# Women*Standardness: The Phonetic Accommodation of Dutch-speaking Women to Different English Varieties

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**Abstract**

Phonetic accommodation, also known as adaptation, convergence, entrainment or alignment, is a process that takes place when a speaker modifies aspects of their speech to adjust to their interlocutor during a conversational encounter (Burin & Ballier, 2017). Convergence has been comprehensively examined in recent decades and particularly included L1 male and female participants, with much of the literature reporting women's higher sensitivity to the context encircling adaptation (Ruch and de Benito, 2023). This experimental design has left L2 speakers as an understudied group in the field. Additionally, standard varieties are the default choice in the experiments. The aim of this research is to investigate accommodation among female Dutch L2E speakers employing different standard and non-standard features (GB Palm /ɑː/, Scottish GOAT /o(ː)/, English fricative /th/, and fundamental frequency). In addition, the participants rated these two accents in terms of pleasantness, familiarity and prestige. The results show that exposure to the accents leads to phonetic accommodation in some of the target features. However, the correlations between the acoustic behaviour and the attitudinal components were not significant. The results are discussed considering different accommodation theories in the social and cognitive domains, and a thorough examination is performed to understand the acoustic behaviour of the participants.

*Keywords:* phonetic accommodation, L2 speakers, English, standard variety, non-standard variety**,** Dutch speakers. women, female speakers.

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**Table of Contents**

# 1. Introduction

Phonetic accommodation, also known as adaptation, convergence, entrainment or alignment, is a process that takes place when a speaker modifies aspects of their speech to adjust to their interlocutor during a conversational encounter (Burin & Ballier, 2017). For example, these aspects in the phonetic domain can be vowel quality, voice onset time (VOT) or suprasegmental features such as fundamental frequency. Convergence has been comprehensively examined in recent decades and particularly including native (also known as L1) male and female participants, with much of the literature reporting women's higher sensitivity to the context encircling adaptation (Ruch and de Benito, 2023). This experimental design has left second language (L2) speakers as an understudied group in the field. Additionally, standard varieties are the default choice in the experiments. The aim of the current research is to investigate accommodation among female Dutch L2E speakers employing different standard and non-standard features from different English varieties and other general features (GB Palm /ɑː/ F1 and F2, Scottish GOAT /o(ː)/ F1, English fricative /th/, and fundamental frequency). This thesis includes a theoretical background where this topic is discussed in relation to its theoretical approaches, analysing previous research regarding phonetic accommodation with women, L2 participants and different language varieties. The theoretical background is followed by the research questions and hypotheses, methodology description, the results, and their discussion. The discussion contains a thorough interpretation of the results in order to understand the behaviour of the participants, and they are examined considering different accommodation theories in the social and cognitive domains.

## 2. Theoretical Background

### 2.1 Theoretical Considerations on Accommodation

Phonetic accommodation is a process that takes place when a speaker changes one or several elements in their speech to adapt to the linguistic style of their interlocutor in a conversation (Levitan & Hirschberg, 2011). The adaptation may occur at one or multiple levels, such as through changes in intonation, selection of vocabulary, or the articulation of phonemes. The reasons for the occurrence of accommodation in a conversational encounter can be several; for example, to improve mutual intelligibility, signal social alignment, reduce the social distance between partners, express affiliation or a desire for approval. The study of phonetic accommodation is very relevant, particularly as a social and cognitive process. For example, the analysis of individual phonetic changes and how they spread through a community can allow further insight into language variation. Usually, these changes are heavily linked to social factors; therefore, being able to analyse it helps to comprehend deeper social dynamics involving class, gender, or ethnicity in speech. From a cognitive lens, not much is known about the cognitive processes at play during accommodation, and its study can shed light on one more aspect of how the brain functions. Lastly, its study can have several practical applications. In the field of language education, it can help to understand which and why some phonetic elements are harder or easier to learn for L2 students. For technology, the study of adaptation can help to create voice-based tools that are able to consider the speech of their interlocutor and therefore improve their speech recognition accuracy. In professional settings such as a courtroom or a doctor's practice, accommodation can aid in analysing the role that accent perception and speaker credibility play in those situations and how that affects the outcome of a trial or consultation.

Many scholars from different subfields of linguistics have tried to delimit the extent to which this phenomenon can occur and consequently used a diverse range of terminology to describe it. Some authors, such as Sebregts et al. (2024), employ the terms convergence, imitation, accommodation, alignment, and entrainment interchangeably to talk about this issue and only constrain its definition by specifying *long-term*. They use this term because accommodation studies usually examine this phenomenon in short laboratory sessions or conversations which are several hours long; however, they did it using speech recorded over a period of three years with the same participants. In Ruch and De Benito's (2023) overview of the subject, they use the words accommodation, synchronisation, and convergence (and divergence) and approach the topic from a language change perspective, which is relatively unusual in the field. The most relevant classification for this study is Levitan & Hirschberg's (2011) description of the phenomenon which pertains specifically to the field of laboratory phonetics in an experimental setting for short-term accommodation, as this study also involves the same type of accommodation and setting. Their classification contains three subtypes of adaptation. Proximity and convergence are found at the conversation level. *Proximity* refers to the phenomenon where two speakers realise a particular feature in a comparable way. On the other hand, *convergence* involves the development of proximity in the same features throughout the course of a conversation (Levitan, 2014, as cited in Michalsky & Schoormann, 2021; Levitan & Hirschberg, 2011). Finally, *synchrony* occurs at the level of turn-taking within a conversation. It entails an adaptation in response to the other participant in the conversation by reflecting each other's behaviour. For example, if one participant raises their mean fundamental frequency (F0) by 15 Hz, the other participant will do the same by 15 Hz (Edlund et al., 2009; Levitan, 2014, as cited in Michalsky & Schoormann, 2021). This

research specifically examines accommodation in terms of proximity. Additionally, for the purpose of this study, we will employ the words convergence, accommodation, or adaptation interchangeably to refer to short-term phonetic accommodation.

The study of phonetic accommodation was initially presented by Giles (1973) as part of the *Communication Accommodation Theory* (CAT), in which he examined the variability of accents in the city of Bristol (UK). This research highlighted the relationship between social distance and accommodation, positing that phonetic similarity reflects a stronger social connection. Over the following decades, several theories from diverse disciplines have sought to explain this phenomenon. The *Motor Theory* posits that the units of speech perception are defined by articulatory movements; consequently, the replication of speech that has been heard before should occur faster than that of unheard speech (Liberman and Whalen, 2000, as cited in Gambi & Pickering, 2013). Under this theory, Gambi and Pickering (2013) argue that accommodation can be understood as simulation mechanism. This means that listening to the speech of an interlocutor activates previous motor representations in the listener's mind. Thus, the simulation process facilitates the adaptation of a speaker's speech to their interlocutor's in a conversational encounter. The *Direct-Perception Theory* (Gibson, 1979, as cited in Mitterer & Müsseler, 2013) asserts that hearing the speech signal provides the speaker with sufficient information for the articulatory gestures of a speech unit to be produced, indicating that exposure may facilitate adaptation. Lastly, the *Episodic Theory* states that previously heard words are retained as memories containing intricate details, including specific information related to the conversation partner. Therefore, if a recently acquired word is activated through production, this intricate memory can lead to accommodation. An important limitation of this theory is that lower frequency words, which have produced fewer stable memories in the brain,

are more likely to be affected by new instances of the word (Goldinger, 1998, as cited in Black, 2012). In conclusion, it is relevant to consider that the focus of these latter theories was not specifically on accommodation; however, they can help to explain this phenomenon from a cognitive and processing lens. Nonetheless, there is no consensus among researchers as to which one is the most comprehensive theory to explain this process.

**2.2 The sociolinguistic dimension of accommodation**

Phonetic accommodation is a socially mediated process (Pardo, 2006, as cited in Babel, 2009) because it requires direct interaction with or exposure to other people to take place. Nonetheless, this social aspect can apply more broadly. Words and utterances convey considerable amounts of information beyond their explicit meaning and communicational intent (Namy et al., 2002). They provide indexical information about the social, physical or psychological features of the speaker, for example, their emotional state, age, gender or social status (Laver & Trudgill, 1979, as cited in Namy et al., 2002). Indexical information can influence the perception and attributes the listener has of the speaker regarding their attractiveness, their classification into a specific class or group, or their persuasive power (DePaulo, 1992; Oskenberg et al., 1986, as cited in Namy et al., 2002). Under the Communication Accommodation Theory (CAT; Giles, 1973), this indexical information becomes extremely relevant. People accommodate with others to attain social goals, for example, attraction (Byrne, 1971, as cited in Namy et al., 2002), approval (Giles & Powesland, 1975, as cited in Namy et al., 2002), assertion to a group or of individual identity, or regulation of discourse (Namy et al., 2002). Therefore, accommodative behaviour leads speakers to explicitly or implicitly survey the indexical characteristics of their interlocutor and then change their own indexical information to adapt to them (Namy et al., 2002). Accommodative

behaviour can be convergent or divergent, as indexical cues do not always lead to similarity towards the conversational partner (Namy et al., 2002). Consequently, adaptation can affect the way an interlocutor is seen (Namy et al., 2002). Particularly for this research, it is relevant to consider that gender-based asymmetries in accommodation might be based on the social dimension, for example, women's higher sensitivity to indexical variation (Namy et al., 2002), the effect of social factors on women (Babel, 2009, as cited in Black, 2012) or the fact that they are more sensitive to the context encircling adaptation (Ruch and de Benito, 2023).

### *2.2.1 Accommodation and attitudes*

Phonetic accommodation is an intrinsically social process that is affected by a wide range of factors. The ideas and attitudes that the speakers have about themselves, and their interlocutor affect the development of an interaction and, consequently, of convergence. Some scholars have claimed that adaptation is an automatic process, yet social perceptions can facilitate or prevent it from occurring (Dijksterhuis and Bargh, 2001, as cited in Babel, 2009). Additionally, Dijksterhuis and Bargh (2001, as cited in Babel, 2012) state that the simplest mitigating element in the perception-behavioural connection is liking, suggesting that the accommodation rate can be foreseen based on how much the subjects like the model speakers. Babel (2012) theorises that accommodation can be influenced by positive attitudes towards the interlocutor. Ruch and de Benito (2023) have claimed that one of the most important elements that account for individual variability are the attitudes of the speakers. In long-term accommodation studies, speakers with more positive attitudes towards a new variety and their community tend to adapt more than those with more negative opinions (Mick & Palacios 2013, Reubold & Harrington 2015, as cited in Ruch and de Benito, 2023). This finding has also been attested in short-term accommodation. For example, Argentinian

immigrants who want to remain in Spain tend to accommodate more towards the local speakers than those with more negative opinions of their new country (MacLeod, 2012, as cited in Ruch and de Benito, 2023). Additionally, conversational partners who deemed their conversation quality and interlocutor as good displayed higher rates of F0 adaptation (Michalsky and Schoormann, 2021). Therefore, convergence can be considered a two-way process; speakers imitate their conversational partner more if they like them and rate their interaction more positively if there is a high degree of adaptation (LaFrance and Broadbent, 1976; Chartrand and Bargh, 1999; Dijksterhuis and Bargh, 2002; Van Baaren et al., 2004; Stel et al., 2010 as cited in Adank et al., 2013).

Furthermore, it is important to account for the attitudes that speakers might have of the language variety of their interlocutor. Attitudinal research of native and non-native varieties is a common theme in the field of World Englishes. Many variables can be investigated to measure beliefs and perceptions towards a variety, for example, questioning the subjects about the honesty, prestige or confidence of the model speakers and their language. Studies with L2 participants indicate that one of the most preferred varieties of English is General British (also known as GB, British English, BrE, Standard Southern British English or SSBE). British English was considered the most prestigious variety in Ladegaard (1998, as cited in Scales et al., 2006). The authors theorised that this might be the result of its status as the pronunciation standard in education. In addition, SSBE was deemed the most educated, organised and courteous variety among L2 speakers (Dalton-Puffer et al., 1997, as cited in Scales et al., 2006).

Attitudinal research has normally investigated the perception of standard varieties. However, in recent years non-standard varieties have been incorporated into different research projects. Therefore, this project aims to investigate phonetic

adaptation to Standard Southern British English and Scottish English, particularly the variety present in the city of Glasgow. For this purpose, it is relevant to consider prior studies in this field. Coupland and Bishop (2007), also called *The Voices* survey, studied the perception of 34 different accents of English among over 5000 UK native participants. GB was ranked first for social attractiveness and second for prestige. Contrastingly, Glasgow English ranked 29th for both social attractiveness and prestige. López-Soto and Barrera-Pardo (2007) performed a similar study among L2 speakers of English in Spain. SSBE was rated four out of four in pleasantness and correctness, was correctly identified by 97% of the participants and was correctly transcribed to 93%. On the other hand, Scottish English was rated three out of four in pleasantness and correctness; however, it was not correctly identified by any of the participants and was only correctly transcribed to 40%. The authors highlight that some Northern English accents are completely unknown to the students due to a lack of a substantial amount of input from different cultural sources (López-Soto & Barrera-Pardo, 2007). Additionally, GB is preferred by the participants, but this choice is not justified in terms of amount of input or cultural affinity (López-Soto & Barrera-Pardo, 2007).

Lastly, prior research on the effects of familiarity on phonetic convergence shows contradicting results. Convergence latencies lowered as familiarity towards English increased (Nye & Fowler, 2003). In Cowie and Pande (2017), Asian speakers were able to converge to the vowel /æ/ through interaction with a GA speaker, who was rated positively. Even though the relationship between these two factors was not considered statistically significant. Considering these findings, this research will contain an overt familiarity, prestige and pleasantness component to broaden the short number of studies on the subject.

### *2.2.2 Accommodation by L2 speakers*

Phonetic convergence research has mainly been centred on L1 speakers in cross-dialectal environments (Troncoso, 2022), leading to L2 adaptation remaining understudied. L2 speakers have only become the focus of research very recently. Additionally, it is important to highlight that L2 speech can be considered a social marker (Dragojevic et al., 2016, as cited in Ulbrich, 2021), and it contains indexical information about its speakers, i.e., the speaker's proficiency (Gluszek & Dovidio, 2010, as cited in Ulbrich, 2021). It is often seen in a negative manner (McKirnan & Hamayan, 1984, as cited in Ulbrich, 2021), and their speakers are viewed as having fewer general capabilities and less social status (Nelson et al., 2016, as cited in Ulbrich, 2021). Accordingly, non-native speakers might change their speech to adapt to certain social identities and attitudes (Zuengler, 1991, as cited in Ulbrich, 2021). Researchers assert that both L1 and L2 accents need to be seen as dynamic elements that change throughout a conversation to converge or diverge for different reasons (Babel, 2009, as cited in Murphy, 2014).

Adaptation has been proved to occur between bilingual speakers with different degrees of L2 proficiency in research involving short-term accommodation (Ruch and de Benito, 2023). Lewandowski (2012, as cited in Ruch and de Benito, 2023) detected phonetic adaptation among native speakers of English and German speakers in English conversations. Despite being instructed not to adapt before the test, the native speakers accommodated to their non-native counterparts. Contrastingly, Kim et al. (2011, as cited in Ruch and de Benito, 2023) discovered that some conversational pairs diverged while others converged in conversations between non-native and native speakers of English. They explain that the heavily accented L2 English of the majority of non-native

speakers could have intensified the processing load and hindered the adaptation process (Kim et al. 2011, as cited in Ruch and de Benito, 2023).

Attitudinal beliefs can play a vital role in the adaptation process, particularly regarding the nativeness of a conversational partner. Participants who thought that their interlocutor was a native English speaker displayed higher degrees of convergence in vowels (Jiang & Kennison, 2022b). Conversely, when they assumed that their interlocutor was an L2 speaker, their vowel production was different from their interlocutor's (Jiang & Kennison, 2022b).

Lastly, the L2 proficiency of research subjects can affect the accommodation process. More advanced L2 learners normally have a similar cognitive processing load when producing speech to that of native speakers (Lecumberri et al., 2010, as cited in Troncoso, 2022). They are also predicted to converge more to their interlocutor than learners with lower proficiency (Kim et al., 2011, as cited in Troncoso, 2022). Ulbrich (2021) asserts that more advanced speakers have a wider range of grammatical knowledge and can be more flexible when they accommodate, whereas less proficient interlocutors are more limited in their knowledge and rely on L1 forms more often. Finally, convergence can be considered an instrument to enhance L2 pronunciation skills, following Jiang and Kennison's (2022b) results where phonetic accommodation helped the participants to improve their L2 vowel production.

In conclusion, this study will include an overt attitudinal component about the two English varieties employed in the experiment and the female Dutch L2 English participants will be asked specifically about their level of English proficiency.

### 2.3 Phonetic Accommodation and Gender

In the field of sociolinguistics, the relationship between gender and linguistic variation has been widely investigated. However, gender has only been incorporated as a relevant factor in the investigation of phonetic accommodation very recently. In this study, the use of gender refers to socially a constructed identity that people negotiate and perform in relation to others (Butler, 1990). Participants will be referred to as women or female based on their self-identification without collecting data on their biological sex. This choice is based on current sociolinguistic and feminist notions of gender which see gender as a relational and performative category undetermined by anatomy.

To create a comprehensive overview of the research, we must consider briefly the methods employed in the field. Phonetic convergence is usually measured acoustically or perceptually in the literature (Wagner et al., 2021b) and it employs either human-to-computer or human-to-human tasks. Acoustic methodologies entail the recording of speech samples and their acoustic analysis in specialised software, with shadowing tasks being the most common example (Mitterer & Ernestus, 2008). Perceptual approaches also encompass the recording of speech; however, later the samples are assessed or judged by specialised or non-specialised listeners (an example of this methodology is AXB judgements) (Mitterer & Ernestus, 2008). The following section will give an overview of the most relevant literature involving phonetic accommodation and gender with a particular focus on the methodology employed in each study.

One of the first studies investigating gender and convergence is Willemyns et al. (1997), who researched whether job applicants would change their accent in job interviews to adapt to their interviewer in Australia. Ninety-six (48 women and 48 men) participants had two conversations; one with a broad Australian English speaker, which

is associated with lower social classes, and a second one with a cultivated accent speaker, linked to higher and more educated social classes (Willemyns et al., 1997). The conversations were recorded and later analysed by raters trained in Australian dialectal variation. The results show that the participants accommodated more to broader accents and did not align towards the cultivated-accented interviewers. Specifically, male candidates were more prone than female candidates to deviate from cultivated interviewers (Willemyns et al., 1997). For the lack of accommodation by women towards the cultivated variety, the authors propose that the female sensitivity to situational and gender-role norms was superseded by a motivation to indicate a linguistic group identity (Willemyns et al., 1997). Women use prestigious accents in formal contexts, but the broad-accent interview might have redefined the requirements of the interviews (Willemyns et al., 1997). Therefore, women felt they were permitted to signal their language identity in the broad accent environment and continued to use this variety with the cultivated interviewer (Willemyns et al., 1997). Willemyns et al. (1997) remains highly relevant for this research, as it is one of the few studies to investigate the relationship of accommodation, gender and accents with different levels of standardness.

Namy et al. (2002) also employed a perceptual task in which they researched the phonetic accommodation of men and women in a laboratory setting adapting Goldinger's (1998) paradigm. Participants were recorded twice: first, reading a word list as baseline productions and second, after listening to an accent exposure phase by model speakers of General American (Namy et al., 2002). Lastly, a second group of participants were asked to judge whether the pre- and post-exposure recordings sounded more like the model speakers (Namy et al., 2002). Women were found to accommodate more overall than men, and both men and women accommodated more to male speakers

(Namy et al., 2002). Namy et al. (2002, as cited in Ruch and de Benito, 2023) explain this gender-related asymmetry in terms of differences in sensitivity to indexical variation, which is the systematic language variation related to extralinguistic factors such as the conversational context or the social class of the speakers (Namy et al., 2002, as cited in Ruch and de Benito, 2023). Prior research had shown that skills to notice indexical information are shaped by feedback, practice, and intervention (Nygaard & Pisoni, 1998; Nygaard, Sommers, & Pisoni, 1995, as cited in Namy et al., 2002). Namy et al. (2002) argue that the process of socialisation of a person can influence the way both genders are tuned to the perceptual sensitivity of indexical features. Therefore, they argue women are more likely to notice and adapt to these changes because they have been socialised (through tools such as feedback, practice and intervention) to do so from an early age. They conclude that these results provide evidence that women are more sensitive to convergence than men (Namy et al., 2002). Additionally, they describe their experimental laboratory as a socially impoverished setting where social motivations for accommodation could be minimised (Namy et al., 2002). However, they highlight that even in this context accommodation still takes place and gender differences in adaptation behaviour continue despite the laboratory's aseptic nature (Namy et al., 2002).

Nielsen (2008, as cited in Black 2010; 2012) examined accommodation using extended voice onset time (VOT) as an acoustic parameter to measure convergence in a spontaneous imitation task with an exposure phase. The results showed that men displayed higher degrees of adaptation than women (Nielsen, 2008, as cited in Black 2010; 2012). Additionally, Nielsen (2008, as cited in Black 2010; 2012) highlighted that the women who participated in the study naturally had longer VOTs than the men. They suggest two hypotheses to explain the results. Firstly, females converged less because

the modified VOT stimuli were less notable for them, as they already had naturally longer VOTs (Nielsen, 2008, as cited in Black 2010; 2012). Secondly, the results reflect a universal pattern of accommodating more towards the same gender, as there was only one male model speaker, the women adapted overall less than the men (Nielsen, 2008, as cited in Black 2010; 2012). These findings are in line with Pardo (2006, as cited in Black 2010; 2012) who also noted gender differences as men accommodated more than women in a conversational task.

Babel (2009, as cited in Black, 2012) employed acoustic measurements of vowels to account for the cumulative degrees of adaptation to vowel targets in order to study gender-based differences. They performed an immediate shadowing task in which both men and women display similar results in accommodation (Babel, 2009, as cited in Black, 2012). However, male participants adapted to the model speaker in the first block and did not change over time, but females displayed rising rates of convergence as the exposure time to the stimuli increased (Babel, 2009, as cited in Black, 2012). Additionally, the results were dependent on the participants' ethnic biases and how physically attractive the model speaker was to them (Babel, 2009, as cited in Black, 2012). Therefore, Babel (2009, as cited in Black, 2012) proposes that a wide array of social factors can be the cause of the gender-based asymmetries described in the literature.

Black (2010) analysed the relationship between participants and model talkers in a shadowing task using VOT measurements. The results show that women adapted more to the male voice, and men did the opposite. Thus, Black (2010) concludes that speakers tend to align more with the opposite gender. They propose two alternative hypotheses to explain this result: first, speakers might have stronger sensitivity towards speakers who are seen as more different from the listener, and therefore they adapt more towards those

speakers (Black, 2010). Second, participants are highly aware of potential reproductive partners, suggesting an evolutionary impulse in the adaptation process (Black, 2010).

Black (2012) examined accommodation across both genders in a shadowing task employing stimuli with natural and extended VOTs and different vowel qualities. Additionally, in Black (2012) the participants took post-exposure questionnaires: one to determine how they felt about the accents/speakers and a second to measure the emotional reactivity of the participants. Emotional reactivity can be defined as the strength and duration of an emotional response to different stimuli (Shapero et al., 2018). They concluded three main points from this study: first, a participant is more likely to adapt to a model speaker of the opposite gender (Black, 2012). Second, men and women can adapt to all acoustic features (Black, 2012). And third, the convergence rates, and possibly manner, of these acoustic features are determined by socially defined subgroups, not gender. The participants with higher emotional reactivity scores were more prone to adapt than those with lower scores. Additionally, the participants' opinion on the model speaker was slightly important for the extended VOTs but not on the convergence for vowel quality (Black, 2012).

Pardo et al. (2017; 2018, as cited in Ruch and de Benito, 2023) also focus on gender and accommodation; however, they are not able to find direct evidence on gender effects. However, they both note that women are more affected by factors mediating phonetic convergence (Ruch and de Benito, 2023). The *Episodic Theory* becomes quite relevant in this research. Under this theory, previously heard words are retained as memories containing intricate details. However, an important limitation of this theory is that lower-frequency words, which have produced fewer stable memories in the brain, are more likely to be affected by new instances of the word (Goldinger, 1998, as cited in Black, 2012). In Ullman et al. (2008, as cited in Black, 2012), it was

discovered that women depend more significantly on episodic memories compared to men in the processing of complex linguistic representations. Under the Episodic Theory, as phonetic convergence uses exemplar-type representations (Goldinger, 1996, as cited in Black, 2012), this could indicate that women are more likely to adapt to others than men (Black, 2012). In Pardo et al. (2017, as cited in Ruch and de Benito, 2023), women were more likely to adapt in low-frequency words. They employed a mixed methodology which included a holistic AXB perceptual-similarity task and different acoustic measurements. They suggest that prior research has shown salient gender effects because either the research design employed many low-frequency words or the individual model speakers in the study did. In Pardo et al. (2018, as cited in Ruch and de Benito, 2023), female participants were less consistent in terms of accommodation across tasks than the males. The participants performed two tasks (conversation and shadowing task), and later the samples were judged using an AXB perceptual similarity measure. This result again highlights the fact that women are more sensitive to factors surrounding convergence (Ruch and de Benito, 2023).

As can be seen in this overview, and Babel (2012) highlights in their study, the conclusions of which gender tends to accommodate more overall and the reasons behind this behaviour are tenuous. In the first studies, women seemed to be the main accommodators. However, as researchers have worked on this subject, including different focuses and employed several methodologies, drawing clear lines has become increasingly difficult. This issue is further problematised by the diverging use of methodologies in the field. A wide array of experimental designs allows for a more comprehensive view of the phenomenon. But at the same time, it hinders the comparison across studies and subsequent possibility of drawing wider conclusions to account for accommodation more holistically (Babel, 2012). Babel (2012) deems

concrete acoustic analysis the most suitable method to measure adaptation. Additionally, they claim it is impossible to know on what raters or perceivers base their assessments and if they might be dismissing possible ways in which participants are accommodating (Babel, 2012).

All the aforementioned studies, except for Willemyns et al. (1997), make use of standard features in the study of accommodation. Thus, the role of standardness and the use of non-standard forms are rarely analysed in this type of research, and therefore it is unknown how these forms affect the process of convergence. Additionally, it is relevant to consider two more studies that are important for the present investigation. Coupland (1984) remains one of the few studies employing non-standard speech characteristics from Cardiff (h-dropping, g-dropping, intervocalic /t/ and simplification of consonant clusters in coda position) to examine convergence in a travel agency setting between the agent and her clients. However, they do not consider the effects of gender, either of the agent herself nor of the clients. Lastly, the author of this paper examined in González González (2024) the phonetic accommodation of L2 Dutch speakers of English to different English vowel realisations in both standard and non-standard varieties. In the results, the men adapted more than the women; however, the number of male participants was disproportionately low to the females, and the gender asymmetries were not analysed due to this figure difference.

Lastly, all studies highlighting gender as a research factor have included male and female participants and compared their behaviours. However, given women's higher sensitivity to phonetic accommodation, this study aims to analyse only the phonetic convergence of Dutch L2 female speakers of English with a particular focus on different (standard and non-standard) English varieties.

### 2.4 Women and Standard Language

The use women make of language has been a topic of research for many years in the field of linguistics. Jespersen (1922, as cited in Freed, 1996) found that women used more traditional language than men. Many scholars in the following decades deemed females as more aware of status and less confident than men (Labov 1972, as cited in Freed, 1996), more amiable than men in conversation (Lakoff 1975, as cited in Freed, 1996), or women as more likely to look for more verbal affinity than men in an interactional encounter (Tannen 1990, as cited in Freed, 1996). Most importantly for this study, Trudgill's (1972, as cited in Freed, 1996) claim, among others, that women employ more standard speech forms has been investigated throughout the second half of the 20th century. As a consequence, several approaches have been proposed to explain this relationship and the reasons behind it (see Freed (1996) for a comprehensive review of these approaches). Standard speech entails the use of a language variety that is recognized as normative within a speech community. Additionally, these varieties are associated with formal settings, higher social classes and are often perceived as more prestigious and correct which in turn can become a form of social capital. The use of standard speech forms can be localised on a specific level (syntax, phonology, vocabulary, or pragmatics) or in all of them.

Throughout their review, James (1996) highlights the idea that in previous research, men and women are considered separate homogeneous groups whose characteristics and behaviours can be explained by means of generalisation. However, they claim that a wide array of factors (for example, the local economic situation, differences in social network strength, status and respect given to women in a community, the educational and employment opportunities available for each gender, the possibility for women to participate in public and social life, etc.) have to be

considered in order to account for a comprehensive explanation for the behaviour and choices observed in women and men in a particular group. Crucially, for James (1996), it is relevant to acknowledge that women generally are given less power and status across communities. Additionally, this must be seen as an important underlying factor that can partially help to explain the common finding of women employing prestige forms in many sociolinguistic studies (James, 1996).

Both James (1996) and Freed (1996) highlight an important issue that might affect women's use of standard speech in sociolinguistic research. That is the influence the experimental setting or staff might have on the behaviour of the participants. Scholars often find that women employ more prestige forms than men when interrogated by a researcher who is standard speaking (James, 1996). For James (1996), politeness theory can help to explain this phenomenon, as women might be more aware of not threatening their standard addressee's face and therefore, they use more prestige forms. This error has been corrected in other studies by working with community members or with no researcher present in the laboratory (see Larson, 1982; Lanari and Clarke, 1993, as cited in James, 1996). Freed (1996) explains that in their study (Freed & Greenwood, 1996), men and women use very comparable language styles due to the experimental and discourse settings they were placed in. Participants were asked to have informal conversations in pairs of same-gender friends. They claim that unconsciously they might have created a space that socially is seen as 'female' (Freed, 1996). Consequently, the subjects might have produced speech similar in both genders, which is seen in society as a style typical of women's private talk (Freed, 1996). The same participants placed in a more naturalistic setting or more similar to their own daily lives could have chosen different communicative styles (Freed, 1996). Additionally, those communication styles cannot be considered habits associated with specific genders, but

practices determined by activities or behaviours encouraged in each of the genders (Freed, 1996).

For the purposes of this research, the experimental design will include both standard, non-standard and general acoustic features to account wholistically for the accommodative behaviour of the participants in relation to standardness. Additionally, the experiment setting will minimise the influence of the researcher as much as possible by creating a self-paced task controlled by the participants.

## 2.5 Phonetic accommodation and different acoustic features

In order to do an acoustic investigation of convergence, it is necessary to select the features that are going to be analysed. An acoustic feature is a physical measure of sound or speech that can be quantified, normally in Hertz and analysed in specialised software. In González González (2024), six vowels (diphthongs and monophthongs) from different English varieties were employed as features for the investigation. The current paper aims to continue and further examine the process of phonetic convergence by changing the selected the acoustic features in order to best fit the new participant population and its features

### *2.5.1 Vowel spectra*

Vowel spectra is a very popular research feature in accommodation studies; however, the results do not show a clear picture of the phenomenon, as they are very divergent when compared. Babel (2012, as cited in Pardo, 2013) analysed the vowels /a æ i o u/ placed in fifty low frequency monosyllabic words, searching for convergence. /a/ and /æ/ showed the highest degrees of adaptation and additionally the attractiveness ratings of a white male speaker played an important role in the study. Male participants who found the model speaker attractive diverged in their vowel realisation, while females

with the same opinion adapted more to his vowels. Babel (2012, as cited in Cowie & Pande, 2017) theorises that low vowels might favour the occurrence of accommodation as there is more space in the mouth to manoeuvre the adapted articulatory gestures. Additional research has shown a relationship between vowel height and adaptation (Ulbrich, 2021); for example, in Burin and Ballier (2017), /ɑ:/ and /æ/ presented higher adaptation rates, particularly in the F1 level. Nevertheless, these results are not persistent across studies. In Pardo (2010, as cited in Pardo, 2013), the high vowels /i/ and /u/ showed higher accommodation rates than the low vowels /æ/ and /a/. In Cao (2018), Hong Kong English speakers kept their prior production of /ɔ:/ and did not converge in /ɑ:/ to an American speaker. Babel (2012) analysed the adaptation of the vowels /i, ɪ, e, ɛ, æ, u, o, a/ and found equal rates of convergence in all vowels across female and male participants. Contrastingly, Lewandowski and Nygaard (2017) investigated three diphthongs and eight monophthongs, finding no significant adaptation to any of them.

An additional factor that is relevant to consider for all features is the phonetic distance between the realisations of a speaker and the feature that requires accommodation. Walker and Campbell-Kibler (2015, as cited in Cowie and Pande, 2017) uncovered that adaptation is more likely to occur in features with higher phonetic distance, causing subjects to align more with those varieties that are more different from their own. Therefore, they conclude that adaptation takes place more often when the changes are more noticeable for the participants (Walker and Campbell-Kibler, 2015, as cited in Cowie and Pande, 2017). However, Ruch and de Benito (2023) highlight that none of these studies have quantified saliency empirically; therefore, the findings are only speculative.

English, as other Germanic languages, has many vocalic phonemes in its inventory which differ considerably across dialects and varieties, turning vowel variation into an easily identifiable marker of regional variation. Two vowel items have been selected for this research due to their popularity as a research feature and their saliency in the varieties where they come from. The PALM vowel (/ɑː/) has been chosen as the representative feature for General British (GB), which is the standard variety in this research. There are two main reasons for this choice; it is commonly associated with GB among L2E learners, and it might lead to accommodation more easily than other vowels due to its low-back production. Additionally, this vowel is part of the native inventory of Dutch speakers; however, there is a length difference between both varieties. In Standard Dutch, it is a checked monophthong, and in GB PALM is a free monophthong (Collins and Mees, 2003). The GOAT diphthong, which in GB is articulated as /əʊ/, has been selected to represent the non-standard variety in this study, which is Glasgow English. Contrastingly in Scotland, GOAT is realised as /o(ː)/, namely, a steady-state vowel containing no diphthongal quality (Carley et al., 2019). This diphthong in its GB articulation has no counterpart in Standard Dutch (Collins and Mees, 2003); however, its Scottish realisation is a monophthong in the Dutch language. We expect this dissonance between phoneme categories and realisations to play a role in the accommodation process.

### *2.5.2 Fricatives*

The use of consonants as research features in the adaptation literature is not as popular in comparison to vowels. However, features such as Voice Onset Time (VOT), t-glottalisation or consonant voicing have been analysed in previous studies. Consequently, other consonantal features remain severely understudied in this field. This project will investigate the adaptation of Dutch L2 learners of English to the

fricative phoneme /θ/ (hereafter also named TH). The selection of this feature is based on several reasons; first, the phoneme does not exist in Standard Dutch, and it is normally substituted in English with /t/ or /d/ (Wester et al., 2007; De France & Smakman, 2013). This particularity allows for TH to become a control feature for understanding the participants' overall adaptative behaviour. Second, in Johnson and Babel (2007), both Dutch and American English listeners had similar discrimination speeds when listening to /θ/ and /ʃ/ and /θ/ and /s/, thus indicating that Dutch L2 learners of English can tell /θ/ apart from other fricative phonemes. Lastly, Mitterer and Müsseler (2013) discovered that consonantal sounds that diverged more are more likely to be replicated. Therefore, /θ/ is expected to maximise the opportunity for adaptation in the participants.

### *2.5.3 Fundamental frequency*

Lastly, it is also possible to employ suprasegmental features in the study of phonetic accommodation. For example, previous research has utilised vowel, word or utterance length, pitch contours, or response latencies. This project will use fundamental frequency (f0) as a suprasegmental indicator of adaptation. In Lewandowski and Nygaard (2017), a lack of significant overall adaptation to f0 was found among the participants of the study. Additionally, the f0 adaptation depended on the model talker and not on their accent. Babel and Bulatov (2012) tested the effects of f0 in an auditory naming task with unfiltered and filtered (high-pass filter at 300 Hz, which eliminates the fundamental frequency) stimuli. In the unfiltered condition, participants aligned slightly more to the model talker than in the filtered condition (Babel & Bulatov, 2012). This test was followed by a perception study in which the unfiltered stimuli were judged to be more similar to the model speaker. However, a significant correlation between the listener judgements and acoustic measurements was not found (Babel and Bulatov,

2012). Lastly, Gijssels et al. (2015) investigated the role of f0 in accommodation with a virtual interlocutor. Participants accommodated to its f0; however, fundamental frequency did not increase over the course of the conversation, and it vanished as soon as the encounter ended. The authors reject a priming-based account of f0 adaptation and suggest that there is an alternative method that could explain adaptation along continuous dimensions of language (e.g., pitch or speech rate) (Gijssels et al., 2015). Lastly, no research has been found investigating f0 adaptation with a focus on standardness.

### *2.5.4 Effects of the native inventory in L2 production*

The participant sample for the current study are Dutch female L2 speakers of English. Consequently, it is important to acknowledge the fact that there are substantial contrasts between their L1 and L2 inventories and the methods they will use in order to bridge the differences when performing the experiment. Authors such as Troncoso (2022) assert that problems in production are caused by differences in the L1 and L2 phonetic inventories of the speakers (Chang and Mishler, 2012, as cited in Berry & Ernestus, 2018). Previous research has shown that speakers try to approximate their phonetic realisations in different ways when their inventory is lacking a phoneme. For example, in Wester et al. (2007, as cited in Troncoso, 2022), Dutch participants employed /d/ or /t/ for /θ/ in *thank,* and in Wang and van Heuven (2006, as cited in Troncoso, 2022), /ɛ/ for the TRAP vowel /æ/ in *had.* Therefore, awareness about these divergences can aid in anticipating the complications that might appear (Berry & Ernestus, 2018) and in the interpretation of the results. Additionally, research has shown that the categories in both the L1 and L2 are more flexible than previously considered (Ruch and de Benito, 2023). Hwang et al. (2015, as cited in Ruch and de Benito, 2023) studied the accommodation of two phonological contrasts in Korean speakers of English. The participants aligned

with the native speaker after the phonological contrasts of interest had been produced. They suggested that the results can be explained through priming and not in order to breach social distance with their interlocutor.

Although accommodation has become a relatively popular subject of research in recent years, many elements remain unknown. This research aims to advance in this endeavour by including new factors that have not been considered before in the study of this phenomenon. Firstly, the population sample usually is formed by participants speaking their native language, particularly in Anglophone contexts; however, we will include Dutch speakers of L2 English from the Netherlands. This choice becomes relevant for two reasons: analysing adaptation in L2 speakers is rare and still in very early stages, but the use of Dutch natives is even rarer, as there are very few studies with this participant sample in accommodation studies. Secondly, as outlined in the theoretical background, women have been deemed by several authors as more sensitive to social factors (Babel, 2009, as cited in Black, 2012) and to the context encircling adaptation (Ruch and de Benito, 2023). Additionally, previous studies have examined both men and women; however, to the best of the author's knowledge, none has focused exclusively on women. Consequently, this study will only analyse the convergence of female Dutch speakers of L2 English. Thirdly, the use of standard language in this type of research is the default choice in all studies except Coupland (1984) and Willemyns et al. (1997), which analyse non-standard speech in Bristol and Australian English. Due to the marked history of women and standard speech, this study will consider both standard and non-standard forms and varieties (GB and Glaswegian English) in the experimental task through a diverse range of acoustic features (Palm F1, Palm F2, GOAT diphthong, f0 and the fricative /th/). The purpose of these choices is to further

investigate such a relevant phonetic phenomenon and widen the perspective of what is already known about it.

## 3. Research Question and Predictions

Considering the focus outlined in the previous section, the current study aims to further analyse the phenomenon of phonetic accommodation. Therefore, the research question for the present study is:

*RQ*: Do Dutch female speakers of L2 English accommodate more to phonetic features of Standard Southern British English (SSBE) in comparison to Glaswegian English?

The role of social factors and individual attitudes towards a speaker or language variety are extremely important and, in many cases, can influence greatly the occurrence of convergence. Three sub-questions have been posited to account for the influence of such factors in the process of adaptation for this study:

*SQ1*: Does the perceived prestige of the variety play a role in the degree of accommodation?

*SQ2*: Does the pleasantness of the varieties play a role in the degree of accommodation?

*SQ3*: Does familiarity with an accent play a role in the degree of accommodation?

Each question has been postulated based on prior research with a similar topic or focus. Therefore, the predictions for these questions follow the results of prior experiments. For the RQ and following López-Soto and Barrera-Pardo's (2007) results, SSBE is expected to show higher rates of accommodation due to the influence of the schooling and media consumption of the Dutch participants. For the SQ1 and based on Dalton-Puffer et al. (1997, as cited in Scales et al., 2006), SSBE is to be rated as more prestigious and thus produce higher similarity rates. For the SQ2 and following,

MacLeod (2012, as cited in Ruch and de Benito, 2023), the accent with higher pleasantness ratings is expected to produce more accommodation in the participants. Lastly, for SQ3 and based on Nye and Fowler (2003), the variety that displays higher familiarity ratings will show a higher degree of adaptation.

## 4. Methodology

### 4.1 Procedure

The current paper has used a within-participants design, in which all participants completed the same experiment, with a verbal guise technique where the input has been produced by different speakers of the two English varieties. The main task for this experiment is a shadowing task based on Goldinger's 1A task (1998). This task consists of three parts. Firstly, reading short sentences to establish the baseline productions of the participants (pre-exposure elicitations). Secondly, listening to speech input produced by model speakers of each of the varieties in which they discuss everyday matters of the place where they are from and their upbringing. Thirdly, the participants repeated the same utterances as in part one after being produced by each of the model talkers (post-exposure elicitations). Parts two and three were organised in blocks per variety, namely, participants listen and repeat one variety and then follow the same procedure for the second one. The order of the blocks was changed per participant to avoid task sequence effects.

The procedure had two parts; firstly, participants were welcomed to the laboratory, informed about the experiment and asked for permission for the analysis of their data. The instructions for all the sections highlighted the production of unrushed natural speech and did not mention the dialectal variation present in the recordings. The participants performed the experiment in a soundproof booth with a microphone and

speakers. The speech was recorded digitally in Audacity (Muse Group & Contributors, 2024) at 44.1 kHz in WAV format. During the pre-exposure phase, the stimuli were presented in written form and produced by the participants twice in addition to some filler sentences (see Appendix A for the sentences). In the post-exposure phase, all the stimuli were presented by the model speakers and produced by the participants. The vowels were produced four times and the f0 and fricative a total of 8 times per participant. The experiment was performed using a PowerPoint presentation controlled by the participants with attached sound files. The participants were recorded continuously throughout the entire session.

The second part of the experiment consisted of an attitudinal questionnaire in Qualtrics (Qualtrics, 2020) based on the Speech Evaluation Instrument by Zahn & Hopper (1985). Participants provided their demographic information (age, gender, level of English proficiency and years of studying English) and an opinion of the accents (pleasantness, familiarity and prestige) on a five-point Likert scale (completely disagree – partially disagree – neither agree nor disagree – partially agree – completely agree) (see Appendix B for more detailed account).

### 4.2 Materials

The sound files used in this study belong to the IDEA database (International Dialects of English Archive: Meier, 1999), which is a corpus of English dialects for actors and researchers. The recordings contain two parts; in the first one, the speakers read an elicitation passage designed to include two times the Wells' standard lexical sets (1982) and a second one in which they talk about their daily lives and upbringing. A total of four model speakers were included in the experiment: they all were male, Caucasian and their ages ranged from 18 to 30 years. Two of them were from the south of England (Kent and Surrey) with a GB accent, which was considered the standard variety, and the

other two speakers were from the Glasgow area (Airdrie and Lennoxtown) with a Glaswegian accent in English, which was considered the non-standard variety.

A detailed account of the stimuli materials presented to the participants to elicit the target features can be found in Appendix A. Nevertheless, Table 1 contains a summary of the target items per variety and feature of interest.

**Table 1**

*Selected Items for the Study of the Accommodation*

| Variety | Feature | Item |
|---|---|---|
| GB | PALM (/ɑː/) | *bath, palm* |
| Glasgow | GOAT (/o(:)/) | *goat, owner* |
| GB and Glasgow | F0 | *bath, palm, goat, owner* |
| GB and Glasgow | TH (/θ/) | *mouth, north* |

### 4.3 Participants

Eighteen Dutch speakers of English were the subjects for this experiment. They all identified as female and were an average age of 23.8 years old (range = 18-37). They were asked to participate while present in the Lipsius Building at Leiden University among Leiden's student population. They all agreed to participate in the study after being explained the procedure and their consent was recorded acoustically prior to the beginning of the experiment. They had attended an average of 8.94 years (range = 6-13) of English classes. They all self-reported an average level of 5.7 in English (range = 1-7). Lastly, all of them hold a university degree.

### 4.4 Acoustic Analysis

The acoustic information was measured in Praat (Boersma & Weenink, 2023). Due to the diversity of acoustic parameters, the measurements were gathered in different ways: for the monophthong PALM (/ɑː/), both the first formant (F1) and second formant (F2)

were measured at mid-point in the vowel. For the diphthong GOAT (/əʊ/), the first formant (F1) was obtained at 25 and 75% of the vowel's duration, and later the numbers were subtracted to measure the degree of monophthongisation. For the F0, the average fundamental frequency was measured at the mid-point in the vowels PALM and GOAT. For the fricative TH, the centre of gravity (CoG) measurement process was slightly more complex. Firstly, all the speech recordings (from the model speaker and participants) were filtered using a bandwidth of 0-10 kHz in order to have the same frequency range because the participant files were recorded at 44.1 kHz and the model speakers at 22 kHz. The fricatives were analysed following the recommendations by HKBU Phonology Lab (2021b, June 9), which entail the analysis of the CoG in an extracted separate sound file (which only contains the /θ/ phoneme) from the main recorded file. As mentioned in the theoretical background of this study, participants were expected to behave in different ways when managing the adaptation to the fricative TH, particularly with a substitution with /t/ or /d/ (Wester et al., 2007; De France & Smakman, 2013). However, this process did not take place in such a straightforward manner. The phonemes were elicited in coda position after a vowel and before /s/ or /d/ in the onset of the following word. Due to this phonological context, some of the participants elided the realisation of /θ/ and directly articulated the following consonantal phoneme which has a similar gestural position. To create a realistic analysis of TH accommodation, the CoG data was filtered by leaving out all participant realisations with a CoG below 500 Hz. This threshold was determined by the researcher during the Praat analysis, as all tokens with a CoG below 500 Hz did not resemble a /θ/ perceptually. Sixteen tokens were eliminated out of a total of 288. The measurements for all the features were taken both for the model speakers and

participants. In the case of the participants, they were taken in the pre-exposure phase and also after the accent exposure part of the experiment.

Once the measurements were taken, the pre- and post-exposure measurements were subtracted from the model speaker measurements. These calculations produce two distances per participant: the distance to the model speaker in the pre-exposure phase and the distance in the post-exposure phase. The model speaker measures were entered into the calculation in order to account for the influence of their speech on the participants' realisations. The data was not normalised due to the diverging acoustic measurements that are being considered; therefore, they were analysed in Hertz. The results will indicate the occurrence of accommodation if the post-exposure distance is smaller than the pre-exposure distance.

**4.5 Statistical analysis**

Both the attitudinal responses and acoustic data were introduced into R (R Core Team, 2013) to create several linear mixed-effects models, one per acoustic feature. The package 'lmerTest' (Kuznetsova et al., 2017) was used for modelling. No Bonferroni corrections were applied due to the limited statical knowledge of the researcher. Two types of linear mixed-effects models were analysed: one for CoG and F0, which considered both English varieties, and another type for PALM F1, PALM F2 and GOAT, which did not, as the features already belong to one of the varieties, PALM for GB and GOAT for Glasgow English. For the PALM F1, PALM F2 and GOAT models, the outcome variable was the distance to the model talker, and the independent variable was the exposure phase (with two factor levels: pre and post). Lastly, there was one random variable with several factor levels: participant number (1 to 18). For CoG and F0, the outcome variable was the distance to the model talker, and the independent variables were the standardness of the variety (with two factor levels: standard and non-standard)

and the exposure phase (with two factor levels: pre and post). Lastly, there was one random variable with several factor levels: participant number (1 to 18).

Afterwards, the influence of the attitudinal ratings had on the degree of accommodation was considered. To do so, a Spearman correlation coefficient was necessary; however, this calculation requires a unique number that accounts for the change between conditions (pre-exposure phase to post-exposure). Additionally, since there were multiple measurements of the same acoustic feature per participant, they were averaged per variety. The new variable consisted of the subtraction of the pre-minus-post exposure averaged values per acoustic feature of the participants. Once this figure was obtained, fifteen Spearman correlations were calculated between each acoustic feature (Palm F1, Palm F2, GOAT, F0 and CoG) and attitudinal element (pleasantness, prestige and familiarity). The package ggplot2 (Wickham, 2016) was used for the creation of the boxplot graphs.

Lastly, a post hoc analysis was performed in order to understand the acoustic behaviour of the participants in both phases. The acoustic realisations made by the participants and used to calculate the subtractions mentioned above were employed for this analysis. These numbers were averaged per feature, phase and variety. The researcher expects to be able to compare them to the available literature regarding each language and variety.

## 5. Results

### 5.1 Model and correlation results per acoustic feature

Five linear mixed effects models were calculated to study the relationship between the five acoustic features, the distance to the model speaker, the effect of the exposure phase

and the influence of variety standardness. In Table 2, an overview of the distance per feature can be found.

**Table 2**

*Means and Standard Deviations for the Phonetic Distance per Feature, Variety and Exposure Phase*

| Exposure | Variety | | Palm F1 | Palm F2 | GOAT | F0 | CoG |
|---|---|---|---|---|---|---|---|
| Pre | Standard | Mean | 105.86 | 182.72 | - | 66.79 | 1728.29 |
| | | Standard deviation | 113.02 | 253.81 | - | 29.1 | 1722.76 |
| | Non-Standard | Mean | - | - | 216.77 | 64.52 | 2848.66 |
| | | Standard deviation | - | - | 113.26 | 25.08 | 1585.75 |
| Post | Standard | Mean | 105.02 | 137.14 | - | 71.24 | 1378.37 |
| | | Standard deviation | 113.67 | 219.61 | - | 27.58 | 1750.44 |
| | Non-Standard | Mean | - | - | 167.13 | 66.55 | 2801.06 |
| | | Standard deviation | - | - | 90.90 | 29.63 | 1692.52 |

### 5.1.1 *Palm F1*

In this model, standardness was not a variable, as PALM is already a feature of the standard variety. Additionally, the exposure phase did not alter the post-exposure realisations of the first formant in a significant manner ($B$ = –4.92, $SE$ = 15.73, $t$ = –0.313, $p$ = .755).

While the linear mixed effects model indicated that accommodation did not take place, it is also relevant to consider this finding in light of the acoustic descriptions available for both Dutch and English. The SSBE model speakers have an average F1 of 626 Hz, which is very similar to the 646 Hz described for GB /ɑː/ in male speakers in Deterding (1997) (see Table 3). In this same description, the average first formant for female natives in Palm is 910 Hz, which does not resemble what the participants did in the pre- or post-exposure phases, 732 and 727 average F1, respectively (see Table 3).

Additionally, it is relevant to consider that /ɑ:/ is part of the Dutch phonetic inventory, differing only in terms of length, namely, /ɑ/ (Collins and Mees, 2003). However, if we look at Koopmans -van Beinum's (1973) description of Dutch phonetics, the average Palm F1 for Dutch female natives is 757 Hz (see Table 3). Therefore, it is possible to conclude that the participants were producing a classic realisation of F1 in Dutch ZAT /ɑ/ (Collins and Mees, 2003).

**Table 3**

*Average F1 Realisations of the Different Sources in Hz*

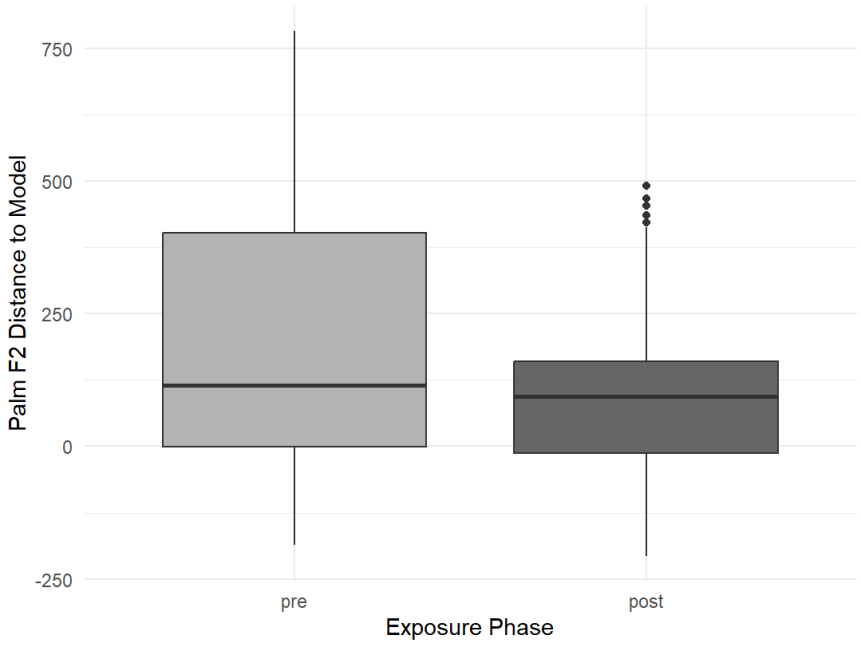
| Gender | Model Talkers | Participants | Detering (1997) | Koopmans-van Beinum (1973) |
|---|---|---|---|---|
| **Male** | 626 | - | 646 | 639 |
| **Female** | - | Pre: 732<br>Post: 727 | 910 | 757 |

### 5.1.2 *Palm F2*

In this model, standardness was not a variable, as PALM is already a feature of the standard variety. The model showed a significant effect of exposure on PALM F2 accommodation ($B = –85.25$, $SE = 34.26$, $t = –2.49$, $p < .01$). This result indicates that after the exposure phase, the F2 realisations of the participants lowered, thus accommodating to the model speakers (see Figure 1).

**Figure 1**

*Box Plot for Palm F2 Distance Before and After Exposure to the Model Talker*




The second formant (F2) behaves oppositely to F1, as the linear mixed effects model showed that adaptation indeed took place. The model speakers' average F2 is 1072 Hz, and again, this is similar to the description present in Detering's (1997), which is 1155 Hz for GB male speakers (see Table 4). The participant's pre-exposure average realisation diverges from Detering's (1997) account for female GB speakers but resembles Koopmans-van Beinum's (1973) for ZAT F2 in Standard Dutch (see Table 4). After the exposure phase, the average F2 of the participants lowers by 85.25 Hz, which is considered statistically significant (see Table 4). Therefore, this change makes the participant's realisation closer to the male model talkers.

**Table 4**

*Average F2 Realisations of the Different Sources in Hz*

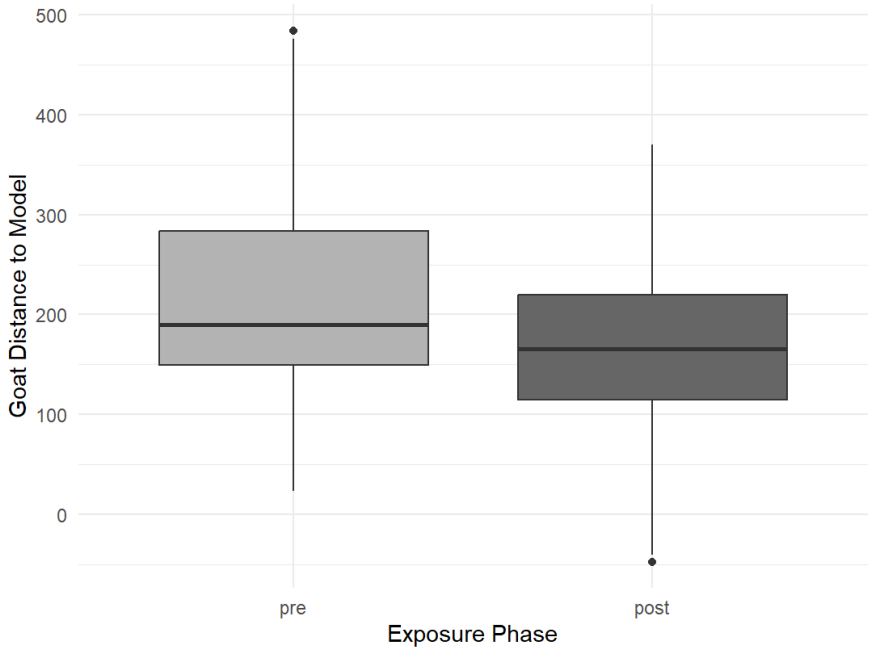
| Gender | Model Talkers | Participants | Detering (1997) | Koopmans-van Beinum (1973) |
|---|---|---|---|---|
| **Male** | 1072 | - | 1155 | 1292 |
| **Female** | - | Pre: 1255<br>Post: 1169 | 1316 | 1277 |

### 5.1.3 *Goat Monophtongisation*

In this model, standardness was not a variable, as GOAT is already a feature of the non-standard variety. Nevertheless, exposure is a significant main effect in the distance to the model speakers for GOAT monophthongisation ($B = –49.64$, $SE = 14.97$, $t = –3.32$, $p < .001$). After the exposure phase, the participants reduced the acoustic distance with the model talkers of the Scottish variety (see Figure 2). The model accounts for the distance to model speakers after exposure, however, not for the degree of monophthongisation.

**Figure 2**

*Box Plot for GOAT Distance Before and After Exposure to the Model Talker*



Additionally, the degree of GOAT monophthongisation (onset-offset distance) in the participants reduces from the pre-exposure phase to the post-exposure phase (see Table 5). Consequently, this change reduces the phonetic distance to the model speaker, which is considered significant in the linear mixed effect model. In the pre-exposure stage, the female participants articulated the phoneme with a diphthongal quality due to the high distance between onset and offset, namely, 246.7 Hz (see Table 5). After exposure, the onset-offset distance reduces considerably to 197.1 Hz (see Table 5).

**Table 5**

*Average F1 Realisations of the Participants and Model Talkers in Hz*

| Exposure Phase | | F1 Onset | F1 Offset | GOAT Monophthongisation |
|---|---|---|---|---|
| **Pre** | **Model Talkers** | 384 | 414 | 30 |
| | **Participants** | 606 | 359 | 246 |
| **Post** | **Model Talkers** | - | - | - |
| | **Participants** | 581 | 384 | 197 |

The diphthongal realisations of the participants can be compared to the available literature on the topic. The only article found by the researcher on the acoustic description of English diphthongs with F1 onset and offset information is Lee et al. (2014) which is focused on General American English (GA or AmE) (see Table 6). In this variety, the GOAT diphthong also has a diphthongal realisation with an average onset-offset distance of 174 Hz for female speakers, which still is lower than the one the participants had. Therefore, the quality of this new articulation can still be considered diphthongal.

**Table 6**

*Average Degree of GOAT Monophthongisation of the Different Sources in Hz*

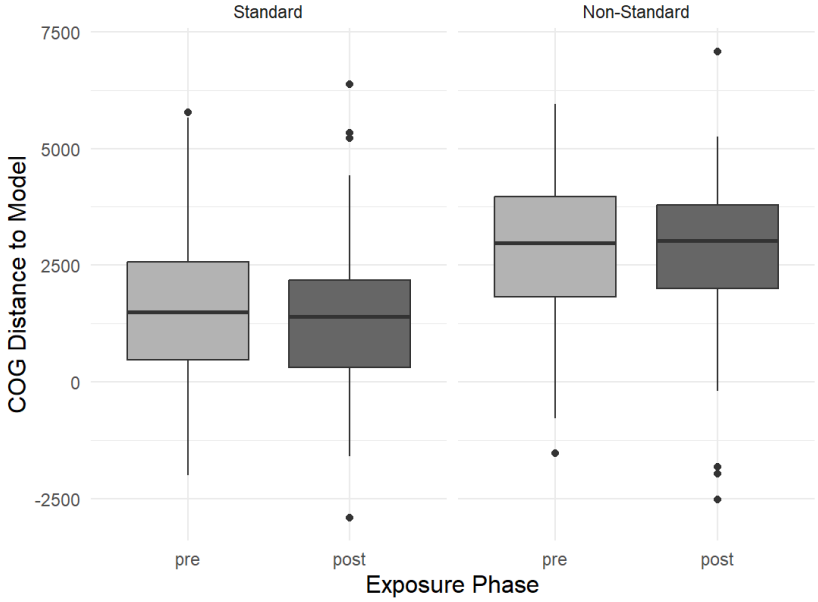
| Gender | Model Talkers | Participants | Lee at al. (2014) |
|---|---|---|---|
| **Male** | 30 | - | 168 |
| **Female** | - | Pre: 246<br>Post: 197 | 174 |

### 5.1.4 *Centre of gravity*

This model included two independent variables: the standardness of the variety and the exposure phase to the model speakers. Standardness is a significant main effect, as the participants produce an overall larger distance to the non-standard model speakers in both phases of the exposure ($B = 1129.86$, $SE = 241.29$, $t = 4.68$, $p < .001$). However, exposure and the interaction between standardness and exposure were not significant effects. Thus, indicating that after the exposure phase, the distance to the model speaker remains stable and accommodation has not occurred in both varieties (see Figure 3).

**Figure 3**

*Box Plot for CoG Distance Before and After Exposure to the Model Talker per Variety*



Despite the lack of accommodation after exposure, it is important to look at the acoustic behaviour of the participants and model speakers. The phoneme /θ/ is generally not used as a marker of dialectal variation in English research, as its place of articulation and sound quality seem quite similar across varieties. Therefore, there are not many acoustic descriptions of this segment, and the ones that are available examine General American English. In Table 7, both the model speakers and female participants have a relatively low centre of gravity in regard to Jongman et al. (2000), which averages the mean spectral moment values across participants in AmE. However, the participants' data is quite close to Jongman et al.'s (2000). Additionally, these lower frequency ranges in the female participants and model speakers can also be observed in the fundamental frequency data. This variation might indicate a movement in which the frequency ranges for the same segment or feature find their lower frequencies in Standard Dutch and increase more as they are produced in GB and a bit more in American English. Other acoustic descriptions of TH locate its centre of gravity at 4111 Hz for females and males in Toda, which is a Southern Dravidian language known for its fricatives (Gordon et al., 2002). Consequently, it can be concluded that the acoustic behaviour of the participants is within an acceptable range of how the phoneme is produced across languages.

**Table 7**

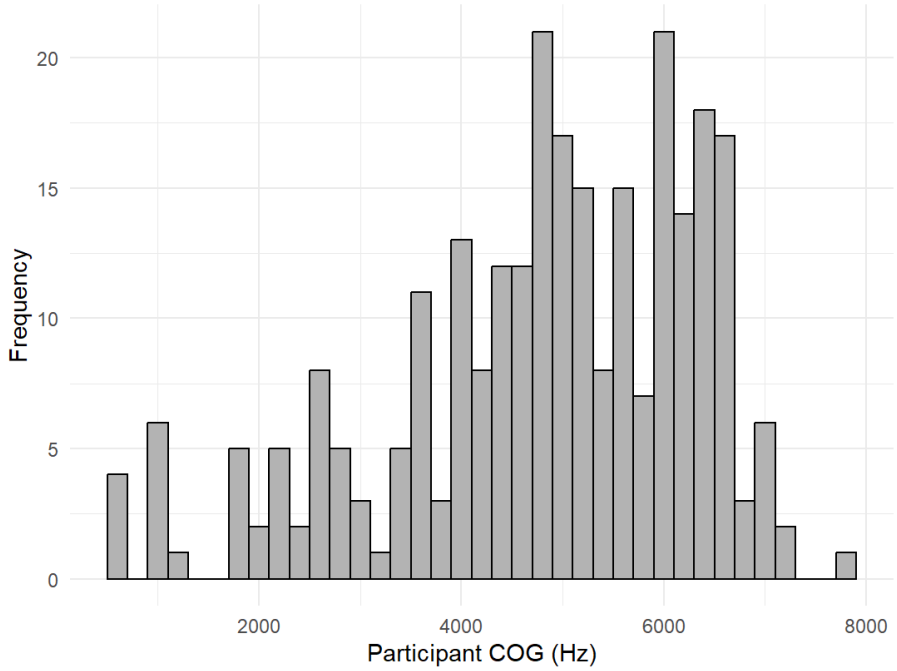
*Average Centre of Gravity of the Different Sources in Hz*

| Exposure Phase | Variety | Model Talkers | Participants | Jongman at al. (2000) |
|---|---|---|---|---|
| **Pre** | **Standard** | 3162 | 4872 | 5137 |
| | **Non-Standard** | 2024 | 4872 | |
| **Post** | **Standard** | - | 4630 | - |
| | **Non-Standard** | - | 4850 | - |

Additionally, if we take a closer look at the participants' production of TH, a wide individual variation in the CoG can be observed, as some realisations are placed in the 2000 Hz range and others in the 7000 Hz (see Figure 4). While it would be desirable to find all the articulations in a narrower range of frequencies, this occurrence is not entirely uncommon. In Behrens and Blumstein's (1988) description of AmE fricatives, the major frequency peaks for TH were spread in a range of 1,800 to 8,500 Hz for male speakers. Therefore, the participants' articulations, while they contain a high degree of individual variation, behave like other studies in the field.

**Figure 4**

*Histogram of /θ/ CoG for all the participants*



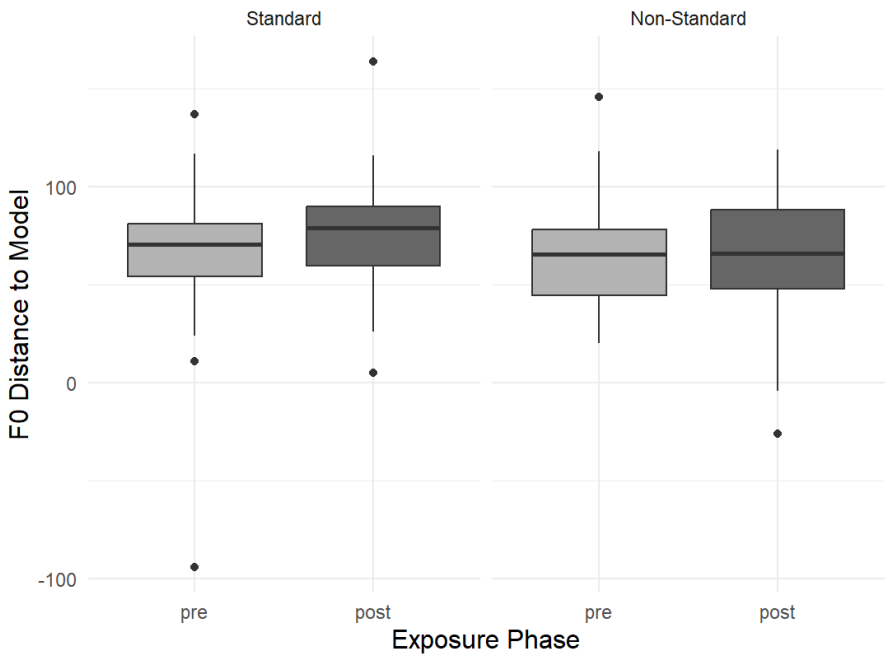

### 5.1.5 *Fundamental frequency*

This model included two independent variables: the standardness of the variety and the exposure phase to the model speakers. Exposure is a significant main effect as the distance to the model speakers rose in the post-exposure phase, thus indicating that the participants diverged from the model speakers rather than accommodated in both

varieties ($B = 8.47$, $SE = 3.85$, $t = 2.20$, $p < .01$) (see Figure 5). However, it is important to note that the difference between phases (pre to post) and the effect are quite small, which may be indicating a tendency rather than effect. Lastly, the effects of standardness and the interaction between standardness and exposure were not significant.

**Figure 5**

*Box Plot for f0 Distance Before and After Exposure to the Model Talker per Variety*




Additionally, we must consider the acoustic behaviour of the participants in relation to both English and Dutch linguistic descriptions. In the case of Dutch, no available literature with f0 information for Dutch vowels (except Koopmans-van Beinum (1980), which is not accessible for the author) has been found, so drawing a comparison between the participants and their mother tongue remains impossible. Lee et al. (2014) and Hillenbrand et al. (1995) are the only sources available with f0 data in PALM and GOAT for English native varieties, namely, General American English. The average f0 realisation of the model speakers is relatively close to that of the American

natives in the articles (see Table 8). But the participants' production is very different from the AmE female speakers. We suggest this might be related to their Dutch native realisations, as they have overall lower frequency ranges than English native speakers (see Palm F1 and F2 in the results section).

**Table 8**

*Average f0 Realisations of the Different Sources in Hz*

| Measured in | Gender | Model Talkers | Participants | Lee et al. (2014) | Hillenbrad et al. (1995) |
|---|---|---|---|---|---|
| **Palm** | **Male** | 98 | - | - | 123 |
| | **Female** | - | Pre: 167<br>Post: 173 | - | 215 |
| **Goat** | **Male** | 117 | - | 130 | - |
| | **Female** | - | Pre: 181<br>Post: 183 | 216.5 | - |

### 5.1.6 *Correlation coefficients*

Fifteen Spearman correlation coefficients were calculated to assess the relationship between the attitudinal components (prestige, pleasantness and familiarity) and the accommodation to the different acoustic features (Palm F1, Palm F2, GOAT, F0 and CoG) in the participants. None of them showed significant results. The exact results of each of the correlations can be seen in Table 9.

**Table 9**

*Correlation results per Feature and Attitudinal Component*

| Feature | Prestige | Pleasantness | Familiarity |
|---|---|---|---|
| Palm F1 | $r(16) = –0.10$, $p = .703$ | $r(16) = 0.008$, $p = .976$ | $r(16) = –0.03$, $p = .914$ |
| Palm F2 | $r(16) = –0.42$, $p = .084$ | $r(16) = –0.27$, $p = .285$ | $r(16) = –0.44$, $p = .068$ |
| GOAT | $r(16) = –0.001$, $p = .998$ | $r(16) = 0.37$, $p = .135$ | $(16) = 0.03$, $p = .899$ |
| f0 | $r(34) = 0.009$, $p = .957$ | $r(34) = 0.17$, $p = .315$ | $r(34) = 0.009$, $p = .956$ |
| CoG | $r(34) = 0.22$, $p = .197$ | $r(34) = 0.06$, $p = .736$ | $r(34) = 0.03$, $p = .865$ |

The average ratings given by the participants were calculated per component and variety in order to take a closer look at their opinions and draw possible conclusions (see Table 10).

**Table 10**

*Average rating per Variety for each of the Analysed Attitudinal Components*

| Variety | Familiarity | Pleasantness | Prestige |
|---|---|---|---|
| General British | 4.44 | 4.38 | 3.94 |
| Glasgow English | 3.94 | 3.61 | 2.66 |

# 6. Discussion

## 6.1 Answer to research questions

This study aimed to answer the question*:* Do Dutch female speakers of L2 English accommodate more to phonetic features of Standard Southern British English (SSBE) in comparison to Glaswegian English?

The answer to the research question is not a straightforward one. The standard variety shows accommodation in two levels: PALM F2 and CoG; however, the CoG distance is not affected by the exposure phase as it was already closer to the model speaker prior to the exposure. The non-standard accent displays accommodation in one level, namely, the GOAT diphthong. Additionally, both varieties show a slight divergence in the f0 level. In closing, it is not possible to conclude that the female participants of this study adapted more to the standard variety than the non-standard one, as they converged and diverged to both in different manners.

Furthermore, this study sought to analyse acoustic accommodation in relation with attitudinal components. To do so, three questions were proposed. The first sub question was: does the perceived prestige of the variety play a role in the degree of

accommodation? The perceived prestige of the variety lacks a strong relationship with the production of the different acoustic features. The second one: does the pleasantness of the varieties play a role in the degree of accommodation? The pleasantness of the varieties is not related with the articulation of the different acoustic features. Lastly, the third one: does familiarity with an accent play a role in the degree of accommodation? The familiarity with an accent is not related with the realisation of the acoustic features.

### 6.2 Acoustic production and native inventory

A thorough analysis of the acoustic performance of the participants is necessary to understand its relation in the occurrence of accommodation. Additionally, it is relevant to consider the differences the L1 and L2 sound inventories of the Dutch L2E participants (Burgos et al., 2013; Chang and Mishler, 2012, as cited in Berry & Ernestus, 2018; Troncoso, 2022). To do so, we will discuss each feature individually.

#### 6.2.1 *Considerations on Palm F1 and F2*

The implications of these numbers for Palm F1 and F1 will be considered jointly, as they are part of the same phoneme. The fact that F1 remains unchanged after exposure can be interpreted in several ways. Firstly, /ɑ/ and /ɛ/ are the only vowels in the 700 Hz range for F1 in the Dutch native inventory. Maintaining this number could be seen as a marked way of keeping the phoneme category recognisable for the participants and not creating a clash with other phoneme categories. Secondly, the average GB F1 for women (910 Hz) is higher than the one the participants produced. This tendency in the native women could have produced a rising movement in the female participants, but it did not happen. However, it could be interpreted that the lack of post-exposure raising in the F1 might be seen as an adaptation to the lower frequencies of the male model talkers' F1. This interpretation remains speculative due to the lack of female model

talkers in the experiment and the impossibility to test it. Additionally, the change in the F2 can be seen in several manners. Unlike the F1 level, the second formant unconsciously might have been seen by the participants as a more decisive and salient element in order to accommodate to the PALM vowel. Additionally, this result coincides with prior findings. Babel (2012, as cited in Cowie & Pande, 2017) theorised that lower back vowels allow for more accommodation, as there is more space in the oral cavity to manoeuvre the adapted articulatory gestures. In Burin and Ballier (2017), /ɑ:/ and /æ/ presented the highest adaptation rates among several vowels; however, they did so in the F1 level with French L2E speakers.

### 6.2.2 *GOAT Monophthongisation*

When reading the GOAT diphthong in the beginning of the experiment, the participants seem to be aware that the pronunciation of this phoneme is usually diphthongal. This awareness is most likely caused by their English language training and media consumption, which in the Netherlands mostly involves GB and GA. After the exposure to Glasgow English, their realisation remains diphthongal but less divergent than before. This change can be partially explained by Ruch and de Benito's (2023) claim that L1 and L2 categories are more flexible than previously considered and can be subject to change. However, it is important to state that while the accommodation to the model speakers does take place, it seems to be superseded by their categorical notion of this phoneme as a diphthong, as their post-exposure realisation remains diphthongal. In addition, the exposure phase (with a duration of 4 minutes and 30 seconds), the familiarity score (3,94 out of 5) and the prestige rating (2.66 out of 5) can help to explain the diphthongal quality of the post-exposure productions. It could be argued that a longer exposure phase is needed, particularly with a variety with a low familiarity rating. The prescriptive nature of language classes in secondary education tends to

emphasise very overtly that standard forms are the desirable and prestigious choices to make and an accent such as Glasgow English is not normally discussed as a possible variant of English pronunciation. The effect of such conditioning on the students might have hindered the opportunity for higher accommodation due to the low prestige they consider the accent to have. Given the non-significant correlations between acoustic features and attitudinal components, these last claims remain speculative.

### 6.2.3 *Fricative /θ/*

The main result of the linear mixed effect model is that standardness is a significant main effect, as the participants' realisations differed more from non-standard model speakers in both exposure phases than the standard ones. However, after further examination, this interpretation of the data becomes inadequate. The pre-exposure elicitations of the participants were performed by reading written text on a screen; therefore, they are unaffected by the experiment's accents or their exposure. Their acoustic behaviour remains stable after the exposure phase. Consequently, it is not possible to establish that standardness is the reason behind their higher similarity to GB model speakers. Considering the available data in this experiment, it is only possible to conclude that the participants' realisations are more similar to the two specific GB model speakers than the Glasgow English model speakers. One possible explanation might be the participants' familiarity with General British (with an average familiarity score of 4.44) due to their schooling and media consumption. However, due to the limited number of model speakers in the experiment, it is not possible to determine it, and this claim remains speculative.

As mentioned in the results section, there is a high degree of individual variation in the participants when producing the TH phoneme. Two reasons might explain this variability. Firstly, this phoneme was selected as a control measurement due to the fact

that it does not exist in Standard Dutch, but according to prior research, its speakers are generally able to produce it and tell it apart from other fricative sounds. Additionally, it is also relevant to remember that prior literature states that proficient L2 speakers can process speech similarly to native speakers. However, this phoneme, which is relatively uncommon in the participants' daily lives, might have shown their cognitive limitations in the adaptation process. Participants might have been able to hear and process it, but its articulation in a fast shadowing task has proven hard to produce consistently in each elicitation sentence. Secondly, the elicitation context might have been unfavourable for the production of TH. The options for the elicitation of the /θ/ in the source material were limited, as there were only three instances of TH present in the recordings. The main strategy used to bridge this context has been to elide the articulation of this phoneme and directly articulate the following one which had similar gestural position. Another possible strategy to bridge the context is to approach each utterance individually and try to adapt to the best of their ability, yielding many different realisations of the same segment, thus producing high individual variation.

### 6.2.4 *Fundamental frequency*

Unlike PALM and GOAT, the adaptation in f0 is slightly divergent to the model speakers. Such a movement could be considered in light of the participants' pleasantness ratings: GB has an average of 4,38 and Glasgow English of 3,61. However, how much the participants liked an accent does not seem to be relevant, as both varieties behave similarly despite having quite different average scores. Gijssels et al. (2015) reject the idea that f0 adaptation is simply triggered through priming or exposure, and they proposed that there might be a more complex process at play allowing speakers to adjust their f0 in a more flexible and gradual way depending on the interlocutor or context. In line with this idea, the f0 measurements in this research are quite

fragmentary, as they have been taken only at mid-point in two vocalic phonemes rather than considering their evolution throughout the elicitation utterances. A change in the analysis methodology could yield more consistent results in future f0 research.

### 6.3 L2 accommodation

The disparity in the results (which show accommodation on some features and divergence in others) and its relation to L2 participants can be interpreted in several ways. First, the cognitive load demanded of the L2 participants can be a factor preventing more consistent behaviour across features. Pardo et al. (2018b) state that shadowing tasks exhibit the highest influence of the integration of perception-production of speech. Although the participants are able to manage speech in a similar way to native speakers (Lecumberri et al., 2010, as cited in Troncoso, 2022 and normalise non-standard accented input (Baese-Berk et al., 2013; Bradlow and Alexander, 2007, as cited in Berry & Ernestus, 2018). It does not mean that they can listen to, process (as standard and non-standard), repeat the utterances and additionally converge to a variety (as exposed in Costa et al., 2008, as cited in Troncoso, 2022) across all acoustic domains. Hence, this process demonstrates that L2 adaptation varies from L1 convergence, and it might entail a more complex cognitive operation. A second explanation can be drawn in regard to the social aspect of phonetic accommodation. This interpretation functions at two different levels. On a sociolinguistic level, the idea that both L1 and L2 should be seen as dynamic items (Giles et al., 1991; Babel, 2009, as cited in Murphy, 2014) is quite important. The experiment subjects might have no desire or need to adapt to certain features, and the results of this study can be explained beyond the standardness of the variety. For example, self-identity, prior experience with English or other attitudinal components (that were not included in the questionnaire) might have affected the participants' behaviour. On a perception-production level,

previous research has shown that proficient L2 participants can process speech similarly to native speakers; however, this does not imply that shadowing tasks are the most suitable test for them. Shadowing tasks normally give a low level of exposure and are quite fast paced. Investigations involving in-person human-to-human conversations might be better for this population group and could maximise the opportunity for adaptation, as both interlocutors are human instead of computers.

### 6.4 The effect of exposure

One of the main findings of this paper in relation to exposure is that exposure can indeed trigger convergence and likely divergence to a lesser extent. This finding can be interpreted considering different theories on accommodation. Under CAT (Communication Accommodation Theory; Giles, 1973), it could be argued that the need to bridge social distance is not necessarily a requirement of accommodation, as the participants adapted to human speech on a computer. The simulation process described in the Motor Theory (Liberman and Whalen, 2000, as cited in Gambi & Pickering, 2013), by which heard speech (from the model speakers) is easier to replicate, is in fact attested in some of the findings (Palm F2 and GOAT). Lastly, a similar claim can be made for the Episodic Theory (Goldinger, 1998, as cited in Gambi & Pickering, 2013) and the Direct-Perception Theory (Gibson, 1979, as cited in Mitterer & Müsseler, 2013). The exposure phase of four minutes was long enough for the participants to replicate the articulatory gestures and create a strong memory for some of the acoustic features. This is further supported by the fact that Palm and Goat are words with a relatively low frequency (lemma frequency per million of 30 and 28, respectively, in the CELEX database (Baayen et al., 1995) and therefore more prone to be affected by new instances of the word. CAT and the Motor Theory are underpinned by a necessity of physicality, as exposure is more successful in triggering accommodation in person-to-person

encounters (Cohn et al., 2019; Berry and Ernestus, 2018, as cited in Troncoso, 2022). However, this research further proves that convergence is also possible with human speech heard through a computer, and a two-way interaction does not seem an essential requirement of this process. Under the Episodic Theory and Direct-Perception Theory, it can be proposed that a minimum time of exposure is needed to generate accommodation, and this research has met it for some of the acoustic features. Particularly if we consider that shadowing tasks do not account for the participants' prior exposure to an accent and the fact that L2 learners do not have as much exposure as natives through daily life conversations.

### 6.5 The effect of standardness

Despite the social preference for standard varieties, the results of this research yield a complex picture of how accommodation intersects with standardness. The data on Palm F2 and GOAT indicate that speakers can adapt to both types of accents. However, CoG, Palm F1 and f0 show that they are also able to remain as they were or slightly diverge. Additionally, despite CoG remaining unaffected by the exposure, it shows an overall smaller distance with standard speakers. A main point can be concluded from these results; both varieties are able to produce accommodation despite their level of standardness. This finding has significant implications for fields where standard accents are the default choice for L2 speakers, suggesting that alternative accents can also be a suitable option, particularly in areas such as education and voice-based technologies. Additionally, this suggests that social conditioning and pressure to conform to standard accents may have less influence than expected on certain cognitive processes, such as accommodation, which can still lead to phonetic convergence. However, these findings can be seen in a different light; salient variety features (Palm F2 and GOAT) trigger accommodation, while suprasegmental and general features do not (CoG and f0).

Therefore, this fact might suggest a tendency by which phonetic distance can be reduced in the case of salient features, which in this research are segmental in nature. In this case, saliency is understood as the degree to which a characteristic becomes noticeable and typically assigned to a certain group or geographical area by others. Thus, the importance of standardness becomes diminished in favour of saliency. This finding aligns with Walker and Campbell-Kibler's (2015, as cited in Cowie and Pande, 2017) assertion that adaptation takes place more often when the changes are more noticeable for the participants. Additionally, the relevance of saliency can be related to women's higher sensitivity to indexical variation described by Namy et al. (2002, as cited in Ruch and de Benito, 2023). The female participants' ability to notice extralinguistic factors might have allowed them to accommodate to both despite having different degrees of familiarity with each accent. Nevertheless, these claims remain only speculative, as this study has not measured saliency empirically with the participants.

### 6.6 The effect of gender

The original design of this research aimed to include the gender of the model talker as a factor in the analysis. Due to reasons explained in the limitations section, only male model speakers were finally included in the experiment. The consequences of this restraint entail that the interaction between speaker gender, accommodation and women remains unaccounted for. For example, it remains impossible to compare which gender produces more accommodation in female participants and the possible reasons behind these tendencies. Despite this setback, this research has been able to attest, as previous research has also done, that female speakers, in fact, can adapt to male speakers. Lastly, an additional effect of gender, as could be expected from previous research, is that the female participants in this experiment had overall higher frequency ranges than the male model speakers, despite the adaptation process.

### 6.7 The effect of attitudes

The relevance and influence of attitudes and feelings towards a speaker, accent or variety have been examined in previous literature and turned into the main argument of relevant theories such as CAT (Communication Accommodation Theory; Giles, 1973). However, this research has not been able to determine the effects of pleasantness, prestige perception and familiarity in the accommodation towards GB and Glaswegian English. The aseptic nature of the laboratory setting has not hindered the opportunity for accommodation, as it has taken place in some of the acoustic features and has been demonstrated in prior investigations such as Namy et al. (2002). During the laboratory sessions, many of the participants reacted positively to the model speakers through sympathetic comments, laughter and smiles when they were talking. However, it could be argued that the influence of a computer-to-human interaction has muted the feelings the participants could have developed towards a real speaker in a normal conversation, thus producing mild reactions about the model speakers.

The averages of the attitudinal questionnaire can be observed in Table 10 (see results section). The perception of GB is relatively typical considering the role it has played in the lives of L2 participants in the Netherlands. It is the accent that is taught throughout their schooling, and much of the media that they consume is likely to be performed with such an accent. In the case of Glasgow English, and in line with *The Voices* survey (Coupland and Bishop, 2007), the participants display a fairly high familiarity with the accent and therefore have a low prestige score, as the UK native speakers also do.

### 6.8 Limitations

Due to the scope of this project as an MA thesis, several limitations have arisen in the course of its completion. The size of the participant sample is rather small and does not allow for a free generalisation of the research findings to the entire population. Additionally, the correlation coefficients might have been affected, yielding overall insignificant results. Therefore, despite previous literature indicating the importance of attitudes and opinions on accommodation, no connection with attitudinal components has been established in this study. As previously mentioned, it was not possible to include female talkers in the experiment design. The recordings available in the IDEA database (Meier, 1999) for female speakers of GB and Glasgow English between 18 and 30 years old were not of the sufficient quality to be included in the research. Lastly, the phonetic context in which the fricative TH was placed has yielded results with high individual variation that do not allow for an easy general interpretation. Given these limitations, further research in this area is necessary, for instance, regarding the inclusion of female model talkers, employing a bigger sample size, a comparison across different L2 groups and the inclusion of additional phonetic features to yield a more wholistic picture of this phenomenon in L2 speakers.

## 7. Conclusion

This research further highlights that adaptation is a more complex process than originally described in the Communication Accommodation Theory (CAT), which primarily linked it to social distance. Additional cognitive and social elements are part of this phenomenon that requires further attention. Although the results do not allow for a definitive answer to the research question, the acoustic behaviour of the participants can provide new insight into the multifaceted nature of this process. Several interpretations in the social and cognitive domains have been suggested in order to

explain this research's findings. Additionally, a thorough acoustic examination has been performed with the objective of facilitating a comparison with related studies and being able to establish more generalisable conclusions.

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## Appendix A

*Elicitation sentences for the experiment:*

1. give her a relaxing bath
2. foot and mouth disease
3. private practise in North Square
4. see it in a dog or a goat
5. and washed her face in a hurry (filler)
6. Perry was a veterinary nurse (filler)
7. goose's lower back with her palm
8. a bowl of porridge (filler)
9. the goose's owner

## Appendix B

*Questionnaire*

Participant Personal Information:

1. Participant Number
2. Age
3. Gender
4. What do you study and what level is it?
5. How many years have you learned English in school?
6. In a scale of 1 to 7, how would describe your English level?
7. What is your level of education?

Listen to the sound file below and answer the following statements:

- It is a prestigious accent
- I am familiar with the accent

- It is a pleasant accent

Possible answers: Completely disagree, Partially disagree, Neither agree or disagree, Partially agree and Completely agree.