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# Topic-based variation as both cognitive and agentive

Identity politics, deaf speakers, and hearing researcher

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Topic-based style-shifting refers to the variation pattern that, when people talk about a topic, they shift to a linguistic style which is associated with the topic. Most of the research on topic-based variation in read speech have not taken stance-taking into consideration. This study argues that stance-taking needs to be included in the analysis of topic-based variation, for reading something aloud is a practice where individuals engage with the message communicated in a text. This study looks at the socially salient variable /s/ in Taiwan Mandarin, and how deaf speakers exploit this variable to perform their stances towards a passage concerned with the political relationship between hearing people and deaf signers. The findings show that participants who demonstrate a stance of deaf solidarity diverge from standard speech styles in their repertoires when reading the deaf passage.

**Keywords:** stance-taking, cognitive sociolinguistics, read speech, retroflex fricative, deaf identity

## 1. Introduction

This study<sup>1</sup> explores how identity politics interacts with style-shifting among oral deaf speakers of Taiwan Mandarin. Specifically, this study looks at the style-shifting taking place when oral deaf speakers read aloud a passage which frames the relationship between hearing people and deaf signers as structural oppression.

By 'oral deaf people', I mean deaf people who are orally educated. The term 'oral' is ideologically loaded. It emphasises how oralism deems spoken language as

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1. An early version of this study was presented at UKLVC 13.

a superior modality to signed/written language, and how a shift to oral education has been framed as a move to ‘inclusive education’ or ‘mainstreaming’ since the 1980s in Taiwan, where efforts were seen to ban signed language in regular (hearing) schools in the 1980s (Liu et al., 2014).

Most of the participants in this study identify as 聽障者 *tīngzhàngzhě* (lit. ‘hearing disabled people’) or 聽損者 *tīngsǔnzhě* (lit. ‘hearing loss people’). In contrast, people who attend deaf schools and receive education in Taiwan Sign Language (TSL) usually identify as 聾人 *lóng rén* (lit. ‘deaf people’). Oral deaf people usually do not identify as *lóng rén*, for this label has a strong connection with signed language use. Some oral deaf adults who learn TSL as a second language<sup>2</sup> and do not use it as their dominant language also identify as *lóng rén*. In this article, unless I look at how my participants specifically identify themselves, I follow Kusters, O’Brien, and De Meulder’s (2017, p.15) proposal to “define ‘deaf’ as a term describing all kinds of deaf persons, including those who are hard of hearing”.

This study contributes to topic-based style-shifting research (§2). At a macrosocial level, the topic of the oppression of deaf signers is not stereotypically associated with any speech styles. At an individual level, when an oral deaf person shows solidarity with deaf signers, this topic may be associated with their own casual speech styles (usually known as ‘deaf accent’, §4.2). In the present study, the oral deaf participants demonstrate different patterns of topic-based linguistic variation when shifting to the topic of identity politics about deaf signers. This study is a part of the ‘deaf speech’ project (see Wan 2021a) which explores agentive linguistic practices among oral deaf people. This paper analyses the inter-speaker difference in terms of whether a person demonstrates ‘deaf solidarity’.

This article is structured as follows: first, I review mainstreamed perspectives on topic-based style-shifting. Then, I provide descriptions of how the participants of this study were recruited, what task they were invited to participate in, and my positionality. Then, I focus on the linguistic variable used in this study and present findings. Finally, I review how the cognitive model of topic-based linguistic variation can be revised to explain the empirical phenomenon.

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2. The Development of National Languages Act was passed in 2018. Elementary and junior high school students can take any of the national languages as their target language in mandatory local language class, including Taiwan Sign Language (TSL). Therefore, it is likely that there will be a trend among oral deaf students to learn TSL at an early age if they choose TSL as their target language.

## 2. Topic-based style-shifting

Topic-based style-shifting refers to a phenomenon where individuals travel between different linguistic styles when talking about different topics. In terms of phonetic/phonological variation, most topic-based style-shifting research is on conversational or interview speech (Becker, 2009; Boyd, 2018; Hall-Lew, Cardoso, et al., 2021; Hay & Foulkes, 2016; Levon, 2009; Moore & Carter, 2015); some research is on read speech (e.g., Hashimoto, 2019; Lin, 2018; Love & Walker, 2013; Walker, 2019).

The topic effect has been approached from different theoretical perspectives. In a broad sense, there are two major perspectives – *agency theory* and *cognition theory*. In agency theory, emphasis is put on how people perform their relationship with the topic. For example, speakers shift to speech styles associated with specific topics (e.g., ethnicity, place, sexuality) to perform their identities associated with those topics (Becker, 2009; Boyd, 2018; Hall-Lew, Cardoso, et al., 2021). At a microsocial level, Kiesling (2011) argues that topic-based style-shifting should be considered a product of *stance-taking*. For instance, Moore and Carter (2015) observe that a Scillonian person educated in mainland Britain shifts to different English speech styles when talking about different employees under a ‘company’ topic; this speaker uses more mainland-oriented vowel variants when talking about certain captains who achieved ‘authority, discipline, ambition and institutional status’, and shifts to Scilly-oriented variants to distance himself from other employees who don’t achieve this kind of status. Kiesling (2011) argues that topic-based style-shifting is not driven by the conversational topic per se; instead, it is the stance taken by people that drives the topic effect.

In cognition theory, the emphasis is instead put on how social information and linguistic information are cognitively associated, thereby enabling topic-based linguistic variation. Walker (2019) points out that stereotypical sociolinguistic representations drive topic-based variation. As agentive factors do not always show a significant influence on the topic effect, researchers question whether agency is a necessary condition for topic-based linguistic variation (Devlin et al., 2019; Love & Walker, 2013). Especially for read speech, individual agency has been reported to play no effect in such ‘non-interactional’ settings. For instance, in Hashimoto’s (2019) research on Pākehā New Zealand English speakers, when reading a passage on Māori culture, Pākehā speakers realise Māori loanwords with the Māori-imported variant [ɾ] rather than the adapted variant [ɹ]; the topic effect has no statistical interaction with a person’s attitude towards Māori language and culture. In contrast, Lin (2018) reports no significant topic effect among Xiamen Mandarin speakers who study in Beijing when they read two promotional materials introducing Xiamen and Beijing. It seems that cognitive asso-

ciation is necessary for topic-based variation, but some other agentive factors may also be necessary.

In addition, even when the present interlocutor (i.e., the researcher) remains the same person, individuals engage with expectations of different social groups in their style design. Levon (2009) notices that in terms of intra-speaker variation, Israeli gay men do not stick to the same speech style when talking about gay topics. Instead, it depends on whether the conversational frame is an opinion or a narrative. When framing one's speech as an opinion, speakers shift to speech styles (e.g., a higher pitch) which cater to positive Israeli stereotypes of feminine gay men; when framing one's speech as a narrative, they shift to speech styles (e.g., a lower pitch) which embody masculinity, catering to the expectations of other gay men. This observation has theoretical implications for topic-based style-shifting in read speech.

Reading tasks are not really 'non-interactional' settings, and experiments are not context-free. Self-conscious read speech is highly performative. Previous work on topic-based variation in read speech does not invite speakers to comment on the passages. In the *stance triangle* framework proposed by Du Bois (2007), individuals not only take a stance to objects; they also take a stance to the stance of their interlocutors, which contributes to mutual stance-taking between interlocutors. Specifically, speakers take a stance towards the act of performing a reading task as well as to the researcher's presence (Gaftner, 2016; Stuart-Smith et al., 2013).

Texts are not neutral materials. The author of a text takes a stance towards what's communicated, and people who read the text also take a stance towards its content. Reading a text aloud is a discursive activity where speakers inevitably interact with how others in society respond to this text and their act of reading it out loud. Based on previous experiences, individuals are socialised to take a certain stance towards a certain type of text. In this study, I show how stance-taking is a factor which should be considered in research on topic-based style-shifting in read speech.

### 3. Research design

#### 3.1 Reading tasks

Two passages were used in this study. The first passage was on a royal story that took place during the Qing dynasty of China and had a total of 26 characters (syllables) with the target linguistic variable (see §4). The second passage was relevant to deaf people and had a total of 21 tokens with the target variable. The two

stories were comparable in terms of affective valence; both stories were unhappy stories.

The first passage (henceforth, *NON-DEAF* passage) was concerned with how an empress broke up with the emperor by putting a curse on him. No participant knew this story before the reading task. This story was chosen because for the participants it was distant in space and time, in contrast to the second passage, close to the participants' life experiences. It also served the additional purpose of priming the participants to only take particular stances towards the second story.

The second passage (henceforth, *DEAF* passage) was a fictional story based on a story written by Hsin-yi Lu (2012), a deaf artist who published this story in a news outlet. In the story, there was a kingdom where 'Wei people' and 'Bi people' were the two major ethnic groups (see the Appendix). Wei people were the dominant group and royalty (this setting serves to create a colonial situation), forcing Bi people to abandon the signed language because Wei people thought signed language was not real language (this setting served to represent the language ideology of signed language in real world). All the participants were aware of the allegorical nature of this story, pointing to the relationship between hearing people and deaf signers in real life.

All participants were required to read the two passages before the recording to see whether the pronunciation of any of the Chinese characters was unknown to them. That is, before the recording, the participants knew what the two passages were about. After the reading tasks, the participants were invited to comment on the *DEAF* passage. All recordings were made using Zoom H5 (sampling rate = 44.1 kHz), with built-in microphone.

Before the reading tasks, I interviewed them about their comments on TSL, how they identified themselves, and how they understood the relationship between TSL and themselves. I compared the interview speech to the read speech to know how each participant engaged with the investigated linguistic variable to perform standard speech (§4.2). This is crucial, as not every participant engaged with the investigated linguistic variable in the same way as how hearing people do. They may invoke different articulatory gestures to index the same social meaning.

This study does not focus on any topic effect of the *NON-DEAF* passage. The *NON-DEAF* passage is the first passage to be read. Previous research shows that when there is a topic effect of the first passage, the effect carries over to the second passage (Hashimoto, 2019). The current research design has prevented a topic effect of the first passage. If the results show no variation in the target linguistic variable between the two passages, we will take it to mean that there is no topic effect of the *DEAF* topic.

### 3.2 Participants and the researcher

A total of 14 deaf participants were recruited from Greater Taipei, through posting recruitment advertisements in the public Facebook group ‘公「聽」並觀，「障」義執言—聽障者權益論壇 Deaf and HOH forum Taiwan’ between December 2018 and January 2019. The participants used Mandarin as their dominant language and never attended a deaf school. The average age of the participants was 25.9 years (max=44; min=18). The interviews were conducted by the author, a hearing man from New Taipei, and aged 25, at the time of interview.

Among all the participants, five of them were TSL signers. One participant – Sandy – learned TSL in early childhood from her parents, who are both deaf signers and received education in TSL. Sandy learned spoken Mandarin from her (hearing) grandparents. She could only communicate specific topics she would discuss with her parents in TSL. At the time of the interview, she did not identify as *lóngrén*.

The other four persons (Zuo-Zuo, A-Wei, Huei, and Xiao-Lu) learned TSL in adulthood. All four persons were born to hearing parents and spoke Mandarin as their first language. They learned TSL from classes offered by deaf non-profit organizations. At the time of the interview, A-Wei and Huei also identified as *lóngrén*. A total of 9 participants did not sign, none of whom identified as *lóngrén*.

To differentiate myself from speech-language pathologists, who are often the ones recruiting oral deaf people to participate in research projects, it was mentioned on the recruitment text that the researcher has no intention to measure the correctness of the participant’s speech by the standard of hearing speech. In the consent form, it is again emphasised that ‘the mainstreamed society has many misunderstandings about deaf people [...] this study does not test whether your pronunciation meets the standard of hearing people’. Some deaf persons do not favor an identity politics emphasising the dominance of hearing people. To avoid discouraging them from participating in the study, the recruitment text does not mention anything about oppression. That is, for the participants, it is not explicit whether I take a positive or negative stance towards the perspective that deaf people are dominated by hearing people.

Campbell-Kibler (2021) reports that white people perceive a social danger of displaying racial bias, and this perceived social danger has an effect on how they deliberately avoid relying on facial information to evaluate accentedness of recordings. In this research, oral deaf people are invited to read a passage on how hearing people dominate deaf signers. Apart from the participant, there is no deaf signer present in the interview. Therefore, when the participant displays negative attitudes towards deaf signers, there is no social danger; in contrast, when the interviewer is a hearing person, displaying negative attitudes towards hear-

ing people can produce a social danger for the participant. This may lead the participants to perform ‘hearingness’ (Henner & Robinson, 2021a) by distancing themselves from the passage. In the context of US academia, Henner and Robinson (2021a, p. 102) observe that deaf scholars are pressured to perform like hearing scholars through various linguistic practices such as showing superior writing skills or signing in an English-like way. In this study, due to the researcher’s hearing privilege, some of the participants perform affiliating themselves with hearing people and avoiding aligning themselves with the DEAF passage. I am aware that their discourse in the interview is an example of ‘performative hearingness’ rather than a socially neutral medium which mirrors what they internally think.

#### 4. Linguistic variable: /ʃ/, to retroflex or not

##### 4.1 Hearing people and /ʃ/

In Taiwan Mandarin, the alveolar-retroflex contrast (including the /s/-/ʃ/, /ts/-/tʃ/, and /ts<sup>h</sup>/-/tʃ<sup>h</sup>/ contrast) is undergoing a merging process, in the direction of the alveolar (Tso, 2017). This study looks at the socially salient variant-‘retroflexion’ – in the retroflex sibilant /ʃ/.

The retroflexion of /ʃ/ is achieved by a bunched tongue. Taiwan Mandarin speakers who demonstrate a clear alveolar-retroflex distinction produce /ʃ/ by elevating the tongue tip and blade (Chiu et al., 2020). The articulatory difference is acoustically reflected in the measurement of the spectral centre of gravity (CoG) of the sibilant: alveolar sibilants receive higher CoG values than retroflex sibilants. As there is a general trend of de-retroflexion among hearing speakers of Taiwan Mandarin, the full retroflexion of /ʃ/ is a marked variant, associated with Mandarin speakers from People’s Republic of China (Brubaker, 2012; Tso, 2017). It is also perceived as a standard variant used in read speech (Starr, 2016). Women are more likely to realise retroflexion in read speech than men (Lee-Kim & Chou, 2022). When hearing people shift from spontaneous speech to read speech, a higher retroflexion is usually observed – a decline of 200 to 300 Hz in the CoG of /ʃ/ (Tso, 2017). Thereby, it is locally appropriated to perform an academic persona (Baran, 2014) or educator persona (Starr, 2016).

##### 4.2 ‘Deaf accents’ and /ʃ/

As hearing people are the majority in society, spoken Mandarin is developed based on hearing people’s auditory status. Hearing people do not express referential or indexical meanings via acoustic signals they have no auditory access to



(e.g., ultrasound). There are acoustic signals which hearing people have auditory access to, but some deaf people do not. Most of the participants of this study self-report having no access to the fricative sibilants or the acoustic differences between them. It is not unexpected because most of the acoustic energy of fricative sibilants occurs at higher frequencies.

As fricative sibilants are difficult to acquire for deaf speakers with limited access to higher sound frequencies, they adopt different strategies to realise the fricative sibilants. The inter-speaker variability of ‘deaf accents’ is observed to be very high. Some deaf speakers stick to fricative sibilants but do not necessarily make use of the same sounds as used by hearing people; some deaf speakers utilise sounds other than fricative sibilants.

Among the 14 participants, four of them demonstrate variants of /ʃ/ which are considered ‘substitution errors’ by speech-language pathologists (Li & Munson, 2016). Specifically, speakers may drop the sibilant or use alternative sounds in Mandarin to pronounce the sibilant. These include stopping ([k], [p], [k<sup>h</sup>], and [p<sup>h</sup>]), affrication ([ts], [tʃ], [ts<sup>h</sup>], and [tʃ<sup>h</sup>]), or glottalization ([h]). These are processes identified from the current data; other deaf speakers might have other ways to realise the sibilant. I refer to these speakers as ‘pathologised speakers’.

The other 10 participants do not demonstrate the above phonological processes. I refer to them as ‘non-pathologised speakers’ in this paper. They instead realise /ʃ/ as other fricative sibilants, such as [ç] and [s]. /ç/ is in complementary distribution with /ʃ/; /s/ and /ʃ/ are in merging process. Travelling between these three variants does not really influence speech intelligibility. The style-shifting between these sibilants can be studied as an acoustic continuum.

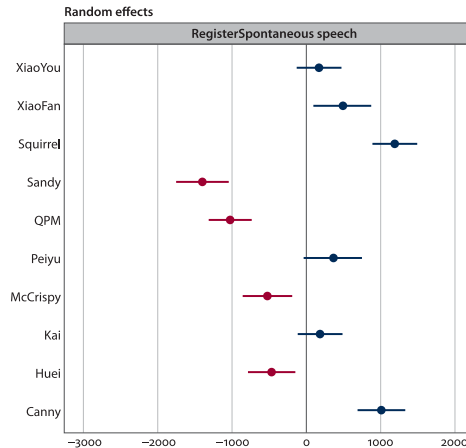
Generally, deaf speakers who engage in the medicalization of their speech (e.g., speech therapy or training) may tend to consider retroflexion as a strategy to perform a standard speech; others who do not receive a speech therapy or training instead tend to see de-retroflexion as a strategy to perform standard speech. Note that standard language ideology is entangled with multiple structural oppressions such as racism, sexism, and ableism (Henner & Robinson, 2021b; Phuong & Cioè-Peña, 2022). When deaf speakers perform standard speech, they are performing hearingness (or able-bodiedness in general) (Henner & Robinson, 2021a).

To compare interview speech and read speech, a linear mixed effects model was fit into the CoG data of the 10 non-pathologised speakers by the *lme4* package (Bates et al., 2015) in R (R Core Team, 2019). Temporal-midpoint CoG values were automatically extracted on Praat (Boersma & Weenink, 2019), using a 25 ms Gaussian window, by a script (Reetz, 2020). A high-pass filter was set at 1,000 Hz to eliminate low frequency noise and co-articulatory voicing from the surrounding segments (Chang & Shih, 2015). Data points whose CoG was not within two

standard deviations from the mean were excluded from the dataset; so were those with duration less than 30 ms.

The model considered vowel height (high/mid/low), vowel roundedness (yes/no), log-transformed sibilant duration, and register (read/interview) as fixed effects. Register-by-speaker random slope was also included in the model. There was no main effect of register. As there was no community pattern, the coefficient of by-speaker random slope was extracted (see Forrest, 2015).

Figure 1 shows how individual speakers engage with the effect of register on CoG. Four speakers (Sandy, QPM, McCrispy, Huei) raise CoG of the retroflex sibilant in read speech; the other six speakers instead lower CoG of the retroflex sibilant like hearing people (see Wan, 2022 for a detailed indexical analysis). The standard speech style is processed as a categorical variable (retroflexion/de-retroflexion) in later analysis.



**Figure 1.** By-speaker random slope of register (x-axis: CoG (Hz))

The absolute values of individual random slopes are extracted by the *coef* function in the *stats* R package. It is a continuous variable, termed as ‘register difference’, used as a proxy for the amount of symbolic work individuals do “to affirm their membership in groups or communities” (Eckert, 1989, p.259). This factor is included in order to consider individual speakers’ tendency to respond to the register demand of standard speech, for not every speaker from the same community is equally sensitive to the social meanings indexed by linguistic variants (Hall-Lew, Honeybone, et al., 2021).

When recruiting participants, I did not balance the number of participants allocated to each of the groups of other social factors, such as gender, age, and social class. These factors may affect the tendency to shift the place of articulation

of /s/ (Kuo, 2018; Lee-Kim & Chou, 2022; Tso, 2017). Practically it is hard to achieve a balance in participant allocation when working with deaf speakers as they are a small population. It is estimated that around 1.16% of newborn Taiwanese children do not pass the newborn hearing screening, and less than 85% of them follow up the screening results (Chen & Lim, 2021). Without controlling for macrosocial factors, this study uses ‘register difference’ as a proxy to prevent assuming every person has equal access to the semiotic landscape.

## 5. Stance-taking analysis

The framework of *stance triangle* (Du Bois, 2007) is applied to highlight how interlocutors take stances towards a stance object, and the stances taken by interlocutors further contribute to the alignment between stance-takers. The stance object in this study is the DEAF passage. Among the 14 participants (including the 4 pathologised speakers and 10 non-pathologised speakers), two broad stances towards the DEAF passage can be identified – a stance of solidarity and a stance of distance. All the pseudonyms are offered by the participants.

### 5.1 A stance of solidarity

After reading the passage, the participants comment on the DEAF passage: 8 participants (Table 1) think of their own experiences negotiating with hearing people after reading the DEAF passage.

**Table 1.** Participants who take a stance of solidarity

Participant	TSL proficiency	Speech therapy	‘Pathologised’ speakers
Hua	non-signer	No	Yes
A-Wei	signer	Yes	Yes
Zuo-Zuo	signer	Yes	Yes
Xiao-Lu	signer	Yes	Yes
Sandy	signer	No	No
Huei	signer	Yes	No
QPM	non-signer	No	No
McCrispy	non-signer	No	No

The comments are focused on one’s own negative experience of audism (Hua, QPM, McCrispy), one’s experience in signing communities (A-Wei, Zuo-Zuo,

Xiao-Lu, Huei), or both (Sandy). Audism, as part of ableism, refers to hearing ways of dominating, restructuring, and exercising authority over deaf people (Lane, 1992).

People do not necessarily have the same definition of a situation (Wang, 2018). Some of the current participants frame the discussion of the DEAF passage as one of hearing people's oppression. For example, QPM talks about how hearing employers refuse to make reasonable adjustments for her in the workplace. The other participants instead interpret the DEAF passage as one about what's going on within the signing community. For instance, Huei mentions Gallaudet University in the United States and expresses her desire for a unified signing community in Taiwan. While at face value the two types of comments are oriented to different topics, the eight participants all take a positive stance towards the message communicated in the passage, demonstrating 'deaf solidarity'.

In terms of cognitive schema (Bourdieu, 1977; Dodsworth, 2008), there seems a shared socio-autobiographical background among these participants, against which they are habituated to take a positive stance towards the claim that hearing people are oppressing deaf people. They do not perceive a social danger of explicitly criticizing hearing people in the presence of a hearing researcher.

Half of the 8 participants did not receive speech therapy, and the other half did. Speech therapy is not only about working with deaf people on how to be intelligible to hearing people; speech therapy, as an institutionalised medical practice, also imposes upon deaf people the ableist ideologies that disabled ways of languaging are inferior and less human-like (Henner & Robinson, 2021b; St. Pierre & St. Pierre, 2018). Medicalization does not necessarily entail ableism; disabled people also engage with medicalization to secure equal rights (Grue, 2015). I use the term ableist medicalization to refer to medicalization which involves institutionalised ableist ideologies. Major early intervention institutes in Taipei are sometimes ableist in their practices – disabled ways of languaging, such as signed language (and sometimes lip-reading), are discouraged under 'auditory-verbal therapy' (see a critique by Friedner, 2022).

The four participants receiving speech therapy during childhood all learnt TSL from deaf signers when they became adults. With the language learning experiences, they are connected to deaf signers, and develop an insider perspective about the relationship between hearing people and deaf signers. Among the five TSL signers, only A-Wei and Huei also identify as *lónggrén*; nevertheless, all the five signers demonstrate a stance of solidarity. That is, compared to 'identity', stance-taking may be a better site where we can see how the difference lying in speaker agency can influence style-shifting.

As mentioned, Sandy is the only participant who is an L1 TSL signer. Sandy is aligned with the DEAF passage as she and her family have experienced much discrimination against TSL from hearing people:

When I was at junior high school, my cousin came to me with tears. She is hearing, but her parents are both signers. She told me she was bullied by her classmates because they found she communicates with her parents in signed language. I said, ‘what’s wrong with those people?’ I told her she should tell her teacher, but she said she didn’t have the courage [...] If some guy looks down upon signed language, they won’t want to date me. But I was told it can be a good opportunity to know whether someone will be a good boyfriend.

For Sandy, the message communicated in the DEAF passage is very relatable. We can also see how Sandy takes a resistant approach to audism, rather than accommodate to hearing people: for example, reporting audist classmates to the teacher, and excluding ableist hearing guys from ‘good boyfriend’ list.

For some participants, they might perform their *lóngrén* identity when commenting on the passage. However, what matters to this paper is the fact that one does not need to identify as *lóngrén* to perform ‘deaf solidarity’. In a broad sense, the stance of solidarity contributes to a “performative deafness” (cf. Henner & Robinson, 2021a).

## 5.2 Stance of distance

When commenting on the passage, six participants take a stance of distance towards the DEAF passage (Table 2). In this group, comments are quite varied. Broadly speaking, they might define the situation described in the passage as about negative experience with hearing people (Canny, Kai), or conflicts between hearing people and deaf signers (Squirrel, Peiyu, XiaoYou, XiaoFan).

**Table 2.** Participants who take a distant stance

Participant	TSL proficiency	Speech therapy	‘Pathologised’ speakers
XiaoYou	non-signer	Yes	No
XiaoFan	non-signer	Yes	No
Peiyu	non-signer	Yes	No
Kai	non-signer	No	No
Squirrel	non-signer	Yes	No
Canny	non-signer	Yes	No

When orienting her stance towards negative experience with hearing people, Canny frames the discussion of audism as an issue of individual personality rather than structural violence, as described in the passage. This is a stance divergent from the passage. Kai states that he is fluent in spoken language, and he does not sign, so he does not have relatable experience to what's described in the passage; here, he also distances himself from the passage.

The other participants frame this passage as one about conflicts between hearing people and deaf **signers**. XiaoYou and XiaoFan explicitly point out that this passage is not about them. For instance, when invited to comment on the passage, XiaoYou immediately said "I think this piece is from the perspective of *lónggrén*". She further points out that this passage is biased:

In real life, yes, there are people who don't like *lónggrén*, but we should not have a blanket statement, because there are people willing to accept these people. And, from my own experiences, **I don't sign**, but I have seen many people enjoy conversation by writing, no matter whether they are hearing or *lónggrén*.

[emphasis mine]

XiaoYou emphasises that she doesn't sign, so this passage is not very relatable for her. She also points out that there are also nice hearing people, and argues the perspective expressed in the passage is a 'blanket statement', which demonstrates a divergent stance from the passage.

The other participants focusing on the conflicts adopt discursive strategies to 'objectively' analyse why the conflicts may happen. For example, Squirrel compares the oppression described in the passage to the ethnic conflicts in Africa:

The part where hearing people and *lónggrén* have conflicts is very like the ethnic conflicts in African countries. [...] I think *lónggrén* is a group and normal people is another group. When *lónggrén* live in the mainstream society, they find they are the minority as a group.

By comparing the oppression of hearing people to conflicts between African ethnic groups without any group explicitly being an oppressor in the discourse, Squirrel takes a distant stance from the passage, and approaches the passage from a third-person viewpoint. Then, he speaks from his own experience:

We, *tīngzhàngzhě* [hearing disabled people], are in the grey area between the two groups [...] We incorporate ourselves to the mainstream society as individuals, like minorities. Sometimes when there is only one *tīngzhàngzhě*, and I have something that I need hearing people to do for me [...] I feel sorry. To appreciate their help, I used to help them with their coursework

In this follow-up comment, it becomes clear that Squirrel does not see himself as part of the dominated group as described in the passage. Neither does he belong to either hearing people or *lóngrén*, strengthening his distant stance towards the passage. He also foregrounds how he feels sorry for asking hearing people for help, possibly due to the presence of the hearing researcher. Hence, Squirrel takes a very different stance towards the passage from those who demonstrated ‘deaf solidarity’ in the previous group.

Most of the participants in this group (Table 2) received speech therapy during childhood. Not having experience of learning TSL may be one of the reasons why they do not align themselves with the deaf signers described in the passage. They may be sensitive to the potential social danger of criticising hearing people in front of a hearing person (the researcher).

Under ableist medicalization, if one fails to comply with the ableist norm, the disabled person is the one to be blamed, instead of abled people. The argument for this, from an ableist perspective, is that they are not working hard enough to ‘overcome’ their disabilities. This is despite the existence of a neoliberal free market of medical assistance (Mitchell & Snyder, 2015). The perspective is reflected in many inspirational narratives admiring some disabled people’s achievement in ‘overcoming’ their disabilities. Disabled people can be critical of ableism while having inspirational experiences (Chrisman, 2011); yet, the regime of ableist medicalization usually does not authorise such a possibility. In fact, neoliberal ideologies (individual responsibility, free choice, etc.) have been experimentally observed to undermine socio-political solidarity and collective action (Girerd & Bonnot, 2020).

It is important to emphasise that deaf individuals engage with deaf identity politics from different perspectives because of socio-autobiographic experiences. What is important to the current study is the displayed stance in the presence of the hearing researcher. What underlies the stance-taking here is ‘performative hearingness’ (Henner & Robinson, 2021a), by which deaf people perform accommodating to hearing people’s ways of living under the huge pressure of audism. In the remainder of this article, I will show how stance-taking mobilises the topic-based linguistic variation in the passage reading task.

## 6. Data analysis

As mentioned above, among the 14 participants of this study, ten do not demonstrate pathologised variants (substitution or dropping) of the target variable, and the other four participants do. For the four pathologised speakers, the variants of /s/ vary between stops, affricates, the glottal fricative [h], and deletion. Therefore,

the focus is not on whether they invoke retroflexion. Instead, the focus is on how they shift between the categorical variants. Therefore, I frame the data analysis as two small studies: one on the pathologised speakers, and one on the others.

## 6.1 Pathologised speakers

There are four pathologised speakers – Hua, Zuo-Zuo, A-Wei, and Xiao-Lu. All demonstrate a stance of solidarity to the DEAF passage. We expect them to invoke the same direction of style-shifting in topic-based variation – shifting to variants indexing deafness (non-standardness) when reading aloud the DEAF passage.

Each speaker uses a different set of variants to realise the retroflex sibilant. There are five categories of variants observed in this study which speakers adopt to realise the retroflex fricative: deletion, the glottal fricative [h], plosives (e.g., [k], [p]), affricates (e.g., [ts], [ts<sup>h</sup>]), and fricative sibilants (i.e., [s], [ʃ]).

The main idea of the coding scheme is to represent how hearing-like (or standard) a variant is, in relation to other variants in personal stylistic repertoires. The coding is based on both phonetic similarity to the hearing variant, as well as the level of difficulty for the deaf speakers to produce that sound. To capture the individual difference in terms of stylistic space, each variant is coded with a ‘relative rank’ for each speaker (Table 3). The same phone does not always receive the same rank across participants. The most dissimilar variant from the hearing variant is coded as 1; the most similar variant to the hearing variant is coded as 2. Variants that do not exist in a speaker’s repertoire for realising /ʃ/ do not receive a rank. When phones are more phonetically similar to the hearing variant [ʃ], they are also more difficult for deaf speakers to acquire. The coding scheme is designed to take care of both aspects.

**Table 3.** The coding of variants in each speaker’s stylistic repertoire

Participant	Deletion	Plosives	[h]	Affricates	Sibilants
A-Wei	–	–	–	1	2
Hua	–	–	–	1	2
Xiao-Lu	1	1.25	1.5	1.75	2
Zuo-Zuo	–	1	–	1.5	2

As shown in Table 3, A-Wei and Hua only travel between affricates and fricative sibilants. In contrast, Xiao-Lu switches between all the five categories. Even if the three speakers all realise a particular /ʃ/ token as [tʃ], this phone is not equally weighted in their repertoires. For A-Wei and Hua, it is the least standard (hearing-



like) variant, but for Xiao-Lu, it is the second most standard variant. For Xiao-Lu, the manner of articulation of [h] is phonetically more similar to the fricative sibilant than the plosives. For deaf speakers [h] is more difficult to acquire than plosives (Peng et al., 2004). Therefore, [h] receives a higher rank than plosives do. The relative rank is operationalised as a continuous variable later to measure ‘hearing-like-ness’ of tokens. In terms of statistical modelling, I am interested in how the speakers shift the degree of hearing-like-ness between the two topics. The dependent variable is the relative rank of hearing-like-ness of each token.

Linear mixed effect models were fit to the data in R (R Core Team, 2019), using *lme4* package (Bates et al., 2015). Models were expanded incrementally from the null model. The two passages differ in terms of the words that contain an initial fricative. We need to exclude the possibility that a topic effect results from different phonological environments in the two passages. Thus, during model expansion, the following linguistic factors were considered: lexical tone (level/contour), whether the following vowel is rounded (yes/no) (Chang & Shih, 2015; Chiu et al., 2020) and the height of the following vowel (high/mid/low) (Chiu et al., 2020), and log-transformed Chinese character frequency (Chui et al., 2017).

By-speaker and by-Chinese character intercepts were included as random effects.<sup>3</sup> Topic-by-speaker random slope was also included. Likelihood ratio tests were run to determine whether the model fit of an expanded model improved. Fixed effects and interaction terms were only retained in the model if the model fit improved. Model expansion continued until incorporating another independent variable did not improve the model fit.

The best-fitting linear mixed effect model is  $Rank \sim Topic + (1 | Chinese Character) + (1 + Topic | Speaker)$ . Topic is the only fixed effect and shows a significant effect on CoG (Estimate = -0.12, SE = 0.05,  $t$ -value = -2.35,  $p = 0.019^*$ ). In other words, the four speakers take a stance of solidarity towards the DEAF passage and shift to less hearing-like variants when reading aloud the DEAF passage (Figure 2).

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3. Mandarin uses a writing system that does not denote word boundaries. Some words share the same Chinese character which conveys the same meaning. For example, three words – 失傳 (‘[a tradition] is lost’), 失去 (‘to lose [something]’), and 失寵 (‘to fall out of [someone’s] favour’) – share the character 失, which means ‘to lose’. A model which included word as a random effect was compared to another model which included Chinese character as a random effect through a likelihood ratio test, and the latter improved the model fit significantly ( $p < .001$ ).

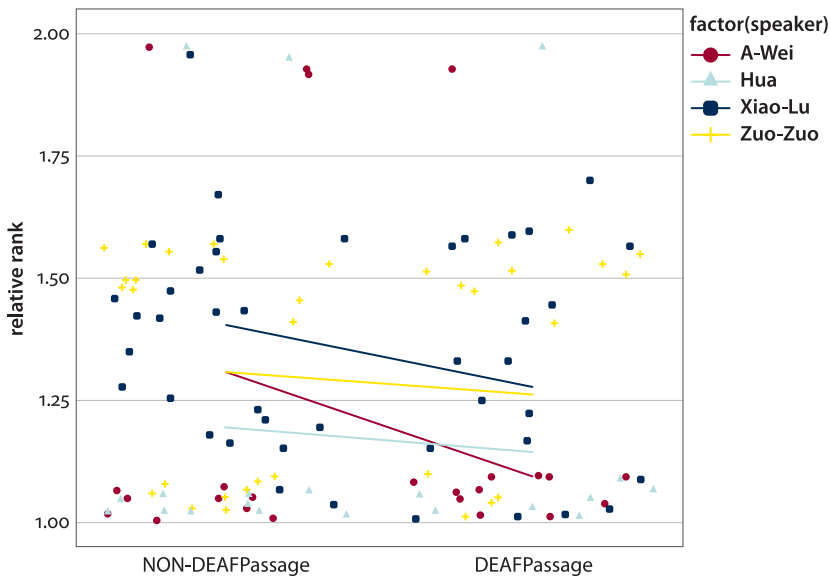


Figure 2. Individual pathologised speakers' topic-based style-shifts

## 6.2 Non-pathologised speakers

In the second study, I explore how speakers of non-pathologised speech engage with the target linguistic variable between topics. The dependent variable is the temporal-midpoint CoG of the syllable-initial /s/ (the same extraction method as in §4.2).

For modelling the topic-based variation, linear mixed effects models were fit to the data. The model expansion proceeded in the same way as mentioned earlier. In addition to topic, other factors which were considered included lexical tone (level/contour), vowel roundedness (yes/no),<sup>4</sup> vowel height (high/mid/low), log-transformed character frequency, and log-transformed frication duration. The preceding segment of the sibilant has little influence on the CoG of fricative sibilants in Taiwan Mandarin (Chiu et al., 2020), so it was not considered. The effect

4. Previous research pointed out that Mandarin speakers sometimes invoke extra lip rounding when making a retroflex fricative (Chiu et al., 2020). Among the 465 observations in the original dataset, there are 415 observations of unrounded vowel. To know whether the observed topic effect on the CoG of the retroflex fricative is from lip rounding on unrounded vowels, tokens of unrounded vowels that follow the retroflex fricative were segmented, and midpoint F2 values were automatically extracted on Praat. A linear mixed effects model was run:  $F2 \sim Topic + Vowel Class + (1 | Chinese Character) + (1 + Topic | Speaker)$ . No topic effect on F2 values was found.

of prosodic prominence was already considered in the factor of frication duration (Chang & Shih, 2015).

As shown in Table 4, the 10 participants included in this study have two kinds of standard speech styles (which were identified in §4.2). It is parallel to their stance to the DEAF passage. It might not be coincidental. Participants who perform the standard accent similar to the hearing people are also more immersed in ableist medicalization of deafness, thereby distancing themselves from the DEAF passage.

**Table 4.** Performed standard /s/ and stance-taking are parallel

Participant	Standard speech style	Stance to the DEAF passage
Squirrel	retroflexion	distance
Canny	retroflexion	distance
XiaoFan	retroflexion	distance
Peiyu	retroflexion	distance
XiaoYou	retroflexion	distance
Kai	retroflexion	distance
Huei	de-retroflexion	solidarity
McCrispy	de-retroflexion	solidarity
QPM	de-retroflexion	solidarity
Sandy	de-retroflexion	solidarity

As the two social factors are parallel, we only need to include one of them in the statistical modelling. Standard speech style is considered. If the DEAF passage elicits a topic effect due to any automatic cognitive activation of one's own deaf accent, it should elicit the same indexical shift from the 10 participants, regardless of stance-taking. In this case, we expect to see an interaction between standard speech style and topic, as the two groups of stance-takers have opposite ways of performing standard speech. If speaker agency does play a role in the current topic effect, we would expect a lack of interaction between standard speech style and topic. This means that the two groups should invoke the same phonetic shift to index different social meanings.

Register difference (continuous, mean-centred; §4.2) is also considered, to represent the inter-speaker variability in the amount of symbolic work in performing standard (hearing) speech.

The best-fitting model is as follows:  $CoG \sim topic * register\ difference + standard\ speech\ style + (1 \mid Chinese\ character) + (1 + topic \mid speaker)$ . No linguistic factor is retained in the model. The factor of standard speech style alone shows

a significant effect. It is not surprising that speakers who utilise retroflexion to perform standard speech demonstrate a lower CoG than those who utilise de-retroflexion.

The interaction between standard speech style and topic was not significant, nor was it retained in the model. That is, no matter how a speaker performs standard speech, they shift to a lower CoG under DEAF topic (Table 5). Recall that the speakers index **different** social meanings by the same direction of phonetic shift.

**Table 5.** Summary of the linear modelling of CoG value of /s/ demonstrated by ‘non-pathologised’ speakers

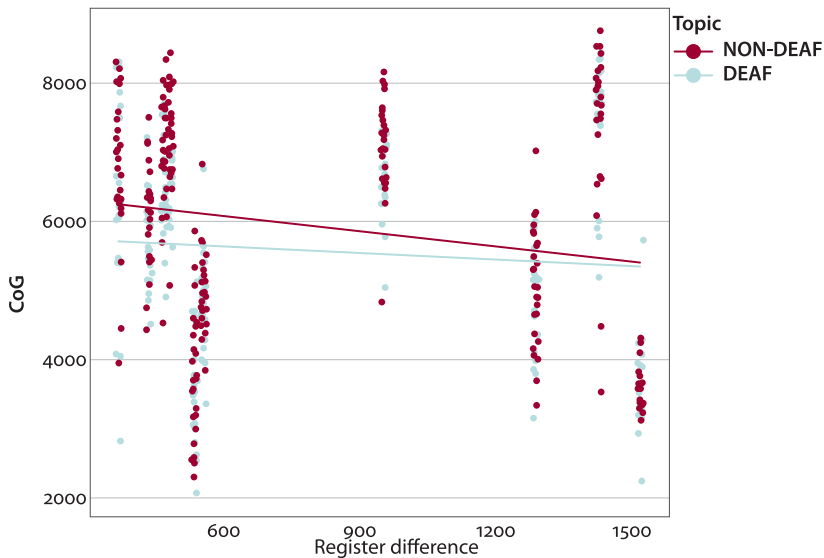
	Estimate	Std. error	t value	Pr(> t )
(Intercept)	7077.06	480.14	14.73	<0.001***
standard speech style = retroflexion	-1985.69	611.1	-3.24	0.014*
topic = DEAF	-284.7	83.39	-3.41	<0.001***
topic = DEAF x register difference	0.43	0.17	2.45	0.015*

We see a group-level effect of the topic that CoG of /s/ decreases significantly under the DEAF topic. By extracting individual slopes of the topic effect, it is confirmed that all participants lower the CoG under the DEAF topic.

The speakers who perform standard speech via de-retroflexion (hereafter, ‘de-retroflexing’ speakers) invoke more retroflexion under the DEAF topic, compared to the other topic. That is, these speakers perform deafness when reading the DEAF passage. Sociolinguistically, it is the same indexical shift as shown in the results of the first study, where the pathologised speakers shifted to less hearing-like variants under the DEAF topic.

In contrast, the speakers who perform standard speech via retroflexion (hereafter, ‘retroflexing’ speakers) invoke more retroflexion under the DEAF topic, compared to the other topic. That is, they diverge from deaf speech styles, consistent with their stance towards the DEAF passage. The two groups of participants demonstrate different indexical shifts.

Register difference alone is not a significant factor. However, the significant interaction between topic and register difference suggests an inverse relation between larger COG difference and smaller topic effect (Figure 3). Each speaker’s standard speech style has been considered in the model. Thus, the interaction here is not driven by whether one has articulatory space to retroflex the sibilant after shifting from interview to read speech.



**Figure 3.** The topic effect is reduced among speakers who demonstrate larger changes in CoG (Hz) when shifting to read speech

The interaction indicates that when a speaker does greater symbolic work to perform standard speech in read speech, they are less inclined to show semiotic engagement with the DEAF topic through /s/. We can see a speaker's tendency to perform standard speech as a tendency to engage with performative hearingness (Henner & Robinson 2021a). Then, it is not surprising that among individuals who make greater symbolic work to perform hearingness, there is a weaker trend to style-shift to embody their relationship with deaf identity politics. However, as there are only 10 speakers, this claim awaits validation in future research.

## 7. Discussion

In this paper, I have demonstrated how stance-taking can contribute to style-shifting in topic-based variation in read speech. However, it does not indicate that the framework of cognitive activation does not matter here. What the results show is that we need a cognitive model of topic-based variation which considers speaker agency.

As mentioned in the introduction, read speech does not occur in social vacuum, and the practice of reading aloud per se is a site where speakers take stance on the content of the passage to negotiate their relationship with potential audiences. I argue that passage reading should be analysed as a social practice where

people engage with not only the passage but also the social values which are linked to such an activity.

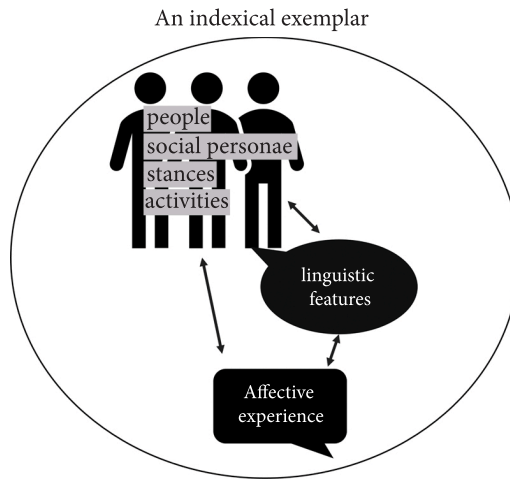
In the current research, the DEAF passage is concerned with condemning audism. It demonstrates interdiscursivity with other discourses in society (Silverstein, 2005) addressing the relationship between deaf people and hearing people. In those discursive practices, some deaf people may face social danger when they condemn hearing people as they may be accused of being biased (as seen in XiaoYou's case).

In fact, a cognitive framework and a framework of speaker/signer agency are not mutually exclusive (Drager & Kirtley, 2016; Hay & Foulkes, 2016). When researchers emphasise how stance-taking mobilises a topic-based style-shift, they do not negate the fact that the invoked linguistic style is cognitively linked to the invoked 'stance indexicality' (Kiesling, 2009). Surely stance-taking does not arise from nowhere; it also comes from speakers' cognitive schemas where they have been habituated to take a particular stance towards a certain topic (Bourdieu, 1977). What we lack is a cognitive framework which acknowledges the fact that speaker agency is also rooted in cognitive schema (Dodsworth, 2008).

In the current research, we can see a potential relationship between whether one is highly aligned with medicalization and the stance that one takes towards the DEAF passage. DEAF people, when involved in medicalization, are more likely to be immersed in ableist ideologies. This makes them distance themselves from criticising audism in the presence of a hearing person. It is also true that in the neoliberal ableist society, a positive social persona of disabled people usually does not imply being critical of ableism, but is concerned with 'diligently overcoming' physical impairments. Thus, it is not strange that a majority of the deaf participants in the current research hesitate to align themselves with the act of condemning hearing people, in the presence of a hearing person.

In the cognitive framework, a cognitive activation of a linguistic feature by the priming of a social exemplar is argued to be inhibited or reinforced by the subject's attitudinal orientation to that social exemplar (Drager & Kirtley, 2016). However, when events are stored as episodic memories in cognition, related stances reoccurring in the similar events also get stored in the memories; they are not external to the memories. If engaging in some activities repeatedly leads to an uncomfortable feeling, then the link between this activity and an uncomfortable feeling gets reinforced.

I argue that we should situate our analysis of topic-based linguistic variation in how the brain activates a practice-based indexical exemplar (Figure 4) where the contingency among a social type of people, their linguistic features, the subject's stance towards the social group is stored as a single conceptual unit. Note that the subject's stance towards the social group may be mediated by their inter-



**Figure 4.** A practice-based indexical exemplar stores the contingency among elements which recurs in this kind of social practice. The arrows indicate how the contextual information are co-indexed

locutors – talking about the same topic to different interlocutors may be cognitively stored with different stances (see Rickford & McNair-Knox, 1994). This model can account for situations where individuals do not demonstrate topic-based style-shifting when they seem to take ‘neutral’ stances towards those topics (e.g., Devlin et al., 2019).

It may not be the case that, when talking about a certain topic, its associated linguistic style is activated in the first place, and then because the subject has negative affective orientation towards the topic, the linguistic activation is inhibited. Instead, I propose that when one engages in a social practice, the associated stance stored with the social practice in cognition also gets activated, which in turn can lead to activation of, for instance, the relevant sociolinguistic representation. It is rare to talk about a certain topic without the associated stance included, if the topic is something which the speaker has often experienced in everyday life. When a speaker engages with a new situation, the brain does not always look for the most weighted exemplar where minimal information is present. The brain can look for other less weighted exemplars where similar contextual information with the new situation is present (e.g., time frames, see Hay & Foulkes, 2016).

The current finding is comparable to Drager, Hay, and Walker’s (2010) study on New Zealand English speakers, where they found that after reading good facts about Australia, the participants who were sport fans shifted to New Zealand speech style in wordlist reading, whereas those who were not sport fans shifted to Australian speech style. If reading good facts about Australia firstly activates the

link between Australia and Australian English, it is not clear why sport fans end up producing New Zealand English variants. If we foreground the role of the speaker agency (i.e., stance) here, the practice-based exemplar model predicts that the act of stating good facts about their opponent, for sport fans, activates a rivalrous stance, and then this stance invites further practices to embody it – for instance, shifting to one’s national variety.

Some deaf participants perceive a stance of affective or political solidarity towards the act of resisting audism. The positive stance towards this act may also be habitualised from a person’s previous lived experience in society. For instance, QPM mentioned how hearing employers refuse to adjust things for her, after she made a request.

In contrast, some deaf participants may perceive social danger (i.e., not being accepted by the dominant group) from not distancing themselves from what is being discussed to a hearing researcher. This negative stance is stored in cognition from similar events encountered in the past. In my own experience of navigating online public deaf spaces, I came across instances where deaf persons who complained about hearing people, were blamed by others for not working hard enough and ‘playing the blame game’. Such negative stance to the practice of condemning hearing people can be experienced and stored in cognition, even by an onlooker. In the context of the present study, the intuitive response to a situation which activates a perception of social danger is to distance oneself from the practice which causes negative feelings. In everyday conversation, people can change topics or just leave the conversation. Yet, in a reading task where speakers are asked to read aloud such topics, speech divergence becomes a cognitive strategy to distance themselves from the practice.

## 8. Conclusion

This article demonstrates how individual agency is important in modelling topic-based linguistic variation in read speech and proposes that we should not miss the fact that passage reading is a social practice where people engage with the message conveyed in the passage. In this study, deaf speakers invoke different directions of shift in indexical meanings when reading aloud the same passage about the political relationship between hearing people and deaf signers.

Future research can explore how the topic-based variation may appear different when the interviewer is a deaf speaker, or a deaf signer. In addition, given that assistive technologies such as cochlear implants can affect how deaf individuals position themselves in relation to disability (see Wan 2021b; Wan et al, 2022), one reviewer suggests future research to investigate how the interviewer’s and the












interviewee's use of hearing technologies may influence the connection between stance-taking and topic-based variation. When a deaf researcher encounters a topic-based style-shifting different from what's observed in the current research, we have evidence to support the proposal that we should always include stance-taking in a cognitive account of topic-based variation.

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## Appendix. The DEAF passage

### [Original text]

聽損朋友曾跟我說過一個故事：在很久很久以前，「阿帕王國」中並存著兩大民族，主要差異在於使用語言的不同。其中占多數的是「偉族」，他們的語言以口語為主，王族、政府中的官員，皆是偉族出身，偉族文化四處可見，另一族叫「比族」，由於聽力障礙的問題，肢體語言是他們所發展出來的溝通手段，雖然語言不同，這兩大民族的文字相近，因此藉由筆談交流，不過偉族的人常常嫌筆談麻煩，老是拿筆談來開刀，鬧得兩個民族間出現文化代溝，事實上，偉族有相當強烈的排他意識，對他們來說，比族的肢體語言溝通方式簡直怪異，無法忍耐，甚至將比族的語言納為一種異端，認為肢體語言是邪惡的象徵，會敗壞國家。就連王族、政府官員和耆老也持一樣的意見，他們認為，偉族的口語表達方式，才是真正的主流，因此，比族的母語遭到壓制，隨著偉族靠攏，如此特別的肢體語言逐漸失傳，愈來愈不快樂，最終兩個民族爆發嚴重衝突。

### [English translation]

A friend of mine once told me a story: A long time ago, there were two major ethnic groups in the “Apa Kingdom”, and the main difference was the language used. The majority of them are “Wei people”, whose language is mainly spoken. The royal family and government officials are all Wei People, whose culture can be seen everywhere. The other ethnicity is called “Bi people”. Because of deafness, gestural language is the means of communication that they have developed. Although the languages are different, the two ethnic groups have similar written languages, so they communicate through written texts. However, Wei people often find it trouble-

some to communicate through writing. There is a cultural gap between the two ethnic groups. In fact, the Wei people have a strong sense of exclusivity. For them, the gestural language of the Bi people is simply weird and unbearable, and even the language of the Bi people is regarded as a heresy. They think gestural language is a symbol of evil and can corrupt a country. Even the royal family, government officials and the elderly hold the same opinion. They believe that the oral language of the Wei people should be the real mainstream. Therefore, the native language of the Bi people is suppressed. As the Bi people accommodate to Wei people, the gestural language was gradually lost, and Bi people became increasingly unhappy, and eventually a serious conflict broke out between the two peoples.


### Abstract (Chinese)

基於話題的風格轉換是指當人們談論一個話題時，他們轉向與該話題連結的語言風格的一種變化模式。大多數關於朗讀言談之基於話題的風格變化研究，並沒有考慮到說話者對於朗讀文本的立場。本研究認為，在基於話題的風格變異分析中，必須納進說話者的立場。因為朗讀時，說話者亦與文本中傳達的訊息產生互動。這項研究著眼於台灣華語中的社會顯著變項 /s/ (尸)，以及聽損者朗讀呈現聽人和聾人間政治關係的身份政治文本段落時，如何利用這個語言變項來表達他們對此文本的立場。研究結果發現，對文本表現出團結立場的實驗參與者在閱讀此文本時，會在語言風格上偏離其個人風格庫中的標準說話風格。

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