an attribute for *type* (in this case, *place*).

[69] Speaker and text metadata, the categories of which are described in Section 3.3.4 (p. 41), are stored as Microsoft Excel spreadsheets.

[70] http://php.net/manual/en/intro-whatis.php (last accessed September 2017).

[71] I am grateful to Andrew Hardie from Lancaster University for his guidance and support with PHP scripts.

```
[TEXT]
<0211> I haven’t met you

<0216> oh hi

<0220> oh right okay I feel a bit weird about going <u=into> Geordie now but <u=?>

<MANY> [laugh]

<0211> <u=?> or me

<MANY> [laugh]

<0216> what part of Newcastle are you from?

<0220> <place>

<0216> oh yeah

<0220> oh where you from?

<0216> <place>
```

```
      <body>
<u n="1" who="S0211">I haven't met you</u>

<u n="2" who="S0216">oh hi</u>

<u n="3" who="S0220">oh right okay I feel a bit weird about going <unclear>into</unclear> Geordie now but <unclear/></u>
<u n="4" who="UNKMULTI" whoConfidence="low"><vocal desc="laugh"/></u>
<u n="5" who="S0211"><unclear/> or me</u>

<u n="6" who="UNKMULTI" whoConfidence="low"><vocal desc="laugh"/></u>
<u n="7" who="S0216">what part of Newcastle are you from?</u>
<u n="8" who="S0220"><anon type="place"/></u>

<u n="9" who="S0216">oh yeah</u>

<u n="10" who="S0220">oh where you from?</u>

<u n="11" who="S0216"><anon type="place"/></u>
```

Figure 14. Transcript excerpt, pre- and post-XML conversion.

Aside from converting transcription conventions into XML, the PHP script was used to conduct another stage of the quality control process. The script was written to identify errors in the transcription of tags (as compared to the transcription scheme), and to terminate upon the discovery of an error, providing information on the nature and location of the error. Figure 15, for example, shows the functions of the script which detected errors in the transcription of non-linguistic vocalisations.

```
function bnc_vocal_checker($m)
{
      static $valid = array (
            'laugh', 'cough', 'gasp', 'sneeze', 'sigh', 'yawn', 'whistle',
'misc', 'nonsense'
            );

      $desc = trim(strtolower($m[1]));

      if ($desc == 'couhg')
            $desc = 'cough';

      if (in_array($desc, $valid))
            return '{vocal desc="' . $desc . '"/}';
      else
            exit("Error: invalid vocalisation type found --> [$desc]\n");
}

function bnc_transform_vocal($s)
{
      return preg_replace_callback('/\[(.*?)\]/', 'bnc_vocal_checker', $s);

}
```

Figure 15. Vocalisation checking functions in the XML conversion PHP script.

The function at the bottom (*bnc_transform_vocal*) detected every string enclosed by square brackets (i.e. the format for vocalisations, as instructed in the transcription scheme). Then, the function at the top (*bnc_vocal_checker*) checked that only the permitted names for vocalisations (*laugh, cough,* *gasp*, etc.) were used inside the square brackets.[72] If any string other than those permitted words was used, an error message was produced showing the erroneous tag.

Whenever an error was detected by the script, it was then my job to either (a) manually correct the error in the plain text file and run the script again, or, if it appeared that the error was relatively common, (b) write a new function into the script which would automatically accept the error in the future as a 'variant' form of the correct tag. Since the script was designed to run on one text at a time, I had ample opportunity to amend and improve the functionality of the script which, over time, reduced the likelihood of the script terminating on previously unencountered errors. This meant that the process of converting the plain text files into XML sped up as I adapted the script to account for newly discovered errors; early in the conversion process an individual text could take upwards of an hour to fix (including time to write new functions into the script), but this was soon reduced to a few minutes at most, with many texts passing through the script on the first attempt. Errors were various in nature, and although the final version of the script serves as an account of those errors which became automatically corrected and processed, I did not attempt to quantify the instance of errors as I converted the files, as this would have slowed the process considerably. However, having converted all 1,251 texts individually, I did develop an understanding of commonly occurring errors. These include:

- Spelling errors of tag names (e.g. *backround noise* instead of *background noise*)
- Morphological variants of permitted tag names (e.g. *gasping* instead of *gasp*)
- Missing brackets (e.g. *name M*> instead of <*name M*>)
- Duplicate brackets (e.g. <<*name F*> instead of <*name F*>)
- Incorrect brackets (e.g. <*cough*> instead of *[cough]*)
- Use of disallowed punctuation (e.g. *&* instead of *and*)
- Incorrect case (e.g. *[Sigh]* instead of *[sigh]*)

Reflecting on the conversion process, it was surprising that such a variety of errors in the transcription codes could pass through quality control undetected. The presence of these errors is a testament to the value of devoting time to develop a script to automatically convert the texts while, crucially, checking for errors. Despite the time taken to convert the scripts, transcription would likely have taken much longer had we instructed the transcribers to type directly into XML. The reason for this is that the XML tags are longer and more complex than the

[72] This function also includes an automatic correction of a misspelling: *cough* spelled as *couhg*. There were many instances of mistyped tags, and the rest were detected separately elsewhere in the script.

transcription codes we developed, and would therefore have afforded more opportunity for typing errors (*[laugh]*, for example, is easier to type than <*vocal desc*="*laugh*"/>).

6.3 Annotation

Once each plain text file was converted into XML, the next stage was to annotate the corpus. Annotation is the process of adding interpretive linguistic information to a corpus (see McEnery & Hardie 2012: 13). Although some linguists (e.g. Hunston 2002, Sinclair 2004) initially doubted the value of annotation, it is now a mainstay of corpus linguistics (McEnery & Hardie 2012: 29) and underpins, for example, machine learning in computational linguistics (Hausser 2014). The virtues of making standard types of analytic annotation available to all users of a corpus, by distributing a tagged version alongside the untagged text, are well documented (see Hardie 2014b). In line with this principle, we tagged the whole corpus for part-of-speech (POS), lemma and semantic categories. Semantic tagging was conducted using the UCREL semantic annotation system (USAS; Rayson et al. 2004).

The POS and lemma tagging was conducted using the same systems as the original BNC1994 – most notably the Constituent Likelihood Automatic Word-tagging System (CLAWS; Garside 1987). CLAWS is a hybrid probabilistic/rule-based tagger, which means that a single POS-tag is assigned to each word, where possible (based mainly on a supplied lexicon and rules derived from such), and, for ambiguous cases, more than one POS-tag is assigned, with CLAWS's estimation of the probability of each being correct expressed as percentages (see Garside & Smith 1997). The tagging process is summarised by Garside (1996: 173) as follows:

1. The input running text is read in, divided into individual tokens, and sentence breaks are recognised.
2. A list of possible tags is then assigned to each word, the main source being a lexicon.
3. A number of words in any text will not be found in the lexicon, and for these there is a sequence of rules to be applied in an attempt to assign a suitable list of potential tags.
4. Since the lists of potential tags from steps 2 and 3 are based solely on individual words, the next step uses several libraries of template patterns to allow modifications to be made to the lists of tags in the light of the immediate context in which the word occurs.
5. The next step is to calculate the probability of each potential sequence of tags, and to choose the sequence with the highest probability as the preferred one.
6. Finally the text and associated information about tag choice is output.

In a departure from the practice of the BNC1994, we use the C6 tagset instead of the simpler C5 tagset.[73] C5 tags were used in order to achieve a simpler (and thus more reliable) system of POS-tagging in the first release of the BNC1994 – the estimated error rate for POS-tagging in the Spoken BNC1994 is 1.17%, which is only 0.03% higher than that of the Written BNC1994 (see Leech & Smith 2000). However, later BNC1994 releases use a parallel system of simple tags, or major word classes, alongside the C5 tags.[74] This system uses one single tag for all nouns, another single tag for all verbs, and so on, and in our view addresses the need for a lower-complexity grammatical classification effectively. Thus, the combination of full-complexity C6 annotation and low-complexity simple tags is the best way to address all the purposes covered by the mid-complexity C5 tags.

The next decision related to the choice of lexicon to supply to the rule-based part of CLAWS – i.e. what set of resources should be used to optimize the performance of the CLAWS tagger on this type of data. The problem posed by attempting to tag a spoken corpus is that the 'standard' tagger resources are based on written data; this is potentially problematic – for example, the lexicon includes frequency information. This shows – where a word may have more than one part of speech – which is more common. If this differs between written and spoken English, then a systematic error can be introduced by using a lexicon derived from written English for the analysis of spoken English data – the examples presented later in this section aim to demonstrate this point. This issue is by no means exclusive to CLAWS. The compilers of the Vienna-Oxford International Corpus of English (VOICE), for example, discuss the limitations of applying "conventional standards" of tagging guidelines to "unconventional data" (Osimk-Teasdale & Dorn 2016: 374).

One way of overcoming this problem is to adapt an existing tagger so that it recognises typical features of spoken discourse/grammar which would otherwise confuse a tagger trained on written data. This was precisely the approach of (a later version of) the Spoken BNC1994; a set of spoken resources was developed during the compilation of the corpus, with "supplementary lexicons and lists of pattern templates for spoken data" (Garside 1995: no page). Compilers of subsequent spoken corpora have taken a similar approach, with success. The Research and Teaching Corpus of Spoken German (FOLK) research team, for example, adapted a written-trained tagger based on features of spoken German, and the tagging error rate decreased from 18.84% (using the written-trained tagger) to 5% with the new tagger (Westpfahl & Schmidt 2016: 1495).

[73] Both tagsets are available on the CLAWS website: http://ucrel.lancs.ac.uk/claws/ (last accessed September 2017).

[74] Adopted from the Oxford University Computing Service: http://www.natcorp.ox.ac.uk/docs/URG/codes.html#klettpos (last accessed September 2017).

Given the age of the BNC1994 spoken-trained tagger, its performance on contemporary data was not known – some of the frequencies of parts of speech on which its lexicon is based may have shifted over time. Although written-trained taggers can be used on spoken corpora with acceptable results (Nivre et al. 1996), our aim – obviously – was to tag the Spoken BNC2014 with the greatest possible accuracy, and so we were motivated to explore the possibility of using the spoken resources. I decided to compare the tagging of one randomly selected Spoken BNC2014 text using both sets of resources. Although a crude approach, a comparison of the first 1,000 tagged words in this text between the two tagger resources outputs suggests strongly that, despite the age of the data used to train the spoken tagger, it was able to tag the text with greater accuracy than the standard tagger; the written tagger's error rate on these 1,000 words is 7.3%, while the error rate of the spoken tagger is 2.5%. Of the 1,000 words, 67 were tagged differently by the two taggers. Of these, 57 (85%) were found to have been tagged incorrectly by the written tagger but correctly by the spoken tagger, providing evidence that the spoken tagger resources tend to facilitate more accurate tagging decisions than the written tagger resources. The three most common cases where the written tagger resources made errors, but the spoken tagger resources did not, are:

- Tagging *--UNCLEARWORD* (FU) as a singular proper noun (NP1) or singular common noun (NN1) (10 instances)
  - *it's a mighty green* ***--UNCLEARWORD***
- Tagging the personal pronoun *I* (PPIS1) as the singular cardinal number one (MC1) (7 instances)
  - *I made* ***I*** *I bought coffee filter paper*
- Tagging the adverb *like* as an adjective (JJ) or preposition (II) (7 instances)
  - *but Co-op has loads of* ***like*** *reduced vegetables*

The written tagger resources correctly tagged a word that the spoken tagger resources tagged incorrectly only nine times. Of these, only one type of error occurred more than once:

- Tagging the adjectives (JJ) *reduced* and *sealed* as the part participle of a lexical verb (VVN)
  - *but Co-op has loads of like* ***reduced*** *vegetables*
  - *it's like* ***sealed***

Finally, 15 words were tagged incorrectly by both the written and spoken tagger resources. These include four more instances of *like*, the foreign word *itadakimasu* (tagged as NN1 instead of FW) and *teabag* (tagged as VVI instead of NN1).

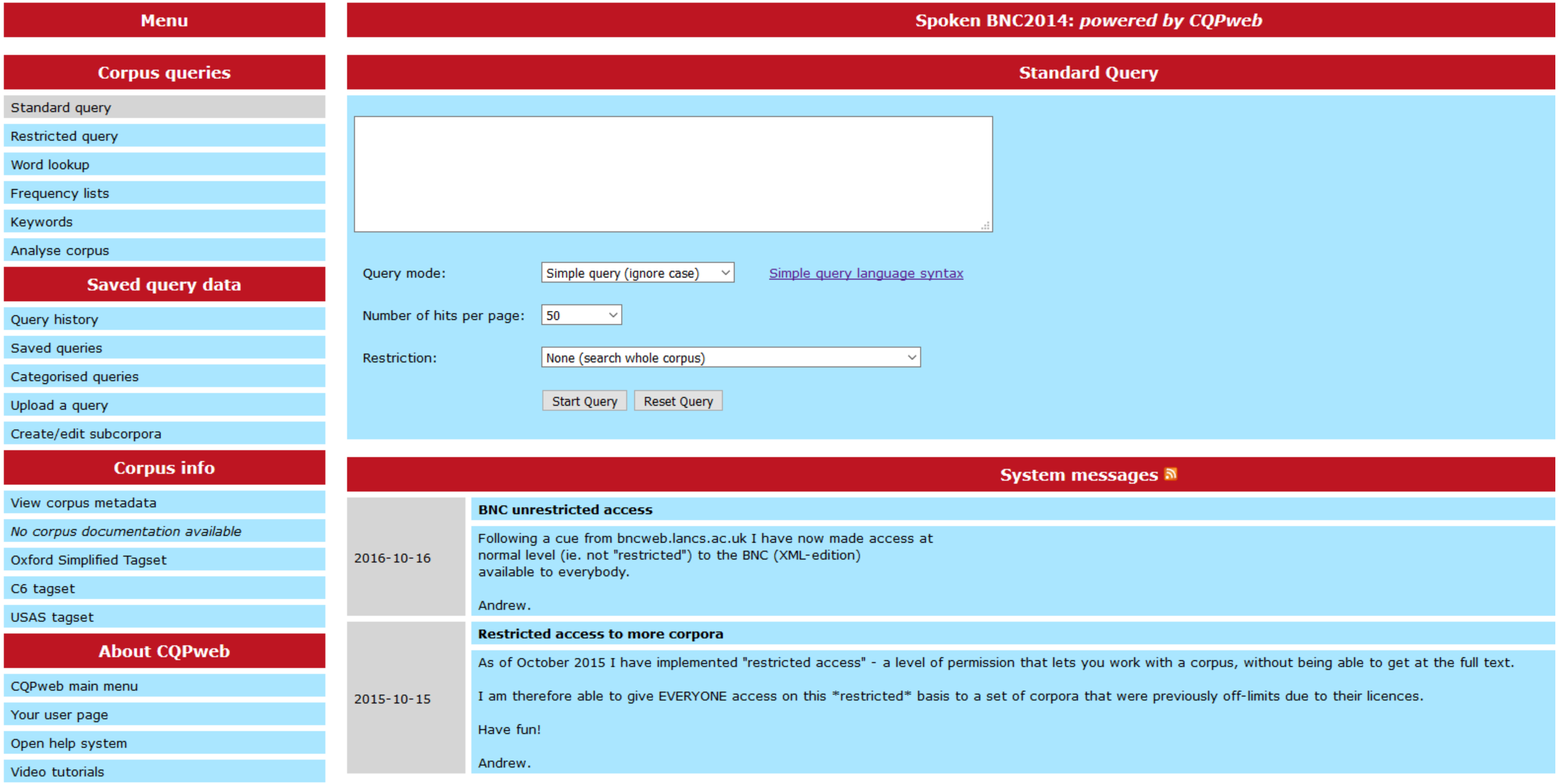
Although not a large-scale comparison between the spoken and written tagger resources, the evidence derived from the 1,000 words I studied was sufficient to justify the selection of the spoken resources over the written resources; the spoken tagger resources seemed to militate in favour of more accurate decisions, based on my limited analysis of the outputs of the tagger for the Spoken BNC2014 text, and future work should aim to calculate the error rate of the two sets for (a larger sample of) the entire corpus.

The result of the conversion and annotation process is a set of XML files, annotated for POS, lemma and semantic categories, as well as a set of untagged XML files. These sets comprise the canonical form of the data, and will be made available for public download as of Autumn 2018, along with speaker and text metadata spreadsheets. In the tagged form of the data, all four annotations (C6 POS tags, simple POS tags, lemmas and semantic tags) are coded as XML attributes on the <*w*> (word) element.

6.4 Corpus dissemination

While the planned 2018 XML release will represent the canonical form of the corpus, the initial release was made available via Lancaster University's CQPweb server from 25 September 2017.[75] CQPweb is the online interface component of the Corpus Workbench software (see Hardie 2012, and Figure 16 overleaf). CQPweb provides full support for a number of features which users of the Spoken BNC2014 require, namely (a) access to all layers of corpus annotation; (b) restricting analyses to utterances whose speakers fulfil certain demographic criteria (e.g. dialect, age, gender); and (c) limiting access only to users who have signed the corpus licence (see Love et al. 2017b). XML elements encoded within a CQPweb corpus can be used to control the appearance of the text in concordance lines and other aspects of the interface; on the Lancaster server, we configured the system to display utterance boundaries and speaker ID codes in an easily readable format. So, for instance, the underlying XML attribute-value pair *trans="overlap"* – which appears on the <*u*> (utterance) element – is rendered in the interface as >> (see Figure 17, p. 138). The display format that we use for such features in CQPweb does not replicate the original codes as typed by the transcribers; the display codes were instead devised afresh for maximal visual distinctiveness. These codes are discussed in full in the BNC2014 user guide (Love et al. 2017b).

[75] Incidentally, this date is exactly one year after the final conversation to be included in the corpus was recorded.



Query mode: Simple query (ignore case)

Number of hits per page: 50

Restriction: None (search whole corpus)

2016-10-16

BNC unrestricted access

Following a cue from bncweb.lancs.ac.uk I have now made access at
normal level (ie. not "restricted") to the BNC (XML-edition)
available to everybody.

Andrew.

2015-10-15

Restricted access to more corpora

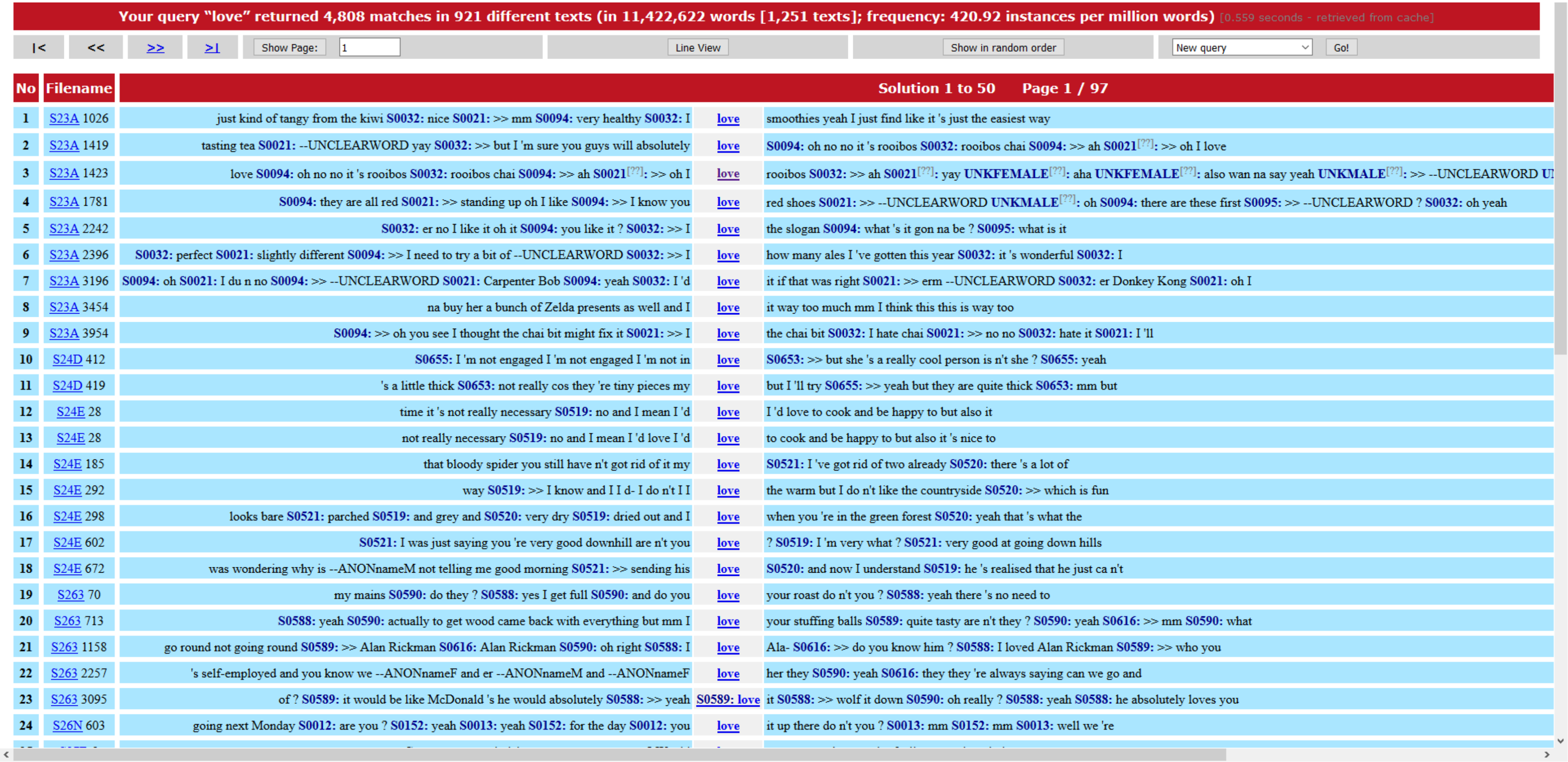
As of October 2015 I have implemented "restricted access" - a level of permission that lets you work with a corpus, without being able to get at the full text.

I am therefore able to give EVERYONE access on this *restricted* basis to a set of corpora that were previously off-limits due to their licences.

Have fun!

Andrew.

Figure 16. Standard query menu for the Spoken BNC2014 in CQPweb (Hardie 2012).



Your query “love” returned 4,808 matches in 921 different texts (in 11,422,622 words [1,251 texts]; frequency: 420.92 instances per million words) [0.559 seconds - retrieved from cache]

Show Page: 1

No	Filename	Solution 1 to 50 Page 1 / 97		
1	S23A 1026	just kind of tangy from the kiwi **S0032:** nice **S0021:** >> mm **S0094:** very healthy **S0032:** I	love	smoothies yeah I just find like it 's just the easiest way
2	S23A 1419	tasting tea **S0021:** --UNCLEARWORD yay **S0032:** >> but I 'm sure you guys will absolutely	love	**S0094:** oh no no it 's rooibos **S0032:** rooibos chai **S0094:** >> ah **S0021**[??]**:** >> oh I love
3	S23A 1423	love **S0094:** oh no no it 's rooibos **S0032:** rooibos chai **S0094:** >> ah **S0021**[??]**:** >> oh I	love	rooibos **S0032:** >> ah **S0021**[??]**:** yay **UNKFEMALE**[??]**:** aha **UNKFEMALE**[??]**:** also wan na say yeah **UNKMALE**[??]**:** >> --UNCLEARWORD U
4	S23A 1781	**S0094:** they are all red **S0021:** >> standing up oh I like **S0094:** >> I know you	love	red shoes **S0021:** >> --UNCLEARWORD **UNKMALE**[??]**:** oh **S0094:** there are these first **S0095:** >> --UNCLEARWORD ? **S0032:** oh yeah
5	S23A 2242	**S0032:** er no I like it oh it **S0094:** you like it ? **S0032:** >> I	love	the slogan **S0094:** what 's it gon na be ? **S0095:** what is it
6	S23A 2396	**S0032:** perfect **S0021:** slightly different **S0094:** >> I need to try a bit of --UNCLEARWORD **S0032:** >> I	love	how many ales I 've gotten this year **S0032:** it 's wonderful **S0032:** I
7	S23A 3196	**S0094:** oh **S0021:** I du n no **S0094:** >> --UNCLEARWORD **S0021:** Carpenter Bob **S0094:** yeah **S0032:** I 'd	love	it if that was right **S0021:** >> erm --UNCLEARWORD **S0032:** er Donkey Kong **S0021:** oh I
8	S23A 3454	na buy her a bunch of Zelda presents as well and I	love	it way too much mm I think this this is way too
9	S23A 3954	**S0094:** >> oh you see I thought the chai bit might fix it **S0021:** >> I	love	the chai bit **S0032:** I hate chai **S0021:** >> no no **S0032:** hate it **S0021:** I 'll
10	S24D 412	**S0655:** I 'm not engaged I 'm not engaged I 'm not in	love	**S0653:** >> but she 's a really cool person is n't she ? **S0655:** yeah
11	S24D 419	's a little thick **S0653:** not really cos they 're tiny pieces my	love	but I 'll try **S0655:** >> yeah but they are quite thick **S0653:** mm but
12	S24E 28	time it 's not really necessary **S0519:** no and I mean I 'd	love	I 'd love to cook and be happy to but also it
13	S24E 28	not really necessary **S0519:** no and I mean I 'd love I 'd	love	to cook and be happy to but also it 's nice to
14	S24E 185	that bloody spider you still have n't got rid of it my	love	**S0521:** I 've got rid of two already **S0520:** there 's a lot of
15	S24E 292	way **S0519:** >> I know and I I d- I do n't I I	love	the warm but I do n't like the countryside **S0520:** >> which is fun
16	S24E 298	looks bare **S0521:** parched **S0519:** and grey and **S0520:** very dry **S0519:** dried out and I	love	when you 're in the green forest **S0520:** yeah that 's what the
17	S24E 602	**S0521:** I was just saying you 're very good downhill are n't you	love	? **S0519:** I 'm very what ? **S0521:** very good at going down hills
18	S24E 672	was wondering why is --ANONnameM not telling me good morning **S0521:** >> sending his	love	**S0520:** and now I understand **S0519:** he 's realised that he just ca n't
19	S263 70	my mains **S0590:** do they ? **S0588:** yes I get full **S0590:** and do you	love	your roast do n't you ? **S0588:** yeah there 's no need to
20	S263 713	**S0588:** yeah **S0590:** actually to get wood came back with everything but mm I	love	your stuffing balls **S0589:** quite tasty are n't they ? **S0590:** yeah **S0616:** >> mm **S0590:** what
21	S263 1158	go round not going round **S0589:** >> Alan Rickman **S0616:** Alan Rickman **S0590:** oh right **S0588:** I	love	Ala- **S0616:** >> do you know him ? **S0588:** I loved Alan Rickman **S0589:** >> who you
22	S263 2257	's self-employed and you know we --ANONnameF and er --ANONnameM and --ANONnameF	love	her they **S0590:** yeah **S0616:** they they 're always saying can we go and
23	S263 3095	of ? **S0589:** it would be like McDonald 's he would absolutely **S0588:** >> yeah	S0589: love	it **S0588:** >> wolf it down **S0590:** oh really ? **S0588:** yeah **S0588:** he absolutely loves you
24	S26N 603	going next Monday **S0012:** are you ? **S0152:** yeah **S0013:** yeah **S0152:** for the day **S0012:** you	love	it up there do n't you ? **S0013:** mm **S0152:** mm **S0013:** well we 're

Figure 17. Concordance lines for the simple query ‘love’ in the Spoken BNC2014.

The usability of the Spoken BNC2014 in CQPweb was trialled extensively. Our first opportunity to test the corpus data in the interface was the Spoken BNC2014 early access data grant scheme. In 2016, we released a 4,789,185-word sample of Spoken BNC2014 data to a small set of researchers who we had selected, based on an application process. This sample, known as the Spoken BNC2014S, contained texts from the earlier stage of data collection, which had already been transcribed and converted into XML (see McEnery et al. 2017b for more information). The selected researchers were given exclusive early access to this sample in the CQPweb interface for the purpose of conducting research projects, as proposed in their applications. The benefit of the data grant scheme for the research team was the live trialling of the corpus data in CQPweb; we encouraged the researchers to give us feedback about the corpus data and the tool itself. The benefit for the researchers was exclusive early access to the corpus, as well as the opportunity to publish their research in either a special issue of the *International Journal of Corpus Linguistics* (McEnery et al. 2017a), which includes the official citation paper for the corpus (Love et al. 2017a), or a book in the Routledge *Advances in Corpus Linguistics* series (Brezina et al. forthcoming). The data grant researchers, and their research topics, are listed below.

- International Journal of Corpus Linguistics special issue (McEnery et al. 2017a)
  - Robert Fuchs (intensifiers)
  - Jacqueline Laws, Chris Ryder and Sylvia Jaworska (verb-forming suffixation)
  - Tanja Hessner and Ira Gawlitzek (intensifiers)
  - Andreea S. Calude (demonstrative clefts)

- Routledge Advances in Corpus Linguistics book (Brezina et al. forthcoming)
  - Jonathan Culpeper and Mathew Gillings (politeness)
  - Karin Aijmer (intensifiers)
  - Karin Axelsson (tag questions)
  - Deanna Wong and Haidee Kruger (backchannels)
  - Tanja Säily, Victorina González-Díaz, and Jukka Suomela (adjective comparison)
  - Gard Jenset, Barbara McGillivray and Michael Rundell (dative alternation)
  - Andrew Caines, Michael McCarthy and Paula Buttery (zero auxiliary progressives)
  - Laura Paterson (untriggered reflexive pronouns)

The feedback I gathered from these researchers was extremely useful in the further development of the Spoken BNC2014, as we approached the full public release of the corpus in September 2017. We had, for example, proposed a new age categorisation scheme, which we intend to allow a more sophisticated analysis of age grading than offered by the Spoken BNC1994 (see Section 3.3.5, p. 49). What we had failed to consider was the importance of comparing the Spoken BNC2014 data to its predecessor according the same age groups, and the two schemes were not fully compatible. Based on feedback from the data grant authors about this problem, I categorized the Spoken BNC2014 speaker metadata according to both the old and new age schemes, and both are offered in the full release.

Another issue which was drawn to our attention was the possibility that some features (e.g. tag questions) had not been consistently transcribed. Although we were aware of the issue of inter-transcriber inconsistency (see previous chapter), we had not thought of a way of facilitating the exploration of this in the corpus. It was suggested by data grant authors that we include a code for the transcriber of each audio recording in the metadata of the equivalent corpus texts. Having done this, it is now possible to compare the search results in the corpus according to who transcribed it, and explore possible variation.

A final example is a request to facilitate the creation of subcorpora according to text metadata categories which are non-standardised free-text, and therefore not searchable in restricted query mode (e.g. inter-speaker relationship, recording location and topics covered). This is now possible in the 'Create and edit subcorpora' menu of the final release in CQPweb.

Once the remaining corpus texts (i.e. those processed after the release of the Spoken BNC2014S) were ready, and the entire corpus indexed into CQPweb, Andrew Hardie and I organised a workshop at the International Corpus Linguistics Conference (2017),[76] which was hosted by the University of Birmingham and took place in July 2017 – two months before the public release of the corpus. Here, participants were granted temporary access to the entire corpus in CQPweb, and I gathered feedback which, like that of the early access data grant researchers, could be taken into account in advance of the public release. One example of such feedback was a request for the facility to conduct keyword analysis between the Spoken BNC2014 and other corpora, including the BNC1994 (XML edition). Like the data grant feedback, we were able to implement most reasonable requests made in the feedback.

[76] http://www.birmingham.ac.uk/research/activity/corpus/events/2017/cl2017/pre-conference-workshop-9.aspx (last accessed September 2017).

As mentioned, the Spoken BNC2014 was publicly released via CQPweb on 25 September 2017, along with a user guide (Love et al. 2017b), which provides information about the corpus make-up as well as the functionality of the CQPweb interface.

6.5 Chapter summary

In this chapter, I have described three important stages in the construction of the Spoken BNC2014 – conversion into XML, automatic annotation and corpus dissemination.

With regards to the conversion of the corpus transcripts into XML (Section 6.2), I have shown how the transcription scheme (Appendix J, p. 224) was designed specifically with automatic mapping to XML in mind, and how a PHP script was set up to facilitate this automated process. I showed that, despite this intention, many and various errors in the transcription codes were detected by the script, and that the script proved to be crucial in the process of quality control.

In the section on annotation (Section 6.3), I introduced the CLAWS tagger (Garside 1987) and justified our decision to use the lesser-known set of resources available for the tagger – the spoken resources (Garside 1995). Despite its age, the spoken-trained CLAWS tagger appears to perform much better on the Spoken BNC2014 data compared to the standard (written) tagger – achieving an error rate of 2.5% compared to 7.3% for the standard tagger resources. I also introduced the USAS tagset for semantic categories (Rayson et al. 2004), which we used for semantic annotation of the corpus.

Finally, I discussed our procedure for releasing the corpus publicly. The Spoken BNC2014 was made available publicly (and for free) via the CQPweb platform (Hardie 2012) in September 2017. Before this, though, we were able to trial its use in real research settings by releasing the Spoken BNC2014S to a small set of selected researchers in 2016. This, and other trialling methods, was described. The Spoken BNC2014 XML files and metadata will be available for free public download as of Autumn 2018.

With the research, design and compilation of the Spoken BNC2014 accounted for in Chapters 2 to 6, the final aim of this thesis is to demonstrate how the corpus may be used in linguistic research. In the next chapter, I compare the Spoken BNC2014S with the Spoken BNC1994DS with regards to the occurrence of bad language.

7 Analysing the Spoken BNC2014

7.1 Introduction

This thesis has, thus far, documented the main stages of the compilation of the Spoken BNC2014. It is now time to demonstrate how the corpus may be used for linguistic research. This chapter aims to investigate bad language in present-day spoken British English, with comparison to that of the 1990s, by comparing two corpus sampling points of spoken British English collected in the 1990s and 2010s. I report on the analysis of bad language words (BLWs) in the early sample version of the Spoken BNC2014, making comparison to the demographically-sampled component of the Spoken BNC1994. The structure of this chapter is necessarily uncharacteristic of the chapters which have preceded it, as this is very much a self-contained piece of analysis, built upon the dataset I have constructed. In Section 7.2, I present a literature review which explores the background of swearing as an object of study, before discussing various linguistic definitions of swearing and laying out the work of McEnery (2005), which is most influential to this study. Section 7.3 presents the methodology and data used in this chapter, and Section 7.4 presents the findings as a series of case studies, which are informed by literature on specific aspects of swearing in spoken British English. The case studies aim to address the following research questions:

RQ1. (How) does the overall frequency of BLW occurrence differ between the corpora? (Section 7.4.1)

RQ2. (How) does the distribution of BLW strength differ between the corpora? (Section 7.4.2)

RQ3. (How) does the social distribution of a sample of BLWs differ between the corpora? (Sections 7.4.3 to 7.4.5)

RQ4. Using FUCK as an appropriate case study, what can manual annotation of the 'category of insult' reveal about possible differences in the meaning of this BLW between the two corpora? (Section 7.4.6)

RQs 1 and 2 aim to establish a bird's eye view of the BLW landscape, focussing on notable differences between the Spoken BNC1994DS and the Spoken BNC2014S. RQs 3 and 4 are more focussed, as necessitated by the limited scope allowed within this single chapter. Findings are presented throughout these sections, and then summarised in the conclusion (Section 7.5), which also includes a consideration of the limitations of this work.

As a whole, this chapter does not purport to produce a full analysis of all bad language in the two Spoken British National Corpora. Such an aim is beyond the scope of this thesis. Rather, it aims to point towards some initial findings about changes in BLW use between the two corpora which may encourage further research in the future while, crucially, demonstrating some of the features and uses of the Spoken BNC2014.

7.2 Swearing in linguistics

7.2.1 Swearing as an object of study

Swearing is "a rich emotional, psychological, and sociocultural phenomenon" (Jay 2009a: 153). Although swearing, and societal discourse around swearing, has existed for centuries, it has only started to become a prominent subject of research in linguistics, psycholinguistics, neurolinguistics, history and other disciplines, since the 1960s (Partridge 1947, Montagu 1967, 1973, Lakoff 1975, Cheshire 1982, Andersson & Trudgill 1992, Hughes 1998, van Lancker & Cummings 1999, McEnery 2005, Ljung 2011, Lutzky & Kehoe 2015). Ljung (2011: 4) claims that many previous studies into swearing "are not intended as overall accounts of swearing but focus on particular aspects of swearing that they find interesting", rendering it difficult to link together the various studies coherently. Although the work in this chapter does not aim to unify all existing scholarship about swearing across disciplines and varieties, it does, on the other hand, aim to act as a starting point for the overall understanding of swearing in contemporary spoken British English. It sets out to investigate how the "passing parade of words that constitute bad language" (McEnery 2005: 2) has changed in recent spoken British English. Clearly such an aim requires an empirical approach (unlike the approach of many of the earlier studies cited above), and corpus linguistics has been shown comparatively recently to facilitate the sophisticated analysis of swearing in a range of datasets (Rayson et al. 1997, McEnery et al. 1999, 2000, McEnery & Xiao 2004, McEnery 2005, Stenström 2006, Thelwall 2008, Di Cristofaro 2014, Drange et al. 2014, Ebeling & Ebeling 2014, Lutzky & Kehoe 2015). In the context of the Spoken BNC2014, and with a view to demonstrating some of the ways in which it can be employed, swearing is an appropriate avenue of enquiry, because it is a "marker of distinction in English" (McEnery 2005: 24); observing variation in the use of swearing across demographic groups, as can be afforded by the Spoken BNC2014, can lead to conclusions which may support or challenge existing ideas about so-called prestigious language. Clearly, then, in terms of similarity to previous studies, it is Chapter 2 of McEnery (2005) that is most relevant: an analysis of swearing in a dataset derived from the demographically-sampled component of the Spoken BNC1994 (henceforth Spoken BNC1994DS). What follows is a review of literature sufficient to lay the groundwork for the present study. It addresses the issue of how swearing should be defined in a corpus linguistic study, and discusses the approach of McEnery (2005, Chapter 2). More specific literature, relating to the strength and the quantitative and qualitative distribution of swearing in contemporary spoken British English, is introduced in relevant sections of analysis.

7.2.2 Defining swearing

Although "there is more to being impolite than just swearing" (Culpeper 2011: 6), it is fair to say that taboo words form the portion of a given language that is most strongly associated with causing offence. Stone et al. (2015: 66), in their review of literature on swearing in western health settings, offer a set of explicit criteria for identifying swearing:

> 1. Refer to something that is taboo, offensive, impolite, or forbidden in the culture;
> 2. Can be used to express strong emotions, most usually of anger;
> 3. May evoke strong emotions, most usually of anger or anxiety;
> 4. Include the strongest and most offensive words in a culture—stronger than slang and colloquial language; and
> 5. May also be used in a humorous way and can be a marker of group identity.

The terms used to discuss swearing in the literature vary, depending upon the definitions to which individual authors subscribe; these definitions can be separated superficially into two camps. Firstly, there are those who adopt a broad approach to swearing and include all types and instances of words which may cause offence. Jay (2009a: 153), in his review of research on taboo words, describes the "lexicon of offensive emotional language" using the terms *taboo words* and *swear words* interchangeably. For him, these are words which are "sanctioned or restricted on both institutional and individual levels under the assumption that some harm will occur if…spoken" (Jay 2009a: 153). Stone et al. (2015) use the term *swearing*, and their criteria (above) clearly include any word which is used to cause offence. McEnery (2005), in his corpus study of swearing in 1990s spoken British English, also uses *swearing/swear words*, but only as a sub-category of *bad language words* (BLWs). BLWs can be split into two types: (a) literal and non-literal use of words which would canonically be described as swear words (e.g. SHIT, FUCK); and (b) other words which may be used "to cause offence" (McEnery 2005: 2), but which would not be considered swear words otherwise (e.g. PIG, TART). The distinction between "swear words and terms of abuse" (McEnery et al. 2000: 37) described here has roots in Hughes (1998), which was a starting point for McEnery's work (i.e. McEnery et al. 1999).

The other camp comprises those who, unlike Jay (2009a), Stone et al. (2015) and McEnery (2005; et al. 2000), take a narrow approach, and exclude certain potentially offensive words from their definition of swearing. Ljung (2011: viii), in his cross-linguistic study into the "shape, use and manifestations" of swearing, defines bad language via a typology that has much in common with McEnery (2005) but, crucially, excludes literal uses of swear words. He asserts that swear words are exclusively emotive in meaning rather than referential, to the extent that "taboo words with literal meaning cannot be regarded as swearing" (Ljung 2011: 12). The reason posited is that taboo words, when used in their literal/non-taboo sense, can be replaced by other non-taboo synonyms (e.g. *we fucked* can be replaced by *we bonked*), but that the same word used in a taboo sense cannot be replaced by the same set of synonyms (i.e. **bonk you* is not a suitable replacement for *fuck you*). This view is shared by Lutzky and Kehoe (2015: 167), who do use the term *swearing* but "do not regard literal uses of taboo words as swearing (e.g. the word *shit* being used with reference to the excretory system)" – the reason being that literal uses are said not to "express emotions".

In this chapter, I adopt the broad approach to swearing, specifically that of McEnery (2005), and so henceforth use his terminology. There are two reasons for this. Firstly, it would be difficult to replicate McEnery's methods or compare the findings presented in this work to those of McEnery without also applying the same selection criteria for BLWs. The second reason is that the narrow view of bad language is flawed, because it ignores evidence about the arousing autonomic properties of these words. It is known that swear words (i.e. the sub-category of BLWs which are considered exclusively taboo, and are not polysemous with non-taboo uses, e.g. FUCK, SHIT, CUNT) – encountered out of any context which would dictate whether they are being used literally or emotively – are more psychologically arousing than non-taboo words (Janschewitz 2008). Consequently, speakers are so-conditioned that taboo words are inherently more memorable than non-taboo words (Jay et al. 2008) – again, when encountered out of semantic context. Therefore, it is difficult to accept the view that swear words (e.g. SHIT) somehow do not trigger such automatic responses when used literally (e.g. to refer to the act of defecating), and yet do trigger psychological arousal when used emotively (e.g. as an interjection). I adopt the view that it is the *form* of the swear word that inherently carries the status of taboo, as is socially conditioned, and that literal uses of such words should still be considered valid examples of bad language. This is, in fact, what distinguishes swear words as a type of BLW from McEnery's (2005) other type of BLW: words which are not swear words in and of themselves, but which could be used to cause offence.

7.2.3 McEnery's approach to bad language

As stated, the aim of this chapter is to use the Spoken BNC2014S to replicate the work of McEnery (2005), who studied bad language in the Spoken BNC1994DS. McEnery (2005) includes a chapter devoted to the analysis of BLWs in a specially curated subset of the Spoken BNC1994DS known as the Lancaster Corpus of Abuse (LCA); the construction of the LCA is detailed by McEnery et al. (1999, 2000). In short, the LCA is a corpus comprised only of instances of bad language (and appropriate context on either side of each instance to understand their use). In addition to quantitative analysis of the distribution of the BLWs across the sociolinguistic categories of gender, age and socio-economic status, McEnery (2005) conducts qualitative analysis of each BLW, using a bespoke bad language categorization scheme (Table 20, overleaf),[77] finding that "the use or lack of use of BLWs is a fault line along which age, sex and social class may be differentiated" (McEnery 2005: 50). Although McEnery (2005: 27) concedes that the categories of insult (Table 21, overleaf) are "certainly susceptible to further development", he shows that they "seem at least to display discriminating power" (McEnery 2005: 28) – finding, for example, that males significantly prefer 'EmphAdv' and 'AdvB' BLWs, whereas females significantly prefer 'Gen', 'PremNeg' and 'Idiom' BLWs (p. 31). Despite this, the LCA annotation has received criticism. Ljung (2011: 28) criticises several of the categories of McEnery's categorization scheme, including 'Idiom', 'Image' and 'Pron', suggesting that the scheme ought to be used with caution.

[77] The categorization scheme was created alongside the LCA itself, and its development is also described by McEnery et al. (1999, 2000).

Table 20. LCA annotation scheme (McEnery 2005: 27); modifications are italicised.

Field	Feature marked	Possible values
1	Gender of speaker	M = male, F = female, X = unknown
2	Social class of speaker	As per social class categories of BNC (see Aston & Burnard 1998)
3	Age of speaker	As per age categories of *the Spoken BNC1994DS* (see Aston & Burnard 1998)
4	Category of insult	*As per Table 21.*
5	Gender of hearer	As per gender of speaker
6	Person of target	1 = first person, 2 = second person, 3 = third person, X = unknown
7	Metalinguistic usage	0 = no, 1 = yes
8	Animacy of target	+ = animate, - = non-animate, X = unknown
9	Gender of target	As per gender of speaker
10	Number of target	1 = singular, 2 = plural, X = unknown
11	Quotation	Q = quotation, N = non-quotation, X = unknown

Table 21. Categories of insult in the LCA annotation scheme (McEnery 2005: 27).

Letter	Code	Description
A	PredNeg	Predicative negative adjective: 'the film is shit'
B	AdvB	Adverbial booster: 'Fucking marvellous' 'Fucking awful'
C	Curse	Cursing expletive: 'Fuck You!/Me!/Him!/It!'
D	Dest	Destinational usage: 'Fuck off!' 'He fucked off'
E	EmphAdv	Emphatic adverb/adjective: 'He fucking did it' 'in the fucking car'
F	Figurtv	Figurative extension of literal meaning: 'to fuck about'
G	Gen	General expletive '(Oh) Fuck!'
I	Idiom	Idiomatic 'set phrase': 'fuck all' 'give a fuck'
L	Literal	Literal usage denoting taboo referent: 'We fucked'
M	Image	Imagery based on literal meaning: 'kick shit out of'
N	PremNeg	Premodifying intensifying negative adjective: 'the fucking idiot'
O	Pron	'Pronominal' form with undefined referent: 'got shit to do'
P	Personal	Personal insult referring to defined entity: 'You fuck!'/'That fuck'
R	Reclaimed	'Reclaimed' usage—no negative intent, e.g. Niggers/Niggaz as used by African American rappers

T	Oath	Religious oath used for emphasis: 'by God'
X	Unc	Unclassifiable due to insufficient context

7.3 Method

7.3.1 Methodological procedure

The aim of this work is to replicate McEnery (2005) by analyzing a large set of BLWs in the Spoken BNC2014S and comparing their frequency, sociolinguistic distribution and use to that of the Spoken BNC1994DS, commenting on any indications of changes in bad language over the last twenty years. McEnery (2005: 30) lists a set of forty-nine BLWs, which was the object of his study. These are:

> arse, arsehole, balls, bastard, bird, bitch, bloody, bollocks, bugger, Christ, cow, crap, cunt, damn, dickhead, fuck, gay, git, god, hell, hussy, idiot, jesus, jew, moron, motherfucker, nigger, paki, pig, pillock, piss, pissed off, poofter, prick, screw, shag, shit, slag, slut, sod, son-of-a-bitch, spastic, tart, tit, tits, tosser, twat, wanker, whore

For this study, using only this set of BLWs would be insufficient; I had to take into account the possibility of new BLWs having emerged since the early 1990s. Therefore, I extended the original list of BLWs by adding those from two other sources. The first set is those that were included by the UK's Office of Communications (Ofcom), which recently published a guide to offensive language in broadcast media (Ofcom 2016). This greatly extended McEnery's original list, adding the following BLWs:

> batty boy, beaver, beef curtains, bellend, bender, bint, bloodclaat, bonk, bukkake, bullshit, bum boy, bumclat, bummer, chi-chi man, chick with a dick, chinky, choc ice, clunge, cock, cocksucker, coffin dodger, coloured, coon, cretin, cripple, dago, darky, dick, dildo, div, dyke, faggot, fairy, fanny, feck/effing, fenian, flaps, fop (fucking old person), fudge-packer, gash, gender bender, ginger, gippo, goddam, golliwog, gook, he-she, ho, homo, honky, hun, jap, jesus christ, jizz, jock, kafir/kufaar, kike*, knob, kraut, lezza/lesbo, loony, mental, midget, minge, minger, mong, muff diver, munter, nancy, nazi, negro, nig-nog, nonce, nutter, old bag, pansy, papist, pikey, pissed / pissed off, polack, poof, prickteaser, prod, psycho, punani, pussy, queer, raghead, rapey, retard, rugmuncher/ carpetmuncher, sambo, schizo, shirt lifter, skank, slapper, slope, snatch,

> sod-off, son of a bitch, spade, spastic/spakka/spaz, special, spic, taff, taig, tranny, vegetable, window licker, wog, wop

The second source is the set developed by Lutzky and Kehoe (2015), in their analysis of bad language in computer-mediated communication. While some of their search terms, such as *omg* (*oh my God*) and *ffs* (*for fuck's sake*), are unsurprisingly informed by research on computer-mediated communication rather than speech (e.g. Thelwall 2008), others which do not appear in either the lists of McEnery (2005) or Ofcom (2016) (e.g. *douche, jerk, wank*) do, by intuition, appear to be good candidates for BLW status in 2010s spoken British English. The full list of additional words offered by Lutzky and Kehoe reads:

> bimbo, bollock, boob, butt, chav, dork, douche, dumb, fag, fart, fatass, ffs, imbecile, jeez, jerk, omg, pimp, prat, sonofabitch, suck, swine, turd, wank, wtf, wuss

The use of both the Ofcom (2016) guide and Lutzky and Kehoe's (2015) work as a basis for extending McEnery's original list resulted in a new set of 173 BLWs (see Appendix Q, p. 264, for the master list of BLWs used in this study and the syntax used to search for them). In several cases, I was motivated to merge separate words which I prefer to treat as morphological variants of the same lemma. Some of the extra words that were derived from the two sources (as listed above) did not actually create an entirely new BLW entry on my new list, but rather served as additional morphological variants not necessarily captured by McEnery (2005). For example, McEnery (2005) includes *bollocks* but not *bollock*; I added the singular form to the search query as a morphological variant of the lemma BOLLOCK, rather than treating it as a separate BLW entry. McEnery's *wanker* was merged with Lutzky and Kehoe's *wank* in the same vein, under the lemma WANK. Likewise, Ofcom (2016) lists *sod* and *sod off* as separate entries, but I have merged these under the lemma SOD; *dick* and *dickhead* are now merged under the lemma DICK; and *god* and *goddam* are now merged under the lemma GOD. For the sake of consistency with this decision I then merged some of McEnery's (2005) original BLWs: *piss* and *pissed off* under the lemma PISS; *tit* and *tits* under the lemma TIT; and *arse* and *arsehole* under the lemma ARSE.

The next step was to create suitable search queries for each of the BLWs under investigation. I used CQP syntax to refine the queries for precision, and originally planned to use lemma searches for BLWs which were clearly morphological headwords (e.g. CRAP). This would simplify the search queries and ensure that no rare morphological variants were omitted from the search (i.e. maximizing recall). However, the automatic lemmatization of the corpus data was not reliable enough to do this; the lemma search for CRAP (*[lemma="crap"%c]*), for example, retrieved 289 instances comprising *crap, crapped, crapping, crappest* and *crapper*, but the non-lemma search (*[word="crap.*"%c]*) retrieved 321 matches, including relevant forms like *crappy, crapper* and *crapola* which were not detected by lemmatization. This observation forced me to abandon searching for lemma forms and adapt the search queries accordingly.

Once the appropriate search queries were written, I was then able to conduct strength, frequency, distribution and manual analyses of the BLWs as per the following analytical procedure:

(1) Search in the Spoken BNC1994DS and Spoken BNC2014S for each BLW in turn;
(2) Observe BLWs which have a frequency of zero in both corpora and eliminate from further analysis;
(3) Analyse the strength of BLW use between the two corpora;
(4) Analyse BLWs which have changed in relative frequency to the greatest extent between the two corpora;
(5) Demographic distribution: select some of the most commonly occurring BLWs in both corpora, and analyse their frequency per speaker metadata category according to gender, age and socio-economic status;
(6) Annotate and analyse the BLW FUCK according to the LCA annotation scheme's 'categories of insult' (McEnery 2005).

Steps 1-5 were carried out by making the queries in both corpora in CQPweb (Hardie 2012) and recording the frequencies in a spreadsheet. For step 3, I compared the sum of instances of each BLW according to each ranking of strength as assigned by Ofcom (2016), as discussed in Section 7.4.2. For step 4, significance (log-likelihood) and effect size (log ratio, see Hardie 2014a) of the differences in frequency across the corpora were calculated (for the frequency analysis) using the UCREL Log-likelihood and effect size calculator.[78] For step 5, I must make explicit my use of terminology: I use the term 'demographic category' or simply 'category' to identify types of speakers collated according to the three relevant demographic identities *gender, age* and *socio-economic status* (so, *age* is an example of a category). For the subsections within each category (e.g. *age 15-24*) I use the term 'demographic group' or 'group'. Again, the UCREL calculator was used to ascertain significance and effect size for diachronic comparisons of individual groups (e.g. differences between 1990s females and 2010s females), while the UCREL Significance Test

[78] http://ucrel.lancs.ac.uk/llwizard.html (last accessed September 2017).

System[79] was used to calculate the log-likelihood of the synchronic differences within categories (e.g. differences between age groups in the 1990s). The selection of BLWs for treatment in step 5 was motivated by frequency; comparison across demographic groups would be most effective for relatively high frequency BLWs. For step 6, I downloaded the relevant concordance lines for both corpora and analysed random samples of 1,000 of each of them according to the LCA annotation scheme's categories of insult in a spreadsheet.

7.3.2 Data

In this section, I briefly describe the corpora under investigation before turning attention to two methodological issues worth discussing: the comparability of the 1994 and 2014 corpora, and attributing findings to language change.

This study compares the spoken components of both British National Corpora. Both corpora were accessed via Lancaster University's CQPweb server (Hardie 2012). The demographically-sampled component of the Spoken BNC1994 (hereafter Spoken BNC1994DS) contains 5,014,655 tokens across 153 texts, while the Spoken BNC2014 Sample (hereafter Spoken BNC2014S) contains 4,789,185 tokens across 567 texts. As mentioned in Section 6.4 (p. 136), the Spoken BNC2014S is a subset of the Spoken BNC2014 which was released exclusively to selected researchers in 2016, while the rest of the corpus was still being compiled (see McEnery et al. 2017b). The corpus texts were transcribed from recordings collected between 2012 and 2015.

Table 22 (overleaf) summarises the token counts for each demographic group in both corpora. Given that there are a certain number of 'unknown' speakers in each demographic category in both corpora, the sum of analysable groups (i.e. all groups excluding 'unknown') within each category does not equal the sum of tokens in the given corpus. For example, as described in Section 3.3.5 (p. 49), the comparison of speaker age between the two Spoken British National Corpora does require that some speakers are placed into the 'Unknown' age group despite having some information about their age. This explains why, for example, the sum of Spoken BNC2014S tokens analysed in the following age sections (3,535,521) is considerably lower than the sum of tokens in the Spoken BNC2014S (4,789,185).

[79] http://corpora.lancs.ac.uk/sigtest/ (last accessed September 2017).

Table 22. Token counts for the groups within demographic categories *gender, age* and *socio-economic status* in the Spoken BNC1994DS and Spoken BNC2014S.

		Tokens in group	
Demographic category	**Group**	**Spoken BNC1994DS**	**Spoken BNC2014S**
Gender	Female	2,662,805	2,872,758
	Male	1,726,993	1,911,836
	TOTAL	**4,389,798**	**4,784,594**
Age	0-14	435,286	69,362
	15-24	596,113	957,924
	25-34	816,024	395,679
	35-44	825,857	656,501
	45-59	859,736	527,901
	60+	783,594	928,154
	TOTAL	**4,316,610**	**3,535,521**
Socio-economic status	AB	852,100	2,641,196
	C1	924,336	622,858
	C2	842,149	93,004
	DE	485,276	1,401,946
	TOTAL	**3,103,861**	**4,759,004**

In terms of the comparability of these corpora, it could be argued that, since neither of the Spoken British National Corpora were sampled with the explicit aim of studying BLWs, it is difficult to claim that the sampling conditions allowed for a comparable amount of BLW use. However, it can firstly be assumed that the Spoken BNC1994 facilitated the natural occurrence of BLWs, given its surreptitious approach to recording (Crowdy 1993: 260). Secondly, as explained in Section 3.4.3 (p. 70), the aim of the Spoken BNC2014 team was to facilitate the recording of conversations in a way which minimized intrusiveness beyond what was required of ethics procedures introduced since the compilation of its predecessor. Although the requirement for informed consent of all speakers prior to the commencement of recording does mean that the contexts of recording are not identical, it does not seem to be the case that speakers were inhibited from speaking naturally. Harry Strawson, a Spoken BNC2014 contributor who submitted over a dozen recordings,[80] claimed that "it was surprising how quickly people seemed to forget they were being recorded" (Strawson 2017: 41). Furthermore, contributor interviews (see Section 3.2.6, p. 33) seemed to support this claim:

[80] Strawson had been guaranteed anonymity as per the standard contract made between the Spoken BNC2014 research team and all contributors. However, since his article was published I understood there to be no issue with mentioning him by name here.

> 3: You didn't completely forget because it was right there in front of you on the table, but there would be times where, one of them in particular where we were playing a game, where we forgot and somebody said *oh yes I forgot we were recording this* or *are we still recording?* Or something like that. (Appendix A, p. 208)

> 9: …I forgot about it straight away.
> 8: I think people forgot about it after the first couple of minutes. (Appendix B, p. 211)

Finally, with specific reference to bad language use, while McEnery et al. (1999: 51) do state that the observer effect may reduce the quantity of BLW usage, they "see no reason to believe that the *patterns of usage* for individual [bad language] words are affected by this observer effect" (emphasis added).

Another issue is the relationship between the comparison of two corpora and claims about diachronic language change. In this chapter, I am clearly interested in change over time; this interest is the primary motivating factor of this investigation. However, I am only able to compare two sampling points – the early 1990s and the 2010s. When making such comparisons in terms of, for example, the frequency of BLWs, the possible outcomes are necessarily limited to three patterns: one may observe an increase between point A and point B, or a decrease, or stability (cf. 'lockwords', Baker 2011). Without comparable data, taken from a larger number of sampling points, it is impossible to conclude whether an observed change or stasis represents, for example, part of a long-existing development, or, on the other hand, a short-term phenomenon[81] - a bump in the linguistic road.

In terms of comparative work between the first and second of the British National Corpora, this is a limitation which cannot be avoided by virtue of having available data from only two sampling points; the Spoken BNC2014 represents only the second sampling point of its type. To create more comparable sampling points, one has two options. One method is to collect data from the past (see e.g. the creation of a 1930s LOB corpus, Leech & Smith 2005). An older Spoken BNC of a comparable point in time would need to contain data from the 1970s; although some recordings of casual conversations from this time likely do exist, it is not a reasonable aim to curate a 10-million-word corpus, of a range of UK regions and sociolinguistic groups, from this decade. The further back through the 20th century one looks, the harder this

[81] Although advanced statistical procedures can be applied which can assess the confidence with which generalisations can be made about such two-point comparisons (Brezina forthcoming).

task becomes. The other option is to halt comparative research into the two Spoken British National Corpora until a third becomes available. A third comparable sampling point would be the 2030s. It is clearly unreasonable to wait so long to conduct such research. Rather, my approach is to compare the two corpora, make tentative comments about difference and stasis, and insist that these research questions are revisited in the future when more data becomes available. Therefore, I frame the findings presented in this chapter with the point in mind that they are not alone directly indicative of language change (or stasis) per se, but rather suggestive of change or stasis.

7.4 Results

7.4.1 Frequency comparison

The full, unfiltered[82] frequency list of the BLWs under investigation is provided in Appendix R (p. 272). In total, there are 31,423 instances of (potential) BLWs identified in both corpora (17,215 in the Spoken BNC1994DS and 14,208 in the Spoken BNC2014S). 32 of the BLW queries, however, returned a frequency of zero in both corpora. These are:

> BATTY BOY, BEEF CURTAINS, BLOODCLAAT, BUKKAKE, BUM BOY, BUMCLAT, CHI-CHI MAN, CHICK WITH A DICK, COCKSUCKER, COFFIN DODGER, COON, DAGO, FATASS, FENIAN, FFS, FUDGE-PACKER, KAFIR/KUFAAR, KIKE, KRAUT, LEZZA/LESBO, MUFF DIVER, OMG, PRICKTEASER, PUNANI, RAGMUNCHER/CARPETMUNCHER, SCHIZO, SHIRT LIFTER, SPIC, TAIG, WINDOW LICKER, WTF

With the exception of FATASS*,* FFS*,* OMG and WTF (which derived from the Lutzky & Kehoe, 2015 list), these BLWs were taken from the Ofcom (2016) list. Many of these are described by Ofcom as having "low recognition" among focus group participants, and several, including BLOODCLAAT, BUKKAKE, FENIAN and KIKE, were labelled as having been identified by less than 40% of participants in an online survey of the words. Based on this, it is perhaps unsurprising that they do not occur in the corpora. Clearly these words do exist in (at least some variety/varieties of) British English, but they are so relatively infrequent that one of two approaches would be required to access them: either (a) a much larger general corpus or (b) specialised corpora which would be gathered based upon knowledge of where these words are most likely to be spoken.

With these BLWs eliminated, 141 (potential) BLWs remain which occur at least once in

[82] The frequencies are the total number of hits produced by each query, regardless of precision. Non-BLW uses of the search terms, if present (due to polysemy), have not been identified or removed from the frequency results.

either of the corpora (see Appendix R, p. 272), which includes figures for percentage change, significance and effect size. Overall, the total sum of these BLWs in both corpora suggests a fall in the use of bad language between the 1990s and 2010s – falling from 3,433 per million (1990s) to 2,967 per million (2010s) which is significant at the $p<0.0001$ level with a log ratio of 0.21. Despite the significant decrease in BLW occurrence, in the context of previous research this does not seem alarming; these frequencies roughly correspond with Jay (2009b: 90), who reviewed several empirical studies into bad language and reported that swearing constitutes 0.3 to 0.7% of speakers' output. Therefore, it would be difficult to claim that the difference in frequency between the corpora is suggestive of some wider decline in the use of BLWs among British English speakers. More likely is the difference in speaker awareness that they were being recorded, as discussed in Section 3.3.3 (p. 41) – perhaps the Spoken BNC2014S speakers, who were aware of the recordings taking place, were slightly less likely to use bad language as often as their Spoken BNC1994DS predecessors, who were mostly unaware (see also McEnery et al. 1999: 51).

What is perhaps harder to attribute to speaker awareness is the strength of the BLWs which speakers do produce, which is the focus of the next section.

7.4.2 Strength

An area of interest with regards to bad language is the strength of BLWs. The strength, or potential offensiveness, of BLWs has been shown to vary according to social context; the same BLWs may be used for offensive purposes such as blasphemy, hate speech or abuse, but also to achieve "positive social outcomes", e.g. through humour, sex talk or in-group slang (Jay 2009a: 155). This is especially true for what Jay calls 'conversational swearing' – the type of BLW use studied by McEnery (2005) and in the present chapter. Jay's view is that "there is no evidence of harm from fleeting expletives or from conversational or cathartic swearing" (2009b: 93). Despite this, it is clear that some BLWs are considered less acceptable than others, even in informal, familial conversation such as that in the Spoken British National Corpora. There is evidence, for example, that the strength of bad language exerts some control on cognition. Bowers and Pleydell-Pearce (2011) analysed electrodermal activity in participants reading aloud the words *fuck* and *cunt*, and their euphemistic equivalents *f-word* and *c-word*, and found that "people find it more stressful to say aloud a swear word than its corresponding euphemism" (Bowers & Pleydell-Pearce 2011: 4). Furthermore, males are said to be genetically predisposed to produce stronger BLWs more than females, due to evolutionary intergroup aggression among males (Güvendir 2015).

It is also the case that the relative strength of BLWs is a metalinguistic topic that is salient in the public consciousness (Dawaele 2015); speakers are usually able to make clear judgements about the strength or offensiveness of bad language words – although, out of context, it is difficult to predict these perceptions based solely on the linguistic unit (Young 2004). Such evaluations are nonetheless used to inform broadcasting practices with regards to the airing of potentially offensive content, e.g. the watershed,[83] or the classification of films according to audience age. Millwood-Hargrave (2000) conducted a study of public opinion of the strength of BLWs which, along with a report by the British Board of Film Classification (BBFC), was used by McEnery (2005: 30) to create a "scale of offence" for analysing BLWs (Table 23).

Table 23. A scale of offence (McEnery 2005: 30).

Categorisation	**Words in the category**
Very mild	*bird, bloody, crap, damn, god, hell, hussy, idiot, pig, pillock, sod, son-of-a-bitch, tart*
Mild	*arse, balls, bitch, bugger, christ, cow, dickhead, git, jesus, jew, moron, pissed off, screw, shit, slag, slut, sod, tit, tits, tosser*
Moderate	*arsehole, bastard, bollocks, gay, nigger, piss, paki, poofter, prick, shag, spastic, twat, wanker, whore*
Strong	*fuck*
Very strong	*cunt, motherfucker*

Using the scale of offence, McEnery (2005: 30) finds that males draw "typically from a stronger set of words than females", while BLW strength tends to decrease with rising age as well as socio-economic status.

The words and their ratings in the McEnery (2005) scale do not necessarily represent present-day BLW use. Since it seems that the BBFC no longer publishes a list of BLWs and their perceived offensiveness (BBFC 2014: 6), I sought out a new source of updated consumer ratings. The Ofcom (2016) report, introduced in Section 7.3.1, not only provides a present-day list of over one-hundred-and-fifty BLWs with which further research could be undertaken, but many of these words have been assigned a level of offensiveness according to the consumer investigations described in the guide, which included focus groups and online questionnaires. A description of the scale of offence used by Ofcom (2016) is provided in Table 24 (overleaf) and the words considered are listed in Table 25 (overleaf).

[83] The time in which adult content may be broadcast; in the UK this is between 21:00 and 05:30.

Table 24. Scale of offence for bad language (Ofcom 2016: 3).

Categorization	Description
mild	of little concern
medium	potentially unacceptable pre-watershed but acceptable post-watershed
strong	generally unacceptable pre-watershed but mostly acceptable post-watershed
strongest	highly unacceptable pre-watershed, but generally acceptable post-watershed

Table 25. BLWs in the Ofcom (2016) report, which are given unambiguous ratings in the scale of offence.

Categorisation	Words in the category
mild	*arse, bloody, bonk, bugger, cow, crap, cretin, damn, div, ginger, git, god, hun, jesus christ, jock, loony, mental, minger, nazi, nutter, old bag, psycho, sod*
medium	*balls, bint, bitch, bollock, bullshit, bummer, fairy, feck/effing, fop (fucking old person), midget, munter, pansy, pikey, piss, shag, shit, slapper, son of a bitch, special, taff, tart, tit, vegetable*
strong	*bastard, beaver, bellend, bender, choc ice, clunge, cock, cripple, dick, dildo, dyke, fanny, flaps, gash, gook, he-she, ho, homo, honky, jap, jizz, knob, minge, nancy, negro, nonce, papist, poof, prick, prod, pussy, queer, raghead, rapey, skank, slag, slope, slut, snatch, spade, tranny, twat, wank, whore, wop*
strongest	*chinky, cunt, darky, faggot, fuck, gender bender, golliwog, mong, motherfucker, nigger, nig-nog, paki, retard, sambo, spastic, wog*

Aside from better representing present-day public opinion on the strength of BLWs, the Ofcom (2016) scheme was also applied to more than double the number of BLWs than McEnery's (2005), making subsequent analyses into the strength of bad language more comprehensive. Another obvious difference between the two schemes is the number of categories; McEnery's (2005) scale has five while the Ofcom (2016) has only four. Although this study does not aim to compare difference in public opinion on BLW strength between the corpus sampling points, the mapping of one scheme onto the other is worth considering. The simplest approach is to posit that McEnery's (2005) 'very mild' and 'mild' categories are merged to form Ofcom's (2016) 'mild' category, with McEnery's (2005) 'moderate', 'strong' and 'very strong' respectively becoming Ofcom's (2016) 'medium', 'strong' and 'strongest'. Doing so is minimally disruptive to McEnery's (2005) scheme, since the only effect is to remove the distinction between two levels of mildness. At the stronger end of the scale, the categories can be directly compared; the differences are perhaps suggestive of recent change in public opinion about certain BLWs. It is notable that NIGGER, PAKI and SPASTIC are considered 'moderate' in McEnery (2005) but 'strongest' in (Ofcom 2016) – an increase of two strength levels. These are the only BLWs which rose in strength to such a degree – the rest either retaining the same strength or moving up or down by only one level.

Over 100 of the BLWs described in the Ofcom (2016) report came with ratings according to a four-point scale of offence (Table 25). By comparing the sum of the instances of each of these BLWs (a) at each level of the scale and (b) between corpora, an interesting difference can be observed in the wholesale strength of BLW use (Figure 18, overleaf). In summary:

- Mild BLWs have **decreased** in occurrence between the Spoken BNC1994DS and Spoken BNC2014S (log likelihood 439.73, significant at $p<0.0001$).
- Medium BLWs have **increased** in occurrence between the Spoken BNC1994DS and Spoken BNC2014S (log likelihood 166.55, significant at $p<0.0001$).
- Strong BLWs have **decreased** in occurrence between the Spoken BNC1994DS and Spoken BNC2014S (log likelihood 109.13, significant at $p<0.0001$).
- Strongest BLWs have **remained stable** in occurrence between the Spoken BNC1994DS and Spoken BNC2014S (log likelihood 1.73, not significant at $p<0.05$).

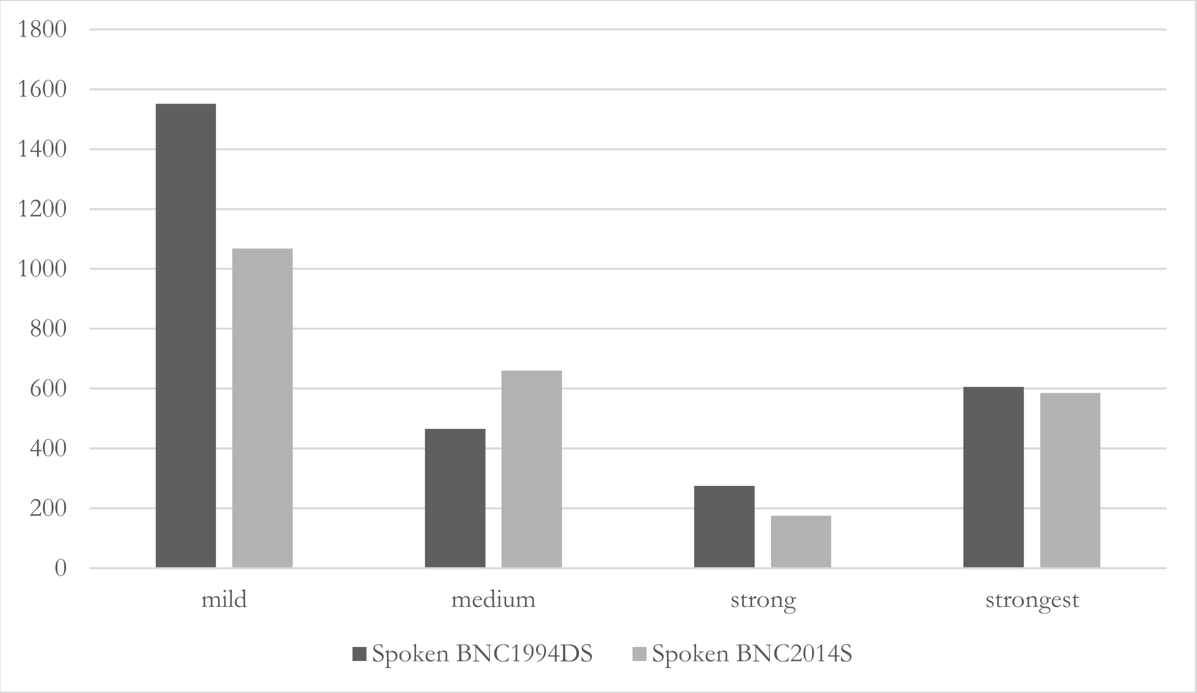


Figure 18. Relative frequency comparison of BLWs categorised according to the Ofcom (2016) scale of offence.

Despite significant changes within three of the levels, the overall pattern is very similar in both corpora: the mild BLWs are, perhaps predictably, the most commonly uttered, and as BLW strength increases the words occur less frequently. That is the case until the 'strongest' category, which spikes up as more than twice as frequent as the 'strong' category in both corpora. Is it the case that, despite the Ofcom (2016) research which in no uncertain terms reports on the high levels of unacceptability of these words among the British general public, all 16 of the 'strongest' BLWs are used more than the 'strong' BLWs in both corpora, and almost as much as the 'medium' BLWs in present-day spoken British English? Looking into the data, it is clear that this is not the case. The spike is driven by only one of the 'strongest' BLWs: FUCK. This accounts for 93% of all 'strongest' BLW occurrences in the Spoken BNC1994DS, and 96% in the Spoken BNC2014S. In fact, it is the second most commonly occurring BLW in both corpora, second only to BLOODY in the former and GOD in the latter, both of which are 'mild' BLWs (see Appendix R, p. 272, for frequency information for all BLWs under consideration). The evidence suggests, therefore, that FUCK – despite its apparent status as one of the strongest BLWs in spoken British English – behaves markedly unlike its 'strongest' counterparts and markedly like the weakest, and that this behaviour is unchanged between the 1990s and 2010s. This is surprising when one considers that frequency is expected to correlate negatively with degree of taboo (see e.g. Jay 1992). Furthermore, while each of the 16 'strongest' BLWs occur at least once in the Spoken BNC1994DS, several have a frequency of zero in the Spoken BNC2014S: CHINKY, GENDER BENDER, GOLLIWOG, NIG-NOG and WOG. These BLWs, therefore, appear to have fallen into obscurity in everyday British conversation; or, at least, there is not enough language evidence in the Spoken BNC2014S for such infrequent words to occur. Another explanation might be that these BLWs are highly referent specific; they can only be applied felicitously to specific minority groups and thus their use could be said to reflect social context. If a speaker does not know any East Asians, transgender people or African Americans, then such BLWs are less likely to occur than BLWs with non-specific referents (e.g. TWAT).

The question remains as to why FUCK is so much more frequent than the other 'strongest' BLWs. One explanation would be that a very small group of speakers use FUCK much more than the majority. In the Spoken BNC2014S, FUCK is uttered at least once by 116 speakers (30.9% of all identifiable speakers), with eight speakers accounting for half of the instances of FUCK. 260 speakers (69.1%) do not produce any instances of FUCK. Of the speakers who uttered FUCK, the mean occurrence is 22.76 with a median of 5 and a standard deviation of 50.56. Taking all speakers into account, including those who produced zero instances of FUCK, the mean is 11.38, with a median of 0.5 and standard deviation of 37.60. The low mean frequencies (relative to their standard deviations) show that a small number of speakers is using this BLW a lot, and with great variation between speakers. The median of 0.5 is expected since it considers the majority of speakers who produce FUCK zero times, but the median of 5 among only those who do produce FUCK points towards a long tail of low-use speakers. These observations lead to the question of whether a demographic group or groups are driving this distribution. Looking at "how the age, sex and social class variables interact" (McEnery 2005: 45), this does appear to be the case; the C2 socio-economic group interacts with both the female and 15-24 groups (see Figure 19, Figure 20 and Figure 21 (overleaf) for cross-tabulated distribution graphs).

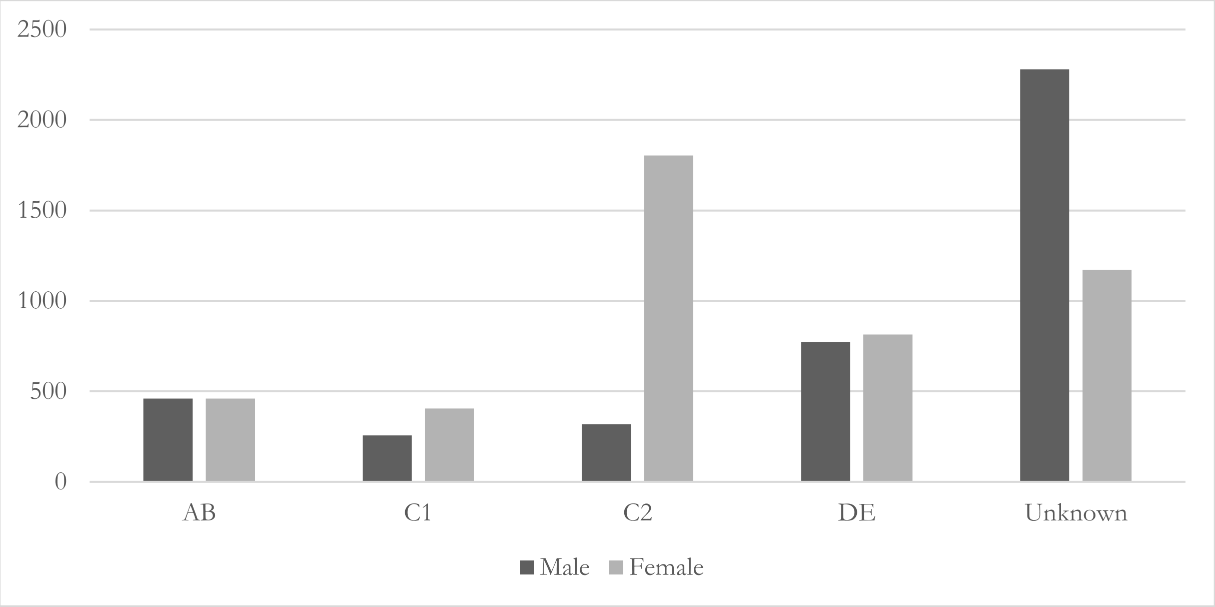


Figure 19. Gender and socio-economic status.

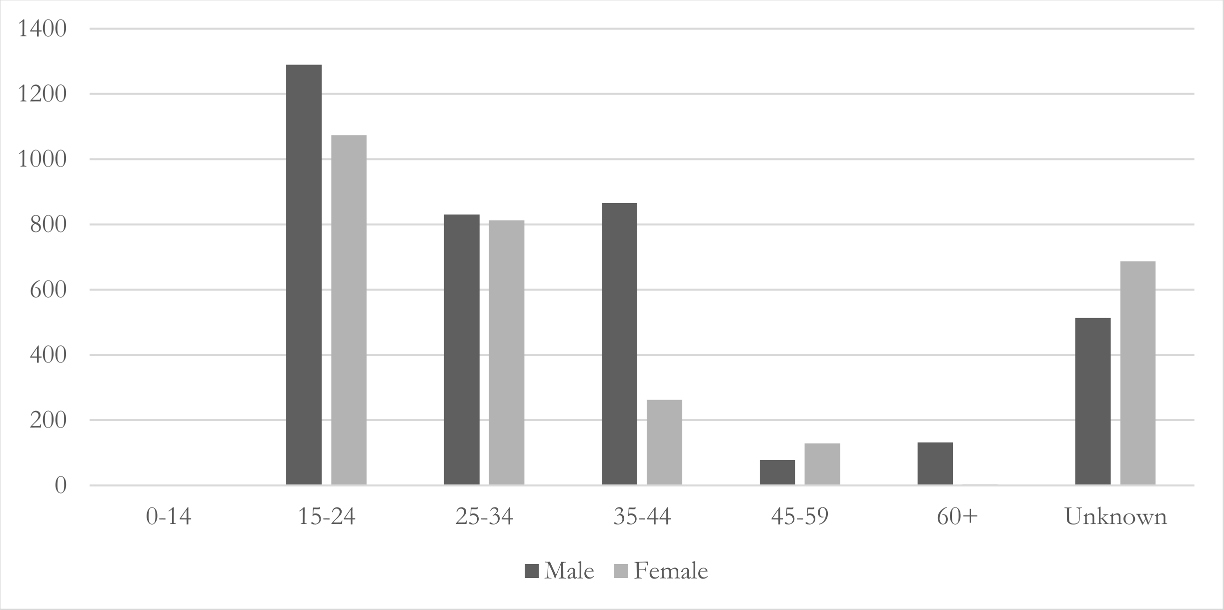


Figure 20. Gender and age.

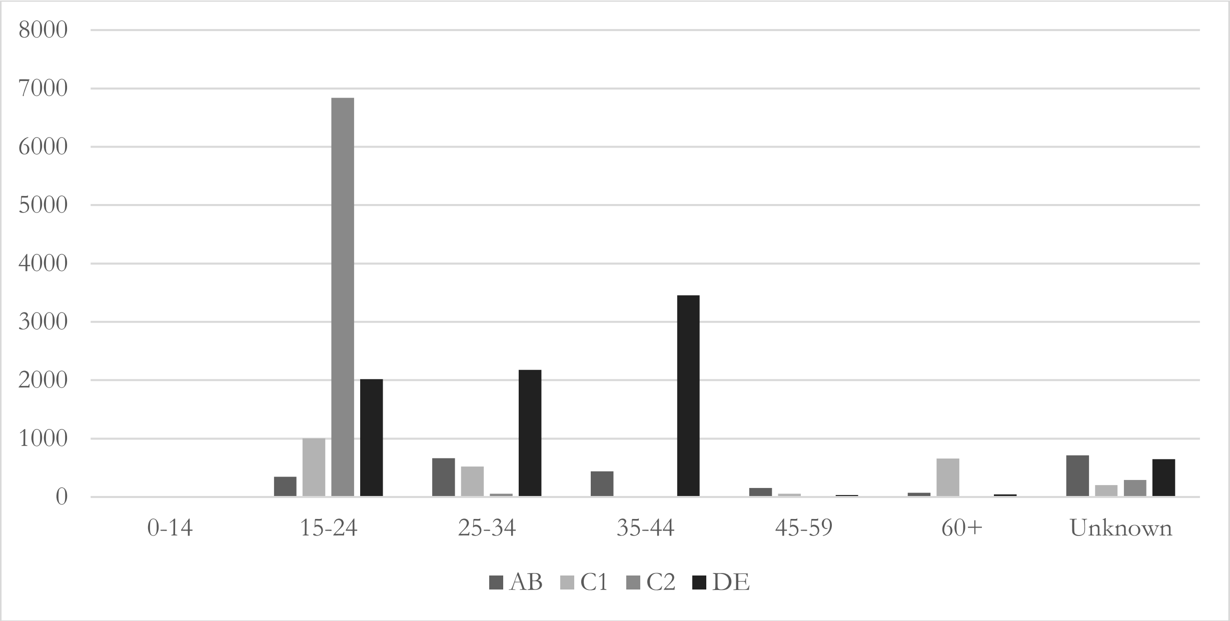


Figure 21. Age and socio-economic status.

It should be noted that the C2 group is severely underpopulated in the Spoken BNC2014S; perhaps too small to offer an opportunity to use FUCK, causing high relative frequencies even with low occurrence.[84] Between the age and gender categories, which are generally better populated, the distribution is skewed towards male overuse in the 15-25 group, although male and female use is similar in the 25-34 group.

Clearly, then, FUCK appears to have a special status; it does occur very frequently, compared to the other 'strongest' BLWs, but the distribution is heavily skewed. This appears to be caused by (a) high use by a small number of individuals, and (b) a dearth of linguistic evidence for some group combinations.

The analysis of strength has already started to reveal some large-scale changes in the occurrence of individual BLWs over time. The following section explores how the frequency of the BLWs varies between the two Spoken British National Corpora.

7.4.3 Change and stability in frequency

In this section, I am interested in the BLWs which differ significantly in terms of relative frequency between the two corpora, and those which have the most similar relative frequencies.

[84] A similar occurrence of "data sparsity" was observed by McEnery (2005: 45) while attempting to combine demographic categories in the Spoken BNC1994.

Of the original 173 BLWs under consideration, I have already eliminated 32 which do not occur in either corpus, leaving 141. Starting with difference, of these 141 BLWs, 36 differ in relative frequency between the two corpora with significance at the p<0.0001 level (LL critical value > 15.13); these are the BLWs which have either increased or decreased to the greatest extent between the two corpora. The remaining 105 BLWs do not differ in relative frequency with significance at the p<0.0001 level, and those with the most similar relative frequencies are discussed later in this section.

Table 26 (overleaf) reveals the BLWs which have decreased significantly (log likelihood) and to the greatest extent according to effect size (log ratio). Interestingly, they include some words which are considered "strong" or "strongest" language according to Ofcom (2016): SPASTIC, HO, CUNT, PUSSY, WANK, and BASTARD; McEnery (2005: 30), drawing upon the British Board of Film Classification on the other hand, lists only one of these words (CUNT) as "strong" or "very strong", while SPASTIC, WANKER and BASTARD are considered "moderate". Furthermore, none of the words in Table 26 have fallen all the way to a frequency of zero, implying that these word forms – albeit at a very low frequency in some cases (like SPASTIC or PRAT) – are still present in spoken British English to some degree.

Table 26. BLWs which have decreased in use significantly (p<0.0001) between the 1990s and 2010s, ranked by effect size.

Head	Per million (Spoken BNC1994DS)	Per million (Spoken BNC2014S)	log-likelihood	log ratio
SPASTIC	3.8	0.2	18.97	4.18
TAFF	3.4	0.2	16.5	4.02
HO	64.0	6.1	271.97	3.4
JOCK	4.4	0.4	18.6	3.39
PRAT	10.0	1.0	40.7	3.26
CUNT	20.5	6.7	36.09	3.07
PUSSY	18.9	2.3	72.48	3.04
SOD	39.5	6.3	130.91	2.66
BLOODY	646.7	128.2	1,846.78	2.33
BUGGER	66.4	16.3	158.84	2.03
GIT	11.8	3.3	24.28	1.82
CHRIST	50.5	15.5	95.52	1.71
FAG	25.7	9.2	39.81	1.49
WANK	17.7	8.1	17.83	1.12
BASTARD	48.1	22.6	46.06	1.09
COW	35.9	17.1	33.19	1.07
DAMN	55.8	30.3	37.65	0.88
BOLLOCK	32.1	19.0	16.62	0.76
HELL	197.0	132.6	62.01	0.57

Turning to the BLWs which have risen in use to the greatest extent (Table 27, overleaf), an interesting picture emerges. Three of the BLWs (CHAV, DOUCHE and WUSS) have risen from a 1990s frequency of zero; although it is impossible to claim that they did not exist at all in this period, the data at least suggests that these BLWs have risen into more general usage in the 2010s. In terms of strength, Ofcom (2016) places only RETARD and DYKE in the "strong" or "strongest" categories, while they are not included at all in McEnery's scale of offense (2005: 30). Looking at semantic categories, noteworthy is the rise of sexuality words DYKE and GAY, and words relating to mental capacity or intellect: PSYCHO, RETARD, MENTAL and IDIOT. Furthermore, the rise of the word NAZI is interesting – clearly this word long pre-dates the 1990s, but occurs much more frequently in the 2010s data; Ofcom (2016: 13) notes that it is

Table 27. BLWs which have increased in use significantly (p<0.0001) between the 1990s and 2010s, ranked by effect size.

Head	Per million (Spoken BNC1994DS)	Per million (Spoken BNC2014S)	log-likelihood	log ratio
CHAV	0.0	11.9	81.67	6.9
DOUCHE	0.0	4.2	28.66	5.39
WUSS	0.0	2.9	20.06	4.87
PSYCHO	0.8	7.7	32.16	3.28
NAZI	0.8	6.5	24.9	3.02
RETARD	1.4	10.6	39.74	2.93
JEW	1.0	6.9	24.39	2.79
MENTAL	9.0	61.2	214.96	2.77
JEEZ	1.4	6.3	16.48	2.17
DYKE	1.6	6.5	15.56	2.02
BOOB	6.0	23.8	56.19	1.99
GAY	9.8	33.6	68.21	1.78
BULLSHIT	3.8	12.1	22.53	1.68
SHIT	153.2	316.1	283.94	1.05
PIG	20.3	38.8	28.88	0.93
IDIOT	17.7	31.3	18.68	0.82
GOD	516.9	626.6	51.71	0.28

"mild" but "potentially offensive if used in a modern context to insult German people".

As well as difference, it is also useful to take note of similarity, by paying attention to what has not changed much in terms of frequency among BLWs. Of the 141 BLWs which occur in both corpora, I have just addressed the 36 which differ at the p<0.0001 level. Eliminating these from the present discussion leaves 105 remaining. Of these, 68 BLWs showed changes in frequency which were not even significant at a lower LL value (p>0.05; LL critical value < 3.84). Their relative frequencies were very similar in both corpora, and their low log ratios mean that they can be described as 'stable' BLWs – or lockwords (Baker 2011). Eight of these BLWs occur at least 100 times in both corpora. Table 28 (overleaf) shows the frequency data for these eight BLWs. Although interesting, these BLWs do not explain themselves in terms of the reason for their stasis; further investigation is required in order to understand how and why these words appear to have resisted the changes which have occurred to so many of the other BLWs.

Table 28. BLWs which have not changed in frequency significantly (p>0.05) between the 1990s and 2010s, and which have a minimum raw frequency of 100 in both corpora, ranked alphabetically.

Head	Per million (Spoken BNC1994DS)	Per million (Spoken BNC2014S)	log-likelihood	log ratio
ARSE	43.07	45.52	0.33	0.08
BITCH	27.32	34.24	3.83	0.33
CRAP	63.41	67.03	0.49	0.08
DICK	30.51	35.91	2.16	0.24
FUCK	564.35	561.06	0.05	0.01
GINGER	35.30	35.71	0.01	0.02
JESUS	39.28	39.46	0	0.01
VEGETABLE	29.71	36.75	3.66	0.31

7.4.4 High-frequency BLWs: sociolinguistic distribution

So far, I have presented three categories of especially noteworthy BLWs: those which have decreased; those which have increased; and those most commonly occurring BLWs which remained stable. In terms of assessing similarity and difference across time periods, these categories clearly present windows of opportunity for dictating the rest of the analysis (in similar fashion to how keywords are used to guide the corpus-based critical discourse analyst, Baker 2006). Looking at the sociolinguistic distribution and qualitatively assessing the meanings of these BLWs may help to answer the question of why they have changed or remained stable over time. The stable BLWs, including the very common and well-studied FUCK (e.g. McEnery & Xiao 2004), show no sign of growth or deterioration in terms of wholesale frequency. But as McEnery (2005) shows with the 1990s words, bad language has a propensity for distributing unevenly across social groups – and in terms of possible language change, the most frequent of the stable BLWs are of interest in terms of assessing whether, if not the wholesale frequency, the social distribution of these BLWs has changed in any way.

As interesting as some of the changes appear, some of the BLWs mentioned above simply do not occur often enough to justify further analysis – either quantitative or qualitative. Therefore, in this section I present the sociolinguistic distribution of all those rising, falling and stable BLWs which occur 100 times or more in both corpora (with the exclusion of three words – PIG, GINGER, and VEGETABLE)[85]. These are:

[85] Of course, as noted earlier, the figures reported in the previous section are not filtered for non-taboo usage of the

Fallers: BASTARD, BLOODY, DAMN, HELL

Risers: GOD, SHIT

Stable: ARSE, BITCH, CRAP, DICK, FUCK, JESUS

The analysis of sociolinguistic distribution is conducted on all instances for which speaker metadata is available.

7.4.5 Sociolinguistic distribution

In this section, I present results of the sociolinguistic distribution analysis of the 12 BLWs listed above:

ARSE, BASTARD, BITCH, BLOODY, CRAP, DAMN, DICK, FUCK, GOD, HELL, JESUS, SHIT

These BLWs are some of the most frequent in both corpora and, as explained, represent a cross-section of rising, falling and stable frequency words. The relative frequencies reported in this section are normalized against the number of tokens produced by the relevant demographic group, rather than the sum of tokens in each corpus. This is the procedure adopted by McEnery and Xiao (2004) and McEnery (2005).

Gender

McEnery (2005: 29) states that there is "a widely held folk belief in Britain that men swear more often than women", but finds that, overall, males and females are equally likely to produce BLWs. However, Figure 22 (overleaf) shows that the 12 BLWs considered here are used to a much greater extent by males than females in the Spoken BNC1994DS. The trend has reversed in the favour of female overuse in the Spoken BNC2014S (both the differences between genders within each corpus, as well as the differences across corpora, are significant at $p<0.0001$).

search terms, and manual analysis of each instance suggests that PIG, GINGER and VEGETABLE only rarely occur as actual BLWs, due to polysemy with non-taboo meanings: PIG occurs as a BLW in only 36% of instances in the 1990s, and 12% of instances in the 2010s; GINGER occurs 0.6% and 15% respectively; and no instances of VEGETABLE in either corpora were used as BLWs. I exclude these words from the analysis.

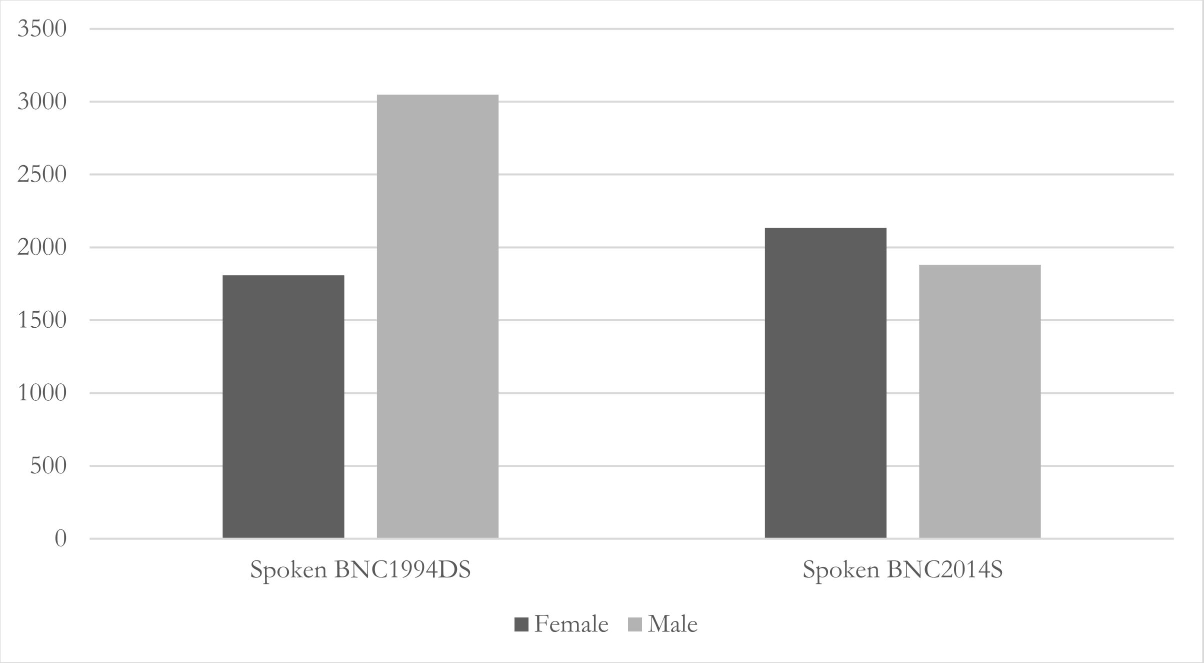


Figure 22. Distribution of relative frequencies for the 12 BLWs by gender in the Spoken BNC1994DS and Spoken BNC2014S.

According to the log ratio scores, the most drastic change is the drop in the use of these BLWs among male speakers, from 3,048 per million (1990s) to 1,881 per million (2010s) (log ratio 0.7). The swapping of gender distribution appears to have been caused by BLWs which are stable between genders, or BLWs which are now more popular among females. Only one BLW is still overused by males in the 2010s data.

Male overuse in the 1990s (p<0.0001); stable between genders in the 2010s:

ARSE, BASTARD, CRAP, DAMN, DICK, FUCK, HELL, JESUS, SHIT

Female overuse/male underuse (2010s) (p<0.0001):

BITCH, GOD

Male overuse/female underuse (2010s) (p<0.0001):

BLOODY

Firstly, this supports the point that "while BLWs as a set may not differentiate males from females, the frequency of use of individual BLWs clearly does mark males and females apart" (McEnery 2005: 29). I argue that this is true of the Spoken BNC2014S findings but not to the same extent. All of the now stable BLWs (nine of the 12 studied) discriminate for gender in the

1990s data but not in the 2010s – interestingly, all of them were previously overused by males rather than females.

This also helps to explain why, although still significant, the gender gap in the 2010s is not as large as that in the 1990s; only two of the BLWs considered here are significantly more frequent among females in the Spoken BNC2014S. These two BLWs are identified by McEnery (2005: 29) as being overused by females in the Spoken BNC1994DS too, suggesting that they have retained this status in the Spoken BNC2014S. Looking at the Spoken BNC1994DS, I can find evidence of this being true of GOD but not of BITCH. For the latter, my query returned 21.8 hits per million for females in the Spoken BNC1994DS but 26.1 per million for males – not a significant difference (LL 0.81) and so best characterised as stable. Perhaps this can be explained by differences in the use of the Spoken BNC1994 data; McEnery (2005) only considered examples where gender, age and socio-economic status were marked in the speaker metadata, whereas I have used the entire Spoken BNC1994DS. Therefore, the relative frequencies reported using the LCA may not match those calculated against all of the speakers in the Spoken BNC1994DS.

Overall, it appears that the main cause of the gender shift observed is the levelling out of so many of the BLWs which were previously overused by males. While this finding cannot be taken as representative of the rest of the BLWs (further searching of the full release of the Spoken BNC2014 will be necessary to establish how all BLWs behave), it does suggest a shift in acceptability of bad language use in casual conversation in favour of a convergence in the use of emotive language.

Age

Figure 23 (overleaf) shows the distribution of the 12 BLWs according to age. Of the 1990s pattern, McEnery (2005: 38) concludes that it “certainly lends some support to the hypothesis that adolescents are more likely to use BLWs”. At the top end of the age scale, he makes the hypothesis that the low level of BLW use in the 60+ group could be attributed to euphemistic replacement terms being used in places where BLWs may otherwise be expected (e.g. *oh dear* instead of *oh fuck*). Another 1990s observation to note is the trough in the 35-44 group. This is not discussed by McEnery (2005) but is dealt with by McEnery and Xiao (2004), who notice a similar pattern for FUCK, on its own (as discussed in Section 7.2).

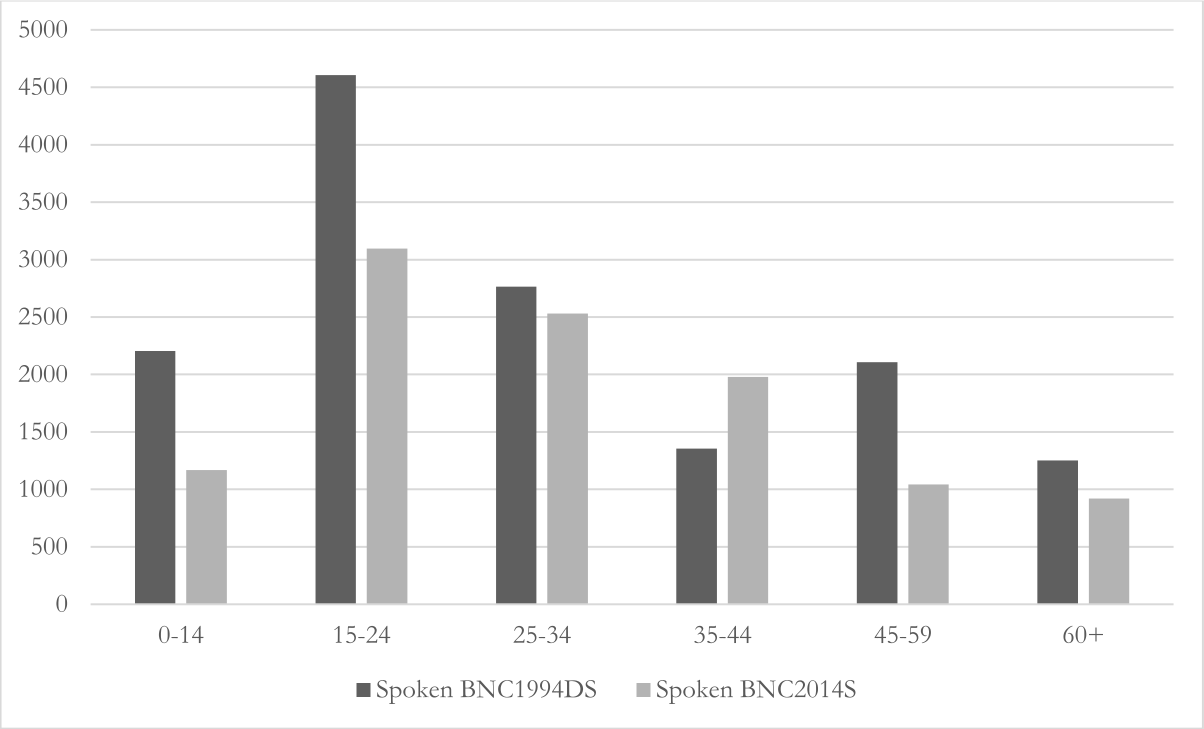


Figure 23. Distribution of relative frequencies for the 12 BLWs by age in the Spoken BNC1994DS and Spoken BNC2014S.

The Spoken BNC2014S data reveals that the 15-24 group, as expected, is the most likely to produce the group of BLWs under investigation – although less so than the same group in the Spoken BNC1994DS. This difference is significant (p<0.0001), with the frequency falling by a quarter from 4,607 per million to 3,095 per million. Looking into the use of these BLWs in the 15-24 group exclusively, most contribute to the observed decrease but four BLWs (BITCH, DICK, JESUS, and SHIT) increased between the corpora (albeit not significantly at p<0.0001), resisting the general trend. These may be considered the most 'trendy' of the 12 BLWs studied in this section; they have retained their relative popularity in the 15-24 group, where others appear to have become less popular.

Aside from the 15-25 peak, it is also not surprising to observe that the lowest frequency is held by the 60+ group, perhaps for the reason that McEnery (2005) suggests. And so, the overall picture is more or less similar to that of the 1990s speakers. What is different about the 2010s pattern is the distribution among middle-aged speakers. According to effect size, the biggest difference between the 1990s and 2010s groups is the decrease in the 45-59 group from 2,108 hits per million to 1,042 hits per million (log ratio 1.02) – a decrease of over a half. It is not the case, at least for the 12 BLWs considered here, that there is a dip at the 35-44 level, drawing into question McEnery and Xiao's (2004) parental age hypothesis, which is similar to

"Goffman's (1978) point about avoiding saying 'fuck' in a nursery school" (Culpeper 2011: 225). It could be the case that people of typical parental age simply swear more around their children. There is probably not enough data of that type to assess in the Spoken BNC2014, but on intuition alone this suggestion seems unlikely. The more probable answer in my view lies in a demonstrable change in UK society which has been in progress for the last few decades: the steady increase in the average age of parents. According to the UK Office for National Statistics, the average age of parents in England and Wales has risen by almost four years over the last four decades.[86] Therefore, the later dip could be explained by the same hypothesis, which accounts for the 35-44 drop in the 1990s: parents of young children are in a temporary habit of consciously reducing their rate of BLW production. It is simply the case that the age of these people is, on average, old enough nowadays in comparison to the 1990s to push into the next age group.

Overall, the negative correlation between age and BLW is entirely expected (McEnery 2005: 40) – the phenomenon of speakers (being perceived as, or otherwise) becoming more conservative with age is by no means unique to the 1990s. Only one feature of the Spoken BNC2014S age pattern, with regards to the 12 BLWs considered, flies in the face of the 1990s pattern; and a hypothesis has been presented to account for this difference.

Socio-economic status

McEnery (2005: 44) reports that "class relates to BLW use in ways in which we might expect (frequency of usage being inverse to height of social class)", and, indeed, the distribution of the 12 BLWs considered here conforms to that pattern very well for the 1990s data (Figure 24, overleaf).

[86] https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/livebirths/bulletins/birthsbyparentscharacteristicsinenglandandwales/2015 (last accessed September 2017)

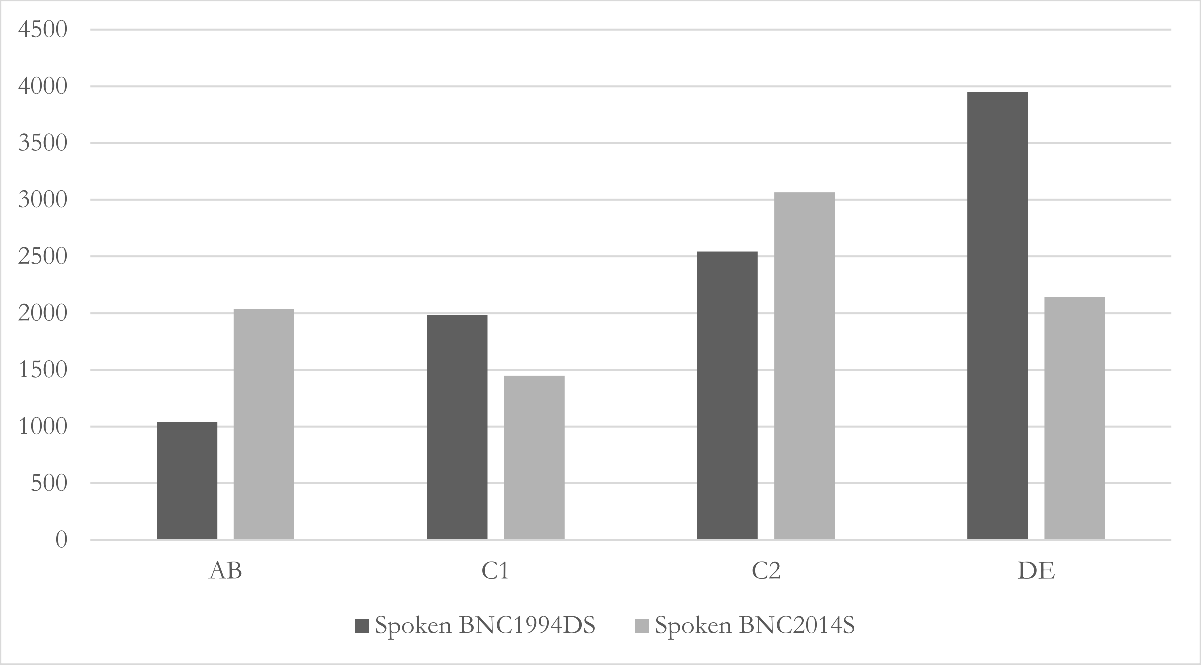


Figure 24. Distribution of relative frequencies for the 12 BLWs by socio-economic status in the Spoken BNC1994DS and Spoken BNC2014S.

The pattern which emerges from the 2010s data is somewhat more complicated. The BLW usage peaks at the C2 group and then falls among the DE speakers. Rather than steadily rising from AB to DE, the AB and DE frequencies in the 2010s data are almost equal: 2,040 per million and 2,143 per million respectively. The only difference which is not significant at p<0.0001 is the C2 increase between the 1990s and the 2010s. For a possible explanation, I turn again to McEnery and Xiao (2004: 244), who observed a similar pattern just for the BLW FUCK. They suggest that C1 speakers producing the BLW less than the AB group means that those in the C1 group are socially influenced by those in the AB group, who are perceived (not unreasonably based on previous research) to produce a relatively low number of BLWs. The effect of this 'norm perception' is that, in an attempt to sound like their perception of upper class, C1 speakers produce FUCK less than expected – so much so that they produce the BLW fewer times than the AB speakers themselves. If one accepts the norm perception hypothesis, then one interpretation of the overall 2010s pattern in Figure 24 is that the phenomenon is occurring in the Spoken BNC2014S: C1 speakers should, by previous accounts, be higher than AB speakers. Furthermore, a second 'wave' of norm perception could be posited between C2 and DE; again, DE speakers should, if behaving as expected, be higher than C2 speakers.

However, there are several problems with this suggestion, which should be mentioned. Firstly, it could be that the AB-C1 difference, for example, is less to do with C1 being lower than expected but more to do with AB being higher than expected. After all, if the AB frequency were the same in the 2010s data as it is in the 1990s, the 2010s C1 count would still be higher, and the pattern would better match expectations, based on McEnery (2005) and others. What might be driving the significant increase of AB frequency between the two corpora? Looking at individual BLWs, several (FUCK, GOD, HELL, JESUS, and SHIT) increase significantly (p<0.0001) within this group. Noteworthy here is HELL, which, despite falling in frequency overall, increased within the AB group (from 88 per million to 152 per million; log ratio -0.74). It is interesting to note that three of these BLWs – GOD, HELL and JESUS – are religious in nature.

Another issue has already been discussed in the Method section – namely that, second only to the 0-14 age group, the C2 socio-economic group is the least populated in terms of word count in the Spoken BNC2014S. It could be the case that the dearth of C2 speakers in this sample version of the corpus is such that relatively low frequency lexical items like BLWs are overrepresented in normalized frequencies.

A third issue is discussed by McEnery (2005), who, at times, talks of 'hidden peaks' in the data, i.e. high frequencies of a given word, produced by a small subset of speakers within a given demographic group, which are obscured by their inclusion within a larger group. This seems an appropriate opportunity to find out whether the Social Grade classification system is obscuring any such hidden peaks within the distribution of the 12 BLWs considered in this section. If I re-categorise the Spoken BNC2014S frequencies using the NS-SEC scheme (introduced in Section 3.3.5, p. 66), then the result is visualized by Figure 25.

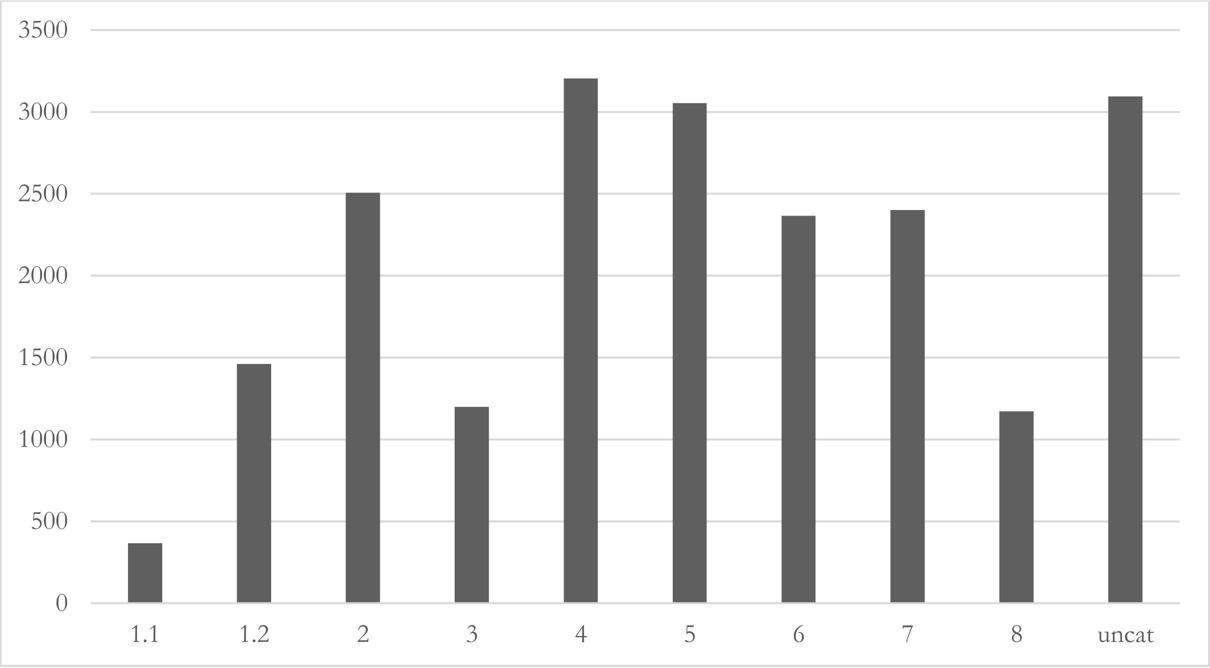


Figure 25. Distribution of the 12 BLWs in the Spoken BNC2014S according to NS-SEC. Key: [1.1/1.2 = A], [2 = B], [3/4 = C1], [5 = C2], [6/7 = D], [8/uncat = E]

The figure reveals several hidden peaks, clearly demonstrating the discriminatory power of the NS-SEC. Social Grade A is split into NS-SEC groups 1.1 and 1.2, the latter of which (higher professional occupations) uses BLWs more than the former (large employers and higher managerial and administrative occupations). Social Grade C1 is split into NS-SEC groups 3 and 4. Again, this reveals a hidden peak – this time it is group 4 (small employers and own account workers) which dominates over group 3 (intermediate occupations). NS-SEC groups 6 and 7 (Social Grade D) suggest that BLW use is evenly split between semi-routine occupations (6) and routine occupations (7). Groups 8 (never worked and long-term unemployed, including retired) and 'Uncat' (students/unclassifiable) together form Social Grade E. Here there is a clear split, probably caused by retirees (i.e. 60+, generally) being included in group 8 and, therefore, keeping the frequency low. Returning to the question of norm perception, it is much harder to make that claim based on the increased granularity with which the data can be viewed using the NS-SEC scheme. However, the dip in NS-SEC group 3 may well be explained by such a hypothesis.

7.4.6 Case study: linguistic annotation of FUCK

Although, as shown, there is a considerable body of research into bad language as a cultural, psychological and linguistic phenomenon, there is one BLW, FUCK, which appears to have received particular attention. FUCK is said to have first appeared in English around the year 1500 (Ljung 2011: 71), but its development in the late 1900s is described by Ljung (2011: 71) as "a success story of almost unlikely proportions". It has recently become a highly frequent and productive BLW (Stenström 2006), which is what appears to have made it so popular in recent research.

McEnery and Xiao (2004) published a study entirely devoted to FUCK and its occurrence in the Spoken BNC1994. They found that males were approximately three times as likely to produce this BLW as females. Detailed analysis of its social distribution found that, while young people (especially teenagers) used FUCK the most, the 35-44 category had an "unexpectedly low propensity" (McEnery & Xiao 2004: 241) for using this word when compared to the 45-59 category, which had a higher frequency. They offer the hypothesis that parents of young children, who were likely to populate the 35-44 category, may be less likely to say FUCK than other adults who do not live with children (or those whose children have grown up, and so are more likely to populate a higher age category). Finally, the C1 group used FUCK significantly less than not only C2/DE but also AB. McEnery and Xiao (2004: 244) speculate that this dip is an example of the members of C1 attempting to "appear closer to what they perceive to be the norms of AB speech".

These findings are supported by several studies which use the same or similar corpora. Rayson et al. (1997) carried out chi-squared tests to identify the most frequent lexical items within different demographic categories of the Spoken BNC1994DS. They found that BLWs *fucking* and *fuck* were among those significantly more likely to be produced by: males, under-35s and those from social classes C2/DE. Stenström (2006) found that FUCK is the most commonly produced taboo word in the Bergen Corpus of London Teenage Language (COLT, Stenström et al. 2002), and that it occurred more than twice as often in boys' speech than girls'. Murphy (2009) reports on the use of FUCK in a corpus of spoken Irish English from the years 2003 and 2004, finding that it is "noticeably more frequent" (Murphy 2009: 93) among males, and specifically those in their twenties.

More recently, evidence has started to appear which suggests that the distribution of FUCK according to gender, at least, could be changing. Gauthier (2012) studied perceptions of swearing among L1 English informants. He observed that males over the age of 25 *believe* they use FUCK more than females, but that the opposite is true for young adults. Aijmer (forthcoming) investigates intensifiers in the Spoken British National Corpora, with a focus on *fucking*. She reports that *fucking* in the Spoken BNC2014 "has been adopted mainly by young women who want to be associated with a 'new' female style of speaking and behaving".

As shown by Ljung's (2011) cross-linguistic study of BLWs, FUCK can be considered a far-reaching BLW which thrives in many languages. In 2017, the University of Oslo launched an international investigation of the worldwide use of the f-word, with a view to bringing together researchers from around the world with an interest in this BLW. Clearly, though, the reach of the present chapter does not extend beyond British English.

Clearly, special attention has been paid to FUCK in previous research, and so it serves as a good candidate for an initial analysis of 2010s bad language, using the LCA annotation scheme (McEnery et al. 1999, 2000). Before I discuss the linguistic categorisation of FUCK, it is worthwhile taking stock of what my analysis has found with regards to the frequency distribution of this BLW in the Spoken BNC2014S. FUCK is the second most common BLW in both the Spoken BNC1994DS and the Spoken BNC2014S, and its overall frequency has remained stable between the two corpora. This is despite the opinion of the UK general public that FUCK is among the strongest of all BLWs. Taking each demographic category individually, it is equal for gender preference; it follows the expected negative correlation between age and frequency; and there may be norm perception effects between AB-C1 and C2-DE, as described in the previous section, although the issues discussed do apply. Furthermore, as shown in Section 7.4.2, the distribution of FUCK, when these categories are combined, becomes heavily skewed towards a small number of speakers who produce this BLW well above the mean.

Observations about social distribution make no comment on the meanings of the BLWs themselves, and how they vary between sampling points – even if there are problematic skews in the data, the meaning of the BLWs can still be studied without comment on representativeness. To do this, one may turn to manual annotation of individual instances which, while labour intensive, has been shown by McEnery (2005) to be very useful in the study of bad language.

Table 29. Annotation of FUCK in the Spoken BNC1994DS and the Spoken BNC2014S, using the bad language categorization scheme.

Letter code	Code	Spoken BNC1994DS			Spoken BNC2014S		
		Freq.	**% of FUCK**	**Rank**	**Freq.**	**% of FUCK**	**Rank**
E	EmphAdv	113	37.7	*1*	72	24.0	*1*
N	PremNeg	45	15.0	*2*	43	14.3	*2*
B	AdvB	37	12.3	*3*	37	12.3	*4*
G	Gen	33	11.0	*4*	41	13.7	*3*
X	Unc	14	4.7	*5*	3	1.0	*12*
D	Dest	13	4.3	*6*	20	6.7	*7*
I	Idiom	12	4.0	*7*	22	7.3	*6*
F	Figurtv	10	3.3	*8*	11	3.7	*9*
C	Curse	9	3.0	*9*	23	7.7	*5*
L	Literal	6	2.0	*10*	2	0.7	*13*
P	Personal	5	1.7	*11*	5	1.7	*11*
O	Pron	2	0.7	*12*	9	3.0	*10*
A	PredNeg	1	0.3	*13*	12	4.0	*8*
M	Image	0	0.0	*14*	0	0.0	*14*
R	Reclaimed	0	0.0	*14*	0	0.0	*14*
T	Oath	0	0.0	*14*	0	0.0	*14*
	TOTAL	300	100		300	100	

Table 29 shows frequency data for the annotation of a random sample of 300 instances of FUCK, from both the Spoken BNC1994DS and the Spoken BNC2014S (representing 10.6% and 11.2% of all instances respectively). Overall, categories E, N and B are among the most frequent in both corpora. They are all produced exclusively by the "strongly taboo intensifier" (Culpeper 2011: 225) *fucking*, which is used variously to modify verbs, nouns, adjectives and adverbs. Category E is the most frequent in both corpora; however, it has a lower share of instances in the 2010s sample, allowing several other categories to increase their share of the sample.

They call her flapper, flapper. I don't **fucking** believe this. (BNC1994 KDA)

Charming I bet you he has **fucking** eaten dinner. (BNC2014 SJG5)

Category N, which is used to modify nouns (including other BLWs) with a clear negative stance (e.g. “the fucking twat”), maintains its position as second most frequent, while category G – the general expletive – has risen slightly in the 2010s sample to take 3rd place.

Oh **fuck** so you struggled, you couldn't speak, you know. (BNC1994 KDN)

Oh **fucking** hell love. (BNC2014 STXT)

This has displaced category B (*fucking* modifying adjectives e.g. *fucking awesome*) which has maintained the same frequency in both corpora.

Category C (curse) accounts for nearly 8% of the 2010s sample. It appears to be caused by the phrases *fuck it* and *fuck me*, which occur six times each. Other examples include:

And I went **fuck** you, wanker! (BNC1994 KE1)

Oh **fuck** this I hope it's not when I walk to work. (BNC2014 SXRR)

Categories D (destinational) and I (idiomatic set phrase) have both increased in frequency while swapping their 6th and 7th place rankings. Many instances of the idiomatic category of FUCK were instantiated by examples which used “taboo words to add emphasis to WH-constructions such as…What the fuck…?” (Ljung 2011: 29). In my analysis, when *what the fuck* occurred as an independent utterance, it was classified as a general expletive. Only when *what the fuck* occurred within a full clause (e.g. *what the fuck was that?, why the fuck did she do that?*) did I include it in the idiom category.

Category A, the predicative adjective *fucked*, has risen to account for 4% of the sample. Stenström (2006) describes the development of *fucked,* as a derivative of *fuck,* from its literal sexual meaning into the present-day predicative negative adjective as follows:

fuck: ‘have sex with’ => ‘harm’, ‘cheat’ => ‘stop’ => ‘make a mess’ =>
fucked: ‘ruined’, ‘unhappy’, ‘cheated’ => ‘intoxicated’, ‘crazy’, ‘unfair’ => ‘psychologically maladjusted’

Most examples of *fucked* in the 2010s data appear to fall into the 'intoxicated' or 'psychologically maladjusted' categories:

> my mam and dad had to take him home because he got absolutely **fucked**. (BNC2014 S5LP)

> oh that's **fucked** up. (BNC2014 SDJA)

This does seem to corroborate with previous findings about the desemanticization of FUCK, as reported by Ljung (2011: 21).

Pronominal replacement (category O) has risen slightly to rank 10, and nominal use of FUCK as a defined reference (category P) retains rank 11. Category F (figurative extension of literal meaning) has maintained a lower than 4% share of the instances, which is not surprising, considering that senses which allude to the literal meaning of FUCK have already been found to be uncommon in previous research. This is supported by the 2010s sample, where category L (literal) accounts for only two hits:

> didn't even see him **fuck** […] I knew that I d- I did n't know that they were having sex. (BNC2014 SAR5)

> 0246: is that their --UNCLEARWORD sex noise ?
>
> UNKFEMALE[??]: >> yeah
>
> 0249: **fucking** Noo Noo off the Teletubbies. (BNC2014 S5LP)

Category M returned no hits in either sample. This is possibly due to similarity with category C (the phrase *fuck me* is provided as an example of both by McEnery 2005). Less surprising are the zero occurrences of categories R (reclaimed usage) and T (oath), since FUCK is neither a racial nor religious term.

Finally, category X (unclassifiable due to insufficient context) has a much lower frequency in the 2010s data. My belief is that the reason for this decrease is a general improvement in transcription quality between the Spoken BNC1994 and Spoken BNC2014; there were far fewer unclear passages in the 2010s concordance lines, and so it was easier to classify the examples into one of the other categories.

Overall, what can be said about the semantic distribution of FUCK between the 1990s and 2010s samples? The main finding is that the intensifier *fucking* was, and still is, the most common form of FUCK. This is perhaps due to its versatility, not only syntactically but also semantically – it can intensify both negatively (PremNeg) and positively (AdvB), as well emphasise an entire clause neutrally (EmphAdv). On a scale of delexicalisation, with literal usage at the bottom and general intensification at the top (see Stenström 2006), two previously rare senses have notably risen in the middle; namely cursing (*fuck that*) and the predicative negative adjective *fucked*. As expected, the LCA annotation shows that the literal meaning of FUCK is among the least-frequently used.

7.5 Chapter summary

Returning to the Research Questions, this chapter has found that overall BLW use is significantly lower in the Spoken BNC2014S compared to the Spoken BNC1994DS (RQ1). The distribution of strength appears as expected in both corpora (RQ2), other than the behavior of FUCK, which is the second most frequent BLW in both corpora, despite being considered by the UK public to be among the strongest. Perhaps it could be posited that the strength of FUCK will eventually be perceived to be lower in the future, should it continue to maintain such a relatively high frequency of use, especially among younger speakers. Socially, there appear to have been some interesting developments in the use of bad language over the last two decades (RQ3); namely an overtaking of female use over male use of a number of BLWs; a possible effect of delayed parental age in UK society; and a new pattern of use across socio-economic status, which is not expected based on previous research. Finally, I have found that the intensifier *fucking* is by far the most commonly used 'category of insult' of FUCK (RQ4), in a variety of semantic/syntactic contexts, but that some other, non-intensifying forms do appear to have increased in usage between the 1990s and 2010s.

There are, of course, several limitations of this study to which attention should be paid. Some have been mentioned where appropriate throughout the chapter, including the limitation of comparing corpora from only two sampling points; the fact that a number of non-taboo uses of the BLW forms will have been included in the frequency data; and the difference in speaker awareness of the recording taking place. Others will be discussed here.

The first pertains to the scope of the study and the crucial elements of analysis which I necessarily sacrificed. One of these elements is the analysis of bad language as directed at speakers of different genders, ages etc. It is known, for example, that "most people swear more around listeners of the same gender than in mixed crowds" (Jay & Janschewitz 2008: 274), and, indeed, much of McEnery's (2005) chapter on bad language in the Spoken BNC1994 paid great attention to variation according to the intended recipient of the BLWs.

The scope of the study can also be criticised when the number of BLWs analysed in terms of social distribution is considered. It would have been much more appropriate to assess the social distribution of all BLWs in both corpora; however, the lack of availability of automatic frequency distribution data in the mid-development version of the corpus in CQPweb meant that social distribution data had to be generated manually in a spreadsheet, severely slowing down the process, and causing me to select only 12 BLWs. In the full release of the Spoken BNC2014, these features are now available, and it is my wish to return to this particular part of the analysis in the near future.

Another issue, which I addressed, to an extent, in the discussion of the strength of FUCK, is the importance of individual variation among speakers. Brezina and Meyerhoff (2014) show, quite conclusively, that replication of previous studies on the Spoken BNC1994, including McEnery (2005) and McEnery and Xiao (2004) are:

> not feasible […] because of the very large number of individual speakers and the extreme variance in the amount of speech produced by them. This degree of inter-speaker variance makes it impossible to normalise the data in the necessary ways. (Brezina & Meyerhoff 2014: 7)

Indeed, speaker skew was shown to be an important factor in the analysis of FUCK in this chapter. It is obvious to me that a comparison of BLWs in the original and new Spoken British National Corpora ought to be done again, with less reliance on an aggregate data methodology. The ongoing BNC secondary data analysis (SDA) project, led by Brezina,[87] aims to produce a demographically-balanced subcorpus of the Spoken BNC1994, which should allow such comparative work to be done with more confidence that individual speaker skew will not influence findings.

With regards to the LCA annotation of FUCK, manual annotation is infamously time-consuming, and I was unable to annotate all 6,000 instances of FUCK, as should be the case with this type of analysis. Furthermore, the original LCA studies annotated all instances of all BLWs under consideration (McEnery et al. 1999, 2000) – not only using the categories of abuse but also the main annotation scheme itself – which I have all but ignored in this chapter. An analysis of BLWs which uses the entire scheme, and addresses features such as animacy or gender of the

[87] See http://cass.lancs.ac.uk/?page_id=2087 (last accessed September 2017).

hearer, for example, is too large a task to include in one paper, and deserves separate treatment. In making this decision, I do acknowledge that features such as these have been shown by McEnery (2005) to have discriminatory power, but chose to focus solely on the categories of insult nonetheless. Clearly, a more thorough analysis of all BLWs is required to make substantive claims.

The annotation scheme itself proved at times difficult to apply. For example, it was difficult to maintain a distinction between the categories 'EmphAdv' and 'PremNeg'. Intuition suggests that several examples of adjectives which were placed into one of these categories could have convincingly been placed into the other (e.g. *I had to be up at fucking what like six o'clock in the morning*). Another example is the ambiguity of *fuck me* with regards to whether it should be analysed as 'Image' or 'Curse'.

Finally, I should comment on the other aim of this chapter: to demonstrate some of the ways in which the Spoken BNC2014 may be used. The compilation of the Spoken BNC2014 has facilitated large-scale, diachronic analyses of spoken data on a scale which has, until now, not been possible. Therefore, this study exemplifies new challenges in the sociolinguistic study of spoken data. Using swearing as an appropriate case study (it is a "complex social phenomenon", McEnery 2005: 1), I have drawn attention to some of the methodological challenges of comparing such datasets for sociolinguistic purposes, as well as showing that there appear to have been some large-scale changes in the use of bad language in spoken British English over the last two decades. The design of the speaker metadata categories in the Spoken BNC2014 makes the new data comparable to the Spoken BNC1994 for the purposes of sociolinguistic analysis, and the case of FUCK suggests an interesting change in use between the 1990s and 2010s.

8 Conclusion

8.1 Overview of the thesis

In this thesis, I have presented an account of the design, compilation and analysis of a new corpus of contemporary spoken British English – the Spoken British National Corpus 2014. My aim has been to make clear the most important decisions the research team made as we collected, transcribed and processed the data, as well as to demonstrate the research potential of the corpus. The Spoken BNC2014 should be of use to many researchers, educators and students in the corpus linguistics and English language communities and beyond.

Chapter 2 presented the background to this thesis, providing the justification for the focus of this thesis on the construction of a new corpus of spoken British English. As I argued in this chapter, the Spoken BNC2014 can be considered the first spoken corpus since the Spoken BNC1994 that fulfils the following key strengths:

i. orthographically transcribed data
ii. large size
iii. general coverage of spoken British English
iv. (low or no cost) public access

As such, I have made the case that a number of factors (scarcity of data, lack of accessibility, and age of the Spoken BNC1994 when being used as a proxy for present-day English) have resulted in several problems with the use of spoken corpora in a variety of research streams (Section 2.3). Therefore, my work on the Spoken BNC2014 was intended to achieve three main objectives:

(1) to compile a corpus of informal British English conversation from the 2010s which is comparable to the Spoken BNC1994's demographic component;
(2) to compile the corpus in a manner which reflects, as much as possible, the state of the art with regards to methodological approach; and, in achieving steps (2) and (3),
(3) to provide a fresh data source for a new series of wide-ranging studies in linguistics and the social sciences.

Subsequently, Chapters 3 to 6 showed how the research team's approach to the compilation of the corpus struck a delicate balance between backwards compatibility with the Spoken BNC1994 (objective 1) and optimal practice in the context of the new corpus (objective 2). Evidence of the success of objective (3) is to be gathered in the months and years following the release of the Spoken BNC2014, although the study presented in Chapter 7 (as well as the early access data grant projects discussed in Section 6.4) demonstrates the potential of the corpus for such work.

Chapter 3 focussed on issues of corpus design. I first justified our decision to collect recordings from only one situational context: informal conversation between speakers who are intimately acquainted with each other (i.e. family and friends). I then showed, in Sections 3.2.3 and 3.2.4, how the approach to design in the Spoken BNC1994 was largely opportunistic, and that this would inform our decision to take an almost entirely opportunistic approach to data collection, introducing our use of PPSR (public participation in scientific research) for data collection (see Shirk et al. 2012). I also showed that encouraging speakers to provide their own metadata resulted in a much richer set of metadata when compared to the Spoken BNC1994. In Section 3.3, I discussed the ethical issues considered with regards to data collection, before listing and describing the various categories of speaker and text metadata we collected for the corpus. Finally, I turned to the collection of the audio data itself. I confirmed that digital audio recording is well-suited for the purpose of capturing informal, spoken conversations unobtrusively, and that contributors' access to the in-built audio recording feature of smartphones was pervasive enough in the present to completely replace the method of the Spoken BNC1994, where recording devices were provided by the research team. Therefore, the Spoken BNC2014 was compiled exclusively from recordings made on the contributors' own equipment.

Chapter 4 described the development of a bespoke transcription scheme for the corpus. I started in Section 4.2 by dismissing the possibility of conducting automated transcription as a full or partial replacement for human transcription – human transcription has been the status quo for the compilation of existing spoken corpora, including the Spoken BNC1994. Having decided that manual transcription would be employed, I turned to existing principles of good practice with regards to transcription (Section 4.3), which informed the development of our scheme, including the definition of a simple set of transcription conventions, which could later be unambiguously and automatically converted into the corpus encoding standard used in this thesis, XML. I then identified areas of weakness in the Spoken BNC1994 transcription scheme (Section 4.4), before describing the main features of the Spoken BNC2014 scheme (Section 4.5). These include:

- encoding of speaker IDs;
- de-identification;
- minimal use of punctuation;
- overlaps;
- filled pauses; and
- non-linguistic vocalizations.

Section 4.6 discussed the wider transcription process for the corpus, in which the transcription scheme was used to create transcripts from the audio recordings. This included the training of transcribers and quality control procedure run by Cambridge. I showed that our goal was not to eradicate inter-transcriber inconsistency, but rather to minimize it as much as reasonable given the nature of the task.

Chapter 5 explored speaker identification – the confidence and accuracy with which the transcribers assigned speaker ID codes to the turns they had transcribed. In Section 5.2, I introduced the topic and discussed how the transcription scheme afforded the transcribers the option to signal that their assignment of a given speaker ID code was not certain. I then posited that speaker identification was most likely to be a difficult task during the transcription of recordings made in the following circumstances:

(1) when there are more than two speakers; and/or,
(2) when the differences in voice quality between two or more speakers are not sufficient to tell them apart.

After a review of pilot testing (Section 5.3), which suggested that speaker identification is indeed something which transcribers are likely to find difficult when there are many speakers, I presented a set of studies which assessed (a) the level of certainty and inter-rater agreement with which transcribers identified speakers in a Spoken BNC2014 recording, and (b) the level of certainty, inter-rater agreement and accuracy with which transcribers identified speakers in a specially-made 'gold standard' recording. The results (Section 5.6) showed that, for the Spoken BNC2014 recording, certainty was high, while inter-rater agreement was only fair. Similar results were gathered for the gold standard, with the addition of a 58.1% accuracy rate, indicating that, while transcribers were in the majority of cases confident in their speaker assignments, they were incorrect almost half of the time. I then provided some reassurance in the form of the gender and age of speakers being mostly correctly identified, even if the specific code assigned was incorrect (Section 5.7), before discussing the ways in which the user can mitigate the potential effects of this phenomenon when using the Spoken BNC2014 (Section 5.8).

Chapter 6 discussed issues of corpus processing and dissemination. In Section 6.2, I described the procedure undertaken to convert the transcripts from their original format into the 'modest' form of Extensible Markup Language (XML) introduced by Hardie (2014b). This was done using a PHP script which also checked for errors in the transcription of codes from the transcription scheme. I discussed the nature of the most common forms of transcription error, and noted how their presence is a testament to the importance of having transcribers produce the transcripts in a form which could later be converted automatically into the chosen corpus encoding standard. I then described the annotation that was applied to the resulting XML files: part-of-speech (POS), lemma and semantic categories (Section 6.3). I paid particular attention to the POS-tagging, discussing the differences between the standard tagger resources in CLAWS (Garside 1987) and the spoken tagger resources, and estimating that the spoken tagger resources improved the tagging error rate in the Spoken BNC2014, reducing it from 7.3% to 2.5%. Section 6.4 discussed the final stage of the compilation of the Spoken BNC2014 – the public dissemination of the corpus. In September 2017, the corpus was made available via Lancaster University's CQPweb server (Hardie 2012), where it will be available exclusively until the XML files and associated metadata are made available to download in Autumn 2018. I discussed how the Spoken BNC2014 early access data scheme allowed the research team to trial the corpus with a selection of researchers, and gather feedback which was used to inform the final release.

Chapter 7 presented a comparative study of bad language in the Spoken BNC1994DS and the Spoken BNC2014S. The aim of this chapter was to demonstrate how the Spoken BNC2014 may be used to conduct research. In Section 7.2, I introduced several definitions of swearing, which have formed the basis of research into bad language in linguistics and other disciplines, focussing on the work of McEnery (2005) and his broad approach to bad language words (BLWs), which includes swear words as well as non-taboo words which may be used to cause offence. I also introduced the Ofcom (2016) study into public perceptions of the strength of BLWs, which I used alongside McEnery (2005) and a study by Lutzky and Kehoe (2015) to generate the list of BLWs to investigate in the corpora. The findings (Section 7.4) included:

- a significant decrease in the overall frequency of BLWs between the Spoken BNC1994DS and Spoken BNC2014S;
- the unexpected position of one of the 'strongest' BLWs, FUCK, as the second most frequent BLW in both corpora;

- an overtaking of female use over males for a number of frequent BLWs; and
- the resilience of *fucking* as the most versatile form of FUCK.

Aside from the linguistic findings, the chapter showed that Spoken BNC2014 can be used to investigate indications of short-term changes in spoken British English, when compared against its predecessor.

8.2 Successes, limitations & recommended future work

A theme of this thesis has been the compromise that was sought between comparability of the Spoken BNC2014 with its predecessor and methodological innovation and improvement. In pursuing this difficult balance, the work reported in this thesis has achieved some notable successes. These include:

- the collaboration between academic and commercial institutions;
- a clear demonstration of the potential of public participation in scientific research (PPSR) in linguistics;
- insisting that speakers provide metadata on their own behalf and in their own words, demonstrating the utility of PPSR in eliciting high quality metadata from users and creating substantial improvement in the richness of speaker metadata made available with the corpus, when compared to its predecessor;
- the use of self-reporting of metadata in part as a route into enabling work on perceptual dialectology;
- the use of contributors' smartphones to make recordings;
- the digital transfer of recordings from contributor to research team;
- the design of a transcription scheme which could be unambiguously mapped onto XML;
- the investigation of an under-researched feature of transcription (speaker identification), leading to practical changes in the way we recommend research is undertaken;
- the use of spoken tagger resources, which appears to have reduced the POS-tagging error rate by approximately 5%;
- the early release of a portion of the data for use by researchers in 'real-life' research settings; and
- the visualisation of useful features of transcription (such as speaker ID codes, turn-taking and overlaps) in the CQPweb interface.

Although I am confident that the product of the work of the Spoken BNC2014 research team is a resource which will be of use to many researchers, educators and students for years to come, there are, of course, aspects of the project which were not as successful as hoped, and I have identified additional work which should be undertaken to extend the research capability of the corpus. While I have discussed some limitations at points throughout the thesis (e.g. Section 5.9, p. 125 and Section 7.5, p. 178), I intend to focus on the key limitations of the project which I think are important to make readers, corpus users and future corpus builders aware of.

Although comparable to the Spoken BNC1994DS, the approach taken to compile the 11.5-million-word Spoken BNC2014 differs, of necessity rather than by design, from its predecessor in several ways, as discussed in several chapters in this thesis. With regards to corpus design, I discussed in Section 3.2.4 how, in addition to the Spoken BNC1994DS, the Spoken BNC2014 differs from what appears to have been the norm for several of the spoken corpora which have been compiled in the intervening years. The approach to design in the Spoken BNC1994DS was largely 'opportunistic', in that only the participants who made the recordings (the contributors) were recruited according to a sampling frame. They were then free to make recordings with whomever they chose, and the demographic balance of these speakers was not controlled. Other corpora have, as shown, fallen somewhere on a scale between principled and opportunistic, though rarely is this acknowledged explicitly by their compilers (cf. Douglas 2003).

In Sections 3.2.5 and 3.2.6, I used this point to make explicit the Spoken BNC2014 research team's decision to take an almost entirely opportunistic approach to data collection, introducing the use of PPSR for data collection, and the use of press and social media engagement as a recruitment method, as well as the use of contributor's smartphones to make recordings. Although this approach brought about benefits (e.g. speed of corpus construction; not being constrained by an aim for exact comparability), a potential major, unforeseeable, disadvantage was observed – a dearth of speakers from Scotland, Wales and Northern Ireland. Despite not drawing up a sampling frame, imbalances of this magnitude were, of course, not our intention, as evidenced by the interventions described in Section 3.2.6. While the gathering of 'English English' corpus data was arguably our biggest priority for reasons explained in Section 3.2.5, I do regret that our interventions were not enough to generate a better representation of the other countries in the UK. While the impact of this issue was mitigated by other corpus building projects focussing on these regions, it is still the case that the opportunistic model does mean that the researcher is, to some extent, at the whim of the participants. Even with a financial reward offered for recordings, and determined effort to recruit participants to balance the sample made, we still have to accept, especially when asking for recordings of intimate conversations, that people may simply refuse to participate. That is their right, of course, and it is something that no corpus builder can, or should, forget.

As well as reflecting critically on aspects of the project which we did complete, I want to comment on future work which is planned, or should be planned, and which would add further value to the Spoken BNC2014. First of all, CASS has started a new project, addressing the creation of a balanced sociolinguistic core from both the Spoken BNC2014 and the BNC1994DS (Brezina et al. 2016). The project combines expertise from the fields of corpus linguistics and variationist sociolinguistics to develop subsamples of the two larger corpora, that will allow sophisticated sociolinguistic searches and analyses. A list of speakers, provided by Susan Reichelt, a Senior Research Associate on this project, was used to create the balanced core that is described in Section 3.2.5. This project aims to do the same for the Spoken BNC1994, increasing the power of the comparisons made between the corpora with regards to sociolinguistics.

Another planned project is the transcription of the BBC 'Listening Project' recordings, which are archived at the British Library.[88] BBC Radio 4 has gathered a large set of recordings of intimate conversations between friends and relatives, conducted in a radio studio or mobile recording booth, which has been travelling around remote areas of the UK. CASS has agreed to transcribe these recordings and release them as a large-scale supplement to the Spoken BNC2014. Not only will this help to plug the Scottish, Welsh and Northern Irish gaps, but it will also better cater for the interests of phoneticians, since the recording quality is higher than that of the Spoken BNC2014.

Finally, as discussed in Section 4.3, we have not prepared the audio files from the Spoken BNC2014 project for public release – nor did we plan to within the scope of this corpus compilation project (as explained, we were focussed solely upon the creation of a text corpus of transcripts). However, the question of whether we plan to release the audio files has been a very common one at conferences and research seminars, and I do believe that there would be value to (a) making the recordings available, and (b) linking them to the transcripts so that the relevant segment of audio can be played while searching through the corpus. Similar work has been done recently for the Spoken BNC1994 audio files (see Coleman et al. 2012). This work would require timestamping the XML files before de-identification of the audio. I aim to seek funding to conduct this work in the near future.

[88] http://cass.lancs.ac.uk/?p=2241 (last accessed September 2017).

8.3 Summary

The compilation and release of the Spoken BNC2014 is an important moment for the study of spoken British English. The main contribution of this thesis, and the project it represents, to the linguistic research community is clear: a new corpus of contemporary spoken British English, which is comparable to the conversational component of the Spoken BNC1994 and yet reflects the state of the art with regards to methodological approach.

This thesis also represents an example of good practice with regards to academic collaboration with a commercial stakeholder. The compilation of this corpus has been a truly collaborative effort between Lancaster University and Cambridge University Press. An important aspect of our collaboration, and something which I believe contributed to the speed with which the corpus was constructed, was our establishment of an efficient and unambiguous 'production line'. CUP was at the front of the line, corresponding with contributors, receiving the recordings and metadata, and transcribing the recordings. Lancaster was in the back room, so to speak, processing the transcripts and disseminating the corpus to the academic research community. I was the 'go-between', working at Lancaster, primarily on the background research activity, while in regular contact with the CUP team, advising on and learning about all aspects of the front-line work. Therefore, this thesis presents an account of the project from the perspective of the one member of the research team who was involved in every stage of the compilation of the corpus, and I have tried accordingly to pay due attention to each of those stages.

Reflecting on this project, the complexity of the methodological issues the research team encountered was surprising. Working on this project has been very informative for my understanding of the compilation of spoken corpora, and has developed my awareness of issues to consider when using other corpora. I have come to the conclusion that the more access researchers are granted to clear and comprehensive information about the methodological decisions made in the compilation of the corpus they are analysing, the more likely it is that high quality research will be undertaken, which acknowledges both the strengths and, importantly, the limitations, of the data set. The complexity I have unearthed and the issues I have documented in this thesis are therefore major contributions in themselves; this is the first time an account of this length and depth has been produced to inform users and future corpus builders. In addition to the BNC2014 user guide (Love et al. 2017b), the methodological discussions and analysis presented in this thesis are intended to help the Spoken BNC2014 to be as useful to as many people, and for as many purposes, as possible. I have been lucky to have had a hand in its creation.

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List of Appendices

Appendices

Appendix A: Transcript of contributor interview no. 1

Key

R = Robbie Love

C = contributor

R: I'm here with <C> who has been doing some recordings for the project.

C: Hello <R>.

R: Thank you for agreeing to do this little interview. So you've done a few recordings with the Dictaphone that I gave you.

C: Yes I have.

R: So first of all I just want to get your impression of the project. In your mind, what do you think is the purpose of doing this project?

C: My understanding of it was that data was being collected on language use depending on gender, dialect, area, and how things have changed over time.

R: Okay. That's great, thank you. So we'll talk a little bit about the recordings that you made then. What settings did you choose to do your recordings and what was it that influenced you to choose those?

C: We were on holiday and we were away with friends, and we thought that because it was a more relaxed environment and we had more time it would be a better place to have easy-going conversations, rather than rushing around when you're trying to go to work. So that was the main reason for that.

R: Were there any situations where you felt you might have wanted to do a recording but you couldn't?

C: No. After the first couple, there were maybe a couple of funny conversations had happened where we had said that would have been a good one to record, but there wasn't any time when I went out and thought I should have had the recorder with me.

R: Who did you choose to do the recordings with then?

C: My dear beloved husband and our friends.

R: And were they easy to persuade to join in?

C: Oh yes, they're up for anything.

R: So they didn't need much explaining then?

C: No. They just went with the flow.

R: How much do you think they understood, the way you do, the purpose of the recordings?

C: I think perfectly fine. They're interested in it and they'd be interested to see the results of it at the end.

R: Okay. So you used the Dictaphone that I gave you then?

C: Yes.

R: Were there any problems with that or did it work fine?

C: Once we worked out how to make sure it was recording it was fine, and it did pick up everything. We had it on the table in between us and it seemed to pick up all of the voices.

R: Great. So how did it feel to be recorded? What was it like?

C: I was a bit worried about it to start with. I thought it would be a bit false, but it wasn't. Once you had it turned on and the conversation started you just forgot. Occasionally if somebody swore or something you'd go oh, you know, we're recording, but apart from that I don't think it made the conversation flow less freely or restrict what people said.

R: So did you ever at any point completely forget that the recorder was there or was it always in your mind?

C: You didn't completely forget because it was right there in front of you on the table, but there would be times where, one of them in particular where we were playing a game, where we forgot and somebody said *oh yes I forgot we were recording this* or *are we still recording?* Or something like that.

R: Do you feel at any point like you spoke any differently to how you perhaps would have done?

C: I think the only thing you have in the back of your mind is if you're talking about somebody else, so being perhaps a little bit more aware of using peoples' names or something like that. But not really. I mean the sort of stuff we were talking about was so generic, to do with the holiday, what we were going to do and things like that so it wasn't in depth heart to hearts or anything like that. So it didn't seem to be a problem.

R: Okay. I also gave you a few forms to fill out. How easy was the documentation to use? Did it make sense?

C: Initially there was quite a lot of it. I think possibly combining it into one document would have been quite useful, but it was alright. There was nothing major.

R: And do you think people were willing to fill out the information, for example the speaker details form?

C: The people that we worked with, yes. But as you know I think other forms have had to be altered slightly for people who weren't happy about putting their names on. And really if it is anonymous there really isn't any need to have their name on. Perhaps just gender and age would be enough, or to give people a number or something.

R: Is there anything else you'd like to say about the collection of this information?

C: I was going to say I wasn't quite sure why you needed to know sexual preference on there, but I suppose if you're looking at how different factions use language and differences in language then that could be important. Whether everybody would be comfortable filling in that bit, and I know there's the option not to, but if there is the option not to, is it really necessary to have it there in the first place? But apart from that I don't think there is anything else you needed to add to it. Maybe again just thinking about what information you really need, rather than covering all bases. I mean for most people it wouldn't be a problem. It's just asking *is this going to be used as part of the study or is this just an additional piece of information?*

R: Is there anything else about any part of the project that you'd like to add?

C: It was quite a laugh! I wish we'd listened back to the stuff, because obviously we didn't; we just checked that it was recording. But maybe if we had we would have gone *oh*, so maybe it's better not to remember every single word you said in the recording. But it was quite an interesting thing to do and it will be interesting to see the results, definitely.

Appendix B: Transcript of contributor interview no. 2

Key

R = Robbie Love

C1 = contributor 1

C2 = contributor 2

R: I'm joined by <C1> and <C2> who have been doing some recordings for me over the last couple of weeks. So thank you for doing those and I hope it was fun. So first of all I just want to get a general impression from both of you on what you think it is that my project is trying to do. What do you think is the purpose of me getting you to do these recordings?

C1: Presumably so you can study and analyse the words and language that people use when chatting informally.

C2: And perhaps allocating that to things to do with their age or whether they are male or female.

C1: And regional variation.

C2: It's not topics of conversations but rather words. The kinds of words that different generations might use as well.

R: Okay thank you. What setting did you choose to make your recording and what influenced you to choose that?

C1: It was in a large holiday cottage in Wales with lots of various family members present, and we were all taking a week's holiday down there together. So it was quite busy with lots and lots of people.

R: So the other speakers you mentioned they were family members. How willing were they to participate? Did they take much persuasion?

C1: No they were all quite happy to do it.

C2: I think there was quite a bit of discussion as there always is with these sorts of things as to what they should and shouldn't say. Jokes about *oh let's say how awful* <R> *is while we're talking*. Once everybody had got over that bit I think everybody forgot about it.

C1: They just carried on as normal.

C2: You forgot it was happening which is exactly what you would want. Because it's a natural kind of conversation that you want. You don't want something that's rehearsed or that people have thought deeply about; you just want them to be speaking as they speak.

R: Did you feel aware of the recorder or did you forget about it after a while?

C2: Absolutely, I forgot about it straight away.

C1: I think people forgot about it after the first couple of minutes.

C2: I think as well because you are focussing on informal conversation, people are in a relaxed situation. I was on holiday so I wasn't going to start worrying about what I was saying, or thinking deeply about what I was saying.

R: So you don't feel like you spoke any differently to how you would have done otherwise?

C1: No.

C2: No.

R: Good. So did the people who you recorded appear to understand the purpose of the project as well?

C2: There was quite a lot of discussion from one person who got a bit trapped in thinking it was the topic of conversation you were listening to rather than the words, and it was that distinction between what we were talking about and what words we were using just in our conversation. Because actually it doesn't matter what we were talking about at all, does it?

C1: And there were comments like *that would be a good thing to talk about, wouldn't it?* But I think that soon went away because we just carried on. And for most people I don't think it will be a problem in the sense that once they get started, they'll forget. I think it might have some bearing on how long you suggest people record for, or how many times, because I think running for half an hour is easier to forget about the recorder than a two minute recording. I think after five minutes if there's conversation going on you just get into that. And if you do it a few times it's easier because the second time or third time we did it I just said *oh I'm putting it on again* but the first time it was *oh he's doing a recording*. So I suppose if you got people to make several recordings rather than just one that might help that.

R: Yeah, I think routinizing it might be the trick. So, the equipment; you used your phone to make the recordings. How was that? Did you manage alright with that?

C1: Easy, yeah.

R: Great. And the documentation; how easy was it to use? Were there any points of misinterpretation?

C1: Yeah it was fine; there was a discussion with some people about what would happen to the information. A couple of people made the point that when they usually fill in forms like this there is a box which says *please do not share this information with other people*. They didn't have a problem with it but I think they felt that if you put a box like that on it may make people who did have a problem with it feel more comfortable. So that their information won't go anywhere else even if it was optional.

C2: One person wanted to know why you wanted the email address because they were concerned about receiving unwanted mail from Lancaster University or something.

C1: And that was linked to that same thing about ticking a box to say *I don't want spam*. There was the question as well about the form asking you where you lived and how long you had lived there, and whether that related to how long you had lived in your actual house or how long you had lived in the area in general. There was also the query after holding several recordings about putting the date on the consent form; whether that meant today's date or the date of the recording.

C2: For me too there was the one about place of birth. My place of birth bears absolutely no relation to how I speak because I wasn't brought up there; I was transported immediately somewhere else and brought up in a completely different place. But you wouldn't know that from the form.

R: Thanks. Now onto the type of information I asked you to collect from speakers. The form was split between basic compulsory information and then optional information which was slightly less linguistically relevant but still interesting. Were people happy to fill everything out or was there any reluctance?

C1: There was some discussion about why you needed to know things like sexuality and religion. And some people said *prefer not to say*. And I'm not sure if people approached it as if it was optional.

C2: They still felt they ought to fill it in. Because they see it's a form, and you feel you ought to fill a form in.

C1: And whether it was also because it was a form from you, and they felt they were doing you a favour by filling all of it in rather than just the compulsory stuff.

R: Okay thank you. Have you got anything else you'd like to add about the project?

C2: No, not really. It would be interesting to talk to you when you've done the work about what you found from the recordings, and how useful they were.

C1: And also it might be good to add a box on the consent form that allows people to choose to receive updates about the project if they are interested every few months or something.

R: Okay, great, thank you very much.

Appendix C: Guide sheet used in the contributor interviews

CONTRIBUTOR INTERVIEWS – APRIL 2014

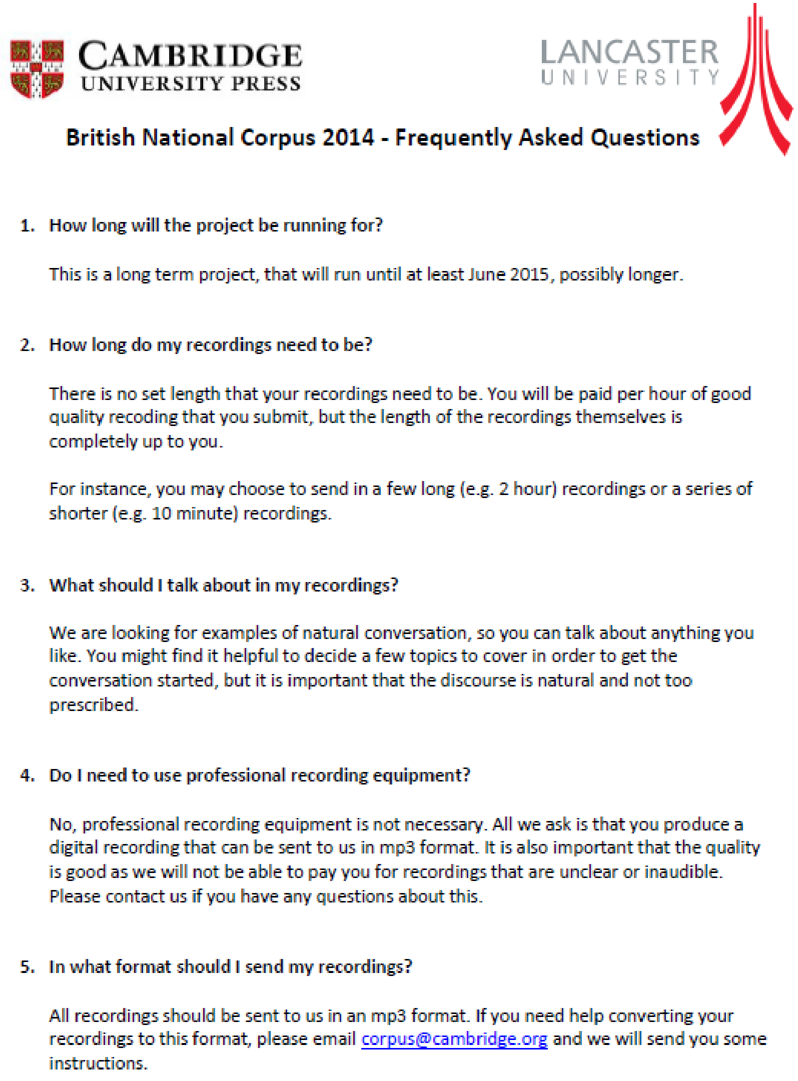
EXPAND ON ANY AS APPROPRIATE TO FLOW OF CONVERSATION

THERE ARE NO RIGHT OR WRONG ANSWERS

No.	Theme	Question
1	Overview	What is your general impression of the project? i.e. from the information I gave you what do you think is the purpose of recording your conversations?
2	Recording	What setting(s) did you choose to do your recording? What influenced your choice of setting?
3	Participants	Other speakers who you recorded how willing were people to participate? did they appear to understand the purpose of recording the conversation?
4	Equipment	What piece of equipment did you use? Provided or your own? How did you manage with the recording equipment? Any problems?
5	The experience	What was it like to be recorded? To what extent were you aware of the recorder being switched on? Do you feel like you spoke any differently to how you may have done otherwise as a result of being aware of the recorder?
6	Documentation	How easy was the documentation to understand and use? Is there anything you would suggest to be done differently were you to participate again? Did you manage to get people to fill everything out? Any problems?

ANY OTHER POINTS?

Appendix D: Spoken BNC2014 Frequently Asked Questions document



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British National Corpus 2014 - Frequently Asked Questions

1. **How long will the project be running for?**

   This is a long term project, that will run until at least June 2015, possibly longer.

2. **How long do my recordings need to be?**

   There is no set length that your recordings need to be. You will be paid per hour of good quality recoding that you submit, but the length of the recordings themselves is completely up to you.

   For instance, you may choose to send in a few long (e.g. 2 hour) recordings or a series of shorter (e.g. 10 minute) recordings.

3. **What should I talk about in my recordings?**

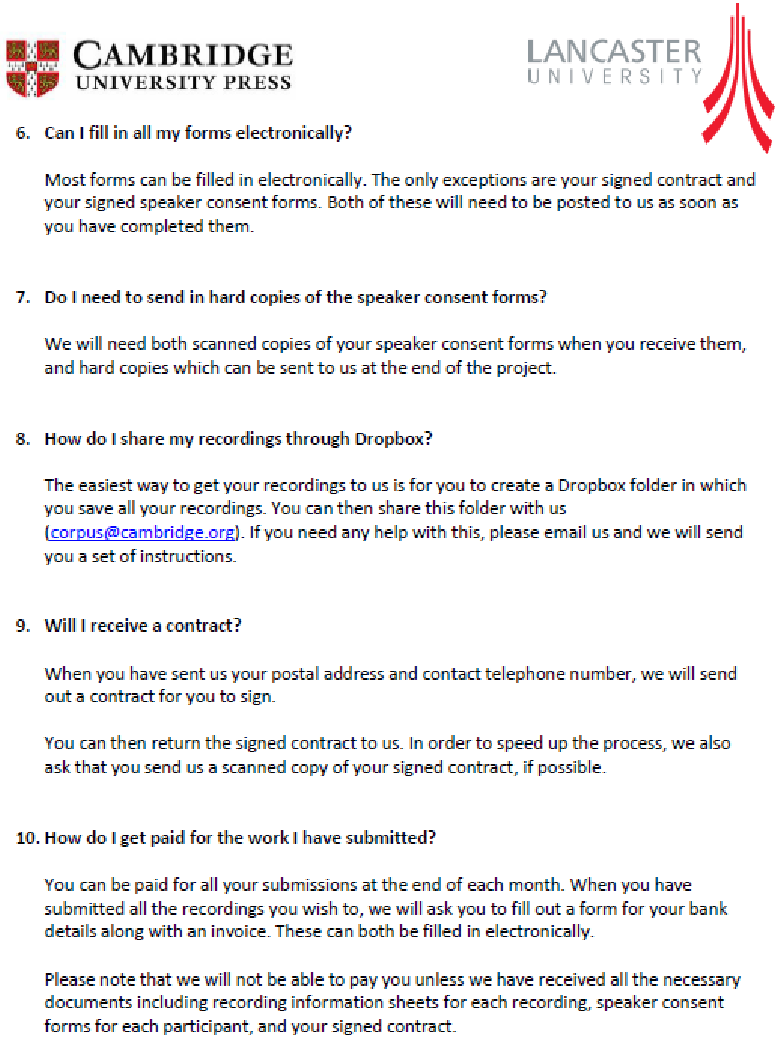
   We are looking for examples of natural conversation, so you can talk about anything you like. You might find it helpful to decide a few topics to cover in order to get the conversation started, but it is important that the discourse is natural and not too prescribed.

4. **Do I need to use professional recording equipment?**

   No, professional recording equipment is not necessary. All we ask is that you produce a digital recording that can be sent to us in mp3 format. It is also important that the quality is good as we will not be able to pay you for recordings that are unclear or inaudible. Please contact us if you have any questions about this.

5. **In what format should I send my recordings?**

   All recordings should be sent to us in an mp3 format. If you need help converting your recordings to this format, please email corpus@cambridge.org and we will send you some instructions.



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6. **Can I fill in all my forms electronically?**

   Most forms can be filled in electronically. The only exceptions are your signed contract and your signed speaker consent forms. Both of these will need to be posted to us as soon as you have completed them.

7. **Do I need to send in hard copies of the speaker consent forms?**

   We will need both scanned copies of your speaker consent forms when you receive them, and hard copies which can be sent to us at the end of the project.

8. **How do I share my recordings through Dropbox?**

   The easiest way to get your recordings to us is for you to create a Dropbox folder in which you save all your recordings. You can then share this folder with us (corpus@cambridge.org). If you need any help with this, please email us and we will send you a set of instructions.

9. **Will I receive a contract?**

   When you have sent us your postal address and contact telephone number, we will send out a contract for you to sign.

   You can then return the signed contract to us. In order to speed up the process, we also ask that you send us a scanned copy of your signed contract, if possible.

10. **How do I get paid for the work I have submitted?**

    You can be paid for all your submissions at the end of each month. When you have submitted all the recordings you wish to, we will ask you to fill out a form for your bank details along with an invoice. These can both be filled in electronically.

    Please note that we will not be able to pay you unless we have received all the necessary documents including recording information sheets for each recording, speaker consent forms for each participant, and your signed contract.

Appendix E: Extract from the ‘gold standard’ transcript

<4> you don’t have to grandma do you want some orange?
<1> you don’t have to if you don’t want to
<6> will you taste it first?
<1> [laugh]
<5> <OL> oh yeah (.) see how strong it is
<6> nice
<7> orange orange orange orange orange
<2> <OL> do you want some <name F>?
<7> <OL> just a bit just a little bit dear (.) thank you (.) that’s bucks fizz of course isn’t it?
<4> yeah (.) it is
<7> once you put the orange to it actually
<2> you want some?
<5> oh go on then
<4> you want some?
<6> have you have you started recording?
<5> yes
<6> have you?
<5> yes
<6> [laugh]
<5> so
<6> watch what we say [laugh]
<5> <OL> no
<8> okay so dig in (.) wanna take and pass on?
<3> <OL> croissant
<8> take and pass on there’s only six [f=briock]
<7> [laugh]
<4> [f=briock]
<8> [laugh]
<1> mam that’s not [f=briock] you know that right?
<4> <OL> that’s a chocolate croissant
<7> pan au chocolat
<6> pan au chocolat
<8> oh right pan au chocolat [laugh]

<2> that one's pan au chocolat brioche

<7> ooh

<8> <OL> [name M] do you want a croissant?

<3> yes please nah I'm alright I'll have a croissant please do you want me to take the plate? Or

<8> no

<5> I'll have a croissant as well thank you

Appendix F: Trint transcript

[00:00:36] You don't have to come up to any one that is easy for. Me to go spiders to be nice to horror in Joralemon a.. And that box which of course you do if you want to do it you are used to it actually.

[00:00:56] Oh go on. You want to thank you. You started recording. Yes have you.

[00:01:02] Yes so what we see is what you know to have a bad question and has taken part in anything real. This if you look through your book.

[00:01:15] That's not very often you know that's a public question here Carol. I wish I could have just because you know how much more likely to get through that I'd like to have a custom made Johnny to play no. Service charges you were so obviously not all wrong of course and totally bizarre that I saw one of those However I have a lot of lives and I could use some of the customers young men whose job.

[00:01:46] Schonberger What they'll be lovely thank you all the ones you Reza because they've been such a movement that's very comforting. Good Lord.

[00:01:58] Probably half way to feel. Really. Off of a tough. Exterior people. I walk a bit and I think and feel and believe that really everything. You. Do. Well

[00:02:10] because you and I go in pursuit of them I agree with a lot of sorry love.

[00:02:15] Well you tell me you have a problem when you know you.

[00:02:20] Don't just on work days and so much of it is a very issue and I don't pretend to look at. Least well married before very very inefficient. America has got me so I think it has to do. With having to know what happened are. On. The floor and will point out that I was indeed you.

[00:02:47] I'm. Not afraid. I have plans for how closely do. You find that you are married.

[00:02:54] So imagine.

Appendix G: Pilot study transcript produced by human (produced before the Spoken BNC2014 transcription scheme was established)

8: so why have they cancelled? <clears throat>

9: <cough> well <unclear=we had> <cough> erm <.> we had it down for tomorrow night and a reserve as Saturday night

8: mm

9: but she looked at the weather and it's meant to be raining apparently and said it's been non-stop said it's been raining there for the last week and said all the fields and everything are really soggy

8: mm

9: now whether it'll dry out on Saturday is another matter cos I

0:00:30.7

think it's

8: in the woods

9: around the house and the fields erm <.> because having had that con=

8: <unclear=00.40>

9: having had that conversation I think erm <unclear=00.45> it's meant to rain again on Wednesday and Thursday so anyway that's what we're doing <pause=7>

8: okay

0:00:58.0

9: we didn't have any plans did we?

8: no <unclear=1.01>

9: yeah

8: that's fine <unclear=1.07>

9: and it's only an hour or so anyway <.>

8: I'm gonna do a fast day on Sunday and Wednesday this week

9: on when? Sunday

8: no Saturday <pause=5> Saturday and

9: I thought you said Sunday

0:01:31.5

8: this Wednesday

9: oh I can listen to the recording and check

8: this Wednesday and Saturday

9: okay <.>

8: why would I do it on a Sunday?

9: well that's what I was surprised <pause=4>

8: I'm not gonna sit and watch you eat afternoon tea and a meal <unclear=1.54> while I have a lettuce leaf

9: <laugh> I'm glad to hear it <pause=19> I think I'm gonna be

0:02:21.1

really stiff tonight after my Pilates

8: mm <.> yes cos it's how many weeks three or four?

9: mm something like that I must resolve to do something during the week somehow how am I gonna do that?

8: get on your bike and ride it

9: no I meant Pilates-wise I was talking about really

8: mm

9: but that as well <pause=8>

8: well maybe you should go try and go to another class <.>

0:03:03.4

9: what Pilates?

8: mm

9: mm she doesn't do she only does one class

8: well go to somebody else's class

9: mm

8: go to someone at the community centre <pause=4>

9: well <.>

8: it's the only way you're gonna do it to really motivate you if you're don't pay for something and commit to something you need rely on

0:03:26.0

doing it <.> for yourself

9: mm

8: it's not gonna happen I'm sorry to sound as if I don't have much faith in you

9: <laugh>

8: I think scrabble on the sofa will win hands down <.>

9: <laugh> <pause=5> <unclear=mm> <pause=25>

8: that should really fill you up tonight with the potato as well

Appendix H: Pilot transcript produced by Trint

[00:00:01] And. So I can talk to him. Well we have an. We had it down for tomorrow night on a reserve a Saturday night river. But look the weather is meant to be raining apartment until it's been non-stop. They have been running there for the last week until all fields and everything are really soggy and you know whether a drug Gonzalez nominatives I think there's loads. Around the house in the fields.

[00:00:35] Right. To.

[00:00:39] Because I'm a by long time have a conversation I think I'm Those who is meant to run again on Wednesday and Thursday it's over. Anyway. I saw them.

[00:00:53] The. Did I cry.

[00:00:59] No bounds we were not allowed to. Yeah. And one little hold on is only an hour.

[00:01:10] Or so anyway.

[00:01:15] I'm going to do a run today on Sunday. Wanna go with you.

[00:01:21] On one climb but no luck about it.

[00:01:29] So that when I thought you said some back there's one inside Washington.

[00:01:32] He recalled an check this Wednesday and Saturday of the Cape.

[00:01:41] WELD everyone from that.

[00:01:43] Well that's why I was surprised to see it.

[00:01:47] Which it did not go as that's what Louis Farrakhan and then a real arm about all I have a lot with Lou.

[00:01:59] I'm glad to hear it. Oh I did.

[00:02:19] I think I'm a realist if you mar my plot was no doubt.

[00:02:26] I was with a waiter of Alton Brown. I must resolve to do some hungry Lloyd. If somehow I wouldn't do that. Only about I can write a check.

[00:02:47] Norman plaque is wires often a relic.

[00:02:49] Oh but I was a while back to that quote. It did.

[00:03:00] Maybe you should try and us were a class act.

[00:03:06] But what a lot of time she didn't do in those months. Who had some got his class go to the one in front.

[00:03:16] How are you anyway going to do it.

[00:03:21] The relative you don't pay for someone and commit them and many rely on doing it.

[00:03:27] Think for yourself and it's not gonna happen. Sorry to sound as if I don't have much better there.

[00:03:38] I think Scrabble on the saddle will come down to did it for me.

[00:03:51] But cash. Got it. But to go through so much with Rubio you have then I would be dead as well.

[00:04:21] And there are a lot lately.

[00:04:29] I do.

[00:04:35] I mean about Miles Yeah you have to remember though I can find I will hunt for the president.

Appendix I: Phonetician's transcript

the u. s. a problem and the on the bones thirty there isn't a wall of ths their own lives the time i hear you novel chooses to go on this is the view of the thin end of the one that he said the voting teaches that in our history i i i go out to know so the fact that i knew years of the mood for love i pop you know he's got back from its that these movies today rose a veto it would allow us isn't that a fair and i love you you guys even took over the years of a couple of our own home without a beloved son the a preview of what was he denies them will know what was the thing and i thought i knew nothing yet and if it hadn't been in rise high up for you know the earth in i hope that's so it's a good good book rio the way of them i know a year i don't kill muslim drunk that of the so the alluded weapons going away to that i know you go outside for a front row who who you think that the image of the malaysian they found the says i have the question i knew he had a month they always them to efficiently i don't know where it meets the vote in a jumping one thing i learned to the principles that i think you have so a lot of death many of them i didn't know i have to cause a lot of the anyhow they uh and the lemon the way you in a grunted when our yes and this is this isn't even a so in a loan to move so of a that have someone and you a what you think that i didn't know you saw someone with a thoughtful go halfway house of the food than needed for the widow of a oh i grew up with it that it would be a thing that i met the guy was that a few into the root of the method of movement and it is what no often death of moving it right well when hathaway found don't know that good and very efficient though it in a fifty solutions because the middle of the scene of the ths i did then danger and i so i think i'm a hero i think hey the middle of the mario a moment but he was the day of the way i see a of abound a gun in the world of e. so i think they should retire that's what i do want to know of and a new vision of the movements of the death of the i knew i liked it a violent well actually the enough of a favorite movies of (BNC_AUDIO_FILE)

Appendix J: Spoken BNC2014 transcription scheme

Cambridge University Press – Transcription Conventions 5.0

Transcription conventions are used to indicate features of a spoken interaction (such as speaker turns, repetition and overlaps) in typed text. This document outlines the format of the conventions used by Cambridge University Press. This document should be used for reference throughout your transcription work for Cambridge.

The conventions are, in many respects, a working document (and you may receive an update from time to time). We would very much appreciate your comments in order to explain and refine our definitions further - please contact corpus@cambridge.org with any suggestions for future updates.

CONTENTS

1. GENERAL GUIDELINES

Unlike legal or medical audio transcription, transcription for linguistic research requires you to transcribe exactly what you hear. This means that you should not correct or paraphrase any instances of “bad” grammar, unfinished sentences, missing or repeated words. We are very interested in this type of variation, so it is important that the transcription is a direct copy of the recording.

On the whole, accent features (i.e. the sounds of the language) should not be represented in the transcriptions. For example, speakers with regional or international accents may pronounce a word in a way that is different to what you might expect to find in Standard English, but no effort should be made to reflect this in the transcription. (This is discussed further in 18. SPEAKER ACCENT/DIALECT).

2. DOCUMENT FORMAT

When undertaking a transcription project for Cambridge, you will be sent a template file. You should open this template and then save your new file using the same name as the sound file you’re working on. The name of the sound file and the text file should correspond.

For example, if you were transcribing the sound file *001.002.mp3* you should open the template and then save a copy of this file and call it *001.002.doc*.

You should use the same template for all transcriptions you work on. You should not change the font, spacing, justification, margins or anything else in this document.

3. LINE HEIGHT AND SPACING

Single line height should be used throughout your transcription. A double carriage return (enter key) should be used after each speaker as shown in 6. SPEAKER IDs.

4. HEADER INFORMATION

Header information is used to make a note of certain characteristics of the spoken data file. The following information (or similar) is saved in the template that you will work from and will appear as header information at the top of each transcription;

[HEADER]

FILE NAME:
MAIN SUBJECT:
LIST OF SPEAKERS:

[TEXT]

Please **do not delete** the [HEADER] and [TEXT] lines; these indicate where the header begins and ends.

When we send you a soundfile, we will also send you the list of speakers that feature in the recording. It will be a list of the speaker IDs in order, separated by commas, with no full stop at the end. Please copy and paste this into the header of the transcription. This then needs to be checked – see 6. SPEAKER IDS.

Copy the list of topics covered in the conversation from question 9 of the Recording Information Sheet and add it to MAIN SUBJECT

5. TAG FORMAT

Tags form the basis of the transcription conventions and are used to indicate features such as speaker turns and overlaps. Most tags have angle brackets < >. Some use other brackets (to make it easier to tell them apart).

Each tag also has a label to differentiate them from each other. E.g. <OL> is the tag for overlaps. These tags are explained in more detail in the subsequent sections[89].

[89] (NB – tags and certain words are shown in red throughout this document for emphasis and clarity only – all text and tags should be in transcribed black, as standard)

6. SPEAKER IDS

At the beginning of a new project you will be sent a spreadsheet containing information about all of the speakers in that project. You will be given their name, gender, first language and accent/dialect, plus a unique speaker ID number. These are in the format <001>, <002>, etc.

When you are sent a new file to transcribe, it will be accompanied by information about the recording – speaker names, their first utterance, plus other additional information.

For example, the recording information sheet you receive may contain the following:

Speaker 1: Anna Brown, 'OK, so are we recording now?'
Speaker 2: Thomas Brown, 'Yep'

These names can be matched up with the speaker numbers using the spreadsheet. For example:

Speaker ID	Name	Age	Gender	L1	Accent/dialect
<022>	Anna Brown	30-39	F	English	Welsh
<023>	Thomas Brown	40-49	M	English	London

So the first two speaker turns of this transcription would be:

<022> okay so are we recording now?

<023> yep

Never leave out the initial zeroes – for our work, <022> and <22> are not the same thing!

When transcribing, please make sure that a new speaker starts on a new line, leaving one line between. Speaker tags should not appear in any position other than at the start of a new line.

If you think a particular utterance is said by a speaker but you aren't sure, please indicate this with e.g. <003?>. If you aren't sure who is speaking please identify the speaker as male or female by using <M> and <F> respectively. **Never use <M?> or <F?>**.

6. i) Multiple speakers

If multiple speakers say exactly the same thing at the same time, please write this as <MANY>. For example, if a whole class respond to a teacher's question with the answer "Friday", then this would be written:

<001> what day is the homework due in?

<MANY> Friday

7. ANONYMIZATION

7.1 People

Anonymize names of people. All anonymized names should include a gender tag (*male, female* or *neutral*). Indicate the gender of the name where possible, e.g.

"Dave" becomes <name M>

"Susan" becomes <name F>

If gender cannot be interpreted, either from the name (e.g. "Alex", which could be either "Alexandra" or "Alexander") or from the context, then use <name N>. This includes instances where just a family name, and no personal name, is given, or cases where a family name applies to a mixed-sex group, e.g. "Mr and Mrs Jones".

Where an anonymised name is more than one word long, only use a single <name …> code (e.g. <name M> or <name F>).

What is spoken	What is transcribed
my sister Briar Rose is older than me	my sister <name F> is older than me
goodbye Dr Wentwood-Smythe	goodbye Dr <name N>"
Jean-Pierre Duroy is horrible	<name M> is horrible
we invited Mr and Ms Smith	we invited Mr and Ms <name N>

BUT:

“we invited Robert and Harriet Smith” → “we invited <name M> and <name F>”

(no extra <name N> for “Smith”).

7.2 Places

Anonymize names of locations and institutions/businesses which you judge to be locally identifiable, i.e. locations which are so specific that anyone reading the transcription could, with fairly little effort, use this information to help identify the speaker or someone who the speaker is talking about.

“I saw him at the Royal Tavern” becomes “I saw him at the <place>”

As in the example above, if the name of the place comprises several words (i.e. the “Royal Tavern”, which is the name of a pub and contains two words), do not attempt to retain such linguistic information (e.g. by transcribing “I saw him at the <place> <place>”). Simply the <place> tag, regardless of the length of the place name, is adequate. The exception to this is if the place is described as being located within another, separate, identifiable location – for example

“I saw him at the Royal Tavern in Blyth” becomes “I saw him at the <place> in <place>”

Note that this rule only applies to *names* of such locations and institutions, and not other associated words that on their own cannot identify the place. So, if somebody mentions that their child goes to a certain school, the level of anonymization depends on what is said:

“My daughter goes to Plessey road first school in Blyth” becomes “My daughter goes to <place> first school in <place>”

Likewise

“My daughter goes to first school in Blyth” becomes “My daughter goes to first school in <place>”, and NOT “My daughter goes to <place> in <place>”.

In no case does the word “school” need to be anonymised as it is not part of the identifiable place-name.

Do not anonymize the names of locations which are so general that they would not help a user of the corpus to identify any of the speakers etc. in the corpus.

“We went on holiday to France” – this would not be anonymized

7.3 Famous people

Do not anonymize the names of famous people, which are so general that they would not help a user of the corpus to identify any of the speakers etc. in the corpus.

> “Did you see David Cameron’s speech last night?” – this would not be anonymized

7.4 Personal information

Anonymize personal information. Here is a full list of personal information anonymization tags:

Telephone numbers (this includes all types – landline, mobile etc.)	<tel-num>
Addresses (any address which is spoken – this includes postcodes)	<address>
Email addresses	<email>
Bank details (card numbers, account numbers, sort codes, etc.)	<bank-num>
Social media username (e.g. Twitter handles, skype names)	<soc-med>
Date of birth	<DOB>
Other personal information which is not captured by any of the above categories	<pers-inf>

8. UTTERANCES

It can be very difficult to decide where to put sentence-breaks into spoken recordings, particularly when the speakers may talk for a long time with few pauses and numerous changes of topic. For this reason we think of the speech in *utterances*, rather than in 'sentences'. An utterance is the length of a speaker turn – that is, we do not break the speaker turn down further into sentences.

Utterances **should not start with a capital letter nor end with a full stop**:

> <001> so I was thinking that erm it would be a good idea to decide on the procedure and then discuss it today

Another exception is where the speaker asks a question and then carries on talking. A question mark should be used, but no capital letter should be used at the beginning of the following utterance (unless it is a proper noun or *I* see: 14. ACRONYMS, SPELLING AND CAPITALISATION)

> <001> what do you reckon? I think we should definitely go

9. PUNCTUATION

No punctuation should be used in transcription i.e. no commas, colons, dashes or full stops. Brackets – round, square and angled – are used to indicate tags and therefore should *never* be used in the 'normal' way.

Utterance ends **should not** be marked with a full stop.

Abbreviations and short forms should not be followed by a full stop: Dr Green not Dr. Green, Ms Black not Ms. Black.

Never use quotation marks of any kind.

There are two exceptions to this no-punctuation rule:

1. Question marks, which should be used for:

    (1) obvious questions (either *yes-no* questions or *who- what-where-when-how-why*-type questions: e.g. *are you happy? what did you do?*)

(2) rhetorical questions
(3) tag questions (e.g. *I told you* <u>*didn't I?*</u>)
(4) statements with obvious rising intonation.

These are exemplified below:

<001> sorry I didn't know you were moving it	=*Not a question*
<002> well what did you think I was trying to do?	=*Obvious question*
<001> you were bending down to have a look at it?	=*Statement with rising intonation (giving it question function)*
002> do I look like an idiot?	=*Rhetorical question*
<001> you're not angry (.) are you?	=*Tag question*

If a question utterance is interrupted or incomplete, only use a question mark at the end

<001> is this

<002> I don't know

<001> important?

2. Hyphens, which should be used for:

(1) Proper nouns (e.g. Hay-on-Wye)
(2) Numbers (e.g. one hundred and forty-six, four-year-old)
Only numbers between 21 and 99 should be hyphenated.

10. PAUSES

Do not record pauses that come at the beginning of an utterance. Record short and long pauses that occur during utterances; only recording pauses that occur between utterances if they are long. The long pauses between utterances should be recorded at the end of the first utterance in the pair.

Short pause	(.)	Only use this tag for pauses which are between one second and five seconds, and only which occur during utterances. Do not record pauses which are less than one second.

Long pause	(…)	Use this tag for any pauses which are over five seconds, either during or between utterances.

E.g.

<001> I had pizza and (.) chips last night

Short pause marked where it occurs during the utterance

E.g.

<001> I can't believe (…) I can't believe you just said that

Long pause marked where it occurs during the utterance

E.g.

<001> did you enjoy the film? (…)

<002> well erm not really actually

Long pause, which occurs between the two utterances, is marked at the end of the first utterance

11. UNFINISHED WORDS (FALSE STARTS)

A speaker may often begin a word but may not finish it. Please use the equals sign to mark where a word is unfinished:

<001> yes he's a ba=bachelor

<003> the test results were in=inc=inconclusive

Feature	Transcription guideline	Example
False starts and repairs	Mark these using the equals sign (no space before or after)	Au=Au=August
Truncated words (not subsequently completed)	Mark these using the equals sign (no space before, space after)	it resem= (.) looks like (only include a pause here, if there's a gap between the truncated word and the next).

12. OVERLAPS

Where one speaker interrupts another or tries to join in the conversation and the speech overlaps, use <OL> (this is a capital 'o', not a zero). This tag should be used **only at the start** of the turn of the speaker who is interrupting:

<001> erm a famous person whose name is Anne Hathaway

<002> okay can you tell us a bit about her?

<001> <OL> er er she she is a very famous movie star in America

Here when speaker one says *"er er she she is a very famous movie star in America"* this overlaps with speaker two saying *"okay can you tell us a bit about her"*. The exact position of the start of the overlap in the speech of speaker two does not need to be recorded. You do not need to mark the end of the overlap.

13. UNINTELLIGIBLE SPEECH / GUESSES

Where a speaker is unclear but you are able to have a guess at what the speaker is saying, use <u=GUESSEDWORDS> (where GUESSEDWORDS should be replaced by your guess!)

Please **do attempt** to guess the word or words you hear, and indicate them like this:

> <001> this was relevant to the <u=manipulation> of the characters

If you can't make a guess as that what the word is, use <u=?>:

> <001> this was relevant to the <u=?> of the characters

Please also try to make informed guesses. For example, in a transcription about farming you might hear the following utterance:

> <001> yes, a lot of my work involves <u=?>

If you could make out the first letter of the utterance as 'm', some reasonable guesses may be *milking, mowing, mixing* depending on what had previously been said and what came next.

Please try and think about the context and about the topic – it may be useful to check back over the guesses you've made once you've got to the end of the recording – often the subject become clearer as the recording goes on.

It may also be useful to check something you aren't sure of (sometimes an unusual name or place) using Google – we don't expect you to spend lots of time doing this, but it can often be a quick solution and a good way to double check things.

14. ACRONYMS/SPELLING/CAPITALISATION

Names of people, places, companies, organisations, institutions, and book or publication titles, should always be capitalised and hyphenated in the usual way:

Mrs Jones, Steve Smith, Lancaster, Southend-on-Sea, The Catcher in the Rye, etc.

Use word-initial-capital for proper nouns and "I". If a proper noun includes a number, it is spelled out (see 15. NUMBERS).

Proper nouns include:

Names of people (but see 7. ANONYMIZATION)	Roger, Shakespeare, Punch and Judy
Place names and derivatives (but not "little words" like "the, of, a")	England, English, North Sea, Mars, Statue of Liberty, the London Eye
Names of products and institutions (the initial letter of each word is capitalised regardless of the official spelling, see *Iphone*)	Google, Facebook, Iphone, Microsoft, American Broadcasting Company, University of Vienna
Religions, religious institutions and derivatives	Christianity, Buddhism, Catholicism, Catholic, Buddhist
Names of days, months and festivals	Monday, February, Christmas, Chinese New Year, Hanukkah

Not capitalised

- No capitalisation is used for titles or 'honorific' uses: archbishop, pope, king, duke, god, doctor, reverend, her majesty, his highness

- No capitalisation is used when originally proper nouns are employed as common nouns or verbs: I googled this, he was facebooking, she tweeted that she had no time

Only use abbreviations for the following titles: Mr, Ms, Mrs, Miss, Master, Dr

All other personal titles: write as normal words; do not abbreviate and do not capitalise. Examples:

Police / military:	superintendent <name F>, captain <name N>
Religious (historical):	guru Nanak, prophet Muhammad, saint John the baptist
Religious (contemporary):	reverend <name F>, ayatollah Khomeini, archbishop Rowan Williams
Professional:	professor <name F>, <name M> esquire, Dr <name F> BA MA PhD (for this last one see also acronym rules below).
Political:	chairman Mao, president Bush, lord justice Smythe
Aristocratic:	queen Elizabeth the second, king Ethelred the unready, duke Richard of York, lord and lady <name N>, sir Walter Raleigh, emperor Caligula, prince Albert.

Hopefully these will be rare!

Please use established conventions for writing acronyms, but do not include dots:

<001> he's staying at the YMCA next week
<001> I've just bought it on DVD
<001> I'm going to the USA for twelve months

Plural forms should have a small 's' and no apostrophe:

<001> there were three PhDs awarded
<001> I've got so many CDs I don't know where to put them

Past tense forms should have an apostrophe and a small 'd':

<001> he MOT'd his car last week

When a speaker is clearly spelling something out in letters, (and not using an acronym), these should be written in capitals with a space between them:

> <001> I said no that's N O
> <001> my name is Bronwyn that's B R O N W Y N

Please do not put spaces between the letters of acronyms.

> <001> we ourselves us that's spelt U S (.) us
> – *spelt out word, space between U & S*

> <001> I spent a month in the US
> – *acronym, no space between U & S*

Finally, always write okay and not OK, O.K. or O K.

15. NUMBERS

Please write numbers out as words. If the speaker pronounces the number 0 as 'oh' then please write 0 (i.e. the number '0'). If the speaker pronounces 0 as 'zero' then please write 'zero'.

Dates should also be written how they're spoken. Numbers such as 31, 26, and 58 should be written in hyphenated form: one thousand and twenty-six, a hundred and two, zero, two double 0 five, twenty-first of the twelfth nineteen eighty-three

Times should be written out in words: twelve o'clock, five thirty, nine o'clock, half past two, ten to eleven

There are a few exceptions where numbers should be written as figures, including:

A4 paper
3D
MP3
Road names e.g. A66, A1

16. NONSTANDARD WORDS OR SOUNDS

Use the following spellings for nonstandard verbalisations (so-called ums and ers" or filled-pauses"):

What it sounds like	How to write it
Has the vowel found in "father" or a similar vowel; usually = realisation, frustration or pain	ah
Has the vowel found in "road" or a similar vowel; usually = mild surprise or upset	oh
Has the vowel in "bed" or the vowel in "made" or something similar, without an "R" or "M" sound at the end; usually = uncertainty, or 'please say again?'	eh
A long or short "er" or "uh" vowel, as in "bird"; there may or may not be an "R" sound at the end; usually = uncertainty	er
As for "er" but ends as a nasal sound	erm

Has a nasally "M" or "N" sound from start to end; usually = agreement	mm
Like an "er" but with a clear "H" sound at the start; usually = surprise	huh
Two shortened "uh" or "er"-type vowels with an "H" sound between them, usually = disagreement; OR, a sound like the word "ahah!"; usually = success or realisation	uhu

Please use **only** the spellings listed above.

If you hear a noise that does not match one of this list of 8 possible spellings, use the **closest-sounding** spelling from the list.

- For example, 'mm' should be used to cover all kinds of nasal-sounding agreement noises of various lengths, including but not limited to: *mm, mmm, mm-mm, mm-hm,* etc.
- Likewise, use 'eh' for sounds like *eee*, *ey*.
- Use 'er' also for *uh*, *ughh*
- Use 'ah' also for a pained *aaaargggghhhh*, for an *awwww*! 'Isn't-that-cute' type of noise, or even for a pirate's Arrrr!"
  (And so on.)

17. NONSTANDARD CONTRACTIONS OR SHORTENINGS

Please do not correct contractions that are acceptable in Standard English. E.g. don't change contractions such as: *he's, I've, we're, I'm, don't, she'll* etc.

Use the following conventions and spellings for standard contractions: *ain't, aren't, can't, cos, couldn't, couldn't've, daren't, daren't've, didn't, doesn't, don't, hadn't, hasn't, haven't, he'd, he's, I'd, I'm, isn't, it's, I've, ma'am, may've, might've, mightn't, mightn't've, mustn't, mustn't've, must've, needn't, needn't've, oughtn't, shan't, she'd, she's, shouldn't, shouldn't've, , wasn't, weren't, we've, won't, wouldn't, wouldn't've, you'd, you've*

Plus, also *'d, 's, 're, 'll, 've, 'd've, 'll've* can attach to many words as standard contractions for very common words. Use the standard contraction spelling if you are confident that the pronunciation is as shortened as possible, down to just a very short vowel and consonant, or even less:

'd	*had* or *would* (see also below on "*MOT'd*")
's	*is, has* or *possessive.* Remember, however, the standard way of typing the possessive is *'s* for a singular word and *s'* for a word ending in plural *'s'. (*E.g. *The* ***dog's*** *tail. The* ***dogs'*** *basket. The* ***fox's*** *nose. The* ***foxes'*** *food-source. The* ***church's*** *tower. The* ***churches'*** *collaboration.)*

	BUT *it+possessive* = *its* not *it's.* (E.g. ***it's*** *funny that* ***its*** *head fell off)* BUT *who+possessive* = *whose* not *who's.* *(*E.g. ***who's*** *that? the man* ***whose*** *bike you stole)*
're	*are*
've	*have* Be very careful not to confuse “of” and “’ve” which sound the same (just a very short “uhv”) when pronounced quickly). It should always be “would’ve” not “would of” for instance.
'll	*will* or *shall*
'd've	*would have*
'll've	*will have*

Examples: *The women'll've done it, they'll've left ages ago, I'd've been happy*

There are some semi-standard merged words: *dunno, gonna, wanna, gotta, kinda, sorta*

These should be used provided that it’s very clear that speakers are saying, e.g. gonna, dunno or wanna rather than going to, don’t know or want to. If you’re unsure, please use the standard form.

18. SPEAKER ACCENT/DIALECT

Apart from the specific list above, do not make distinctions that are based only on how the speaker pronounces a word. For example if you hear a word with first or last consonant silent due to fast speech, don’t leave out that letter. If you hear a vowel pronounced differently due to accent, don’t write it differently:

- Don’t use *hoose*: should be *house* even if it sounds like OO instead of OH
- Don’t use *goin* : should be *going* even with silent G
- Don’t use *fish an chips*: should be *fish and chips* even with silent D
- Don’t use *im, ospital, appy*: should be *him, hospital, happy* even with silent H
- Don’t use *me* if the speaker is saying *my*, e.g. if the speaker says **have you seen* ***me*** *hat?* then you should write it as *my* not as *me.*
- Don’t use *whatevva*: should be *whatever* even with an “Ah” sound at the end
- Don’t use *somefink*: should always be *something* even with an “F” sound

- Don’t use *dese/dose*: should always be *these/those* even with a “D” sound
- Don’t use *bovver*: should always be *bother* even with a “V” sound

The exception is that a Southern/London dialect might use “innit”. Like the contractions above, only use *innit* if you are sure: otherwise use either *isn’t it* or *ain’t it*.

19. NON-LINGUISTIC VOCALISATIONS

Non-verbal vocalisations such as coughing, laughter etc. are marked with square brackets. Please use the following conventions.

Category	**Example**	**Comments**
Laughter	[laugh]	When only one speaker laughs include this where the laugh occurs in their speaker turn. When more than one speaker laughs, give on a separate line. Only use *laugh*, i.e. don't use *giggle*, *chuckle*
Coughs, clearing throat, gasps…	[cough] [gasp] [sneeze] [sigh] [yawn] [whistle] [misc]	Include in the speaker turn. Don't use a code for humming – use the "mm" introduced above. Don't use a code for screaming or yelling wordlessly – use the "ah" introduced above. Misc = any noise clearly produced by a human mouth that you can't easily describe
Singing	[sing=LYRICS]	The word LYRICS should be replaced by anything that is sung by the speaker, e.g.: <001> it's a song that goes [sing=somewhere over the rainbow way up high]

Other non-English sounds/speech	**Example**	**comments**
Foreign languages	[f=French= ou est la gare?] [f=French] [f=?=kooda hafeez] [f=?]	The format is: [f=*LANGUAGE*=*WORDS*], where LANGUAGE should be replaced with e.g. *French* or *Spanish* etc., and WORDS with the words that are spoken. If the LANGUAGE is unknown, use [f=?] If the WORDS can't be transcribed by you, leave out the =*WORDS* part. What we would expect you to transcribe: - Some foreign words are commonly used by English speakers, so these can be transcribed without this tag e.g. "ah well c'est la vie". - If it is easy for you to have a good guess at a representative spelling as you heard it e.g. "kooda hafeez" "in weeno werritass" DO NOT do this unless it is easy! It is fine to just use [f=?]
Nonsense / made-up words	[nonsense]	Only use this tag if the speaker is obviously not using a foreign language. If they are using made-up words which can be transcribed phonetically, then do this instead with no codes, e.g. <002> yes indeed. indeedilydoodily.

You should not make up new types of noise **unless it is absolutely necessary**.

Never include comments about how a sentence is said e.g. "enthusiastically" or "exaggerated".

20. EVENTS

An "event" is anything audible **and relevant** on the recording that is not produced by voices of the speakers you are transcribing. The [e=SOMETHING] tag represents events, where SOMETHING is replaced by the type of event. Like the long pauses between utterances, events which occur between utterances are to be recorded at the end of the preceding utterance, rather than on a separate line.

E.g.

<001> I had a lovely time [e=sound of phone]
<002> oh I'll go and get that

You do not have to code every single noise. The general rule is it must be a **relevant** event. The detailed rules for different events are given below.

Background speech	[e=background talk]	Use this when there is a general noise of conversation e.g. chatting before a lecture.
Unintelligible conversation	[e=unintelligible] <001> where did you go on your holiday? [e=unintelligible] <002> oh yes sounds like you had a good time	Use this when the main participants in the recording are carrying out a conversation or conversations – lasting 2+ speaker turns - which cannot be heard clearly. Also use when all speakers talk together and individual speakers cannot be distinguished. (NB do not use this for individual speaker turns which cannot be heard, instead use <u> tags). Use this when you can't distinguish the speakers, therefore this tag is on a separate line with no speaker ID.
Overlapping exchanges	[e=begin overlap] <001> so where do you think it will take place? <003> in the lecture theatre probably <001> I suppose so [e=end overlap]	In some files, groups of speakers hold different conversations at the same time. If both conversations are audible, please write the separate conversations out one at a time. This enables you to keep the corresponding speaker turns together, so that each conversation makes sense when you read it. Include the relevant [e=…] tag at the beginning and the end of the overlapping section.

Sounds and noises	[e=sound of X] X can be … - car, i.e. [e=sound of car] - shouting i.e. [e=sound of shouting] - phone - applause - machinery - animal - siren *only add to this list if absolutely necessary, and try to use as few words as possible.*	**Only include sounds which affect or disrupt the conversation.** Give in the format sound of ...". If it occurs while someone is speaking, include in the speaker turn. If it occurs between speaker turns, give on a separate line. Never add extra detail to the description – just the bare statement of what it is.
Music	[e=music]	**Only include music which affects or disrupts the conversation.** Do not include type of music or song title.
Abrupt end of recording	[e=abrupt end]	**Only use if a recording ends mid-word or mid-sentence**. Type on a new line.
People entering and leaving conversation venue	[e=001 leaves]	**Only include if the conversation is affected.** Don't mark people entering the room. Ignore movements of people other than your conversation participants.
Problems in recording	[e=recording skips]	**Only use if a whole speaker turn** (or more) **is affected** and the conversation no longer joins up correctly. If only a few words are unintelligible, use the <u…> tag.

21. STANDARD SPELLINGS

✓ etcetera
✓ alright
✓ okay

- ✓ whisky
- ✓ racket
- ✓ email
- ✓ realised – any words that can be written with an ‘s’ or ‘z’ use the ‘s’ form.
- ✓ Woah
- ✓ Grandad
- ✓ Summat (not summit, careful with global change on summit as a mountain)
- ✓ Couple of - not coupla
- ✓ Lot of not lotta
- ✓ Out of not outa
- ✓ No (not nah, na)

Appendix K: Aligning the transcripts for the analysis of inter-rater agreement

This chapter's studies protocolled the comparison of speaker ID codes across the turns of several transcripts of the same recordings. In this context, the easiest way to do this was to separate the turns from their corresponding speaker ID codes, so that they could be viewed alongside each other as two columns in a spreadsheet, as in Figure 26. This was done by using a regular expression to insert a tab between each ID code and the rest of the corresponding lines, and then pasting the transcript into a spreadsheet.

Original	
<1>	hello
<2>	hello
<1>	how are you doing?
<2>	okay thanks (.) you?
<1>	yeah I guess
<3>	what time is it?

Figure 26. Separating the turns from their corresponding speaker ID codes (invented data).

The next step was to do this for each of the remaining transcripts of the same recording and to paste them alongside the original (Figure 27).

Original		**Test transcript #1**		**Test transcript #n**[90]	
<1>	hello	<1>	hello	<1>	hello
<2>	hello	<2>	hello	<2>	hello
<1>	how are you doing?	<1>	how are you doing?	<1>	how are you doing?
<2>	okay thanks (.) you?	<2>	okay thanks (.) you?	<2>	okay thanks (.) you?
<1>	yeah I guess	<1>	yeah I guess	<1>	yeah I guess
<3>	what time is it?	<3>	what time is it?	<2>	what time is it?

Figure 27. Viewing each transcript of the same recording alongside each other (invented data).

Speaker ID codes aside, in this invented example, each transcript is identical not only in its representation of linguistic content but also its formatting; one and the same utterance is consistently presented one row at a time. Therefore, it can be said that these transcripts are perfectly *aligned*, meaning that each of the turns in the test transcripts match the master transcript in terms of placement and ordering. Thus, the speaker ID codes could be compared, row by row, in the knowledge that each row refers to the same utterance in the recording. If real corpus

[90] Whereby n represents the final test transcript of any number of test transcripts between 1 and n.

transcripts were to occur in this perfectly aligned state, the next step would be to simply remove the columns that contain the turns, leaving behind only the speaker ID codes, which could then be compared for inter-rater agreement/accuracy (Figure 28).

Original	Test transcript #1	Test transcript #n
<1>	<1>	<1>
<2>	<2>	<2>
<1>	<1>	<1>
<2>	<2>	<2>
<1>	<1>	<1>
<3>	<3>	<2>

Figure 28. The speaker ID codes from each transcript after their corresponding turns have been removed (invented data).

In this case, inter-rater agreement and accuracy would both be 100% for all turns apart from the final one, where there is inconsistency in the assignation of the speaker ID code for that turn (the third column contains '<2>' while the first two columns contain '<3>').

The above method for preparing the transcripts for comparison is simple and assumes that every transcript of a given recording comes readily aligned to one another. In practice, this is not the case. In main study (A), seven test transcripts were compared to one another (and to the original transcript), and in main study (B), there were eight test transcripts, alongside the gold standard. The reality was that the transcripts in both sets were severely misaligned when compared to the master transcripts, and required manual editing in order to achieve the kind of presentation in Figure 28. I have observed three commonly occurring sources of variation between the transcripts which appear to contribute towards misalignment, which I shall explain below. These are split turns, missing turns and indeterminable turns.

Split turn misalignment

Split turn misalignment occurs when turns are split across more than one line in some transcripts but not others. Typically, this seems to affect longer turns, where a given speaker holds 'the floor' for some time. Figure 29 shows extracts from two transcripts of the Spoken BNC2014 recording, before they were aligned for assessment of speaker identification. In the extract from test transcript #1, the first utterance ("he got the money…the money back") has been transcribed in its entirety as one single uninterrupted turn, followed by another speaker's utterance ("okay"). However, in the original transcript, the first utterance is transcribed across two rows, split apart by the response utterance "okay" (the shaded cells show how the turn is split in the original transcript and not split in test transcript #1).

Original Spoken BNC2014 transcript		**Test transcript #1**	
<4>	he got the money back	<3>	he got the money back he originally I mean they you pay the money and then they give you the money back
<2>	okay	<4>	okay
<4>	but he originally I mean they you pay the money and then they give you it later	<3>	erm so yeah he was (.) sort of drugged up and and whatever on on the nursery and
<2>	okay	<5>	<OL> <u=?>?
<4>	erm so yeah so he was (.) sort of drugged up and and and whatever on on and that's really why	<3>	er well a little bit but I mean just like couldn't really drink really

Figure 29. Unaligned extract from original transcript and test transcript #1.

This type of misalignment is a problem for my investigations, because each row of speaker ID codes must refer only to one utterance in a given recording. The solution is to manually edit the test transcript so that it matches the distribution of the original transcript as closely as possible. The resulting aligned version of the above example is shown in Figure 30.

Original Spoken BNC2014 transcript		**Test transcript #1**	
<4>	he got the money back	<3>	he got the money back
<2>	okay	<4>	okay
<4>	but he originally I mean they you pay the money and then they give you it later	<4>	he originally I mean they you pay the money and then they give you the money back
<2>	okay	X	
<4>	erm so yeah so he was (.) sort of drugged up and and and whatever on on and that's really why	<3>	erm so yeah he was (.) sort of drugged up and and whatever on on the nursery and
	ETC.	<5>	<OL> <u=?>?
	ETC.	<3>	er well a little bit but I mean just like couldn't really drink really

Figure 30. Aligned extract from original transcript and test transcript #1.

The shading shows that the split has been maintained in the original transcript, and replicated in test transcript #1. The two shaded rows are now treated as two separate turns in the analysis of speaker identification. In addition to matching the distribution of turns in the test transcript with that of the original transcript as closely as possible, the benefit of maintaining the split, rather than closing it, is to allow for instances where, in some test transcripts, the two lines of a split turn are assigned different speaker ID codes (Figure 31).

Original Spoken BNC2014 transcript		Test transcript #8	
<4>	I'm definitely better at [e=unintelligible] well no I I I would agree with that really I was not great at football	<6>	I guess he was better at rugby but no no I'd I'd I'd agree with that
<3>	erm I think	<4>	I was not great at football
	ETC.	<3>	erm

Figure 31. Unaligned extract from original transcript and test transcript #8.

In these cases, it is impossible to close the split without implying that one turn has been produced by two different speakers. Only in this case would the corresponding turn in the original transcript be split to match the format of the test transcript (Figure 32).

Original Spoken BNC2014 transcript		Test transcript #8	
<4>	I'm definitely better at [e=unintelligible] well no I I I would agree with that really	<6>	I guess he was better at rugby but no no I'd I'd I'd agree with that
<4>	I was not great at football	<4>	I was not great at football
<3>	erm I think	<3>	erm

Figure 32. Aligned extract from original transcript and test transcript #8.

Missing turn misalignment

This occurs when a turn is transcribed in some transcripts but not others, due to inconsistency in the detail applied by the transcribers. One context in which this arises is when a turn occurs in the original transcript but does not occur in the test transcript (Figure 33).

Original Spoken BNC2014 transcript		Test transcript #1	
<3>	so yeah that was a lot of fun	<4>	so yeah that was a lot of fun that was just <u=?> fifty years away and it's such a nice beach
<4>	that doesn't work very well		
<3>	it was just the beach was right two like one block away erm so about fifteen metres away and it was such a nice beach		

Figure 33. Unaligned extract from original transcript and test transcript #1.

The solution I chose is to create a blank line in the test transcript, and assign the dummy speaker ID code 'X' (Figure 34). Note that this also involves splitting the turn in the test transcript to insert the missing turn.

Original Spoken BNC2014 transcript		**Test transcript #1**	
<3>	so yeah that was a lot of fun	<4>	so yeah that was a lot of fun
<4>	that doesn't work very well	X	
<3>	it was just the beach was right two like one block away erm so about fifteen metres away and it was such a nice beach	<4>	that was just <u=?> fifty years away and it's such a nice beach

Figure 34. Aligned extract from original transcript and test transcript #1.

If, on the other hand, a turn occurred in the test transcript but was missing from the original transcript, I took different actions in each of the investigations. In main study (A), additional test transcript turns were retained, and an empty turn inserted in the corresponding row in the original transcript. In main study (B), additional turns, which do not occur in the gold standard transcript, were deleted and treated as empty turns. The reason for this is that the gold standard must be treated as its namesake and, as such, additional turns in the test transcripts must be treated as errors. In other words, I was only interested in comparing the speaker ID assignment of turns which corresponded to those which did actually occur in the gold standard transcript and were assigned a speaker ID code.

Indeterminable turn misalignment

In this situation, misalignment can occur when a turn that has been marked as indeterminable (and yet does have a speaker ID code) appears in a test transcript. With no linguistic content to use as a guide, a decision has to be made about the turn to which it corresponds in the original transcript (if any). If the indeterminable turn can only pair up with one possible turn in the original transcript, then this correspondence is assumed and the indeterminable turn is retained (Figure 35, overleaf); the shaded turn is taken to align with the corresponding turn in the original transcript).

Original Spoken BNC2014 transcript		Test transcript #1	
<3>	he was called there's a story when he was about er seventeen eighteen and erm he managed to fracture a girl's both the girl's legs by having sex with her and her friend	<5>	the story when he was about seventeen eighteen and erm he managed to fracture both <u=?>
<5>	what?	<1>	<u=?>
<3>	yeah	<3>	yeah

Figure 35. Aligned extract from original transcript and test transcript #6.

However, if the indeterminable turn occurs near a missing turn or another indeterminable turn in the test transcript, then there is ambiguity about the correspondence between the indeterminable turn and the turns in the original transcript (Figure 36).

Original		Test transcript #6	
<4>	yeah no we we went er across the island […]	<3>	erm yeah no we erm across the island […]
<3>	and trying to <u=knock each other off>	<2>	<u=?>
<4>	well	X	
<3>	[laugh]	X	
<4>	no we were trying fairly hard not to actually	<3>	no we were <u=?>

Figure 36. Unaligned extract from original transcript and test transcript #6.

Here, the unintelligible turn in the test transcript could either refer to "and trying to <u=knock each other off>", "well" or "[laugh]" in the original transcript. To assign it to one of these turns would be guesswork as opposed to inference. Therefore, the indeterminable turn in this circumstance would be removed and treated as a missing turn (Figure 34, overleaf).

Original		Test transcript #6	
<4>	yeah no we we went er across the island […]	<3>	erm yeah no we erm across the island […]
<3>	and trying to <u=knock each other off>	X	
<4>	well	X	
<3>	[laugh]	X	
<4>	no we were trying fairly hard not to actually	<3>	no we were <u=?>

Figure 37. Aligned extract from original transcript and test transcript #6.

Appendix L: Overview of recordings in speaker identification main studies (A) and (B)

Table 30 provides information about the recordings in both speaker identification investigations.

Table 30. Information about the recordings used in the speaker identification investigations.

	Main study (A): **Spoken BNC2014 recording**	**Main study (B)** **gold standard recording**
No. of speakers	6	8
Gender split of speakers	4 male, 2 female	5 male, 3 female
No. of transcripts	8 (7 test transcripts + original)	9 (8 test transcripts + original)
Length of transcribed section	32 minutes	24 minutes
Familiarity of speakers	"Close family, partners, very close friends"	"Close family, partners, very close friends"
Date of recording	19th August 2014	25th December 2014

The Spoken BNC2014 recording is approximately one hour long, but the first 28 minutes of the recording contain only five speakers. I decided to start analysing only from 28 minutes into the recording, where the sixth speaker joined the conversation. The remaining section was 32 minutes long and, therefore, not only matched the gold standard recording in terms of the number of speakers, but was more comparable in length.

Appendix M: Transcriber feedback about speaker identification main study (B)

Transcriber 1

In spite of the background music and noises throughout the recording, I did my best to transcribe it as accurately as possible. Also, as there were eight speakers taking part in the conversation, I sometimes had difficulty recognising some of the male speakers.

Transcriber 2

Think I've managed to figure out most of the voices. Just a couple I wasn't 100% sure on.

Transcriber 3

No feedback provided.

Transcriber 4

- As discussed, it was quite a challenging recording as there were eight speakers, sometimes talking over each other, at varying distances from the microphone.
- Where I’ve been unable to determine speaker IDs with any certainty, I’ve left them as <F> and <M>, rather than making arbitrary allocations.
- There were more than three main subject areas covered in this recording

Transcriber 5

I spent quite a bit of time checking the speaker identities for this one. I've done my best but where I really wasn't sure about the speaker I've put <RL?>. I hope that's okay.

Transcriber 6

I did my best. It took a little longer since it was more difficult with all the different speakers.

Transcriber 7

No feedback provided.

Transcriber 8

It was quite difficult with the eight people but I hope it's okay.

Appendix N: Inter-rater agreement: the Kappa coefficient

Three strands of this chapter's main studies (A2, B2 and B3) involve the assessment of inter-rater agreement. It is insufficient to observe the extent of agreement between two or more raters without taking into account the amount of agreement that could occur by chance alone. The Kappa coefficient, which I used in these assessments, considers the possibility that chance produced the result observed. It measures "the observed level of agreement between coders for a set of nominal ratings and corrects for agreement that would be expected by chance" (Hallgren 2012: 26).

I calculated the Kappa for both inter-rater agreement analyses (A2 and B2), as well as the gold standard accuracy analysis (B3). Studies A2 and B2 each compared the speaker ID assignment of eight transcripts together (i.e. eight raters were considered for every opportunity to code a transcribed turn). Study B3 can also be described as a type of inter-rater agreement analysis; the difference is that each test transcript was compared individually with the gold standard, meaning that only two raters were considered per turn at any given time.

The difference in the number of raters (namely: two raters versus more than two raters) required that I calculate the Kappa in different ways. For the two-rater analysis, I used Cohen's Kappa (Cohen 1960), which works exclusively with "two raters who rate each of a sample of subjects on a nominal scale" (Fleiss 1971: 378). The multi-rater analyses required the use of Fleiss' Kappa (Fleiss 1971), which works only when there are three or more raters.

Regardless of the method of calculation, the interpretation of the resulting Kappa coefficient, which ranges from -1.0 to 1.0, is the same. "Perfect agreement" equates to a Kappa of 1.0, while a Kappa of 0.0 "is exactly what would be expected by chance", and a negative Kappa indicates "agreement less than chance" (Viera & Garrett 2005: 361). This means that the closer the value that a positive Kappa is to 1.0, the less likely that the observed agreement was due to chance, and the more likely that the observed agreement was due to genuine inter-rater reliability.

Appendix O: Extract of gold standard transcript with speaker ID codes removed

7 might go for one that’s a bit less black cheers

2 who was it the other day that’s was (.) it was one of the neighbours was going to Amsterdam weren’t there?

yeah it’s erm (.) who was it?

was it [name F?] no

no it was (.) it was [name F] of [name M] and [name F] fame

8 oh that’s right they were going for New Year weren’t they?

she’s going (.) no I thought she said she was she going on a hen party? No she’s going for New Year with her family

that’s right

4 and then the one the teacher and er well the two teachers they’re getting married next week

mm

1 really?

yes they are yeah twenty ninth

wow where?

don’t know (.) did you find out much more about the wedding [name M]?

<OL> ah that’s (.) not sure how I feel about that (.) getting married between Christmas and New Year sounds like a nightmare

mm sorry mam?

did you find out much more about their wedding? Where it was or anything? Or

what you gonna gate crash it? [laugh]

no no he just got back from his stag do though so he was feeling a bit ropey

oh was he?

yeah he’d been away (.) with the lads

he seems like a canny guy

aye he was (.) he was really nice until he told me that he was a Sunderland supporter

oh right

oh

it all went downhill from there

oh no

he doesn’t have a Sunderland accent so I didn’t think he was

6 didn’t have a?

Appendix P: The main tags from the Spoken BNC2014 transcriptions scheme in both conventional and XML format

Feature	Transcription scheme	XML
speaker ID	<001>	<u who="S0001">
uncertain speaker ID	<001?>	<u who="S0001" whoConfidence="low">
male speaker	<M>	<u who="UNKMALE" whoConfidence="low">
female speaker	<F>	<u who="UNKFEMALE" whoConfidence="low">
multiple speakers	<MANY>	<u who="UNKMULTI" whoConfidence="low">
anonymized male name	<name M>	<anon type="name" nameType="m" />
anonymized female name	<name F>	<anon type="name" nameType="f" />
anonymized neutral name	<name N>	<anon type="name" nameType="n" />
anonymized place	<place>	<anon type="place" />
telephone number	<tel-num>	<anon type="telephoneNumber" />
address	<address>	<anon type="address" />
email address	<email>	<anon type="email" />
bank details	<bank-num>	<anon type="financialDetails" />
social media username	<soc-med>	<anon type="socialMediaName" />
date of birth	<DOB>	<anon type="dateOfBirth" />
other personal information	<pers-inf>	<anon type="miscPersonalInfo" />
false starts and repairs	=	<trunc>*material-before*</trunc>
truncated words	= (.)	No separate translation, just uses the normal combination of truncation plus pause.
overlap	<OL>	Adds *trans="overlap"* to the preceding <u> tag.
guessed words	<u=GUESSEDWORDS>	<unclear>GUESSEDWORDS</unclear>
unintelligible speech	<u=?>	<unclear />
laughter	[laugh]	<vocal desc="laugh" />
cough	[cough]	<vocal desc="cough" />
gasp	[gasp]	<vocal desc="gasp" />
sneeze	[sneeze]	<vocal desc="sneeze" />

sigh	[sigh]	<vocal desc="sigh" />
yawn	[yawn]	<vocal desc="yawn" />
whistle	[whistle]	<vocal desc="whistle" />
miscellaneous noise	[misc]	<vocal desc="misc" />
singing	[sing=LYRICS]	<shift new="singing" />LYRICS<shift new="normal"/>
foreign languages	[f=LANGUAGE=WORDS]	<foreign lang="LANGUAGE">WORDS</foreign> --> note also, if "Language" is recognised it can be replaced by a standard 3-letter code from ISO-639-2 (e.g. fra, deu, spa); if ? Is given, then it is lang="und" (for "undetermined") --> if not words given., then just <foreign lang="LANGUAGE" />
nonsense / made-up words	[nonsense]	<vocal desc="nonsense" />
short pause	(.)	<pause dur="short"/>
long pause	(…)	<pause dur="long"/>
background speech	[e=background talk]	<event desc="background talk" />
unintelligible conversation	[e=unintelligible]	<event desc="unintelligible" />
overlapping exchanges begin	[e=begin overlap]	<event desc="begin overlap" />
overlapping exchanges end	[e=end overlap]	<event desc="end overlap" />
sounds and noises	[e=sound of X]	<event desc="sound of X" />
music	[e=music]	<event desc="music" />
abrupt end of recording	[e=abrupt end]	<event desc="abrupt end" />
people entering conversation venue	[e=S0001 enters]	<event desc="S0001 enters" />
people leaving conversation venue	[e=S0001 leaves]	<event desc="S0001 leaves" />
problems in recording	[e=recording skips]	<event desc="recording skips" />

Appendix Q: Full list of BLWs, patterns matched and search syntax in the Spoken BNC1994DS and the Spoken BNC2014S

Head	Pattern matched	CQP syntax
arse	arse/arses/arsed/arsehole*/ass/asses/assed/asshat*/asshole*	[word="arse|arses|arsed|arsehole.*|ass|asses|assed|asshat.*|asshole.*"%c]
balls	balls	[word="balls"%c]
bastard	bastard/bastards	[word="bastard.*"%c]
batty boy	batty boy*	[word="batty"%c][word="boy.*"%c]
beaver	beaver*	[word="beaver.*"%c]
beef curtains	beef curtain*	[word="beef"%c][word="curtain.*"%c]
bellend	bellend*, bell end*	([word="bellend.*"%c]|[word="bell"%c][word="end.*"%c])
bender	bender*	[word="bender.*"%c]
bimbo	bimbo/bimbos	[word="bimbo|bimbos"%c]
bint	bint*	[word="bint.*"%c]
bird	bird*	[word="bird.*"%c]
bitch	bitch/bitches/biatch/biatches	[word="bitch|bitches|biatch|biatches"%c]
bloodclaat	bloodclaat	[word="bloodclaat"%c]
bloody	bloody	[word="bloody"%c]
bollock	bollock*	[word="bollock.*"%c]
bonk	bonk/bonks/bonking	[word="bonk|bonks|bonking"%c]
boob	boob/boobs	[word="boob.*"%c]
bugger	bugger/buggers	[word="bugger.*"%c]
bukkake	bukkake	[word="bukkake"%c]
bullshit	bullshit/bull shit	[word="bullshit"%c]|[word="bull"%c][word="shit"%c]

bum boy	bum boy	[word="bum"%c][word="boy.*"%c]
bumclat	bumclat*/bum clat*	[word="bumclat|bumclats"%c]|[word="bum"%c][word="clat"%c]|[word="bum"%c][word="clats"%c]
bummer	bummer	[word="bummer"%c]
butt	butt/butts/butthead/buttheads/butthole/buttholes	[word="butt|butts|butthead|buttheads|butthole|buttholes"%c]
chav	chav/chavs/charv/charvs/charva/charvas	[word="chav.*|charv|charvs|charva.*"%c]
chi-chi man	chi-chi man	[word="chi-chi"%c][word="man|men"%c]
chick with a dick	chick with a dick	[word="chick"%c][word="with"%c][word="a"%c][word="dick.*"%c]
chinky	chinky/chinkies	[word="chinky|chinkies"%c]
choc ice	choc ice	[word="choc"%c][word="ice"%c]
christ	christ (not jesus christ)	[word!="jesus"%c][word="christ"%c]
clunge	clunge	[word="clunge"%c]
cock	cock/cocks (not cock sucker)	[word="cock|cocks"%c][word!="sucker|suckers"%c]
cocksucker	cocksucker/cocksuckers/cock sucker/cock suckers	[word="cocksucker|cocksuckers"%c]|[word="cock"%c][word="sucker|suckers"%c]
coffin dodger	coffin dodger/coffin dodgers	[word="coffin"%c][word="dodger|dodgers"%c]
coloured	coloured	[word="coloured"%c]
coon	coon/coons	[word="coon.*"%c]
cow	cow/cows	[word="cow|cows"%c]
crap	crap*	[word="crap.*"%c]
cretin	cretin*	[word="cretin.*"%c]
cripple	cripple/cripples	[word="cripple|cripples"%c]
cunt	cunt*	[word="cunt.*"%c]

dago	dago/dagoes/dagos	[word="dago.*"%c]
damn	*damn*/*darn*	[word=".*damn.*|.*darn.*"%c]
darky	darky/darkies	[word="darky|darkies"%c]
dick	dick/dicks/dickwad	[word="dick|dicks|dickwad|dickhead.*"%c]
dildo	dildo/dildos	[word="dildo.*"%c]
div	div/divvy	[word="div|divvy"%c]
dork	dork/dorks/dorky	[word="dork.*"%c]
douche	douche*	[word="douche.*"%c]
dumb	dumb/dumbass/dumbasses	[word="dumb|dumbass.*"%c]
dyke	dike/dikes/dyke/dykes	[word="dike.*|dyke.*"%c]
fag	fag/fags	[word="fag|fags"%c]
faggot	faggot/faggots	[word="faggot.*"%c]
fairy	fairy/fairies	[word="fairy|fairies"%c]
fanny	fanny/fannies	[word="fanny|fannies"%c]
fart	fart/farts	[word="fart|farts"%c]
fatass	fatass	[word="fatass"%c]
feck/effing	feck*/effing	[word="feck.*|effing"%c]
fenian	fenian*	[word="fenian.*"%c]
ffs	ffs	[word="f"%c][word="f"%c][word="s"%c]
flaps	flaps	[word="flaps"%c]
fop (fucking old person)	fop	[word="fop"%c]|[word="f"%c][word="o"%c][word="p"%c]
fuck	*fuck*	[word=".*fuck.*"%c]

fudge-packer	fudge-packer/fudge-packers/fudge packer/fudge packers	[word="fudge-packer.*"%c] | [word="fudge"%c][word="packer.*"%c]
gash	gash	[word="gash"%c]
gay	gay	[word="gay.*"%c]
gender bender	gender bender	[word="gender"%c][word="bender.*"%c]
ginger	ginger	[word="ginger.*"%c]
gippo	gippo/gippos	[word="gippo.*"%c]
git	git/gits	[word="git|gits"%c]
god	god	[word="god|goddam|goddamn"%c]
golliwog	golliwog*	[word="golliwog.*"%c]
gook	gook*	[word="gook|gooks"%c]
hell	hell	[word="hell"%c]
he-she	he-she/he she	[word="he-she"%c] | [word="he"%c][word="she"%c]
ho	ho/hos/hoe/hoes	[word="ho|hos|hoe|hoes"%c]
homo	homo/homos	[word="homo|homos"%c]
honky	honky/honkies	[word="honky|honkies"%c]
hun	hun (not as abbreviation of 'honey')	[word="hun"%c]
hussy	hussy/hussies	[word="hussy|hussies"%c]
idiot	idiot/idiots	[word="idiot|idiots"%c]
imbecile	imbecile*	[word="imbecile.*"%c]
jap	jap/japs	[word="jap|japs"%c]
jeez	jeez	[word="jeez"%c]
jerk	jerk*	[word="jerk.*"%c]

jesus	jesus (not jesus christ)	[word="jesus"%c][word!="christ"%c]
jesus christ	jesus christ	[word="jesus"%c][word="christ"%c]
jew	jew/jews	[word="jew|jews"%c]
jizz	jizz*	[word="jizz.*"%c]
jock	jock/jocks	[word="jock|jocks"%c]
kafir/kufaar	kafir/kufaar	[word="kafir|kufaar"%c]
kike*	kike/kikes	[word="kike.*"%c]
knob	knob/knobs	[word="knob|knobs"%c]
kraut	kraut/krauts	[word="kraut|krauts"%c]
lezza/lesbo	lezza/lezzas/lesbo/lesbos	[word="lezza.*|lesbo.*"%c]
loony	loony/loonies	[word="loony|loonies"%c]
mental	mental	[word="mental"%c]
midget	midget*	[word="midget.*"%c]
minge	minge/minges	[word="minge|minges"%c]
minger	minger*	[word="minger.*"%c]
mong	mong/mongs/mongy/mongey/monger/mongers	[word="mong|mongs|mongy|mongey|monger|mongers"%c]
moron	moron*	[word="moron.*"%c]
motherfucker	motherfuck*/mofo*	[word="motherfuck.*|mofo.*"%c]
muff diver	muff diver/muff divers	[word="muff"%c][word="diver.*"%c]
munter	munter*	[word="munter.*"%c]
nancy	nancy/nancies	[word="nancy|nancies"%c]
nazi	nazi/nazis	[word="nazi|nazis"%c]
negro	negro*	[word="negro.*"%c]

nigger	nigga/niggas/niggah/niggahs/niggaz/nigger/niggers /nigguh/nigguhs	[word="nigga|niggas|niggah.*|niggaz|nigger.*|nigguh.*"%c]
nig-nog	nig-nog/nig-nogs	[word="nig-nog.*"%c]
nonce	nonce/nonces	[word="nonce|nonces"%c]
nutter	nutter/nutters	[word="nutter|nutters"%c]
old bag	old bag/old bags	[word="old"%c][word="bag.*"%c]
omg	omg	[word="omg"%c]|[word="o"%c][word="m"%c][word="g"%c]
paki	paki/pakis	[word="paki|pakis"%c]
pansy	pansy/pansies	[word="pansy|pansies"%c]
papist	papist/papists	[word="papist|papists"%c]
pig	pig/pigs	[word="pig|pigs"%c]
pikey	pikey/pikies	[word="pikey|pikies"%c]
pillock	pillock/pillocks	[word="pillock|pillocks"%c]
pimp	pimp/pimps	[word="pimp|pimps"%c]
piss	piss*	[word="piss.*"%c]
polack	polack/polacks	[word="polack|polacks"%c]
poof	poof/poofs	[word="poof|poofs"%c]
poofter	poofter/poofters	[word="poofter.*"%c]
prat	prat/prats	[word="prat|prats"%c]
prick	prick/pricks	[word="prick|pricks"%c]
prickteaser	pricktease*	[word="pricktease.*"%c]
prod	prod/prods	[word="prod|prods"%c]
psycho	psycho/psychos	[word="psycho|psychos"%c]

<table>
<tr><td>punani</td><td>punani*</td><td>[word="punani.*"%c]</td></tr>
<tr><td>pussy</td><td>pussy/pussies</td><td>[word="pussy|pussies"%c]</td></tr>
<tr><td>queer</td><td>queer/queers</td><td>[word="queer|queers"%c]</td></tr>
<tr><td>raghead</td><td>raghead/ragheads</td><td>[word="raghead|ragheads"%c]</td></tr>
<tr><td>rapey</td><td>rapey</td><td>[word="rapey"%c]</td></tr>
<tr><td>retard</td><td>retard/retards/retarded</td><td>[word="retard|retards|retarded"%c]</td></tr>
<tr><td>rugmuncher/carpetmuncher</td><td>rugmuncher*/carpetmuncher*</td><td>[word="ragmuncher.*|carpetmuncher.*"%c]</td></tr>
<tr><td>sambo</td><td>sambo*</td><td>[word="sambo.*"%c]</td></tr>
<tr><td>schizo</td><td>schizo/schizos</td><td>[word="schizo|schizos"%c]</td></tr>
<tr><td>screw</td><td>screw* (as verb)</td><td>[word="screw.*"&pos="V.*"%c]</td></tr>
<tr><td>shag</td><td>shag/shags/shagged/shagging</td><td>[word="shag.*"%c]</td></tr>
<tr><td>shirt lifter</td><td>shirt lifter/shirt lifters</td><td>[word="shirt"%c][word="lifter|lifters"%c]</td></tr>
<tr><td>shit</td><td>*shit*</td><td>[word=".*shit.*"%c]</td></tr>
<tr><td>skank</td><td>skank*</td><td>[word="shank.*"%c]</td></tr>
<tr><td>slag</td><td>slag/slags/slagged</td><td>[word="slag|slags|slagg.*"%c]</td></tr>
<tr><td>slapper</td><td>slapper/slappers</td><td>[word="slapper|slappers"%c]</td></tr>
<tr><td>slope</td><td>slope/slopes</td><td>[word="slope|slopes"%c]</td></tr>
<tr><td>slut</td><td>slut/sluts</td><td>[word="slut|sluts"%c]</td></tr>
<tr><td>snatch</td><td>snatch/snatches (as noun)</td><td>[word="snatch.*"&pos="N.*"%c]</td></tr>
<tr><td>sod</td><td>sod/sods/sodding</td><td>[word="sod|sods|sodding*"%c]</td></tr>
<tr><td>son of a bitch</td><td>son of a bitch/son-of-a-bitch</td><td>[word="son"%c][word="of"%c][word="a"%c][word="bitch"%c]|[word="son-of-a-bitch"%c]</td></tr>
</table>

spade	spade/spades	[word="spade|spades"%c]
spastic	spastic/spastics/spakka/spakkas/spaz	[word="spastic|spastics|spakka.*|spaz"%c]
special	special	[word="special"%c]
spic	spic/spics	[word="spic|spics"%c]
sucker	sucker/suckers	[word="sucker|suckers"%c]
swine	swine/swines	[word="swine|swines"%c]
taff	taff/taffs	[word="taff|taffs"%c]
taig	taig/taigs	[word="taig|taigs"%c]
tart	tart/tarts/tarty	[word="tart.*"%c]
tit	tit/tits/titties	[word="tit|tits|titties"%c]
tosser	tosser/tossers	[word="tosser|tossers"%c]
tranny	tranny/trannies	[word="tranny|trannies"%c]
turd	turd/turds	[word="turd|turds"%c]
twat	twat*	[word="twat.*"%c]
vegetable	vegetable/vegetables	[word="vegetable|vegetables"%c]
wank	wank*	[word="wank.*"%c]
whore	whore/whores	[word="whore|whores"%c]
window licker	window licker/window lickers	[word="window"%c][word="licker|lickers"%c]
wog	wog/wogs	[word="wog|wogs"%c]
wop	wop/wops	[word="wop|wops"%c]
wtf	wtf	[word="wtf"%c]|[word="w"%c][word="t"%c][word="f"%c]
wuss	wuss*	[word="wuss.*"%c]

Appendix R: Frequency information for BLWs in the Spoken BNC1994DS and the Spoken BNC2014S

	Spoken BNC1994DS		Spoken BNC2014S				
Head	**Raw**	**Per million**	**Raw**	**Per million**	**% change**	**log-likelihood**	**log ratio**
arse	216	43.07	218	45.52	5.68	0.33	-0.08
balls	106	21.14	86	17.96	-15.05	1.27	0.24
bastard	241	48.06	108	22.55	-53.08	**46.06**	**1.09**
beaver	0	0.00	6	1.25	N/A	8.6	-3.65
bellend	0	0.00	2	0.42	N/A	2.87	-2.07
bender	11	2.19	1	0.21	-90.48	9.3	3.39
bimbo	8	1.60	2	0.42	-73.82	3.58	1.93
bint	0	0.00	1	0.21	N/A	1.43	-1.07
bird	380	75.78	269	56.17	-25.88	14.32	0.43
bitch	137	27.32	164	34.24	25.34	3.83	-0.33
bloody	3,243	646.70	614	128.21	-80.18	**1846.78**	**2.33**
bollock	161	32.11	91	19.00	-40.82	**16.62**	**0.76**
bonk	20	3.99	8	1.67	-58.12	4.78	1.26
boob	30	5.98	114	23.80	297.89	**56.19**	**-1.99**
bugger	333	66.41	78	16.29	-75.47	**158.84**	**2.03**
bullshit	19	3.79	58	12.11	219.63	**22.53**	**-1.68**
bummer	5	1.00	6	1.25	25.65	0.14	-0.33
butt	15	2.99	22	4.59	53.57	1.67	-0.62
chav	0	0.00	57	11.90	N/A	**81.67**	**-6.9**
chinky	7	1.40	0	0.00	-100.00	9.39	3.74
choc ice	3	0.60	1	0.21	-65.10	0.96	1.52
christ	253	50.45	74	15.45	-69.37	**95.52**	**1.71**
clunge	0	0.00	1	0.21	N/A	1.43	-1.07
cock	67	13.36	28	5.85	-56.24	14.75	1.19

coloured	117	23.33	72	15.03	-35.56	8.85	0.63
cow	180	35.89	82	17.12	-52.30	**33.19**	**1.07**
crap	318	63.41	321	67.03	5.70	0.49	-0.08
cretin	1	0.20	1	0.21	4.71	0	-0.07
cripple	9	1.79	4	0.84	-53.46	1.75	1.1
cunt	103	20.54	32	6.68	-67.47	**36.09**	**3.07**
damn	280	55.84	145	30.28	-45.78	**37.65**	**0.88**
darky	3	0.60	1	0.21	-65.10	0.96	1.52
dick	153	30.51	172	35.91	17.71	2.16	-0.24
dildo	1	0.20	1	0.21	4.71	0	-0.07
div	7	1.40	8	1.67	19.67	0.12	-0.26
dork	1	0.20	4	0.84	318.83	2.07	-2.07
douche	0	0.00	20	4.18	N/A	**28.66**	**-5.39**
dumb	26	5.18	33	6.89	32.90	1.19	-0.41
dyke	8	1.60	31	6.47	305.74	**15.56**	**-2.02**
fag	129	25.72	44	9.19	-64.29	**39.81**	**1.49**
faggot	10	1.99	3	0.63	-68.59	3.66	1.67
fairy	36	7.18	61	12.74	77.42	7.72	-0.83
fanny	29	5.78	8	1.67	-71.12	11.71	1.79
fart	43	8.57	20	4.18	-51.30	7.57	1.04
feck/effing	5	1.00	12	2.51	151.30	3.3	-1.33
flaps	11	2.19	10	2.09	-4.81	0.01	0.07
fop (fucking old person)	0	0.00	1	0.21	N/A	1.43	-1.07
fuck	2,830	564.35	2,687	561.06	-0.58	0.05	0.01
gash	2	0.40	1	0.21	-47.65	0.3	0.93
gay	49	9.77	161	33.62	244.04	**68.21**	**-1.78**
gender bender	3	0.60	0	0.00	-100.00	4.02	2.52
ginger	177	35.30	171	35.71	1.16	0.01	-0.02

gippo	0	0.00	1	0.21	N/A	1.43	-1.07
git	59	11.77	16	3.34	-71.60	**24.28**	**1.82**
god	2,592	516.89	3,001	626.62	21.23	**51.71**	**-0.28**
golliwog	6	1.20	0	0.00	-100.00	8.04	3.52
gook	0	0.00	5	1.04	N/A	7.16	-3.39
hell	988	197.02	635	132.59	-32.70	**62.01**	**0.57**
he-she	8	1.60	25	5.22	227.21	9.99	-1.71
ho	321	64.01	29	6.06	-90.54	**271.97**	**3.4**
homo	2	0.40	8	1.67	318.83	4.14	-2.07
honky	4	0.80	1	0.21	-73.82	1.79	1.93
hun	7	1.40	6	1.25	-10.25	0.04	0.16
hussy	7	1.40	1	0.21	-85.04	4.79	2.74
idiot	89	17.75	150	31.32	76.47	**18.68**	**-0.82**
imbecile	2	0.40	1	0.21	-47.65	0.3	0.93
jap	10	1.99	1	0.21	-89.53	8.14	3.26
jeez	7	1.40	30	6.26	348.75	**16.48**	**-2.17**
jerk	25	4.99	10	2.09	-58.12	5.97	1.26
jesus	197	39.28	189	39.46	0.46	0	-0.01
jesus christ	45	8.97	28	5.85	-34.85	3.25	0.62
jew	5	1.00	33	6.89	591.07	**24.39**	**-2.79**
jizz	1	0.20	0	0.00	-100.00	1.34	0.93
jock	22	4.39	2	0.42	-90.48	**18.6**	**3.39**
knob	55	10.97	64	13.36	21.84	1.16	-0.29
loony	7	1.40	6	1.25	-10.25	0.04	0.16
mental	45	8.97	293	61.18	581.76	**214.96**	**-2.77**
midget	5	1.00	1	0.21	-79.06	2.73	2.26
minge	3	0.60	9	1.88	214.12	3.42	-1.65
minger	0	0.00	1	0.21	N/A	1.43	-1.07

mong	5	1.00	2	0.42	-58.12	1.19	1.26
moron	12	2.39	25	5.22	118.14	5.28	0.46
motherfucker	4	0.80	10	2.09	161.77	2.94	-1.39
munter	0	0.00	2	0.42	N/A	2.87	-2.07
nancy	20	3.99	5	1.04	-73.82	8.96	1.93
nazi	4	0.80	31	6.47	711.49	**24.9**	**-3.02**
negro	4	0.80	1	0.21	-73.82	1.79	1.93
nigger	21	4.19	14	2.92	-30.19	1.11	0.52
nig-nog	2	0.40	0	0.00	-100.00	2.68	1.93
nonce	1	0.20	1	0.21	4.71	0	-0.07
nutter	15	2.99	15	3.13	4.71	0.02	-0.07
old bag	8	1.60	2	0.42	-73.82	3.58	1.93
paki	15	2.99	2	0.42	-86.04	10.66	2.84
pansy	1	0.20	4	0.84	318.83	2.07	-2.07
papist	0	0.00	1	0.21	N/A	1.43	-1.07
pig	102	20.34	186	38.84	90.94	**28.88**	**-0.93**
pikey	8	1.60	2	0.42	-73.82	3.58	1.93
pillock	13	2.59	3	0.63	-75.84	6.29	2.05
pimp	1	0.20	2	0.42	109.42	0.39	-1.07
piss	378	75.38	465	97.09	28.81	13.44	-0.37
poof	10	1.99	4	0.84	-58.12	2.39	1.26
poofter	9	1.79	1	0.21	-88.37	7	3.1
prat	50	9.97	5	1.04	-89.53	**40.7**	**3.26**
prick	35	6.98	15	3.13	-55.13	7.33	1.16
prod	0	0.00	4	0.84	N/A	5.73	-3.07
psycho	4	0.80	37	7.73	868.55	**32.16**	**-3.28**
pussy	95	18.94	11	2.30	-87.88	**72.48**	**3.04**
queer	24	4.79	18	3.76	-21.47	0.61	0.35

raghead	0	0.00	2	0.42	N/A	2.87	-2.07
rapey	0	0.00	6	1.25	N/A	8.6	-3.65
retard	7	1.40	51	10.65	662.87	**39.74**	**-2.93**
sambo	2	0.40	1	0.21	-47.65	0.3	0.93
screw	77	15.35	79	16.50	7.43	0.2	-0.1
shag	80	15.95	54	11.28	-29.32	3.95	0.5
shit	768	153.15	1,514	316.13	106.42	**283.94**	**-1.05**
skank	4	0.80	9	1.88	135.59	2.21	-1.24
slag	54	10.77	50	10.44	-3.05	0.02	0.04
slapper	9	1.79	0	0.00	-100.00	12.07	4.1
slope	20	3.99	33	6.89	72.77	3.85	-0.79
slut	12	2.39	9	1.88	-21.47	0.3	0.35
snatch	2	0.40	0	0.00	-100.00	2.68	1.93
sod	198	39.48	30	6.26	-84.14	**130.91**	**2.66**
son of a bitch	5	1.00	0	0.00	-100.00	6.7	3.26
spade	25	4.99	18	3.76	-24.61	0.85	0.41
spastic	19	3.79	1	0.21	-94.49	**18.97**	**4.18**
special	321	64.01	364	76.00	18.73	5.04	-0.25
sucker	3	0.60	9	1.88	214.12	3.42	-1.65
swine	22	4.39	11	2.30	-47.65	3.25	0.93
taff	17	3.39	1	0.21	-93.84	**16.5**	**4.02**
tart	71	14.16	41	8.56	-39.53	6.81	0.73
tit	53	10.57	59	12.32	16.56	0.66	-0.22
tosser	10	1.99	5	1.04	-47.65	1.48	0.93
tranny	1	0.20	10	2.09	947.08	8.97	-3.39
turd	12	2.39	6	1.25	-47.65	1.77	0.93
twat	21	4.19	38	7.93	89.47	5.78	-0.92
vegetable	149	29.71	176	36.75	23.68	3.66	-0.31

wank	89	17.75	39	8.14	-54.12	**17.83**	**1.12**
whore	19	3.79	49	10.23	170.04	15.12	-1.43
wog	2	0.40	0	0.00	-100.00	2.68	1.93
wop	4	0.80	0	0.00	-100.00	5.36	2.93
wuss	0	0.00	14	2.92	N/A	**20.06**	**-4.87**
TOTAL	17,215	3,432.94	14,208	2,966.68	-13.58	**166.48**	**0.21**