Regional sign language varieties in contact: Investigating patterns of accommodation

Abstract

Short-term linguistic accommodation has been observed in a number of spoken language studies. The first of its kind in sign language research, this study aims to investigate the effects of regional varieties in contact and lexical accommodation in British Sign Language (BSL). Twenty-five participants were recruited from Belfast, Glasgow, Manchester and Newcastle and paired with the same conversational partner. Participants completed a 'spot-the-difference' task which elicited a considerable amount of contrasting regionally-specific sign data in the participant-confederate dyads. Accommodation was observed during the task with younger signers accommodating more than older signers. The results are interpreted with reference to the relationship between language contact and lexical accommodation in BSL, and address how further studies could help us better understand how contact and accommodation contribute to language change more generally.

Introduction

Short-term linguistic accommodation has been observed in a number of spoken language investigations (e.g. Babel, 2010; Coupland, 1984). In the process of accommodation, speakers modify their speech patterns during face-to-face interaction. This can be characterised by the avoidance of markedly regional variants and the adoption of new, possibly supra-regional variants (Trudgill, 1986). Often, this leads to the emergence of a levelled variety of the language (i.e., one lacking sharp regional distinctions; Williams & Kerswill, 1999). According to Trudgill (1986, 2004), frequency of exposure to new dialectal features is the determining factor for short-term accommodation to lead to long-term dialect change; speakers of a traditional variety tend to abandon their traditional forms in favour of an innovative form (Auer & Hinskens, 2005). As a result of recent societal changes including increased mobility and relocation, examples of dialect levelling appear to be increasing across the UK. For example, in Williams and Kerswill's study (1999) looking at British English regional variation in Milton Keynes, Reading and Hull, levelling was apparent in each location despite the existence of different underlying processes, with younger southeast England speakers rejecting the older regional forms and younger northern English speakers maintaining the older regional forms. The relationship between mobility, accommodation and dialect levelling therefore, appears to be well established in the literature on English variation and change (e.g., Watt & Milroy, 1999; Williams & Kerswill, 1999).

Given that the British deaf community has also experienced an increase in mobility, we might expect to find similar changes in British Sign Language (BSL). In fact, mobility may have increased more in the deaf community because of the need for face-to-face interaction. The focus of this investigation, BSL is closely related to

the sign languages used in Australia (Auslan) and New Zealand (NZSL), all of which

are possibly best considered dialects of the same language (Johnston, 2003), and is

reportedly used by 15,000–20,000 people in the UK as their main language (Office of

National Statistics, 2011). In a recent study by Stamp, Schembri, Fenlon, Rentelis,

Woll and Cormier (2014), evidence of lexical levelling in BSL was identified, with

younger signers using a decreasing number of traditional regional variants. Stamp et

al. (2014) claimed that this process of language change may be partly due to signers

being exposed to more varied lexical input in mainstream schooling. It is possible that

the recent closure of most centralised schools for deaf children has contributed to

levelling in BSL, as deaf children are now less likely to be exposed to the traditional

regional lexical items used by older deaf peers than deaf children fifty years ago.

Stamp et al.'s study (2014) highlighted the different development of regional

varieties in English and BSL in the UK. Regional varieties in BSL have long been

associated with the different sites of schools for deaf children across the UK (Jackson,

1990; Ladd, 2003; Quinn, 2010). As a result of the fact that there was minimal

interaction between schools and no standard or written form of BSL, sign language

varieties developed separately in each community, were passed on from older to

younger peers and were maintained in the local community as regional varieties of

BSL (Sutton-Spence & Woll, 1999). These regional varieties have been found to vary

most obviously at a lexical level which is why we focus on lexical accommodation in

this paper. Stamp et al. (2014) also hypothesized that societal changes, such as

increased regional contact, played a role in levelling with BSL but this has yet to be

empirically investigated.

This study aims to explore the effects of contact between different regional

varieties on lexical accommodation in BSL. Twenty-five participants were recruited

from Belfast, Glasgow, Manchester and Newcastle and paired with the same conversational partner (a deaf native BSL signer confederate from Bristol). All participants completed four tasks: a) a lexical elicitation task, b) a collaborative dialogue-based picture matching task (known as 'Diapix'), c) a lexical recognition task, and d) an interview. Here, we focus on the data elicited as part of the Diapix task, using also the lexical elicitation data as a means of comparison. The aim of the Diapix task is to engage participants in spontaneous conversation (Van Engen, Baese-Berk, Baker, Choi, Kim & Bradlow, 2010). By engaging pairs of signers with different regional backgrounds in a task involving signs in semantic fields that are known to vary in BSL, the conversation elicited a considerable number of regional signs and created the opportunity for lexical accommodation to take place.

This paper is divided into four sections. First we review the literature on accommodation in spoken and signed languages to date including a discussion of those social factors relevant to spoken language accommodation. Following this, we describe the methods used as part of this study and how the data were collected and analysed. We then present the results of the Diapix task, looking at the degree of accommodation exhibited and how this may be sociolinguistically conditioned. Finally, we explore the implications of these results for understanding accommodation in sign languages and language generally.

Accommodation in spoken language research

While conducting a sociolinguistic study in 1974, Trudgill noticed that the glottalisation of medial and final /t/ increased in his own speech when conducting interviews with his Norwich participants. Trudgill's (2004) belief was that his behaviour (i.e., increased use of glottal stops) was a result of convergence in face-to-

face interaction, defined in the social-psychology literature as *accommodation* (Giles, 1973; Giles, Coupland, & Coupland, 1991).

Trudgill's (2004) interpretation of accommodation follows the 'change-by-accommodation' model which views accommodation as an automatic process of imitation determined solely by frequency of interactions. Many researchers have, however, argued that frequency of exposure does not sufficiently explain accommodation (e.g., Bauer, 2008; Coupland, 2008; Holmes, 2008; Schneider, 2008; Tuten, 2008). In the alternative 'identity-projection' model, the Communicative Accommodation Theory (CAT) proposes that speakers adopt or abandon certain dialectal features in an attempt to identify with or dissociate themselves from a social group (Bourhis & Giles, 1977; Giles, 1973).

A number of studies have attempted to investigate the relationship between accommodation and language change. In a recent experimental study, Pardo (2006) found that when two monolingual American English speakers completed a conversational task, speakers were judged as sounding more similar to their interlocutors during the conversation task than in either the pre- or post- task productions. In this experiment, listeners heard a triplet of sounds (AXB) from the same lexical item and had to select which one of two sounded most similar in pronunciation to the third item with 'A' samples including pre- and post- productions. In addition, lexical items were rated as increasingly similar over the course of the conversation, even persisting into the post-task performed one to two weeks later suggesting a link between accommodation and language change.

However, other studies have found no strong evidence to support such a link (Alshangiti & Evans, 2011; Babel, McAuliffe & Haber, 2013). For example, Babel et al. (2013) found that whilst New Zealand speakers did change the degree of vowel

mergedness when interacting with an Australian speaker whose speech lacked these vowel mergers (e.g., New Zealander speakers merge the vowels in 'near' and 'square', whilst Australian speakers do not), it was not in a clear, incremental way with considerable variability in how individuals merged and unmerged in the task. Likewise, Alshangiti and Evans (2011) found minimal effects of accommodation on accent change. They recruited speakers with differing regional backgrounds, six with northeast of England accents and six with Standard Southern British English (SSBE) accents, all of whom lived in London at the time of testing. Participants were paired with a speaker with the same regional accent (matched condition) and a speaker with a different regional accent (mismatched condition). Using the Diapix task they elicited keywords known to vary according to accent. Phonetically-trained listeners then gave accent ratings of how northern or southern the clips sounded during the conversation and post-task, whether later or earlier clips sounded more similar to the speaker's interlocutor. Accommodation was found to be minimal with only northerners judged as converging (towards the speech of the higher prestige SSBE accented interlocutor). Alshangiti and Evans (2011) attribute this to a number of possible factors: speakers may differ in their attitudes towards SSBE (see also Evans & Iverson, 2007), they may have already made changes to their speech having lived in London for some time, or they may not have accommodated due to speaker familiarity (i.e., speakers who know one another are thought to accommodate less than speakers who are otherwise strangers – see Labov & Ash, 1997; Nyaard, Sommers & Pisoni, 1994). There was no evidence of accommodation in the post-task suggesting that repeated short-term accommodation is necessary for long-term accent change.

Moreover, accommodation is not always a mutual phenomenon (Giles, Mulac, Bradac, & Johnson, 1987). As noted, some individuals accommodate more than

others and even the same individual may accommodate more in one conversational

setting than another. Many studies have shown that demographics of the interlocutor

affect the speaker's speech patterns. For example, age has been found to be important

in accommodative behavior; looking at the intergenerational communication of

speakers in the United States and Thailand, McCann and Giles (2007) found that older

individuals exhibited less accommodation than younger individuals.

Gender also appears to predict differences in accommodative behaviour. Pardo

(2006) found that gender and conversational role were important factors in the degree

of a speaker's accommodation. Participants in Pardo's study completed the Map Task

(Brown, Anderson, Yule & Shillcock, 1983) in which one person ('giver') describes

the path shown on their map to their interlocutor ('receiver'). The aim for the receiver,

who has a similar map including some landmarks but no path, is to draw the path on

their map from the giver's description. The results revealed that 'givers' converged

more than 'receivers'. In the same study, Pardo (2006) found that males converged

more than females overall, however, in female pairs, 'givers' were found to converge

to 'receivers', whilst in male pairs 'givers' and 'receivers' converged equally. Bilous

and Krauss (1988) also found that males and females differed in their degree of

convergence depending on the linguistic features analysed (e.g., total words uttered,

utterance length, pauses). However, the role of gender is unclear; some studies have

found that females converge more to males (e.g., Namy, Nygaard, & Sauerteig, 2002)

while others show no gender effect at all (e.g., Thomson, Murachver, & Green, 2001).

Hannah and Murachver (1999) suggest that some effects of a speaker's gender can be

better explained by the differing roles that men and women adopt during

conversation, with women being more likely to take a facilitative role. In their study,

female participants changed their length of speaking time depending on the role of the confederate (facilitative vs. non-facilitative), spending more time speaking with the facilitative confederate rather than the non-facilitative confederate, but behaved similarly with a male and female confederate.

Ethnicity has also been found to predict accommodative behaviour (Bell, 2001; Rickford & McNair-Knox, 1994). Investigating the style-shifting of an African American teenager with either a familiar African American female or an unfamiliar European American interviewer, Rickford and McNair-Knox (1994) observed that more standard features were used with the unfamiliar European American interviewer. They determined that this shift was a form of convergent behaviour towards the ethnicity of the interlocutor; however, they did not take interlocutor familiarity into account, despite research showing that speakers who know one another have better mutual comprehension and therefore may accommodate less (Labov & Ash, 1997; Nyaard, Sommers, & Pisoni, 1994).

Evidence is contradictory as to whether language background (i.e. native vs. non-native speaker status) predicts the degree of accommodative behaviour. Allwood and Ahlsén (1986) investigated accommodative behaviour of native and non-native speakers of Swedish (Finnish and Latin-American Spanish speakers), in the form of lexical repetitions (the use of the same lexical item by both speaker and interlocutor), and found that the number of repetitions was subject to the speaker's language background. However, other research has found that the degree of lexical repetitions is not subject to the language background of the interlocutors (Bortfeld & Brennan, 1997). In addition, accommodation with L2 speakers may take place for a number of motivations that are different to accommodation patterns between native speakers such as imitation as a means of acquisition (Allwood & Ahlsen, 1986).

Accommodation in signed language research

Accommodation in sign language research has not been explicitly investigated to date. However, some sign language studies have found convergent behaviour in certain features of signing, for example, in the size of signing space. Researchers looking at deaf-blind signers and signers from different ethnic backgrounds in American Sign Language (ASL) have interpreted their findings in terms of 'alignment theory' (Emmorey, Korpics, & Petronio, 2009; McCaskill, Lucas, Bayley & Hill, 2011), which proposes that production and perception processes are directly linked (Goldinger, 2000) and claims that the use of a particular linguistic feature by one speaker acts as a priming mechanism, activating that representation and increasing the likelihood that the same representation will be repeated in the interaction (Pickering & Garrod, 2004). In conversations between sighted signers and signers with a reduced field of vision, sighted signers reduced their use of the signing space around their bodies in order to be better visually perceived by signers with tunnel vision (Emmorey et al., 2009). Interestingly, Emmorey and colleagues also found that signers with tunnel vision reduced their signing space to align to the reduced space of signers without vision impairment.

Another study on ASL reported that signers from differing ethnic origins aligned their use of signing space. McCaskill et al. (2011) investigated anecdotal reports that black signers use a larger signing space when interacting with members of the black deaf community compared to signing with black hearing individuals or white signers. They found that older black signers used a larger signing space than older white signers during narratives. In contrast, younger black and younger white signers showed no difference in their signing space. They suggest that younger white signers show convergence towards younger black signers in the size of their signing

space. Hill and McCaskill (2010) propose that this can be interpreted in one of two ways. Primarily, this may reflect the history of segregation of signers with differing ethnic origins in schools in the US. They claim that whilst schools for white deaf children forbid the use of signing, schools for black deaf children did not and signing continued to flourish even within the classroom environment. Therefore, separate white and black varieties developed. However, since the abolishment of segregated schools, younger white signers have had more interaction with younger black signers and so these differences are thought to be reducing as a result of natural interaction between signers using the two varieties. In addition, it has been suggested that younger white signers view black signing as 'cool' and as a result they imitate this style of signing. This in turn has led to a decline in the differences in the size of signing space across ethnic groups.

In another sign language study showing accommodative behaviour, Lucas and Valli (1992) found that signers modified their language choice (e.g., ASL, contact signing or signed English) depending on their interlocutor's language style. Their study investigated variation in the use of contact signing (i.e., a style of signing used when a signed and spoken language interact). They concluded that signers were converging towards the language choice of their conversational partner. Lucas and Valli (1992) suggest that the formality of the situation and the lack of familiarity between participant and interviewer also influenced language choice with English-based varieties (e.g., signed English) used in more formal and unfamiliar scenarios.

Evidence of the emergence of a levelled variety has also been found for several sign languages (Geraci, Battaglia, Cardinaletti, Cecchetto, Donati, Giudice & Mereghetti, 2011; McKee & McKee, 2011). McKee and McKee (2011) found that variation in the NZSL lexicon, a variety very closely linked to BSL, has become

increasingly levelled following the introduction of the Australasian Signed English system (from Australia) into New Zealand deaf education, with younger signers making greater use of the lexical variants associated with this system, most of which are borrowed from Auslan. However, as yet, no studies have explicitly investigated the relationship between regional contact and accommodation in sign languages.

In summary, a number of studies have provided evidence of accommodation in spoken and signed language. The following factors have been found to be important in predicting accommodation in spoken languages: age, gender, conversational role, ethnicity, familiarity, language background, and regional background. The aim of the current study is to investigate whether there is any indication that regional contact leads to lexical accommodation in BSL. Two research questions will be addressed: 1) Is there evidence of lexical accommodation over the course of a single conversational interaction? 2) Does lexical accommodation in BSL correlate with social and linguistic factors? Given the social factors found relevant in spoken languages, we expect to find that these same factors (age, region, language background, gender, ethnicity, familiarity) are important in accounting for accommodation in sign languages. In particular, we hypothesise that age may be a predictor of accommodation in BSL in order to account for the increased levelling found in younger signers by Stamp et al. (2014).

Methodology

The BSL Corpus Project is an online digital corpus of video data that is openly accessible for researchers to analyse (Schembri, Fenlon, Rentelis & Cormier, 2011; Schembri, Fenlon, Rentelis, Reynolds & Cormier, 2013), providing a large sample of language use from the British deaf community. The corpus consists of data collected from a total of 249 deaf participants living in eight sites across the UK: Belfast,

Birmingham, Bristol, Cardiff, Glasgow, London, Manchester and Newcastle. The data

analysed in this paper was partially taken from the existing BSL Corpus and partially

from a new dataset following the same criteria as outlined in the Corpus Project

below.

Sites

For the current study, twenty-five participants were recruited from four of the

original BSL Corpus collection sites: Belfast, Glasgow, Manchester and Newcastle.

These specific sites were selected because the data collected there exhibited the most

regional variation for the chosen signs under investigation (i.e., signs for colours and

numbers) and because these sites also showed minimal change towards non-local

variants, with younger signers continuing to use a high proportion of traditional

variants for their region, ensuring that participants were likely to use traditional,

regionally distinct signs (Stamp et al., 2014). Filming took place at local venues

including local deaf centres, churches and in participants' homes.

Participants

Six participants were recruited from each of Belfast, Glasgow and Newcastle

and seven participants were recruited from Manchester, giving a total of 25

participants. As in the study by Hannah and Murachver (1999), a confederate acted as

a consistent conversational partner to all 25 participants in the Diapix 'spot-the-

difference' game that had been designed to elicit target examples of regional variants.

Unlike Hannah and Murachver's study (1999), however, the confederate in the current

study was not trained to produce a certain style of signing and, in order to reduce the

artificial nature of the conversation, was mostly left undirected in her behaviour. The

confederate was a 28-year-old deaf female native BSL signer who grew up in Bristol

and used a regional variety which contrasted with that of each conversational partner.

She was from a white middle-class background and had attended a local primary

school and a non-local secondary school (i.e., she had a mixed school background).

The confederate was not aware of the aims of the experiment (i.e., to investigate

accommodation). However, she was aware that the intention of the task was to elicit

as many regional variants of number and colour signs as possible. The confederate

was asked to become familiar with the 12 differences in the spot-the-difference task to

minimise gradual familiarisation of the task (and maximise consistency) over the

course of the study and to maximise the efficiency of the task. In addition, she was

instructed to begin the task using her own regional variants and thereafter to behave as

she pleased (i.e., either to continue using her own variants or to converge/diverge to

the variants used by the participant). This was in order to maximise the naturalness of

the conversation, allowing the opportunity for the confederate and the participant to

accommodate mutually. Participants were not aware before the task that they were

interacting with a confederate. Table 1 presents the participants' demographics.

TABLE 1 ABOUT HERE

Of the 25 participants recruited for the current study, 13 were previously

involved in the BSL Corpus Project. The 13 participants from the BSL Corpus were

deaf, British-born signers exposed to BSL before the age of 7 years and who had lived

in the same region for at least 10 years. Additionally, 12 participants were recruited

who were not associated with the BSL Corpus, using the same criteria. Three of these

participants, however, had acquired BSL between the ages of 8-12 years and one

between the ages of 13-18 years. All participants were selected if they were found to

use a high proportion of traditional regional variants for colours and numbers as part

of the lexical elicitation task in the BSL Corpus data or if their sign variants were

different from those used typically by the confederate, thereby maximising the difference in signing between the participant and confederate.

Speaker familiarity has been shown to influence comprehension (Labov & Ash, 1997; Nygaard et al., 1994). In addition, the deaf community in Britain is generally believed to be a relatively small close-knit community with many individuals possibly becoming familiar with others in various parts of the UK when participating in national deaf community events. Therefore, familiarity was expected to be high between the confederate and participants. As a result, the confederate provided a familiarity rating to indicate how well she knew each participant prior to the experiment. This was included as a variable in later analyses. Despite initial concerns about participant familiarity, 20 of the 25 participants had never met the confederate.

In spoken language experiments, same-sex pairs are employed in order to reduce the effects of social dominance (see Bilous & Krauss, 1988; Namy et al., 2002; Pardo, 2006). Theories on social dominance predict that males have a higher social dominance orientation than females. This is reflected in gender-related speech differences showing that males speak more (Argyle, Lalljee & Cook, 1968; Strodtbeck & Mann, 1956; Strodtbeck, James & Hawkins, 1957), initiate more communicative acts (Aries, 1982) and interrupt more frequently than women (Zimmerman & West, 1975). As there has been no research into social dominance phenomena in sign languages, the aim was to recruit equal numbers of same-sex and mixed-sex pairs and investigate whether there were any effects of gender on accommodation. The sample included 14 same-gender (specifically, all female) pairs and 11 mixed-gender pairs. As the main task was a spot-the-difference task involving differences in colours, any participants who self-reported as colour-blind as part of the

demographic questionnaire were not recruited for this study. All participants were

naïve as to the purpose of the study. Participants were informed that the study aimed

to further investigate BSL variation as a follow-up to the BSL Corpus Project. After

data collection, participants were fully debriefed about the objectives of the tasks.

Tasks

At the beginning of the session, participants were asked to complete a short

questionnaire about their sign language use. Many participants had already completed

a detailed questionnaire containing their demographic information as part of the BSL

Corpus Project. Participants not involved with the BSL Corpus Project were asked to

complete the same demographic questionnaire issued to Corpus Project participants

(see Schembri et al., 2013). The researcher assisted participants with the questionnaire

ensuring that all questions were fully understood and answered. After completing the

questionnaire and consent forms, participants engaged in the following tasks: 1) a

lexical elicitation task (10-15 minutes), 2) a Diapix task (maximum of 36 minutes), 3)

a lexical recognition task (20-25 minutes) and finally, 4) a post-task interview (10-15

minutes). Before each task commenced, participants were presented with the task

instructions signed in BSL by a deaf native BSL signer on video as well as a copy of

the instructions in written English. The use of regional signs in the instructions was

kept to a minimum to avoid any influence on the tasks thereafter. Three high

definition video cameras were set-up for tasks 1, 2 and 4: one camera to focus on each

individual and a third camera filming the pair of signers. Only data from the first two

tasks was analysed for the current study; these are described in detail below.

Task 1: Lexical elicitation task

In order to establish the variants used by participants on a daily basis for the

target concepts elicited as part of the main conversational task, participants completed

a lexical elicitation task preceding the main task. Participants were shown a series of 40 PowerPoint slides which displayed an image of the target concept and the nearest equivalent English word typed underneath (for example, for the concept *green*, they were shown a green block square with the printed word 'green' underneath as in Figure 1). Twelve of these concepts were the same as those elicited as part of the main conversational task. An additional six colours were elicited as these were relevant for a separate lexical recognition task (i.e., *black*, *blue*, *orange*, *pink*, *red* and *white*), and the remaining 21 items served as distracters to minimise the participant's awareness of the focus of the overall study. These lexical items were taken from the Swadesh list that has been modified for use with sign languages (Woodward, 1978). Participants were instructed to produce the sign variant they use most on a daily basis for the displayed concept. In addition, participants were asked to produce any other signs they knew for that concept (e.g., regional variants). The first sign produced was considered to be the signer's default variant, unless the signer stated explicitly that another variant was the one they used most on a daily basis. The signer's default variant and all other variants produced during the task were analysed and compared to the variant they produced with the confederate during the main conversational task. The experiment was designed to elicit each participant's preferred variant and was completed first in order to avoid participants becoming familiar with the regional variants used by the confederate, as may have happened if this task were completed after the Diapix task.

FIGURE 1 ABOUT HERE

Task 2: Diapix task

The main task was a spot-the-difference exercise, known as the Diapix task (Baker & Hazan, 2011; Van Engen et al., 2010), in which participants work in pairs to find all the differences between versions A and B of a specially designed cartoon picture. The current study generally follows the same methodology as other studies that have used the DiapixUK task (e.g., Hazan et al., 2012; Evans & Alshangiti, 2011), with a few adaptations to make it appropriate for this study. Originally created by Van Engen et al. (2010) for American English and adapted for use in British English research (for the DiapixUK task, see Baker & Hazan, 2011), the Diapix task elicits a large amount of spontaneous language data whilst also allowing the researcher to control the keywords produced in conversation. Using the DiapixUK task as a template, three picture scenes (beach, farm, and street scenes) were altered to include five differences in colours and six differences in numbers as well as one difference unrelated to colour or number (see Figure 2). The target concepts were the colours *brown, green, grey, purple* and *yellow* and the numbers *four/nine, six, ten, twelve, seventeen* and *eighteen*. Colour and number signs are known to show considerable regional variation in BSL (Skinner, 2007; Woll, Allsop & Sutton-Spence, 1991; Stamp et al., 2014) and the aim was to elicit these target signs during the conversation.

FIGURE 2 ABOUT HERE

Participants and the confederate were informed that the task was a 'spot-the-difference' game in which they had to identify 12 differences between the two picture scenes without being able to see each other's pictures. The participant and confederate sat opposite one another with their picture scene displayed in front of them, so that they were unable to see each other's pictures (see Figure 3). Participant-confederate pairs were given 12 minutes to find the differences in each pair of scenes. As such, the

task lasted for a maximum of 36 minutes. In cases in which the differences for a picture scene were not found in the allocated time, the pair of signers were stopped and told to start the next picture scene. Each picture scene was presented in a laminated cover. One of the pair was given a black marker pen to circle the differences identified. This enabled dyads to follow their progress over the course of the task and finally to inform the researcher when all differences had been identified. This role was alternated between participant and confederate for each picture scene. Instructions were presented in a pre-recorded BSL clip, produced by a native BSL signer, and in written English. For consistency, the participant and confederate were instructed to start describing their picture from the top left hand corner of the picture. During the task, the researcher left the participant and confederate alone. The researcher returned after 12 minutes or when informed by the confederate that the task was complete.

FIGURE 3 ABOUT HERE

Data Coding

For the BSL accommodation data, all examples of regional variants for numbers and colours were coded using ELAN (Crasborn & Sloetjes, 2008; ELAN, 2012), along with whether the signers exhibited accommodation or not following the criteria in the following section. Other data which required some coding included familiarity ratings by the confederate, social class, school location, and mobility.

The ratings for familiarity were "0" if the confederate had never met the participant, "1" if they had met once or twice, "2" if they knew the participant or "3" if they knew the participant very well. Participants were coded as middle- or working-class, based on Lucas, Bayley and Valli's (2001) description of working and middle class signers. School location, that is whether the participant was educated locally or

outside of the region where they were filmed, was also included as a social factor as

this has been found to be important in similar studies (Stamp et al., 2014). Participants

were considered to be 'high' mobility individuals if they had lived in at least two

different regions of the UK, and 'low' mobility individuals if they had remained

within their home region for their entire lives.

Accommodation criteria

In the analysis of the conversation data, every production of a regional variant

(i.e., colour or number sign) was coded for whether it exhibited accommodation.

Variants produced in the Diapix task by the participant were compared to those

elicited as part of the preceding lexical elicitation task by the participant. The sign

variant explicitly described by the participant in the lexical elicitation task as being

the variant that they use on a daily basis was considered to be their 'default' variant.

Following Giles' (1973) terminology for various forms of speech modifications, these

variants were coded as 'normative' (*normative*), a form of non-accommodation. When

the participant did not produce their default variant, their actual production was

compared to the variant used by the confederate.

These productions were coded as other forms of non-accommodation,

divergence or as accommodation. Forms of non-accommodation included; (1)

repeating the confederate's sign as a means of clarification where there is a

misunderstanding and without mouthing[i] (*confusion*); (2) repeating the confederate's

variant immediately after they produced it, similar to a form of backchannelling

(*mirroring*); and (3) repeating the confederate's variant on a separate occasion

(*practice*) when discussing the sign itself (e.g., 'oh, so that's your sign for 'purple'?'),

and therefore not clarifying but simply referring to the variant. Divergence was coded

when the participant produced a variant other than those elicited in the lexical

elicitation task and different from the confederate's variant (*deviance*). Behaviour was

considered to be accommodative when a participant: (1) initiated the use of the

confederate's variant later, not directly after the confederate produced it

(*accommodation*); (2) used the confederate's variant to clarify the variant meaning

without any misunderstandings and with use of mouthing (*clarification*); (3) used the

confederate's variant blended with their own variant (*blending*); (4) produced the

confederate's variant incorrectly (*misreplication*); (5) produced a different sign to

their preferred variant and the confederate produced a different sign to their preferred

variant yet the end product was the same variant for both interlocutors (*switching*);

and (6) used a different sign altogether to any variant produced in the lexical

elicitation task, with the confederate also producing a different sign to their preferred

variant (*merging*). The end product for both *switching* and *merging* is convergence

but it is not possible to establish who initiated this convergence.

Data analysis

A multiple logistic regression was used to analyse the data. Data showing

convergent and divergent behaviour were amalgamated as 'accommodative' therefore

making the dependent variable 'accommodation' or 'non-accommodation'. All of the

social factors discussed in the introduction were included as independent variables,

except for conversational role and ethnicity as the former did not vary in the task and

the latter was not investigated as the sample was not balanced for ethnicity. As a

result, the following variables were investigated as part of this paper: signers' regional

background (Belfast, Glasgow, Manchester, Newcastle), age (continuous variable),

gender (female, male), language background (deaf, hearing), familiarity (0, 1, 2, 3),

social class (middle, working), the location of the signer's school (local, non-local).

Other social variables included engagement with the task (1-10) and mobility (high,

low). Participant and lexical item were included as random effects in a mixed effects

model to account for individual variation and lexical effects. We include these

random effects in order to control for the fact that, if the study were repeated with

different individuals and different lexical items, the results may not be the same

(Lawson, 2014). The semantic category of the sign (colour, number) was included as

a linguistic factor.

Results

Accommodation

All participants completed the three picture scenes in the Diapix task, on average spending 9 minutes and 33 seconds on each scene. The average total amount of time for each participant to complete the task was 28 minutes 39 seconds. In general, performance in the Diapix task elicited a moderate number of regional sign variants for analysis. For the 25 Diapix tasks, a total of 2710 tokens were elicited for analysis. Of these, 14% of tokens (i.e., 374) exhibited accommodative behaviour (participants' range of accommodation: 0-18%) and 86% (i.e., 2336 tokens) exhibited non-accommodative behaviour.

Variation according to social and linguistic factors

First, the dataset was analysed to consider the relationship between the degree of accommodation exhibited by participants and the social and linguistic factors described above. Table 2 presents the results for all of the factors including the log odds, number of tokens analysed and the centred weight (with participants' accommodation as the application value) in Rbrul. Factors presented first in the table and listed with an asterisk were significant at a p-value of less than 0.05. Results with a positive log-odd and a factor weight over 0.5 (shown in grey shading) indicate an increased likelihood to favour accommodative behaviour, while a negative log-odd and a factor weight below 0.5 indicate an increased likelihood to disfavour accommodative behaviour.

TABLE 2 ABOUT HERE

Of the factors under investigation, two were found to be significant: signers' regional background and their age. The regional background of the participant was the

most significant predictor of accommodative behaviour with those participants from

Glasgow and Manchester favouring accommodative behaviour and participants from

Belfast and Newcastle disfavouring accommodative behaviour (Factor weights,

Glasgow = 0.879, Manchester = 0.656, Belfast = 0.258 and Newcastle = 0.172).

Paired samples t-tests were performed to see if there was a significant difference

between the results for these regions. The results showed that there was a significant

difference in the degree of accommodation between signers from Glasgow

(M=2.1774, S.D.=0.58547) and Manchester (M=2.077, S.D.=0.403); $t(1210)=3.502$,

$p<0.001$. There was also a significant difference between signers from Manchester

and Belfast (M=1.994, SD=0.189); $t(1461)=5.127$, $p<0.001$. However, there was no

significant difference in the degree of accommodation between signers from Belfast

and Newcastle (M=1.990, SD=0.214); t(1496)=0.445, p=0.657.

Age was the second most important factor. Age was analysed as a continuous

variable and therefore the results displayed in the table indicate that as the age

variable increases (as shown by '+1'), the degree of accommodation decreases (-0.053

log odds), indicating that younger signers accommodated more than older signers (see

Fig. 4).

FIGURE 4 ABOUT HERE

Gender, semantic category, mobility, language background, familiarity,

engagement, school location, and social class were not found to be significant

predictors of accommodation.

To investigate whether the confederate's background played a part in the

degree of accommodation exhibited by the participant, a separate Rbrul analysis was

conducted. In this analysis, the confederate's age (calculated as age difference

between confederate and participant), gender, language background, social class and

school location were investigated as independent variables with participant's degree of

accommodation as the dependent variable. Participant and lexical item were included

as random effects. The results revealed that no fixed predictors determined the

presence of accommodation. That is, there was no relationship between

accommodation by the participant and the confederate's social background.

Discussion

A number of observations were made during the coding process of this study.

Most participants only gave one or two variants for each concept as part of the lexical

elicitation task. Stamp et al. (2014) found some concepts exhibited over 13 lexical

variants and so, considering the variation present in BSL, this suggests that signers

have expressive control over a relatively limited range of other regional variants in

their mental lexicon. That is, though signers may be aware of a large number of

different variants for a particular concept, they only tend to use a small subset of these

in conversation. Of particular importance here is the evident ease with which

participants from different regional backgrounds completed the task, supporting

previous claims that signers have no problems understanding regional varieties in

conversation (Elton, 2010; Woll et al., 1991). On the rare occasion that a

miscommunication occurred, participants in most cases clarified the meaning of the

confederate's regional sign using a number of communicational strategies (e.g.,

mouthing, fingerspelling, switching sign variants) and then often continued to use

their own variant throughout the conversation. This suggests that signers may have a

passive awareness of more than one regional variety despite using only a low number

of variants themselves.

The first of the two research questions proposed in this paper considers

whether there is any evidence of lexical accommodation over the course of a single

conversational interaction. In the Diapix task, each participant produced tokens that were considered to be regional variants and different from the variants produced by the confederate, providing numerous opportunities for lexical accommodation. It was found that participants accommodated to their partner's regional sign in 14% of cases (i.e., 374 tokens). Given that this is the first investigation to empirically investigate the presence of lexical accommodation, it is unclear whether the degree of lexical accommodation exhibited here is relatively high or not for this task. What is clear though, is that not every participant accommodated to the same degree in this study, with four signers not accommodating at all and others accommodating more (i.e., one participant exhibited accommodation in 18% her data).

It is unclear why some signers did not accommodate at all, but there are a number of possible ways to interpret this finding. On the one hand, the 'change-by-accommodation' model claims that accommodation is an automatic process that results from a direct link between perceptive and productive monitoring which in turn leads to the alignment of interlocutors' utterances. That is, when a listener perceives the utterance of a speaker, the auditory message is retained and this directly influences their production. However, in sign languages, perception and production systems are not linked in the same way. Specifically, sign perception is visual and monitoring during sign production is likely based on both visual and motor feedback (Emmorey, Bosworth, & Kraljic, 2009). Furthermore, visual feedback from signs being produced is very different from how signs are perceived both in terms of visibility (it is harder to see one's own hands while signing compared to seeing the signing of others) and in terms of perspective (e.g. front versus back of hand). However, if there were no direct

link between perceptive and productive systems in BSL, then we might not expect to

see accommodation at all, which is not the case here.

On the other hand, the 'identity-projection' model views accommodation as a

social process in which interlocutors reduce or increase the differences between

themselves and their interlocutors. In spoken languages, speakers may adapt their

regional accent to converge or to diverge from their interlocutor. These differences in

regional dialect between a speaker and an interlocutor are often hierarchical, in that,

to lessen the differences between one speaker and their interlocutor, the speaker may

adapt their regional dialect by raising or lowering its status on a vertical scale to

match that of their interlocutor. For example, there is evidence in studies of spoken

English of 'upwards' convergence from a regional dialect towards a standard. For

example, Giles (1973) found that Bristol-accented speakers converged to

an interviewer who spoke with a Received Pronunciation accent, making their speech

less Bristol-accented compared to when they interacted with a Bristol peer.

Downwards convergence, where a higher status person accommodates to a lower

status person, is also possible (Sellars, 1997) and may result in, for example,

employers accommodating to the speech of their employees. From the

Communicative Accommodation Theory (CAT) perspective, some signers may not

accommodate, as they may not feel it necessary to differentiate themselves from their

conversational partner. This may be because the British deaf community lacks the

same socioeconomically stratified structure found in English-speaking communities,

leading to an absence of hierarchy among community members and across regional

varieties and discouraging the instances of accommodation. However, further

ethnographic investigation of how signers perceive these regional varieties and

whether any one single variety is perceived as more prestigious than another is needed to substantiate this claim.

That said, the apparent lack of hierarchical distinctions among varieties of BSL may stem from the different way in which BSL regional dialects developed compared to spoken language varieties. As spoken English dialects are thought to have originated from one uniform source which dispersed into several regional varieties through language mixing or evolutionary processes, divergence from the original source is often assumed to be non-standard by default (Francis, 1983). However, there is no evidence that there was ever a single uniform variety of BSL from which BSL varieties diverged, and there are no written or standard forms to move towards. In addition, speakers often adapt their speech depending on the perceived identities or stereotypes of their interlocutors (e.g., Strand, 1999). This presupposes that stereotypes exist in different regional varieties of BSL and that each of these regional varieties or indeed the communities associated with them (e.g., signers from Manchester) are perceived as being in hierarchical relationships with each other (i.e., that one variety is perceived as higher than another). Within smaller communities, such as the British deaf community, these hierarchies or social distinctions may not be quite as prominent (Sutton-Spence & Woll, 1999). This is demonstrated by the fact that social class is not found to be important in a number of sign language studies (e.g., Stamp et al., 2014) and other studies investigating minority spoken language British communities (e.g., Dorian, 2010). Even in this study, the social class of the participant was not found to correlate with accommodation and furthermore, when participants from a different social class were paired up with the confederate (i.e., working class), there was no indication of

increased accommodation compared to participant-confederate dyads with the same social class background (i.e., middle class).

One might expect though, that accommodation would arise as a matter of communicative efficiency. One theory for the motivation of accommodation describes accommodation as a strategic process for making oneself understood (Allwood & Ahlsén, 1986). In this case, signers might favour the standard, not because of its status but because most signers are familiar with it (e.g., Adank, Evans, Stuart-Smith, & Scott, 2009). In the post-task interview, participants in the current study were asked whether they felt they did or did not accommodate during the Diapix task and the reasons for this. A frequent response was that their interlocutor appeared to understand them without difficulty. However, in the lexical elicitation task, participants only gave one or two variants for each concept despite experiencing few problems understanding signers from other regional backgrounds in the conversational task. This suggests that signers might have a passive understanding of a number of variants and limited control over production of these variants. This passive understanding may inhibit the necessity for convergence. Comprehension of regional varieties in BSL is one area that requires further investigation. Anecdotally, it is sometimes suggested that signers are better able to comprehend other sign languages as well as sign language regional variants compared to users of distinct spoken language varieties for two reasons. First, there is an element of code blending in sign language in that signers produce many signs simultaneously with mouthing of the equivalent spoken word (Boyes-Braem & Sutton-Spence, 2001). This undoubtedly aids in comprehension of regional variants as the mouthing serves as a way to disambiguate the meaning of signs. Secondly, signers are often expected to cope with considerable variation not only in situations of regional variation (Stamp et al., 2014)

but also from non-native signers (of which there are a great deal due to signers being born predominantly to hearing parents, see Mitchell & Karchmer, 2004) and in international situations (Hiddinga & Crasborn, 2011). This adaptability of signers compared to spoken language users is thought to contribute to their acceptance of different variants in accommodative environments. This is explored in more detail using the data elicited from the lexical recognition task in this experiment (XXXX, in prep.).

It is not clear if we can attribute the lexical change found in previous BSL studies to the lexical accommodation exhibited in this study, as this question was not explicitly investigated as part of this study. We cannot rule out other factors such as the different patterns of lexical acquisition. The main source of BSL transmission has been through peer interaction in schools. Transmission is the main process of linguistic change (Labov, 2007) and therefore any disruption in BSL transmission due to changes in education will likely have considerable effects on BSL variation and change. We would expect that older signers, most of whom attended deaf schools, will have been exposed to regional variants used by other deaf signers in contrast to younger signers, most of whom attended mainstream schools, and who will have been exposed to variants used by language service professionals (LSPs), e.g. hearing interpreters or communication support workers (DESF Survey[ii], 2010). One crucial way to further understand language change in BSL would be to investigate which variants younger signers are exposed to at school and home.

There are a number of limitations in the methodology of this study that should be considered. We chose to investigate elicited data in order to maximise the opportunities for lexical accommodation and control a number of social factors by partnering each participant with the same conversational partner. Whilst the task was

successful in eliciting examples of contrastive regional variants, this kind of data may

not be representative of a real life interaction and this may account for the minimal

examples of accommodative behaviour exhibited. In light of this, it would be fruitful

to investigate natural environments in which deaf people from different regional

backgrounds interact, e.g., at national conferences, sporting events or during social

activities.

Variation according to social and linguistic factors

The second research question considers how lexical accommodation in BSL

correlates with social and linguistic factors. Many studies have shown that the

demographics of the interlocutor affect the speaker's speech patterns. This study

considered whether accommodative behaviour in BSL was also socially constructed.

The results revealed that participants' region and age were predictors of their degree

of accommodation. Signers living in Glasgow and Manchester exhibited the most

accommodation compared to signers living in Belfast and Newcastle. We might have

hypothesised that signers living further from their conversational partner (i.e., Bristol)

would accommodate more than those living closer. It is perhaps unsurprising then,

that Glaswegians show more accommodation than signers from elsewhere. Indeed, in

support of the findings demonstrated here, Stamp, Schembri, Fenlon and Rentelis

(2015) noted that over half of the younger participants from Manchester and Glasgow

used number signs non-traditional for their region, therefore indicating higher degrees

of levelling in these regions, which may in turn be a reflection of higher degrees of

accommodation in these regions compared to Belfast and Newcastle.

Participants may also converge towards or diverge from the confederate and

therefore the significance of these social factors need to be understood in light of the

confederate's social factors (i.e., age, gender, language background, schooling, social

class) as well as their own. For this reason, a separate analysis was conducted to consider this. None of the confederate variables were found to predict the degree of accommodation exhibited by the participant, however, suggesting that the age effect found here was not a result of the difference in age between confederate and participant.

The degree of accommodative behaviour decreased with age, with younger signers showing a greater degree of accommodation than older signers. This finding is consistent with the 'identity-projection model' (Coupland, 1984) and Social Identity Theory (e.g., Tajfel & Turner, 1986; Turner & Brown, 1978). Social Identity Theory claims that younger people are likely to want to achieve and maintain positive concepts of themselves with speakers from their in-group (i.e., 'peers'). Younger people may also desire positive reinforcement from their peers more than older people, and therefore, younger people may use accommodation as a strategy to show identification with their peers. This is also supported by findings that younger speakers accommodate more than older speakers by McCann and Giles (2007).

In spoken languages, accommodation, along with other extra-linguistic factors such as identity, has been hypothesised to be one factor leading to dialect levelling, the process whereby different regional varieties begin to sound more similar to each other (Foulkes & Docherty, 1999). In this study, our result – in which younger signers accommodate more – complements previous findings that younger signers show increased levelling compared to older signers. However, further investigation is necessary to determine whether this change is as a result of accommodation or whether it is the result of a combination of factors: changes in deaf education leading to differences in lexical exposure, increased exposure to lexical variants on television and the internet and increased interaction with users of other sign languages.

Conclusions

The aim of this study was to consider the relationship between regional contact and lexical accommodation in BSL. Firstly, we found that there is evidence of lexical accommodation over the course of a single conversational interaction. A number of differences between accommodation processes in signed and spoken languages were discussed: 1) distinctive perceptive and productive monitoring in BSL, 2) lack of necessity to accommodate because of the absence of hierarchical status of BSL regional varieties, and (3) ease of communication due to code-blending of BSL signs and English mouthed words.

Secondly, we found that two social factors correlated with accommodation: regional background and age. Signers living in Glasgow and Manchester and younger signers exhibited the most accommodation compared to signers living in Belfast and Newcastle and older signers. This complements Stamp et al.'s (2014) study in which younger signers and those from Glasgow and Manchester showed the highest amount of levelling, although it does not fully account for the levelling found in BSL.

This paper has described the relationship between social factors and the presence of accommodation in BSL. In doing so, it has highlighted the importance of carrying out further studies in both signed and spoken languages in order to investigate the contribution of accommodation to language change. We have touched upon some reasons why these processes may differ across modalities but further investigations are necessary to fully understand variation and change in BSL, as well as language change more generally.

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Table 1: Number of participants in each social category

Sites	Total	Age			Gender		Ethnicity		Language background		Sc
		Younger 16-39	Middle 40-59	Older 60+	Female	Male	White	Other	Deaf	Hearing	W cla
Belfast	6	2	2	2	4	2	6	0	2	4	4
Glasgow	6	5	1	0	4	2	2	4	1	5	3
Manchester	7	3	1	3	3	4	5	2	3	4	2
Newcastle	6	3	0	3	3	3	5	1	2	4	4
TOTAL	25	13	4	8	14	11	18	7	8	17	13

Table 2: Multiple logistic regression results for the accommodation task

Application value: Accommodation. *Factor groups are significant at *p*<.05.
2710 tokens.

Factor Group	Factor	Log odds	% of accommodation	Tokens	Centred weight
*Region	Glasgow	1.985	37.4	530	0.879
	Manchester	0.644	16.9	682	0.656
	Belfast	-1.057	3.6	781	0.258
	Newcastle	-1.572	4.6	717	0.172
*Age (+1)	(continuous)	-0.053			
Gender	Male	0.423	18.8	1184	0.604
	Female	-0.423	9.9	1526	0.396
Semantic category	Number	0.205	16.6	489	0.551
	Colour	-0.205	13.2	2221	0.449
Mobility	High	0.21	23.0	1118	0.552
	Low	-0.21	7.3	1592	0.448
Language background	Deaf	0.136	15.1	865	0.534
	Hearing	-0.136	13.2	1845	0.466
Social class	Working	0.15	11.6	1642	0.537
	Middle	-0.15	17.1	1068	0.463
Engagement (+1)	(continuous)	0.029			
Familiarity	0 (never met)	0.267	10.2	2171	0.566
	1 (met once)	0.051	33.8	373	0.513
	2 (know)	-0.317	15.7	166	0.421
School location	Local	0.075	10.5	1811	0.519
	Non-local	-0.075	20.5	899	0.481

Degrees of freedom = 7, Mean = 0.138, Intercept = -0.266, Deviance = 1521.008.
Random effects (participant) standard deviation = 1.231. Random effects (lexical item) standard deviation = 1.231.

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[i] Mouthings are a *"full or partial articulation during a sign's production of the corresponding spoken word"* (Lewin & Schembri, 2011)

[ii] Of the personnel working with deaf students in the DESF Survey, 31% were communication support workers (CSWs) compared to 31% of qualified Teachers of the deaf and only 5% of interpreters. The majority of which had only achieved their BSL Level 2 (45%) qualification – 33% achieved BSL Level 3 and 9% achieved BSL Level 4.