

Contents

Abstract.....	p. 2
Introduction.....	p. 3
Methodology.....	p. 15
Results.....	p. 18
Discussion.....	p. 21
References.....	p. 31
Appendix.....	p. 36

1. Abstract

Previous research has found that people mimic the words uttered by their interlocutors who they believed to be less intelligent. According to the Speech Accommodation Theory people tend to converge for approval and to increase liking. We report an experiment investigating whether people also mimic the words chosen by their conversational partner who they believed to be of a higher social status than themselves. Participants played a picture-matching and -naming game in which they believed that they were interacting with either another student or a university professor. In both conditions their “interlocutor” was actually a computer program producing pre-scripted names for pictures. Participants demonstrated a marginal tendency to repeat the disfavoured name for the picture that their “interlocutor” had used in a previous turn in both conditions. It appears that speakers do form judgments about their interlocutor but that lexical alignment is mainly an automatic process.

2. Introduction

The term ‘alignment’ refers to the concept that in linguistic situations the mental states of the speakers’ are likely to meet at some point during the conversation, which often coincides with the convergence of parts of their speech, such as accent, rate of speech and lexical choices (Giles & Coupland, 1991).

Alignment is a naturally occurring behaviour and can be seen in a number of different forms in a number of different situations. There are many interweaving dimensions and facets to the issue of alignment and many of these dimensions may overlap. However, we will aim to deal with these areas of alignment separately as much as may be possible. For instance, the concept of mirroring behaviour is a rather general topic and often seems to concentrate on physical mimicry and there is often scope for overlap in information from this area with the issue of the Speech Accommodation Theory. Similarly, as the section on Speech Accommodation Theory deals occasionally with the issue of social status there may also be a certain amount of potential overlap with the section covering social dominance.

This project aims to investigate whether a speaker is likely to lexically align more with an interlocutor when they judge that interlocutor to be someone of a higher social status than themselves in comparison to interlocutors judged to be of a similar social status. In this sense, this project aims to study the effect of social dominance in dialogue on lexical alignment. The next section of this introduction will cover some of the relevant background information about lexical alignment and the phenomenon of mirroring behaviour (or mimicry) in general, also touching upon the methods used in some of the appropriate previous research. This first introductory section will be divided into subsections: one covering background information about mirroring behaviour; one covering the Speech Accommodation Theory; one that discusses the idea of social dominance; and one covering previous research into linguistic alignment such as syntactic alignment and lexical alignment. In the last subsection of the introduction we will briefly discuss how social dominance (or social status) may affect a speaker’s behaviour in other linguistic situations. After the introduction section, the hypotheses of the study will be outlined. In the third section we will describe the experimental methodology used to investigate the effect of social status on lexical alignment in order that this research can be replicated if necessary. The fourth section of this report will describe and show the results of the experiment conducted, followed by a detailed discussion of these results. The discussion of the findings will be divided into a number of subsections. Firstly we will focus on how the results link to our hypotheses of the study before moving on to a discussion about whether the study has found alignment to be an automatic process or a mediated process. Then we focus on the results in terms of the Speech Accommodation Theory. This is followed by a discussion about the findings of the experiment in terms of the issue of social dominance. At the closing of the discussion section, we will discuss how this study can be applied to practical everyday linguistic contexts before we discuss some potential avenues for further research into this area of study, addressing questions arising from the results and

observations of this experiment. Appendices, comprising of a copy of the participant questionnaire that was included in the study, can be found after the discussion section, at the end of the report.

Mirroring behaviour

This subsection aims to discuss some of the relevant background into the often-observed mirroring behaviour, covering mirroring of body language as well as mirroring of the linguistic behaviours of others.

There is a well-known phenomenon that occurs in human behaviour called mirroring (also known as mimicry). This can often be observed in human body language when one person is interacting with another person. For example, when two people are conversing, if one person folds their arms, their interlocutor will tend to also fold their arms, and so forth for other physical positions and body postures. Interestingly, researchers' understanding of such mirroring behaviour seems to have stemmed from studies on monkeys showing that when a monkey makes a certain arm movement, particular brain neurons are activated that are also activated when the monkey observes that same arm movement being made by any other primate (Arbib, cited in Nehaniv & Dautenhahn, 2002). What is more, this mirroring behaviour has been linked to the Broca's area of the brain, which is widely known to be largely responsible for the production of language (Rizzolatti & Arbib, 1998) and it has been argued that "the ability to imitate is a key innovation in the evolutionary path leading to language in the human (Arbib, cited in Nehaniv & Dautenhahn, 2002, p. 229)". Indeed, Bock (1989) states that the mimicry of speech is especially prominent in human behaviour.

The psychology of this mirroring phenomenon, in humans at least, has been linked to the desire to be liked or admired by an interlocutor (van Baaren, Holland, Kawakami, & van Knippenberg, 2004; Chartrand, Maddux, & Lakin in Hassin, Uleman & Bargh, 2005), which would suggest that people's beliefs or judgements about their conversational partner was an attributive factor in mirroring body language. Chartrand and Bargh (1999) say that in addition to increasing liking, mimicking can also increase bonding between interlocutors. Interestingly, in an experiment where participants' body language (arm gestures or standing and sitting posture and stance) was mimicked in an interview situation, Van Baaren et al., (2004) showed that mirroring another person's body language can even increase that person's generosity and helpfulness immediately following the mimicking. This finding would suggest that mirroring behaviour was mediated by judgements made by the speaker about their conversational partner, as in this interview situation, the participants were placed in a possibly inferior social position and one in which they wanted to be liked and admired by their interviewer. Interestingly, this study found that the prosocial behaviour that was induced by the interviewer's mirroring behaviour was not only aimed towards the person being mimicked in that the participants were observed to continue such prosocial behaviour (generosity and helpfulness) to other people immediately following the interview situation. These findings were supported by a study by Van

Baaren, Holland, Steenaert, & Van Knippenberg (2003). These researchers showed that the prosocial behavioural consequences found when non-verbal behaviour was mirrored (as in Van Baaren et al., 2004) can also be found to occur with mimicry of verbal behaviour. They conducted an experiment in which a waitress was instructed to repeat back the exact orders from her customers immediately after they had give her the orders in one condition, and not to repeat anything in the other condition. This study found that tips were significantly increased when the customers' exact words were mimicked back to them straight away.

Mirroring behaviour, as mentioned above, has been described by some (e.g., Branigan, Pickering, Pearson, McLean & Brown, submitted; Brennan & Clark, 1996) as being a conscious process in some cases. If such behaviour can indeed be conscious (or even affected) the implication is that there is a certain amount of mediation taking place, whereby the conversational partner who is either aware or unaware of their own mirroring behaviour has judged their interlocutor to be someone that they want to be liked or admired by. Brennan and Clark (1996) carried out an experiment in which participants were paired into 'matcher' and 'director', each with a number of picture cards. The participants were required to engage in dialogue so that the matcher's set of picture cards was in the identical layout to the director's set of cards. The cooperative dialogue between the interlocutors was recorded and their referring expressions analysed in terms of mirroring and alignment. Brennan and Clark put forward the idea that common ground and a mutual understanding is attained by both interlocutors developing a shared 'conceptualisation pact' that may be sensitive to beliefs held by one speaker about their interlocutor's mental state and therefore they claim that mirroring linguistic behaviour is a mediated phenomenon.

Conversely, however, some researchers have described mimicry as being somewhat automatic and not mediated by beliefs about an interlocutor. In other words, interlocutors in dialogue may not be aware of such mirroring behaviour in themselves or in their conversational partner who may be mirroring (mimicking) the movements and stance of their conversational partner, but there may still be noticeable consequences of mirroring regardless of whether or not either interlocutor is aware of such behaviour. Indeed, van Baaren, et al., (2004) state that mimicry can be an unintentional process that can even occur between strangers. However, the term 'automatic' also suggests that the occurrence of mimicry is inevitable and undetermined by other factors regarding the social relationship between the interlocutors. Again, in support of this automatic mimicking account, we return to the findings of research into brain neurons. Iacoboni, Woods, Brass, Bekkering, Mazziotta and Rizzolatti (1999) found that the "'Mirror System Hypothesis' (Arbib, in Nehaniv & Dautenhahn, 2002, p. 230)" found in monkeys that was discussed above, was also applicable to human brains, suggesting that mimicking is hard-wired in humans rather than being a conscious and mediated behaviour. Garrod and Anderson (1987) conducted an experiment whereby pairs of participants played a co-operative maze game on computer screens. The researchers were interested to observe how speakers establish and maintain various language schemes in dialogue. Their findings suggested that using the same referring

expressions in dialogue could be automatic and that both parties aim to attain optimal communication levels. According to these researchers, in order to achieve such effective communication, both of the interlocutors are required to mutually agree (explicitly or implicitly) on the “use and interpretation of the language within the context of that particular exchange (Garrod & Anderson, 1987, p.181)”. In this way each interlocutor is also establishing and maintaining a common ground between them. This idea of co-ordinating language schemes within dialogue could be seen as an alternative approach to the Brennan and Clark ‘conceptualisation pact’ approach discussed earlier in this section. However, it should be noted that Garrod and Anderson’s study claims that the linguistic mirroring behaviour in the dialogues in their experiment were automatic, while Brennan and Clark’s conceptualisation pact rests on the idea that such mirroring in dialogue is mediated by the speaker’s judgements about their interlocutor. In contrast to the researchers who take the viewpoint that mirroring (or alignment) is solely automatic or that is solely a mediated behaviour, Garrod and Pickering (2007) admit that there are both automatic and mediated factors involved in alignment.

In the next subsection, we will review the Speech Accommodation Theory and discuss it in relation to the present study of lexical alignment.

Speech Accommodation Theory

As we have seen above, mirroring behaviour is often found in a linguistic capacity, whereby a speaker may often copy their interlocutor’s linguistic style. Indeed, Bilous and Krauss (1988) stated that “In a dyad, participants’ conversational behaviours may become more similar (*convergence*) or more dissimilar (*divergence*), and accommodation need not be symmetrical: the two parties may change different absolute amounts (Bilous & Krauss, 1988, p. 184).” In this subsection, we will discuss the issue of the Speech Accommodation Theory, concentrating especially on the ideas of convergence and divergence.

Firstly, it should be noted that in general, conversation is usually understood to be a collaborative effort by both the speaker and the listener or listeners and that in dialogue the speaker will strive to make their language easy for their addressee to comprehend (Harley, 2008). Clark (1996) uses the term audience design to refer to the phenomenon of speakers adapting and adjusting their language to suit their particular audience. The term audience design, and its definition by Clark, has much overlap in meaning with the Speech Accommodation Theory (sometimes referred to as Communication Accommodation Theory, or CAT) (Giles & Coupland, 1991). According to Giles and Coupland (1991), the researchers who originally developed the theory, the Speech Accommodation Theory is a “universal characteristic of talk (Giles & Coupland, 1991, p. 60)”, which provides speakers with a range of conversational choices dependent on the social contexts they are conversing in. Speakers often make use of these socially-contextual choices in order to obtain solidarity with their interlocutor, or to create a greater distance from their interlocutor.

The Speech Accommodation Theory rests on the idea that the relationship between two

interlocutors can have a significant influence upon the direction of convergence within a conversational situation (Bilous & Krauss, 1988). Therefore when a speaker either converges to (or diverges from) their interlocutor's speech behaviour, they may be revealing their own beliefs and attitudes about their interlocutor, and as such, revealing the socio-cultural situation within the conversation (Giles & Coupland, 1991). For example, Giles and Coupland proposed that people will converge (i.e., align) towards their interlocutors for approval and to increase liking and Lakin, Jefferis and Cheng (2003) add that convergence towards interlocutors strengthens relational bonds between people. Branigan, Pickering, Pearson and McLean (2009) also agree that convergence may occur on the basis that the speaker hopes to be liked and admired by their interlocutor, but they also state that convergence may occur because the speaker admires their interlocutor and desires to behave in a similar way to them. This kind of convergence is understood to be 'upward' convergence because the speaker, in one sense, is looking up to their interlocutor. Convergence where the speaker aligns to the speech of their interlocutor even though the speaker judges their interlocutor to be of an inferior social status is termed as 'downward' convergence in the sense that the speaker is looking down on their interlocutor (Giles & Powesland, 1978). Jucks, Becker and Bromme (2008) state that it is common for speakers to take into account their interlocutor's social standing (e.g., whether they are outwardly noticeable as being a member of a particular social group). Furthermore, Giles and Coupland state that accommodation is in fact often used to try to integrate oneself into a particular social group or to be perceived to be of a certain social class or group of people. By the same token, members of the same social group are likely to converge to some extent with each others' linguistic behaviour in order to reinforce their bonds in the group, and to some extent, exclude non-members. Welkowitz and Feldstein (1970, as cited in Giles and Coupland, 1991) found evidence for this in a study which showed that if participants in dialogue believed themselves to be of similar personalities and attitudes, they converged to a greater extent than if they believed themselves to be of dissimilar personalities and attitudes. Indeed further evidence of this notion was found by Welkowitz, Feldstein, Finklestein & Aylesworth (1972) who tape-recorded conversations and analysed a number of the linguistic and non-linguistic characteristics in the interlocutors' speech. They found that people who believed their conversational partner to be similar to themselves on a social level converged more in their vocal intensity to those people who believed their conversational partners to be more socially different to them.

Giles and Coupland define convergence as a speaker adapting their speech to another speaker's communicative behaviour and claim that people have been observed to converge to their interlocutor's speech rate, length of utterances, as well as other linguistic and non-linguistic behaviour. Indeed, it is not difficult to find anecdotal evidence to suggest that many people converge to other people's accents when in conversation with a speaker with a broad accent of some kind. Holmes (2001) outlined convergence as being a form of politeness in speech and also points out that if a person mimics the speech of their interlocutor it suggests not only that the language their interlocutor uses is acceptable, but that it is admired and preferred by the person mimicking it. Interestingly, Holmes also states that

people who ‘overdo’ convergence could be seen as being offensively patronising or particularly sycophantic by the speaker being aligned to. Holmes also goes on to suggest that convergence, in accordance with the Speech Accommodation Theory, is more likely to occur if the speaker has a significant reason to reassure or impress their interlocutor, which could imply that the bigger the need for approval and liking by an interlocutor, the greater the degree of convergence towards that interlocutor. Moreover still, one could also argue that this suggests that the more dominant that interlocutor is perceived to be, the bigger the need for approval may be. Murphy and Street’s (1987) study looked at the relationship between a person’s interpersonal orientation and the level of various types of convergence, including speech rate, length of utterances, interruptions and turn-taking. They tested the difference between people with low interpersonal orientation and people with high interpersonal orientation in twenty-five-minute conversations with a confederate interlocutor. Their study showed that speech convergence of a non-content sort is even more common in people who have a high sensitivity to interpersonal orientation. This could indicate that even if alignment is not automatic and is mediated through a speaker’s beliefs about their interlocutor, some people are more likely to converge due to their interpersonal orientations. According to this account, if a speaker judges their partner to be of a higher social status the prediction is that they will lexically align to a greater extent than if their interlocutor is either of a lower social status or of the same social status. Social status, in this respect, is being discussed as being a form of conversation social dominance.

Unlike convergence, divergence can be defined as the ways in which a speaker consciously or unconsciously exaggerates the differences between their own speech behaviour and that of their interlocutor (Giles & Coupland, 1991). Similarly to convergence, a speaker can diverge in many forms, including such forms as accent, lexical choice, length of utterance and speech rate. It has been argued that although divergence can be an effective method of asserting one’s personal social status and emphasising one’s social group, this strategy is a rather forced behaviour and is much more difficult linguistic strategy to maintain compared to convergence, which is argued to be the far more natural phenomenon in human language behaviour (Bourhis, 1979, cited in Giles & Coupland, 1991). In the same way that convergence can occur in either an upward or downward direction, so too can divergence be either upward or downward. Upward divergence could be observed in a conversation where a speaker perceives his interlocutor to be of a much lower social status to himself and in order to make that social barrier more distinctive, he exaggerates his apparently more prestigious linguistic behaviour. Downward divergence might be observed in a conversation where a speaker perceives his interlocutor to be of a much higher social status than him but desires to maintain his own (perhaps youthful) language behaviour and so exaggerates his speech to enhance the social distance between himself and the interlocutor.

The third subsection aims to review the idea of dominance in conversation, and specifically, highlight the meaning of social dominance that is especially relevant in this current research.

Social dominance

In this subsection we will discuss what is meant by ‘social dominance’ in relation to our research and in relation to the ideas of the Speech Accommodation Theory, convergence and divergence.

As a starting point, it may be useful for us to consider what dominance can refer to in communicative situations. In many (perhaps most) situations, the dominant communicator or speaker will be the speaker who holds the most power in that situation. An interesting piece of research by Kvale (2006) into the various methods of conducting interviews, points out that because our society holds a particular importance to a dialogical way of communication it can be difficult for us to distinguish one form of power from another. A dominance speaker, in terms of interaction, has also been defined as someone who is in control of “a major part of the territory which is to be shared by the parties, that is, the interactional space, the discourse ratified and jointly attended to by the actors (what is normally called ‘the floor’) (Linell, Gustavsson, & Juvonen, 1988, p. 415)”. Linell, Gustavsson and Juvonen (1988) identify three separate and distinctive forms of dominance that can be related to dialogue situations. The first is quantitative dominance, in which the ‘dominant’ speaker produces the most amount of speech in the conversation. Second is topical dominance, in which the ‘dominant’ speaker introduces new content words or concepts into the conversation more than their interlocutor. Lastly, they identify interactional dominance, in which the ‘dominant’ speaker is able to manipulate and control their interlocutor’s communicative behaviour within the conversation without their own communicative behaviour bending to the will of the other speaker. It is this type of dominance that is of chief interest in this current research. However, in this report we use the term ‘social dominance’ to refer to this same idea of interactional dominance. This begs the question of how a speaker acquires and maintains interactional dominance in the context of a dialogue situation. Crystal (1997) begins to answer that question by stating that “one of the chief forms of sociolinguistic identity derives from the way in which people are organised into hierarchically ordered social groups, or classes (Crystal, 1997, p. 38)”. This observation brings us closer to understanding how dominance can manifest itself in conversation.

Tannen (cited in Bratt Paulson and Tucker, 2003) admits that although things like country of origin and native language can indicate cultural and social differences between speakers in dialogue, other things such as ethnic heritage, age, geographical regional origin, gender and class also play a major part in determining the extent of cultural and social difference between interlocutors. Sidanius and Pratto (2001) discuss the ‘social dominance theory’ by explaining that our society is governed by a system of hierarchies that mean that certain groups of people acquire dominance and prestige due to a higher level of “positive social value (Sidanius & Pratto, 2001, p. 31)”. These groups of people ascend the hierarchy and thus obtain a high level of social status. However, Sidanius and Pratto point out that the strength of a person’s social status tend to depend heavily on the power and social status of the group that they are members of. In terms of using one’s status to acquire dominance in a conversation situation, Tannen (cited in Bratt Paulson and Tucker, 2003) also states that dominance can be

established in conversation through a variety of linguistic strategies such as interrupting the other speaker, continuously holding 'the floor', and, as mentioned above, introducing new topics or content into the conversation. However, Tannen puts emphasis on the fact that dominance can also be immediately acquired if the other speaker already perceives a significant difference in social status due to an significant age gap, or a social class or seniority difference between the two interlocutors. On the subject of status, Crystal again states that in terms of defining the terms 'status' and 'role', one can view 'status' as being the position a person holds in a certain situation socially (e.g., that a person might have a status as a teacher, a judge, or a husband), whereas that person's 'role' signifies the kind of behaviour that is imposed on them in a particular status by society. For instance, a man may have status as a husband at home, as well as having status as a father at home, both of which would suggest different roles for him within his home life. However, he may also have status as a police officer in his working life, which would suggest yet another very different role. All of these roles would require different behaviour and especially require different language. In relation to the present study, we could consider the likelihood of the man's behaviour being mimicked, or his linguistic behaviour being aligned to by his wife, or his children, his work colleagues, or the general public. One may be inclined to surmise that in his role as a husband, the status is equalled by that of his wife and so alignment may be minimal, but that in his role as father, his linguistic behaviour may be mirrored to a greater extent by his children. The status in his role of police officer may lend itself to a greater extent still of linguistic alignment by the general public but perhaps not so much by his colleagues and superiors within the force. This analogy helps us to understand that someone's status and role are separate concepts, that adopted roles can change according to the situation and that, in terms of linguistic alignment, have varying degrees of importance. Evidence for this suggested hypothesis can be found in a recent study by Oyamoto, Fuglestad and Snyder (2010) who asked participants to rate their personal relationships in terms of the balance of power and influence. The study showed that people who perceive an imbalance of power in their relationships with other people are more likely to self-monitor the communicative behaviour with that person. Conversely, this study found that people who believe their relationship to another person to be equal in power and influence self-monitored their communication to a much lesser extent. In our current study, we will be concentrating on the status afforded to a university professor in a dialogue situation. Garrod and Pickering (2007) point out that a speaker's judgements about their interlocutor are likely to continue throughout the dialogue because the interlocutor's utterances and contributions to the conversation are likely to reveal or suggest aspects of the interlocutor's personality, attitudes, and perhaps, status.

The following subsection concentrates on some of the relevant previous research that has been carried out investigating the phenomenon of both syntactic alignment and lexical alignment, and will begin to discuss this in relation to the role of social dominance in dialogue.

Syntactic and lexical alignment

In this subsection we begin by discussing alignment in a general sense before moving on to deal with the issues of syntactic alignment and lexical alignment and we will relate these phenomena to the role of dominance in dialogue, specifically, social dominance.

In a linguistic capacity, mirroring is termed 'alignment' and can be observed in many forms. For example, speakers often tend to take on aspects of their interlocutor's accent, or other speech patterns, such as their rate of speech, their speech volume, and even their specific syntactic choices or word choices (Giles and Coupland, 1991). These last two examples of aligning to an interlocutor's syntactic choices or word choices are termed syntactic alignment (or 'syntactic priming') and lexical alignment, respectively. Linguistic alignment has been said to help align the speaker's and the listener's situation models (Harley, 2008). Pickering and Garrod (2004) share this idea and claim that if a speaker and a listener establish an implicit common ground, they will also establish an alignment of their mental states. In other words, mental representations of certain concepts and ideas converge more readily if linguistic alignment occurs. Furthermore, Zwaan and Radvansky (1998) claim that establishing and maintaining a mutual situation model between speaker and listener is fundamental to the effectiveness of language comprehension. Similarly, Garrod and Pickering (2007) stress the importance of the cooperative nature of dialogue for effective communication to take place, and state that alignment occurs naturally as a consequence of such cooperation. Clark (1996) is also of the opinion that one should view conversation and dialogue as a joint activity, where both (or all) parties are required to contribute to the conversation to similar extents and support one another within the conversation. As we have mentioned earlier, Garrod and Pickering are of the opinion that linguistic alignment occurs through a combination of automatic and strategic processes.

Branigan, Pickering, Pearson, McLean and Nass (2003) conducted a study into the role that speaker's judgements about their interlocutor play in syntactic alignment. Syntactic alignment refers to the phenomenon whereby a speaker mirrors the syntax of another speaker with whom they are conversing with. In Branigan et al.'s (2003) study, the role of personal judgement on the alignment of syntax was tested. The participants in their study took part in a dialogue game in which they believed they were communicating either with another person or with a computer. The idea here was that participants would make particularly different judgements about their interlocutor (e.g., in the computer-partner condition, participants would believe that the computer had a lower communicative intelligence to a human conversant) and thus, the hypothesis was that alignment to particular syntactic choice would significantly differ between conditions. Interestingly, Branigan et al., (2003) found that no such pattern occurred and that speaker's judgement about their interlocutor's mental capacity does not affect syntactic alignment. Moreover, Branigan et al., state that the syntactic alignment that occurred in their research did not seem to be intentional and that speakers who did align syntactically were not necessarily aware of the adjustments they were making to their linguistic behaviour. In another study by Branigan, Pickering and Cleland (2000) participants took it in turns with a

confederate interlocutor to verbally describe pictures to each other. The confederate's descriptions were scripted using different syntactic structures and the participant's subsequent descriptions were monitored for alignment. Alignment was shown to be affected according to which syntactic structure the confederate had used and thus, Branigan et al. (2000) attributed their findings to syntactic priming effects. Additionally, in another study, Branigan, Pickering, McLean and Cleland (2007), who conducted experiments to examine if a person's role within a conversation had any effect on their linguistic behaviour, found that aligning to an interlocutor's choice of syntactic form does not necessarily have to be limited to dyadic situations of a speaker and addressee; that syntactic alignment occurs in other, wider linguistic contexts. However, they did find that the previous role taken by the current speaker in a conversational situation did affect their syntactic alignment to their interlocutor.

In terms of alignment on other grammatical levels, Levelt and Kelter (1982) have shown that even in telephone conversations, the exact structure of a sentence that is used by one speaker is likely to be aligned to by the speaker on the other end of the telephone line. Specifically, Levelt and Kelter carried out an interesting study whereby shop keepers were telephoned and asked either "What time does your shop close?" or "At what time does your shop close?" Responses seemed to match the structure of the interrogative utterance of the person asking the question (e.g., when the question structure included the initial word "At" shop keepers tended to respond with "At 5 o'clock" and when this initial word was omitted, responses were more likely to be "5 o'clock").

Lexical alignment (i.e., speaker's convergence to particular vocabulary choices) has also been investigated by a number of researchers (e.g., Brennan & Clark, 1996; Garrod & Anderson, 1987; Brennan, 1996). Brennan (1996) discusses the idea of the 'vocabulary problem' originally proposed by Furnas, Landauer, Gomez and Dumais (1983, 1987). This is the idea that because a speaker's mental lexicon is invariably an impressive size, many concepts or objects can be referred to in multiple ways, using a number of different names and referring expressions. Brennan also goes on to expand on the idea that dialogue is a cooperative activity by explaining that in terms of lexical alignment and conceptual pacts, people may use certain referring expressions that have been established earlier in the conversation as a conceptual pact, even when it is not necessarily the simplest option. On the other hand, Brennan also states that speakers are likely to adjust and change their conceptual pacts with different conversational partners or addressees.

Bromme, Jucks and Wagner (2005) asked medical experts to respond to emails with health queries. However, the level of technical language in the emails was either more simplistic or more technical. Their study suggested that the medical experts adjusted the level of technicality to the level suggested in the query, as well as aligning with many of the lexical terms chosen by the 'enquirer'. In a similar study Jucks, Becker and Bromme (2008) investigated the effect of expertise on lexical alignment in written language. Their study also involved medical experts responding, via email, to health queries from laypeople. In this sense, they were testing the lexical alignment of the 'expert' interlocutor, to see if they would downwardly converge to the less medically aware communicant.

They found that “although experts entrain on the word use presented in the inquiry, they do not necessarily reflect the word use of their addressee with regard to his or her knowledge level (Jucks, Becker & Bromme, 2008, p. 514)”.

Addressing the question of whether lexical alignment is a process that happens automatically or a process that is mediated, we can look to the views of Brennan and Clark (1996) who state that lexical alignment occurs through mediated processing, where interlocutors tend to use ‘conceptual pacts’, as discussed above, as well using their perceived beliefs about their conversational partner. On the other side of the coin, we can look to the views of Garrod and Anderson (1987) who take the opinion that no such mediation takes place, that automatic processes are in play when people lexically align with their interlocutor, and that alignment occurs regardless of the perceived beliefs about the conversational partner.

Next we will provide a short description of the method used in our experiment before moving on to provide an in-depth detailed description of the method that was used in our research on the effect of social dominance on lexical alignment.

The aim of the present experiment was to discover if the expectation that social status affects alignment is accurate. To test this expectation an experiment was designed in which participants were led to believe that they would be interacting with a partner who was either introduced to them as being of a higher social status to them or of the same social status to them. The task required of the participants involved alternately providing referent names for pictures and matching a referent name to a picture from a set of two pictures on a screen. Specifically, the participants were introduced to another person, who they were told would be their partner in the picture-naming game. Half of the participants were led to believe that this partner was a lecturer at the university, and the remaining half were led to believe that this partner was another student at the university. During the task the participant was required to select a picture from a choice of two on a screen that appropriately matched the referent name that had been provided for them (apparently by their partner). For example, the name on the screen may have been ‘pencil’ and the pictures choices may have been a pencil and a pen. The second task was to provide a referent name for the partner by typing a word into the computer. The computer chose a picture from the two picture choices on-screen for the participant to name. We measured the amount of times the participant aligned to the referent name provided by the partner when the referent name was a disfavoured alternative. As another example, in one of the participant’s matching turns, they may have seen a picture choice of a ‘bus’ and a ‘car’. If the partner provided the disfavoured name of ‘coach’ (versus the favoured name of ‘bus’), we were interested to discover if the participant was more likely to also use the name ‘coach’ on a later picture-naming turn if they believed the partner to be a university lecturer (versus another student). The working hypothesis is that lexical alignment will occur significantly more when the participant is under the belief that their conversational partner is of a higher social status than them. In other words, when participants are told that they are communicating with someone who is a university professor, they will be more likely to

use a disfavoured name that their 'partner' has used in a previous picture-naming turn than if they are told their partner is of a similar social status to themselves (i.e., another student). This prediction is in line with the claim that "people who aspire to a higher social status will diverge upwards from the speech of those from the same social class (Holmes, 2004, p. 232)". The next part of this report aims to explain the method of how the experiment was conducted.

4. Methodology

Participants

In this current experiment, all of the participants were recruited from the University of Edinburgh student population that was available, which because of the time of year, meant that most participants were postgraduate students, as most undergraduates had left the city for the summer. The confederate that was used was a female native British English speaker and was dressed up appropriate for her role in each condition (either as a university professor or as a mature postgraduate student). The same confederate was used for all participants. All participants were native British English speakers with no language problems and who had prior experience with computers. Each participant took part in only one experiment. In total twenty-four participants took part in this experiment; with each condition having twelve participants.

Items

The experimental and filler items that were used in this current experiment were ones that had been used in a previous study by Branigan, Pickering, Pearson, McLean and Brown (submitted). Sixteen experimental items were used. Each experimental item was made up of a prime picture and a distractor picture (the prime picture having a favoured name and a disfavoured name), a target picture (identical to the prime picture), and a different distractor picture. For example, one item that was used was made up of a prime picture of a lamp/light (*lamp* being the favoured name, *light* being the disfavoured name), a distractor picture of a fork, the target picture (the lamp/light), and a different distractor picture of a knife. There were also 128 filler items used that each consisted of one pair of filler pictures (one of the pictures had a specified name), and another pair of filler pictures for the other corresponding naming task. The sixteen experimental items were randomly ordered for each participant in the two conditions. Conversely, the filler pictures were always presented in the same fixed order for each participant.

Procedure

The participants were randomly assigned to one of two conditions. Either they were assigned to the same social status-partner condition (i.e., the ‘student’ condition) or to the higher social status-partner condition (i.e., the ‘professor’ condition). Altogether 12 of the participants were assigned to the same social status-partner condition (‘student’ condition) and the remaining 12 participants were assigned to the higher social status-participant condition (‘professor’ condition). Before the experiment began, and in order to enhance the belief of the participant that they really would be interacting and communicating with a partner, participants were introduced to a ‘stooge’ in the role of either another student or a university linguistics lecturer, depending on which condition the particular participant had been randomly assigned to. Each participant was first introduced to their ‘partner’ (the confederate). Those in the same social status-partner condition were told that they would be interacting with a similar level student to themselves (a recently graduated student where the participant had also just graduated, or a postgraduate student, if the participant was a postgraduate student). Participants who

had been assigned to the higher social status-partner condition were told that they would be interacting with a senior linguistics lecturer. Participants, as well as the confederate, then read an information sheet that explained to them that they were going to play a picture-naming and picture-matching game with a partner who would be playing a separate room, via a network connection. In order to enforce the belief that the partner was also naive to the experiment, the confederate asked a simple question about the procedure at the same point during the time that the participant was reading the information sheet for every participant. Specifically, once the participant appeared to have finished reading the information sheet, the confederate asked the researcher if the game would be cooperative or competitive, to which the researcher explained that the task would be completely cooperative, and that there would be no winners. All participants were told that they would be referred to as *B* and that their partner would be referred to as *A* and that this distinction applied to the textboxes that would appear on their computer screens. Participants sat in front of a computer screen that displayed the pictures and names. They alternated between having to select a picture to match a name that had appeared to have been provided by their partner, and naming the pictures.

Each participant responded to a total of 144 items, with each item being made up of a partner naming turn (and corresponding participant matching turn), followed by a participant naming turn (and corresponding partner matching turn).

On each of the matching turns, a picture matching the prime picture and a mismatching picture were displayed on-screen side by side above a textbox marked *A*. A name seemingly produced by the partner appeared in the textbox after a certain time delay. This delay was manipulated to be 5000ms on experimental trials, and was manipulated to be 4000ms, 4500ms or 5000ms on filler trials. These variable delays were used to create the effect of real-time responses by the partner. Participants pressed *1* to select the picture on the left of the screen or *2* to select the picture on the right of the screen. The matching picture appeared on the left of the screen on half of the trials and the right of the screen on the remaining half.

On each of the naming turns two pictures appeared on the screen side by side above a textbox marked *B*. After a manipulated timed delay of 2000ms, one of the pictures was outlined by a yellow box (on the left on half of the trials, and on the right for the remaining half). Participants were required to type the name of the yellow-outlined picture and press *Enter*, which they were advised would send the typed name to their partner's textbox. Participants were able to use the *Backspace* key to correct any typographical errors. However, except for the *Enter* key, the *Backspace* key and the alphanumeric keys, all other keys on the keyboard were inactive. Participants were told that their partner would select which one of two pictures matched the name that they had sent. After a time delay of 1500ms (on half of trials) or a time delay of 2000ms (on the remaining half), a red box outlined the highlighted picture. The participant was told that this indicated which picture their partner had selected in response to the name that had been sent. The partner always appeared to have chosen the correct picture. Ten of the filler items were played before the participant played the first experimental item. Each of the

experimental trials were made up of the partner's naming turn for the experimental item (and corresponding participant matching turn), the participant's subsequent naming turn for a filler item (and corresponding partner's matching turn), the partner's naming turn for a filler item (and corresponding participant matching turn), as well as the participant's naming turn for the experimental item (and corresponding partner matching turn). There was always one participant naming turn and one partner naming turn between an experimental picture being named by the partner and the experimental picture appearing on the participant's naming turn.

On each of the partner's naming turns an experimental picture was paired with a filler picture. The partner named the experimental picture for the participant to match. On half of the trials the partner named the experimental picture using the favoured name and named the experimental picture using the disfavoured name on the remaining half.

On each of the participant's naming turns, the experimental picture was paired with a different filler picture. The participant named the experimental picture by typing a word into the textbox. Each filler trial was made up of the partner's naming turn for the experimental item (and corresponding participant matching turn), and the participant's subsequent naming turn for a filler item (and corresponding partner matching turn).

After the participants had completed the picture-naming and picture-matching games, they were then asked to complete a written questionnaire, which was made up of four short questions, each question on a separate sheet so that the participants were less likely to pre-empt the following questions. The questions asked participants to describe the game they had just taken part in, explain what they thought the study was investigating, and to place themselves and then their partner in a social hierarchy scale. A copy of the questionnaire can be found in the appendices at the end of this report. The following section will describe the results of this current experiment.

3. Results

In total there were 384 correctly produced responses in the data. One of the responses was excluded from our analysis of the data as it had had the wrong prime to respond to on the computer program. As a result of this, only 383 responses were statistically analysed for the purposes of this study. We report the frequencies of target responses in the different conditions and these can be seen in Table 1. In general, the participants lexically aligned more to the favoured prime name than to the disfavoured prime name (see Table 1).

None of the participants used the disfavoured name after their partner used the favored name, but there was one instance of a different alternative name being used after the disfavoured name has been provided by the partner (e.g., one participant referred to the picture of the sofa as a ‘couch’ rather than ‘sofa’ or ‘settee’ after their partner had used the disfavoured name ‘settee’). However, the participants frequently used the disfavoured names for pictures after their partner used the disfavoured names.

Table 1. Frequency of responses to favoured and disfavoured targets in each experimental condition

Condition	Prime Type	Alignment	
		Aligned	Non-aligned
Student	Favoured	95	1
	Disfavoured	40	55
Professor	Favoured	95	1
	Disfavoured	61	35

Due to some of the problems inherent with ANOVAs as outlined by Jaeger (2008) it was decided that ANOVA should not be used in the analysis of the data in this current study. Specifically, Jaeger has pointed out that “even ANOVAs over arcsine-square-root transformed proportions of categorical outcomes...can lead to spurious null results and spurious significances (Jaeger, 2008, p. 2)”. In other words, when using ANOVA analyses there is a chance that this type of statistical analysis can show a false significant outcome, when in reality the result is marginal or even non-significant. Instead, a linear mixed effects statistical analysis model was used to analyse the categorical binomially distributed outcome variables data. The linear mixed effects model showed that when both the main effects of preference (i.e., ‘favoured’ versus ‘disfavoured’ prime name) and condition (i.e., ‘student’ condition versus ‘professor’ condition) were tested for their effect on alignment, there was a marginal effect of both preference and condition on alignment, which can be seen in the frequencies in Table 1. In other words, preference affected the incidence of alignment and condition also affected the incidence of alignment. The linear mixed effects model also showed that there was no interaction with

preference and condition on alignment ($\text{Chisq} = 3.2543$; $\text{Df} = 1$; $\text{Pr}(>\text{Chisq}) = 0.07123$). A summary of the fixed effects in the mixed logit model can be seen below in Table 2.

Table 2. Summary of fixed effects

Predictor	Estimate	SE	Wald Z	P
Intercept	-0.4119	0.5102	-0.807	0.4194
Preference	5.5151	0.8987	6.136	<0.001
Condition	1.2444	0.6660	1.869	0.0617

Participants were more likely to produce a disfavored target response after a disfavored prime than after a favored prime. The null model was improved by the inclusion of the main effect of condition. The results of the best fit model, which can be seen in Table 2, reveal a significant parameter estimate associated with the ‘professor’ condition. The participants produced marginally more aligned responses when they believed their interlocutor was a university linguistics lecturer (i.e., higher social status to them) than when they believed it was another university student (i.e., same social status to them).

The results from the post-test questionnaire showed that participants remained naive to the precise aims of the study. In other words, none of the participants correctly guessed exactly what the researchers were investigating. The two final questions were critical in pinpointing the perceived status levels within the dialogue situations. In the higher social status-partner condition, all participants labelled their partner with a higher number than they labelled themselves in the hierarchy scale of 1 to 7 (where 1 was seen as the lowest in the hierarchy and 7 as the highest). The majority of those participants in the higher social status-partner condition, labelled their partner (the ‘professor’) as being only one numerical figure higher than themselves, but a small number showed that they felt there was a larger status distance between themselves and their apparent partner (e.g., one participant labelled herself as a 3 on the 1 – 7 scale and the partner as a 6). All of the participants in the same social status-partner condition labelled themselves and their partner with equal numbers, although the number chosen on the hierarchy scale varied from participant to participant (e.g., one participant gave both himself and the partner a 4 on the 1 – 7 scale, while another participant gave themselves and their partner a 7). Interestingly, one participant from the same social status-partner condition responded by stating that they felt that with each turn of the picture game, the ‘namer’ had more status on the hierarchy scale than the ‘matcher’, but that it would then swap over when that ‘namer’ became the ‘matcher’. However, they also stated that in general, they felt that both conversants were equal on the hierarchy scale. For the purposes of this study, it was only necessary to find that participants were aware of a difference in hierarchy (or status) within the interaction in the higher social status-partner

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condition (the 'professor' condition), and that they felt no such status difference in the same social status-partner condition ('student' condition).

4. Discussion

We will now move on to discuss the results presented above and link them back to the studies discussed in the earlier introduction section.

Discussion of hypotheses

Firstly, the fact that people tended to align more to favoured primes rather than to disfavoured primes is no surprise. In other words, this was an expected outcome of the experiment as the likelihood is that the participants were merely referring to these particular pictures with the word that they themselves would have favoured and used anyway. The fact then, that the model shows that there is an effect of preference on alignment is thus, not a surprise. Indeed, our results showed that participants aligned more to the favoured prime name than to the disfavoured prime name (see Table 1). This finding appears to support Pickering and Garrod's (2004) finding that convergence tends to occur for preferred, or common, ways of speaking. For example, a speaker may be more likely to convergence in the form of lexical alignment when the word choices of his or her interlocutor are more favourable referent names for concepts or objects. It was a rarity that participants produced a different disfavoured name for a picture to the disfavoured name that was produced by the apparent partner. However, this did occur, for example in one case where a participant provided the disfavoured name "couch" for the picture of a sofa, after the apparent partner had previously provided the name "settee" for the same picture. This was relatively surprising, as it would be expected that not producing an aligned response would result in producing the favoured name "sofa". However, as Garrod and Pickering (2007) point out this could be a result of the participant making a judgment about the prior knowledge of their conversational partner. In other words, the participant decides that the particular type of interlocutor has the knowledge and understanding of certain alternative words for the picture and makes the decision that the alternative disfavoured word (in this case "couch" rather than "settee"). It might have been assumed by the participant in this case that the effectiveness of the dialogue would not be compromised by the use of this alternative word for the picture, and that communication would still be optimal.

Our other prominent finding was that people aligned to their conversational partner very frequently when they believed their partner to be a university linguistics lecturer. However, this tendency to align marginally more when they were under the impression that they were in communication with a university linguistics lecturer was of marginal significance. Although there was no interaction between the main effects of preference and condition, what we can deduce from the fact that people aligned marginally more in the 'professor' condition is that the social status of a person's interlocutor is, to some extent, taken into account in dialogue situations. It may not be the primary factor in determining how much the speaker desires to be liked or admired by their interlocutor (or indeed, may not be the overriding factor in determining whether or not a speaker lexically aligns to their interlocutor), but it may be a contributing factor nonetheless. However, as we discussed in the

introduction, previous studies by a number of researchers has suggested that “mimicry enhances positive feelings for the mimicker (Van Baaren et al., 2003, p. 396)”. Van Baaren et al. (2003) also goes on to suggest that if such mimicry increases the positive feelings for the person linguistically aligning to another speaker, it could also be argued that people who are being aligned to become more benevolent towards the speaker aligning towards them. Therefore, as the participants in this present study lexically aligned to their partner to a great extent in either condition we could arguably attribute this alignment to the speakers’ desire to increase the interpersonal closeness between themselves and their interlocutor and to increase the likelihood that their interlocutor becomes more benevolent towards them.

At a basic level our results support the work of researchers such as Garrod and Anderson (1987) who found that people engaged in conversation together tend to mimic each other expression and that interpretation of expressions was the same for both conversants. Garrod and Anderson’s work also put emphasis on the fact that the mutual goal for speakers in a dialogue context is for shared intelligibility and for effective and optimal communication to take place. However, in terms of our hypotheses that were outlined after the introduction section of this report, we find that our working hypothesis (that social dominance would have an effect on the lexical alignment in our experiment) was not borne out. The null hypothesis of this study was that lexical alignment will not be affected either way by the beliefs held by the participant about their conversational partner. This null hypothesis was borne out. In other words there was no significant correlation between participants’ beliefs about their conversational partner and the occurrences of the participant using a disfavoured name that their ‘partner’ has used in a previous picture-naming turn. As the null hypothesis was borne out, the results are in support of the research conducted by Branigan et al., (2003) who found that in a similar experiment with naive participants, it was of no consequence whether the participants were told that their partner was a human or a computer. The beliefs that the participants held about the mental state of their conversational partner did not affect the extent to which the participants aligned to the syntactic form of their partner. This also goes some way to addressing the question highlighted by Branigan et al., (2003) about the extent to which speaker’s judgements about their conversational partner affect the ways that they speak to the interlocutor.

The next subsection of this discussion will focus on our results in terms of the issue of whether alignment is shown to be an automatic process or a mediated one.

Alignment as an automatic or a mediated process

In terms of finding evidence to suggest that lexical alignment is an automatic process or one that is mediated by people’s beliefs about their interlocutor, we have shown that although people do indeed make judgments about the social status of their interlocutors, those judgments do not necessarily directly cause people to lexically align in accordance with those judgments. In other words, although people do take social status into account, lexical alignment occurs in dialogue regardless of the

interlocutor's perceived social status, and thus we show marginal evidence that suggests that lexical alignment is an automatic process to a certain extent. This finding supports the suggestions made in the research conducted by Pickering and Garrod (2004) as well as that of Branigan et al. (2003) who also found that the beliefs held by speakers about their interlocutors did not necessarily affect the lexical alignment in dialogue. Our finding also refutes Brennan and Clark's (1996) finding, discussed earlier in the introduction section, in their research that claimed that alignment is mediated by the beliefs made by speakers about their conversational partner. Kvale (2006) suggests a possible reason for the fact that there was a significant perceived difference in social status in the above experiment, but that it was not necessarily a certain cause for an increase in lexical alignment: "we are so immersed in a dialogical culture that it may be difficult to see its specific dialogical forms of power exertion (Kvale, 2006, p. 495)". By this token, one would be led to assume that certain types of social status are not particularly obvious. In this way these certain types of status roles may be less authoritative or overpowering in particular situations. For instance, in our manipulated situation where an apparent university lecturer is taking part in a cooperative communication with a student participant, perhaps the social status afforded to the university lecturer is not prominent enough (or relevant enough) in the situation to have any immediate effect on the lexical alignment of the student participant. Similarly to other previous studies including researchers such as Horton and Gerrig (2005) as well as Hanna et al. (2003), we have found that speakers' judgements about their addressee is not necessarily the main attributing factor in the adaptation of the speaker's language choices, and we would agree with these researchers claims that the memory processes that occur normally in human conversation situations play perhaps much more of a part in the lexical choices of the speaker than the beliefs about the interlocutor's social status. The results of this present piece of research support the description of dialogue by Garrod and Pickering (2007) which emphasises the cooperative nature of the process of dialogue. In this description they highlight the fact that dialogue is an "inherently interactive process (Garrod and Pickering, 2007, p. 443)" and interestingly they propose the idea that the phenomenon of alignment occurs through an interaction of mediated and automatic mechanisms. In addition, we should take into account the point made by Brown and Dell (1987) that when alignment occurs, the conversational partners establish and strengthen the shared accessible knowledge, which rests at the centre of Pickering and Garrod's (2004) idea of 'common ground'. This idea of 'common ground' only goes to emphasise the strength of the cooperative nature of dialogue and the notion that both automatic and mediated strategies are combined in the process of alignment. This idea that mediated mechanisms and automatic mechanisms are both involved in alignment processes seems particularly reasonable in light of our findings from the current study as it was clear that the participants who took part in the study had made some personal judgements about the social status (and therefore, the social dominance) of their conversational partner in the communication. However, as we have stated above, it is not clear that the judgements made by the participants about their interlocutor were necessarily the principle factor in causing the lexical alignment that was observed.

One other factor that might be interesting to examine is that of the lack of other naturally occurring alignment behaviours. For instance, earlier in this report we discussed the phenomenon of mirroring body language. Chartrand and Bargh's (1999) work on imitation behaviour in communication mentions the fact that people tend to mimic the body language (position and posture) as well as the facial expressions of the person they are communicating with. However, this behaviour is dependent upon the conversants being able to see each other physically. In our current study the participant was under the impression that their conversational partner was in another room communicating via a computer network connection, and thus was not able to physically see them. This means that non-linguistic alignment (i.e., mimicry of body language) could not take place. This raises a question regarding the levels of alignment that may have occurred. As Garrod and Pickering (2007) state, "these external indications of alignment lead to alignment of mental states (Garrod & Pickering, 2007, p. 446)" and with this in mind, it might be argued that with external indications of alignment unable to occur, alignment of the conversants' mental states would not be optimal. Thus, perhaps the reason the frequency of the lexical alignment in both conditions was particularly high was due to the reduced level of external indications of alignment. In other words, the participants were required to lexically align to a greater extent in order that the effectiveness of the communication was obtained and sustained. This, however, is not exactly in accord with the viewpoint of Garrod and Pickering, who state that alignment that occurs at one particular level of linguistic processing can trigger alignment at other levels, not that the lack of alignment at one particular level leads to a higher level of alignment at other levels.

The following subsection concentrates on the findings of the current experiment in relation to the Speech Accommodation Theory specifically.

Speech Accommodation Theory

In relation to the concept of the Speech Accommodation Theory, originally developed by Giles and Coupland (1991), we can provide support to researchers such as Street (1982) and Bradac, Mulac and House (1988) who have claimed that the idea of convergence can be thought of in terms of being a continuum of convergence, where people can converge to varying degrees and where the notion of partial convergence is seen as a commonality and the notion of full convergence is seen as a rarity. In other words, in this present study we have shown that speakers are able to converge towards their interlocutor's lexical choice frequently but that this convergence is only partial in that none of the participants aligned to the disfavoured name provided by their conversational partner for every experimental item. This means that even on a lexical level, there was never full convergence to either the 'student' condition or the 'professor' condition. Furthermore, lexical convergence is merely one form of convergence, and we are unable to claim that the high level of lexical alignment that we did observe constitutes convergence (or 'alignment') of mental states as Pickering and Garrod (2004) suggested as being the end result of linguistic alignment.

According to Holmes (2001) people converge due to an aspiration of being accepted as part of a higher social status. The results of this present study does not support this theory as participants lexically aligned greatly in both conditions (i.e., to another student and to a university professor). However, we can suggest that the lexical alignment observed in our experiment might go some way to establishing the ‘conceptualisation pacts’ between the participants and their apparent conversational partner, as discussed by Brennan and Clark (1996). In addition, we can also suggest that the lexical alignment that we observed in the current experiment goes some way to ensuring alignment of the two communicants’ mental representations, as put forward by other psycholinguists including Harley (2008). As we have mentioned above, the results of the current experiment showed that there was only a marginal significance in the effect of social status on lexical alignment in dialogue. Another possible reason for there being no significant difference in alignment between the ‘student’ condition and the ‘professor’ condition is one highlighted by Holmes (2001), who suggested that one of the problems with convergence in dialogue is that it can be perceived as being sycophantic and that people are likely to avoid converging to another’s speech if they think that the person they are converging towards would perceive such linguistic behaviour in this way. With this in mind, in relation to our study, one might conclude that the reason there was not a significant difference between the incidence of lexical alignment in the ‘student’ condition and the incidence of alignment in the ‘professor’ condition is that to some extent the participants were aware of their lexical alignment and did not want to align fully to their partner’s word choice all the time (in the ‘professor’ condition) due to possibility that their high level of convergence might be perceived as being sycophantic. However, due to the high levels of lexical alignment in both conditions, and especially due to the similar degree of lexical alignment in each condition, we suggest that this reason is unlikely as if it were indeed the reason we would expect to see a lower degree of lexical alignment in the ‘professor’ condition than was actually observed. Another possible reason that the results of our current experiment showed that there was only a marginal significance in the effect of social dominance on lexical alignment may stem from the same outcome of research by Welkowitz and Feldstein (1970, cited in Giles & Coupland, 1991). They found that convergent linguistic behaviour such as alignment of the duration of pauses in speech was increased when participants in dyadic conversations believed themselves to be of similar personalities and attitudes than if they believed themselves to have dissimilar personalities and attitudes. In respect to the findings of our present study, Welkowitz and Feldstein’s results suggest that it is no surprise that our participants did not significantly align more to disfavoured primes in the ‘professor’ condition. In fact, by suggestion of their findings, one would expect our participants to have significantly aligned more to disfavoured primes in the ‘student’ condition. As we have seen from Table 1 above in the results section, this was not the outcome of our experiment. In fact our results do not support Welkowitz and Feldstein’s research as there was no interaction between the main effect of condition and lexical alignment in our study.

After an extensive exploration into the phenomenon of lexical alignment in dialogue and the

possible affect that a speaker's beliefs about their interlocutor may have on lexical alignment in dialogue, it is interesting to pay attention to the statements of researchers such as Trudgill (1986) and Zwaan and Radvansky (1998) who discuss the purpose of alignment in general. Trudgill's viewpoint is that convergence in everyday language situations such as the one we contrived to occur in our experiment (i.e., a student communicating with another student, or a student communicating with a university lecturer) are necessary stepping stones in a process that leads to the individual speaker altering their language usage on a more long-term basis. In fact, in addition, Trudgill even suggests that this process of language use change can occur at group level as well as at an individual level. Alternatively, Zwaan and Radvansky claim that the purpose of alignment in a linguistic sense (e.g., syntactic alignment, lexical alignment, alignment of the rate of speech, intonation, or even pitch) is to align the situation models of the speakers who are involved in conversation. This statement is not necessarily only applicable to dialogue situations, however, and can be applied to the notion of audience design in the sense that if a speaker is in conversation with a number of interlocutors at one time, they can align to more than one other interlocutor. This is perhaps of particular interest when we look at the issue of lexical alignment in more everyday linguistic situations other than dialogue.

We will now focus our attention to what our results suggest about the idea of social dominance in dialogue situations.

Social dominance

One of the issues that was central to this piece of research was that of social dominance. Furthermore, time was spent in earlier on in this report on the definition of the term 'social dominance' in terms of its use within this report. In our discussion of our definition of the term social dominance we highlighted the fact that our experiment centred around the status afforded to a university linguistics lecturer in a dialogue situation and we talked about the point made by Garrod and Pickering (2007) that the judgements made by a speaker about their interlocutor are likely to continue during a conversation because the interlocutor's utterances and contributions tend to reveal or suggest certain aspects of their personality, attitudes, and status. It was expected that defining social dominance in such a way as to emphasise the importance of occupational status (i.e., introducing the confederate as a university professor in one condition) would produce results to find out if social dominance affected lexical alignment or not. This expectation arose from the claim that there is "greater convergence to language of another who was an occupational superior (Giles & Coupland, 1991, p. 73)". The idea here, in relation to the experiment we conducted, is that the participants who were assigned to the 'professor' condition perceived the confederate partner to be their occupational superior in the situation of the university setting. In fact, this idea was particularly crucial to the purposes of the study. It was assumed that those participants who were assigned to the 'professor' condition would perceive their partner to be socially higher up the occupational ladder than themselves within the university, or academic, setting, at least. Conversely, it was also assumed that those participants in the 'student' condition

would perceive their partner to be on an equal occupational footing to them within the university setting (or indeed, the academic setting). Indeed, as outlined in the results section, all of the participants who were assigned to the ‘professor’ condition did rate themselves lower in a hierarchy scale to that of their apparent partner, and those assigned to the ‘student’ condition rated themselves equal to their apparent partner in the same hierarchy scale.

Therefore, taking this definition of social dominance into account, and the assumptions that were made for the purposes of the experiment, in terms of the issue of social dominance in relation to our findings, we can say that social dominance only has a small part to play in lexical alignment in dialogue. This goes some way to answering our research question which asked what role social dominance has in lexical alignment within dialogue. In addition, if we refer back to the research mentioned in the introduction section by Branigan, Pickering, McLean and Cleland (2007) we can attempt to link our findings to the concept of a speaker’s role within a conversation and how this might affect the linguistic behaviour of that speaker. In terms of our idea of social dominance, it seems, from our findings, that regardless of the roles each conversant has in the communication, a speaker’s linguistic behaviour is determined by other factors in the conversational dynamic. In other words, the social roles that the participants perceive themselves to have in the context of our experiment did not seem to affect their linguistic behaviour in our study. Therefore, our current piece of research does not support the findings by Branigan et al. (2007). However, linking our findings to the issue mentioned in the final part of the introduction, we are still not able to answer the question of whether or not social dominance may have more of a role in non-dialogue situations, such as classroom situations, where the language situation is better described as a speaker and audience situation (albeit, an audience who are required to interact with the speaker). Moreover, this language situation is perhaps one where the social status effect may be more salient in that fact that the less-socially dominant audience (i.e. the pupils) are necessarily younger and perhaps more suggestible and susceptible to lexical alignment.

With this in mind, we will now spend some time discussing the possible practical applications of our research into the role of social dominance on lexical alignment.

Practical applications

At this point we will turn our attention to how our research into the role of social dominance in dialogue on lexical alignment might be applied to situations outside of the experimental laboratory. As the main focus of the current study has been to test whether social dominance affects lexical alignment, it may be useful to consider some of the dynamics that potentially have discrepancies in social status. One such dynamic is the one encountered in the relationship situation of doctor and patient situation, which has been touched upon above in the introduction section of this report in the research of Bromme, Jucks and Wagner (2005) and Jucks, Becker and Bromme (2008). Another such interesting dynamic which inherently shows an imbalance of status is that of teacher and pupil in many levels of education from pre-school to university. Observations of in-classroom

behaviour, as well as behaviour seen outside of the classroom has shown that “teacher behaviour is commonly ‘mirrored’ by its audience (Edwards & Westgate, 1994, p. 29)”, which in this sense, the term audience would refer to the pupils in the classroom. Edwards and Westgate also point out that in only a small number of classrooms will most of the pupils be totally familiar with Standard English and that in the majority of classrooms it will be likely that the whole classroom of pupils will speak a divergent variety of English to the standard. Many will be used to speaking a particular regional dialect or perhaps another language altogether (Delpit & Dowdy, 2002). This common difference in language varieties of the teacher’s probable language use and the pupils’ language use highlights the perceived imbalance of power and status within the classroom situation. These authors also discuss the contentious issue of whether the form of language that pupils will often face in the classroom (i.e., the language that teachers may use) can be cognitively difficult for the pupils. Edwards and Westgate go on to discuss the specific language areas that pupils are known to struggle with. Language that is used to explain concepts or provide summaries and generalizations can often be problematic for children in the classroom, and is often used by pupils as mere mimicry, rather than as true understanding of the language (Rosen, 1967, cited in Edwards & Westgate, 1994). It has been put forward that terminology and other expository vocabulary that is likely to be misunderstood by pupils should be introduced by attaching the terms to ‘stories’ or backgrounded with analogies (Edwards & Westgate, 1994).

If we also take into account the idea that teachers can be thought of as role models for their classroom students and relate it to the information above about the imbalance of social status within the classroom, we can see that this is a particularly relevant and powerful issue in such language situations. We suggest that in a classroom situation children look up to their teachers and regard them as being in a position of higher social status to them. Thus, the children are likely to align to the teacher’s language behaviour. Furthermore, if the teacher uses vocabulary that the children do not understand there is a possibility that the children will mimic the vocabulary regardless of whether or not they have a proper grasp of the meaning of the words they are mimicking. This scenario highlights the role that teachers play in the development of children’s mental lexicon and their general vocabulary usage. It also emphasises the importance of providing thorough definitions to less basic terminology and expository language in order to avoid mimicry that is devoid of real understanding and encourage accurate use of language.

In the next section of the discussion of this report we will concentrate our attention to some ideas for interesting avenues of further research.

Further research

In this final subsection of our discussion we will begin to suggest some potential pathways for research in the future that have stemmed from the issues of this current study and that may address some questions that have arisen from this work. Although this present piece of research goes a certain way to answering some specific questions, it also goes some way to raising other questions, which may also be

interesting to investigate in the future by other interested researchers. For instance, one such question might be whether or not the act of mirroring a person's behaviour or aligning to their language patterns and choices actually works in the sense that has been alluded to in the introduction and in the discussion parts of this report. In other words, if a speaker, either automatically or consciously, mirrors (or aligns to) their conversational partner, does this mean that their partner is actually more likely to feel positive towards or admire that speaker? One could potentially answer this question by conducting an experiment similar in some aspects to the present study. A potential experiment might be conducted whereby instead of measuring the rate of lexical alignment of the participant, a confederate would actually play the picture-naming and picture-matching games with the participant and the participant would either always be aligned to by the confederate participant or never be aligned to by the confederate participant. Before the experiment is started the naive participant would be introduced to the confederate partner briefly and once all the trials were completed, the participant would fill out a questionnaire in which they would be asked about the levels of liking or positive feeling and admiration they felt towards their 'partner'. By comparing how much the participants felt they liked their partner between the two conditions, one might be able to find out if aligning to someone's lexical choices actually does increase liking and admiration. However, this methodology would not necessarily answer the same question in regards to mirroring a conversational partner's body language.

Furthermore, there is another question that could be posed after this present study's discussion regarding the effects of the beliefs about the social status of the speaker's partner on lexical alignment. For example, in the current experiment there were a select few participants who aligned to a very minimal extent, even when their apparent 'partner' was introduced to them as a university linguistics lecturer. The question is whether or not lexical alignment is effected by the belief of the speaker's own social status or even of the speaker's own self-esteem. In other words, is someone more likely to lexically align to their conversational partner if they are insecure about their own social status or if they generally have a low self-esteem, regardless of their social status? In other words, does a person's personality affect the likelihood of them aligning to another's lexical choice? One way to test this might be to use a similar methodology using a picture-naming and picture-matching task, but manipulating the participants in terms of their personal confidence and self-esteem. One way to do this might be to run pre-tests to find suitable participants for certain conditions of the experiment proper. The pre-tests might compromise a personality test or questionnaire to find extroverted participants for a condition in the main experiment using conversants who have high self-esteem, and to find introverted participants for a second condition in the main experiment using conversants who have low self-esteem. A working hypothesis might arguably be that if a speaker generally has high self-esteem, they are less likely to lexically align to disfavoured names due to high confidence levels.

In conclusion, this report has explored the role that social status plays in dialogue situations and its effect on the occurrence of lexical alignment in dialogue situations. The study has found that

although social status is taken into consideration, it does not perhaps have a hugely important role in determining the extent to which a speaker lexically aligns with their interlocutor. This report has shown that lexical alignment is likely to occur regardless of the beliefs held by a speaker about their interlocutor. This finding highlights the importance and consequences of lexical alignment (and to a certain extent, syntactic alignment) in everyday linguistic situations, such as the ones discussed above including classroom teaching, where people in positions of power and authority are looked up to and where the people mimicking their language may not fully understand the language they are aligning towards. A strong message to come out of this research is that although social dominance does not seem to affect much of the linguistic behaviour of speakers in dialogue, there is still much to be said for the arguments supported by researchers such as Garrod and Anderson that dialogue is largely a cooperative activity, where the shared objective is to attain an optimal level of comprehension and understanding using 'common ground' that is shared between the speaker and their interlocutor.

References

- Bilous, F. R., & Krauss, R. M. (1988). Dominance and accommodation in the conversational behaviours of same- and mixed-gender dyads. *Language and Communication*, 8, 183 -194.
- Bock, K. (1989). Closed-class immanence in sentence production. *Cognition*, 31, 163 – 186.
- Bradac, J. J., Mulac, A., & House, A. (1988). Lexical diversity and magnitude of convergent versus divergent style shifting – perceptual and evaluative consequences. *Language and Communication*, 8, 213 – 228.
- Branigan, H.P., Pickering, M. J., & Cleland, A. A. (2000). Syntactic coordination in dialogue. *Cognition*, 75, B13-B25.
- Branigan, H. P., Pickering, M. J., Pearson, J., McLean, J. F., & Nass, C. I. (2003). Syntactic alignment between computers and people: the role of belief about mental states. *Proceedings of the Twenty-fifth Annual Conference of the Cognitive Science Society, Pts 1 and 2*. Boston, MA, p. 186 – 191.
- Branigan, H. P., Pickering, M. J., Pearson, J., McLean, J. F., & Brown, A. (submitted). The role of beliefs in lexical alignment: Evidence from dialogues with humans and computers.
- Branigan, H. P., Pickering, M. J., McLean, J. F., & Cleland, A. A. (2007). Syntactic alignment and participant role in dialogue. *Cognition*, 104, 163 – 197.
- Branigan, H. P., Pickering, M. J., Pearson, J., & McLean, J. F. (2009). Linguistic alignment between people and computers. *Journal of Pragmatics*, 3084, 1 -1 4.
- Brennan, S. E. (1996). Lexical entrainment in spontaneous dialog. *Proceedings of the 1996 International Symposium on Spoken Dialogue*. Philadelphia, PA, p. 41 – 44.
- Brennan, S. E., & Clark, H. H. (1996). Conceptual pacts and lexical choice in conversation. *Journal of Experimental Psychology: Learning, Memory and Cognition*, 22, 1482 – 1493.
- Bromme, R., Jucks, R., & Wagner, T. (2005). How to refer to ‘diabetes’? Language in online health advice. *Applied Cognitive Psychology*, 19, 569 – 586.

- Brown, P. M., & Dell, G. S. (1987). Adapting production to comprehension: the explicit mention of instruments. *Cognitive Psychology*, *19*, 441 – 472.
- Chartrand, T. L., & Bargh, J. A. (1999). The Chameleon effect: the perception-behaviour link and social interaction. *Journal of Personality and Social Psychology*, *76*, 893 – 910.
- Chartrand, T. L., Maddux, W. W., & Lakin, J. L. (2005). Beyond the perception-behaviour link: The ubiquitous utility and motivational moderators of nonconscious mimicry, in R. R. Hassin, J. S. Uleman, & J. A. Bargh. *The new unconscious*. Oxford: Oxford University Press.
- Clark, H. H. (1996). *Using language*. Cambridge: Cambridge University Press.
- Crystal, D. (1997). *The Cambridge Encyclopedia of Language*. Cambridge: Cambridge University Press.
- Delpit, L., & Dowdy, J. K. (2002). *The skin that we speak: Thoughts on language and culture in the classroom*. New York: The New Press.
- Edwards, A. D., & Westgate, D. P. G. (1994). *Investigating classroom talk*. London: The Falmer Press.
- Furnas, G. W., Landauer, T. K., Gomez, L. M., & Dumais, S. T. (1983). Statistical semantics: Analysis of the potential performance of keyword information systems, *Bell Systems Technical Journal*, *62*, 1753-1806.
- Garrod, S., & Anderson, A. (1987). Saying what you mean in dialogue: a study in conceptual and semantic co-ordination. *Cognition*, *27*, 181 – 218.
- Garrod, S., & Pickering, M. J. (2007). Alignment in dialogue. In *The Oxford Handbook of Psycholinguistics*. M. G. Gaskell (Ed). Oxford: Oxford University Press.
- Giles, H., & Coupland, N. (1991). *Language: contexts and consequences*. Buckingham: Open University Press.
- Giles, H., & Powesland, P. F. (1978). Speech style and social evaluation. *Language in*

Society, 7, 428 – 433.

Hanna, J. E., Tanenhaus, M. K., & Trueswell, J. C. (2003). The effects of common ground and perspective on domains of referential interpretation. *Journal of Memory and Language*, 49, 43 – 61.

Harley, T. A. (2008). *The psychology of language: from data to theory*. East Sussex: Psychology Press.

Holmes, J. (2000). *An introduction to sociolinguistics*. England: Pearson Education Limited.

Horton, W. S., & Gerrig, R. J. (2005). Conversational common ground and memory processes in language production. *Discourse Processes*, 40, 1 – 35.

Iacoboni, M., Woods, R., Brass, M., Bekkering, H., Mazziotta, J.C., & Rizzolatti, G. (1999). Cortical mechanisms of human imitation. *Science*, 286, 2526–2528.

Jaeger, T. F. (2008). Categorical data analysis: Away from ANOVAs (transformation or not) and towards logit mixed models. *Journal of Memory and Language*, 59, 434 – 446.

Jucks, R., Becker, B. M., & Bromme, R. (2008). Lexical entrainment in written discourse: is experts' word use adapted to the addressee? *Discourse Processes*, 45, 497 – 518.

Kvale, S. (2006). Dominance through interviews and dialogues. *Qualitative Inquiry*, 12, 480 – 500.

Lakin, J. L., Jefferis, V. E., & Cheng, C. M. (2003). The chameleon effect as social glue: evidence for the evolutionary significance of nonconscious mimicry. *Journal of Nonverbal Behaviour*, 27, 145–162.

Levelt, W. J.M., & Kelter, S. (1982). Surface form and memory in question answering. *Cognitive Psychology* 14, 78–106.

Linell, P., Gustavsson, L., & Juvonen, P. (1988). Interactional dominance in dyadic communication: a representation of initiative-response analysis. *Linguistics*, 26, 415 – 442.

- Murphy, T. L., & Street, R. L. (1987). Interpersonal orientation and speech behaviour. *Communication Monographs*, 54, 42 – 62.
- Nehaniv, K., & Dautenhahn, C. (2002). Imitation in animals and artefacts. *The Journal of the Society for the Study of Artificial Intelligence and the Simulation of Behaviour*, 1, 303 – 304.
- Oyamot, C. M., Fuglestad, P. T., & Snyder, M. (2010). Balance of power and influence in relationships: the role of self-monitoring. *Journal of Social and Personal Relationships*, 27, 23 – 46.
- Pickering, M. J., & Garrod, S. (2004). Toward a mechanistic psychology of dialogue. *Behavioural and Brain Sciences*, 27, 169–225.
- Rizzolatti, G. & Arbib, M. A. (1998). Language within our grasp. *Trends in Neurosciences*, 21, 188 – 194.
- Sidanius, J., & Pratto, F. (2001). *Social dominance: an intergroup theory of social hierarchy and oppression*. Cambridge: Cambridge University Press.
- Snodgrass, J. G., & Vanderwart, M. (1980). A Standardized Set of 260 Pictures: Norms for Name Agreement, Image Agreement, Familiarity, and Visual Complexity. *Journal of Experimental Psychology: Human Learning and Memory*, 6, 174 – 215.
- Tannen, D. (2003). The relativity of linguistic strategies: Rethinking power and solidarity in gender dominance. In C. Bratt Paulson, & G. R. Tucker. *Sociolinguistics: the essential readings*. Oxford: Blackwell Publishing.
- Trudgill, P. (1986). *Dialects in Contact*. Oxford: Blackwell.
- Van Baaren, R. B., Holland, R. W., Steenaert, B., & Van Knippenberg, A. (2003). Mimicry for money: behavioural consequences of imitation. *Journal of Experimental Psychology*, 39, 393 – 398.
- Van Baaren, R. B., Holland, R. W., Kawakami, K., & Van Knippenberg, A. (2004). Mimicry and prosocial behaviour. *Psychological Science*, 15, 71 – 74.

Welkowitz, J., Feldstein, S., Finklestein, M., & Aylesworth, L. (1972). Changes in vocal intensity as a function of interspeaker influence. *Perceptual and Motor Skills*, 35, 715 – 718.

Zwaan, R. A., & Radvansky, G. A. (1998). Situation models in language comprehension and memory. *Psychological Bulletin*, 123, 162 – 185.

Participant Questionnaire

Question 1

If you were to describe the picture games that you have just taken part in to someone else, how would you describe it to them?

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Question 2

What do you think the experiment that you have just taken part in was investigating?

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Question 3

Many organisations have a hierarchical structure. For example, in a hospital a porter would be relatively low in the hierarchy, whereas a surgeon would be very high in the hierarchy. Using a scale of 1 – 7 (where 1 is the lowest in the hierarchy and 7 is the highest), where would you place yourself in the communication situation that you have just taken part in?

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Question 4

Using the same 1 – 7 scale for hierarchy that you have just used, where would you place your partner in the communication you have just been in?

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