The relationship between language attitudes and metaphonological awareness with the pronunciation of adolescent learners of Polish as an L3*

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Abstract

A number of factors such as age of onset of learning, motivation and type of instruction have been shown to influence the phonological development of foreign language learners[1] (cf. e. g., Nagle 2022). More recently, some studies have suggested that language attitudes and metaphonological awareness might also play a role in the development of foreign language pronunciation by classroom learners (cf. e. g., Sardegna/Lee/Kusey 2018; Saito 2019). However, no investigations have yet been carried out that directly relate these two factors to the learners' pronunciation of specific sounds of the target language.

This study investigates the relationship between both the learners' attitudes and metaphonological awareness with the development of their pronunciation skills during the first year of learning a new foreign language. We investigated 21 adolescents (aged 12–13) with L1 German and L2 English, who had just begun to learn Polish as their L3. Three types of data were collected at the very beginning and the end of the school year: a) questionnaire data on the learners' attitudes towards learning Polish, learning languages and their pronunciation; b) a score of the learners' metaphonological awareness measured with a Polish accent-mimicry task, and c) auditory analyses of their pronunciation of Polish /r/ and vowel reduction in a delayed repetition task. The results of mixed effects logistic regression modelling show that some of the learners' attitudes predict their accuracy of pronouncing Polish /r/ and unreduced vowels. Moreover, the learners' pronunciation of unreduced vowels, but not /r/ in Polish improved significantly over the school year and higher metaphonological awareness predicted higher accuracy of unreduced vowels in Polish. The results are discussed from both a theoretical and pedagogical perspective.

* We are grateful to our two reviewers for their very helpful comments on an earlier version of this article. This work was supported by the Polish-German Foundation of Science [project no. 2017-10] and the German Research Foundation [GU 548/11-1 | KO 5158/4-1].

[1] We use the term "foreign language learners" to refer to individuals living in the L1 environment and studying a non-native language in the classroom setting, either as their first foreign language (L2) or second foreign language (L3). Research on individual learner differences in non-native phonological learning has commonly used the term "second language" (L2) as an umbrella term for all types of acquisitional contexts, including those which concern individuals studying an additional language in the target language environment (cf. Nagle 2022; Hammarberg 2010).

1 Introduction

Research into second (L2) language acquisition has highlighted various factors influencing the development of target language pronunciation (for a comprehensive overview, cf. Nagle 2022). One extensively researched factor is the age of acquisition, which has been shown to strongly predict L2 phonological attainment (cf. e. g., Abrahamsson/Hyltenstam 2009; Saito 2015). However, in the context of formal learning settings, the association between an early onset and superior pronunciation outcomes has been challenged over the years (cf. e. g., Fullana 2006; Kopečková/Dimroth/Gut 2019). Instead, age-related differences, such as motivation (cf. Moyer 1999; Nagle 2018), identity (cf. Gatbonton/Trofimovich/Segalowitz 2011), cognitive aptitude (cf. Abrahamsson/Hyltenstam 2008; Baker-Smemoe/Haslam 2013), and phonological short-term memory (cf. Inceoglu 2021; Mora/Darcy 2016) have also been shown to play crucial roles, together with the quality and quantity of phonological input to which L2 learners are exposed (cf. Trofimovich/Gatbonton 2006; Tyler 2019). The interplay of these factors suggests that L2 phonological learning is the result of complex interactions among multiple influences, both internal and external. More recent studies seek to explore these dynamics, providing greater insights into how various factors jointly contribute to L2 phonological learning over time.

The present study aims to contribute to this avenue of research by investigating the relationship between adolescent learners' attitudes towards the target language, learning languages and pronunciation, and their metaphonological awareness, and how these two factors affect the development of the learners' pronunciation skills during the first year of learning a new foreign language. As classroom learning is both a social and cognitive act, understanding the potential impact of learners' self-perceptions as language learners and their sensitivity towards the sound system of the target language can help teachers better understand students' classroom behaviour and pronunciation development, as well as inform their teaching practices.

2 Language attitudes and metaphonological awareness in L2 speech learning

2.1 Language attitudes

Language learner attitudes refer to the psychological and emotional dispositions that learners hold towards learning the target language. They encompass a range of beliefs, feelings, and behavioral intentions that can influence the learners' motivation, engagement, and success in acquiring (an aspect of) the target language. Previous research on language attitudes in L2 speech learning has primarily explored affective responses to accented speech (cf. Tokumoto/Shibata 2011; Davydova 2015; Meer/Hartmann/Rumlich 2022; Newbold/Paschke 2022). Far less attention has been given to the potential relationship between language learners' attitudes and L2 pronunciation achievement (cf. Elliott 1995; Moyer 2007). Elliott (1995) investigated the relative effect of attitudes or individual concern for pronunciation on segmental accuracy and global foreign accent by university students of Spanish. After controlling for a number of relevant factors influencing the acquisition of L2 speech, such as field independence/dependence, hemispheric specialization, and quality and quantity of exposure, Elliott (1995) found that L2 learners' concern for achieving "proper" pronunciation was the strongest predictor of their actual pronunciation accuracy. Specifically, learners who were more concerned about acquiring

native-like pronunciation in Spanish demonstrated greater accuracy across different L2 production tasks, including sentence repetition, word reading and picture description. Moyer (2007) examined the relationship between language attitudes and the degree of foreign accent in adult migrants residing in the USA. She found that favourable attitudes towards the target language itself, such as the perceived ability to improve in English, the desire to improve accent, and self-rating in English, are more strongly linked to native-like pronunciation than are culture-directed attitudes, even though both were found significant in the study. Sardegna/Lee/Kusey (2018) reported similar findings in a study with Korean adolescents who learned English as a foreign language in a classroom setting. Those who had high self-efficacy scores for acquiring a native-like accent showed greater intentional behaviour to improve their pronunciation skills and more actively self-selected pronunciation learning strategies. As no evaluation of the adolescents' actual pronunciation skills in English was performed in the study, and there is a general dearth of classroom studies on this pattern of an association, the relationship between learner attitudes and pronunciation outcomes warrants further exploration.

2.2 Metaphonological awareness

In L2 acquisition research, the significance of metalinguistic awareness has been widely recognized across various theoretical frameworks. For instance, the Noticing Hypothesis asserts that noticing is a prerequisite for input to become intake, making it essential for L2 learning (cf. Schmidt 1990, 2001). Schmidt (1990) identified different levels of awareness: perception (often unconscious), noticing (focal awareness), and understanding (conscious analysis). Similarly, Gombert (1992) differentiated between epilinguistic awareness, which is unconscious, spontaneous and contextualized, and metalinguistic awareness, which is decontextualized, conscious and intentional, involving reflection on language properties and analysis. Accordingly, the concept has been represented by various terms along a continuum, such as intuitive knowledge, knowledge about language, metalinguistic awareness, declarative knowledge of language rules, and metalinguistic ability. Despite the different terminology, all these terms share a common focus on viewing language as an object and thinking abstractly about it.

In research on L2 speech acquisition, phonological awareness is defined as "knowledge about the phonological system of the target language, and about cross-language phonetic differences between L1 and L2 sounds" (Mora/Rochdi/Kivistö-de Souza 2014: 58). This can include both epilinguistic and metalinguistic knowledge; however, some researchers argue that L2 phonological awareness primarily consists of intuitive/procedural knowledge, with declarative knowledge being secondary and not necessarily present in phonetically-naïve learners (cf. Kivistö-de Souza 2015). Previous studies with adult L2 learners have shown that higher levels of phonological awareness improve learners' speech comprehensibility (cf. Venkatagiri/Levis 2007; Kennedy/Trofimovich 2010), accentedness and fluency (cf. Kennedy/Trofimovich 2010), and L2 pronunciation accuracy (cf. Kivistö-de Souza 2015; Saito 2019; Inceoglu 2021). For instance, a study with Brazilian Portuguese learners of English (cf. Kivistö-de Souza 2015) revealed that implicit phonological awareness was positively correlated with L2 pronunciation accuracy, accounting for 32.8% of the variance in L2 pronunciation as measured by accentedness ratings. Mora/Rochdi/Kivistö-de Souza (2014) provided evidence of implicit phonological awareness of cross-linguistic differences in voice onset time (VOT) among Spanish learners of

English, shown by their imitation of English-accented Spanish with modified laryngeal timing. However, the study found only partial support for a relationship between phonological awareness and accentedness ratings: while VOT measures of L2 English words correlated strongly with the accentedness ratings, VOT durations in English-accented Spanish did not. Saito (2019) reported a link between explicit attention and articulatory knowledge of Japanese learners of English and their accuracy in producing English /ɹ/, but only for two out of the three acoustic dimensions investigated, suggesting that the impact of phonological awareness, whether implicit or explicit, on the acquisition of specific L2 phonetic features may be mediated by their learnability with respect to the speaker's L1.

In the context of third language (L3) speech research, Wrembel (2015) and Kopečková (2018) utilised stimulated recalls to explore how multilingual adults and children, respectively, attend to, modify, and comment on their L3 pronunciation. Both studies found instances of metaphonological awareness at both the noticing and understanding levels, although the latter was much less frequent especially in young L3 learners. In order to address some of the methodological challenges in testing metaphonological awareness in young, phonetically-naïve multilinguals, Kopečková et al. (2021) proposed an adapted accent mimicry paradigm, following Mora/Rochdi/Kivistö-de Souza (2014). It includes an optional component of metacommentary, thus minimising the need for explicit verbalisations of phonetic/phonological knowledge. Consequently, this accent mimicry paradigm was chosen for the present study to test metaphonological awareness in adolescent L3 learners.

2.3 The present study

The aim of this study is to investigate the relationship between young L1 German speakers' attitudes towards their newly learnt Polish language, language learning and pronunciation, and their metaphonological awareness with the development of their Polish pronunciation skills at the beginning of learning the language in school. Also, it aims to investigate to what extent the relationship between the two and the learners' pronunciation skills changes during the first year of their instructed L3 learning. The following research questions thus guided the study:

1. What is the respective influence of language attitudes and metaphonological awareness on young L3 learners' pronunciation skills?
2. Does the relationship between language attitudes, metaphonological awareness and pronunciation accuracy change in the first year of instructed L3 learning?

The novelty of this study is in the investigation of the adolescent learner group, which is underresearched in related L2 speech research, despite representing the most frequent foreign language learner group in many educational settings worldwide. Also, no study with repeated measurements over time has yet been carried out that directly relates the two factors to the learners' pronunciation of specific sounds of the target language.

Two phonological features, rhotics and unreduced vowels, were selected to assess the learners' pronunciation skills. These represent with the rhotic a perceptually highly noticeable and articulatorily challenging difference between German and Polish phonologies (cf. Catford 2001; Kopečková 2016) as well as a perceptually less obvious and articulatorily less challenging difference (reduced vowels) between the two languages. In contrast to German uvular fricative /ʁ/

and uvular trill /ʁ/, Polish rhotic sounds are realised as either alveolar trills /r/ or taps /ɾ/, the latter of which is primarily used intervocalically and in fast speech (cf. Kohler 1999; Jassem 2003). German and Polish phonologies also differ in vowel reduction patterns: In German, stressed and unstressed syllables differ in both duration and vowel quality (cf. Gut 2003). Typically, vowels in stressed syllables are nearly twice as long as those in unstressed syllables (cf. ibid.), and unstressed syllables – especially when following a stressed syllable – are reduced to a schwa (cf. Kohler 2001) or even deleted (cf. Helgason/Kohler 1996). By contrast, in Polish, vowels in unstressed syllables are not reduced, resulting in a similar duration and quality for vowels in both stressed and unstressed positions.

3 Methodology

3.1 Participants

The participants in this study were 21 adolescent learners (aged 12–13, 10 females), who were speakers of German as an L1, lower-intermediate learners of English as an L2, and beginner learners of Polish as an L3. They were recruited in a school located in Germany within close proximity to the German border. All of them had been receiving instruction in English for six years, chose to learn Polish (over French), and had no experience with learning and/or using any other languages in their everyday life. They were exposed to the same amount of English and Polish instructed input at the time of the study (3 hours/week in both languages, with a non-native teacher of English and a native teacher of Polish). They followed a communicative approach of teaching in their English and Polish classes, and as such no specific focus on pronunciation accuracy and/or awareness raising activities regarding pronunciation was part of their foreign language instruction.

Each participant in the study took part in a detailed interview in their L1 in the fourth week of the school year (T1), eliciting biodata, information about their language learning history (previously learnt languages, age of language learning, length and intensity of instruction), and language proficiency and use. At the end of the school year (T2), the data on self-assessed proficiency and language use was collected again. The data on learner attitudes and metaphonological awareness described below were collected as part of the interview protocol at both T1 and T2. The interview session took around 15 minutes at each of the two testing times.

3.2 Data elicitation instruments

Learner speech data were collected both at T1 and at T2 by means of a delayed repetition task in a session with a native speaker of Polish. In this task, the participants heard a single stimulus word (at T1), or the stimulus word in a carrier phrase (*Mówię X do ciebie*, 'I am saying X to you') at T2. After a prompt (*Co teraz mówisz?*, 'What are you saying?') spoken by a different speaker, the learners repeated either the word or the entire first phrase (with the inter-stimulus interval set at 1,000 ms). The target stimuli included the following items: /r/ in syllable-initial position (n=6): *raz, ryba, ręka, chora, rok, stara*; vowels (n=14): *numer, kaszel*[2], *jeden, woda, kawa, stara, chora, mała, brała, ryba, ręka, waza, ława, atak.* Only bisyllabic words with stress

[2] Not all words are at a beginner level, as they were chosen primarily for their phonological properties. The delayed repetition task does not rely on participants actually knowing the meaning of the words.

on the first syllable were chosen, where the L1 German speakers are expected to articulate the second syllable as unstressed. The stimuli were presented in two randomised orders and embedded in a PowerPoint presentation as a self-paced task. The testing block was preceded by a practice block of three trial items. The participants were encouraged to simply repeat what they heard, but they were allowed to listen to a stimulus twice if need be. This production task was selected as it effectively elicits speech production even in beginner language learners and reduces the risk of direct imitation by including a distractor phrase.

Learner attitudes data were collected in a Likert-type test. It consisted of six statements (5 expressing positive expectations, 1 expressing a pessimistic expectation), four of which tapped into the learners' attitudes towards the target language, one into the learners' self-perception as language learners, and one addressed their self-efficacy in pronunciation learning. At T1, some of the attitudinal statements were preambled by the sentence 'I expect …' to acknowledge the learners' early stages of engaging with the new language. The exact formulations were as follows: (*Ich erwarte, dass*) *Ich bin gut im Polnischen.* 'I am good at Polish'; (*Ich erwarte, dass*) *Es fällt mir leicht, Polnisch zu lernen*. 'It is easy for me to learn Polish'; *Mir gefällt Polnisch.* 'I like Polish'; (*Ich erwarte, dass*) *Polnisch ist schwieriger zu lernen als meine anderen Fremdsprachen.* 'Polish is more difficult to learn than my other languages'; *Ich bin gut im Sprachenlernen.* 'I am good at learning languages'; *Ich bin gut in der Aussprache von Fremdsprachen.* 'I am good at foreign language pronunciation'. The statements thus covered both cognitive (perceived competence and learning challenge) and affective (liking Polish) aspects of attitudes towards the target language and language learning in general.

The forced-choice response categories ranged from 1 = "I don't agree at all" to 5 = "I completely agree", in addition to the option "I don't know". Two open-ended questions were also included to gain further insights into the learners' affective attitudes towards the newly learnt language: *Was gefällt dir an Polnisch? Was nicht so?* 'What do you (dis)like about Polish?'

Metaphonological awareness data were elicited by means of an accent mimicry task (cf. Kopečková et al. 2021). The learners were first asked to tell a picture story in their L1 German (the suitcase story from Derwing et al. 2009). Then, they were asked to tell part of the story in German again, but this time pretending to be a native speaker of Polish with a strong foreign accent. After the accented rendition, the participants were encouraged to reflect on and describe the changes they made to their speech. This task thus required the learners to use whatever knowledge they had about the phonetic features of Polish as they retrieved Polish-accented variants of German words, thus providing evidence of their implicit phonological awareness. They could also demonstrate their explicit phonetic/phonological knowledge, if available, in the form of the follow-up metacommentary. As previous studies conducted in formal learning setting propose that it is the implicit phonological awareness that plays a primary role in the speech learning of phonetically naïve foreign language learners (cf. Mora/Rochdi/Kivistö-de Souza 2014; Kivistö-de Souza 2015), only the results of the L3 learners' mimicry performance are reported in this study.

All the data were recorded in a quiet room in the participants' school, using the built-in microphone of a Zoom H4N Handy Recorder (Zoom Corporation, Tokyo, Japan) with a sampling rate of 44.1 kHz.

3.3 Data analysis

Three phonetically trained raters were involved in the auditory analyses of the speech data using the audio software Praat 6.2.03 (cf. Boersma/Weenink 2021). They performed phonemic transcriptions and binary accuracy ratings of the learners' Polish /r/ and unreduced vowels in unstressed syllable position. If the first two raters did not agree, a third rater was consulted. A total of 267 rhotic tokens and 606 vowels for the 21 learners were elicited at both data collection points.

Two independent raters performed quantitative analyses of the accent mimicry data. These yielded a count of all the altered phonetic and phonological features for each participant's rendition of the L3-accented speech. In a second step, only target-like alterations were counted, arriving at three metaphonological awareness scores: the total number of target manipulations of phonetic/phonological features, the number of target /r/ manipulations, and the number of target manipulations of unreduced vowels.

The data were further analyzed by mixed effects logistic regression models in R (cf. R Core Team 2013) using the lme4 package (cf. Bates et al. 2014). The models reflected the likelihood of pronunciation accuracy of rhotics and unreduced vowels with testing TIME, the individual scores of LEARNER_ATTITUDES and METAPHONOLOGICAL_AWARENESS as fixed effects, and LEARNER and WORD as random effects.[3] LEARNER_ATTITUDES, i. e., the learners' responses to Likert-items, were treated as parametric continuous data. The best-fit model was reached by a step-down process. That is, the analysis starts from a full model that fitted all potential independent variables, which then removes the predictors that do not make a significant contribution to the model one after another until the best-fit model was obtained.

4 Results

The results of the best-fit model illustrate that two out of the six attitudinal statements predict the accuracy of the production of the Polish rhotics significantly at both data points: As Figure 1 shows, learners who rated the attitudinal statement "(I expect that) I'm good at Polish" positively, produced a significantly higher amount of accurate rhotic tokens compared to those who rated the statement negatively ($p = .048$).

[3] In line with conventions for reporting statistical models, variables related to fixed and random effects are presented in small caps to enhance readability.

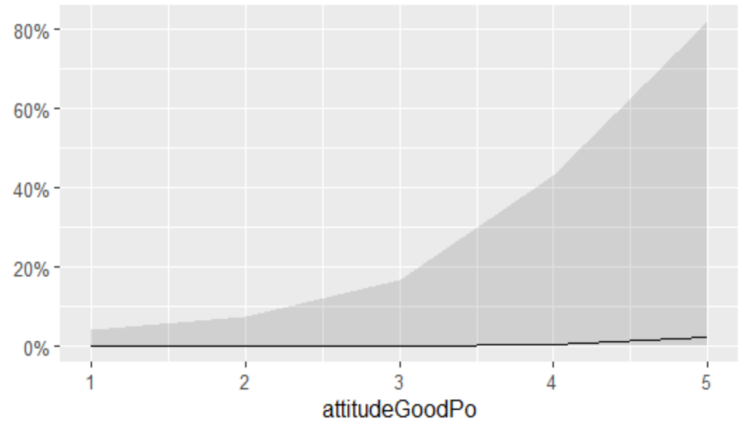

Figure 1: Accuracy of rhotics predicted by ATTITUDE "I'm good at Polish"

Also, as shown in Figure 2, learners who strongly disagreed with the statement "(I expect that) it is easy for me to learn Polish" produced most rhotic sounds accurately (p = .007). METAPHONOLOGICAL_AWARENESS, conversely, whether overall or with respect to Polish /r/, was not found to significantly predict the learners' accuracy of the rhotic productions.

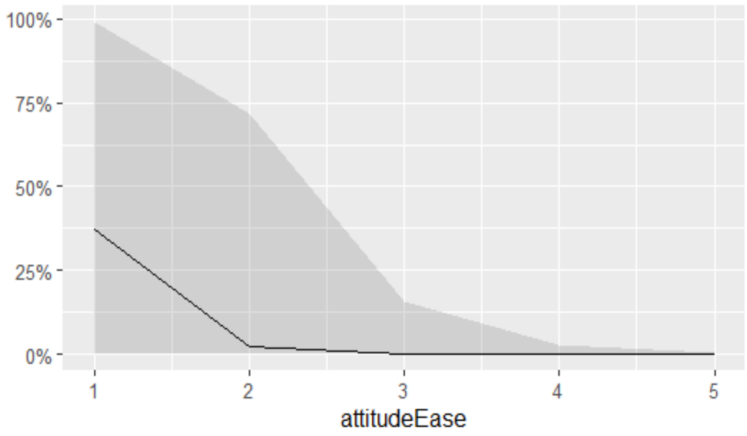

Figure 2: Accuracy of rhotics predicted by ATTITUDE "It is easy for me to learn Polish"

Regarding the production of vowel duration in unstressed syllables, both one LEARNER_ATTITUDE statement and METAPHONOLOGICAL_AWARENESS were found to exert a statistically significant impact at the two testing times. More specifically, the results of the best-fit model showed that the pronunciation accuracy of the reduced vowels was associated with learners' perception of how good they are at Polish and their metaphonological awareness of vowel non-reduction. Figure 3 shows a positive correlation between learners' METAPHONOLOGICAL_AWARENESS of vowel reduction and pronunciation accuracy of the phonological feature. That is, higher METAPHONOLOGICAL_AWARENESS regarding vowel reduction predicted higher accuracy of unreduced vowels in unstressed syllables by the Polish learners (p = .004).

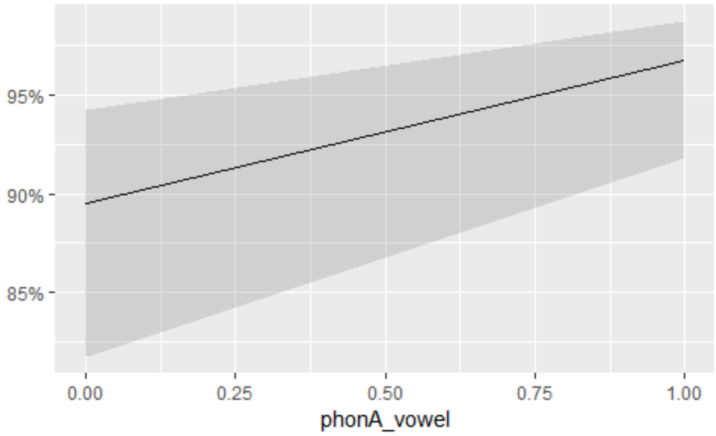

Figure 3: Accuracy of unreduced vowels in unstressed syllables predicted by METAPHONOLOGICAL_AWARENESS of vowel reduction

In addition, a significant interaction between TIME and LEARNER_ATTITUDE towards the statement "(I expect to be) I'm good at Polish" on the pronunciation accuracy of unreduced vowels in unstressed syllables was found (see Figure 4). Specifically, at T1, the learners' perception of how good they are to be at Polish did not affect their production of vowels, while at T2 a significantly positive correlation was found: the learners who rated the statement "I'm good at Polish" higher also produced more unreduced vowels accurately ($p < .001$).

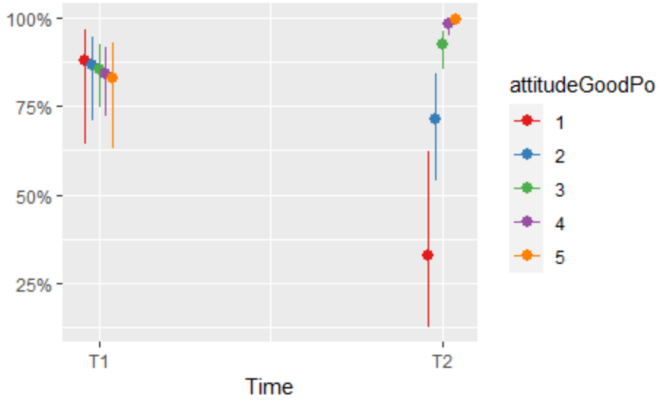

Figure 4: Accuracy of unreduced vowels predicted by the interaction of TIME and ATTITUDE "I'm good at Polish"

Figure 5 shows that, in general, the learners' pronunciation of unreduced vowels in unstressed syllables improved significantly over the school year ($p < .001$). Their pronunciation accuracy of rhotics, on the other hand, did not show a significant difference between T1 and T2.

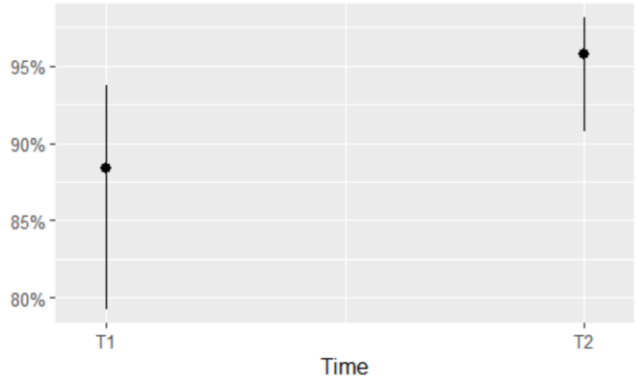

Figure 5: Accuracy of unreduced vowels predicted by TIME

Finally, the results of the qualitative analyses of the attitudinal data regarding liking Polish, selectively exemplified below, show that the learners appreciated learning the new language due to Poland's proximity and the opportunities to use the language in their everyday life. They also expressed an intrinsic interest in Polish language characteristics (especially spelling and pronunciation) although these same characteristics often became the sources of learning frustration, such as the pronunciation of Polish rhotic sounds. The Polish learners' social and practical motivations seem to have become more prominent over time, while linguistic challenges remained and even intensified in some learners' affective responses towards learning Polish. Overall, the adolescent learners in this study generally maintained a positive outlook but developed a more nuanced understanding of the difficulties in learning Polish:[4]

> I like the pronunciation of Polish and that it has the same letters as German. But Polish pronunciation is also sometimes difficult. (BISC14, T1) The proximity of Poland, so Polish is useful, but I don't like the Polish r-sound. (BISC14, T2)
>
> I like the teacher and classroom atmosphere. The writing in Polish is difficult but when you concentrate, you can manage. I don't like the tests. (JUEB20, T1) I know a lot of vocabulary in Polish. I don't like that many words sound the same and so they are difficult to learn. (JUEB20, T2)
>
> I like to learn a new language and that I can communicate with Polish neighbours (CHSC09, T1) The teacher is nice and I can use the language in the neighbouring country. I don't like the many inflections in Polish. (CHSC09, T2)
>
> I like it that Polish has other letters and the pronunciation. But both are difficult to learn. (SMSC15, T1) It is a new language that is and sounds so different. It's difficult to learn. (SMSC15, T2)
>
> It's nice that Polish doesn't have so many letters as Russian and the pronunciation is like in German. But I don't like the sh-sounds. (SAMA27, T1) I simply like the language, it is useful to know, more than French or Russian as there are many Poles living in Germany. I cannot produce the r and the sh-sounds. (SAMA27, T2)

[4] The learners' response to the open-ended question concerning their likes and dislikes about Polish were transcribed and translated from German to English by the first author.

5 Discussion

This study examined the influence of language attitudes and metaphonological awareness on young learners' pronunciation skills in an L3 over time. Mixed-effects logistic regression modelling revealed that language attitudes and implicit metaphonological awareness significantly impacted the pronunciation of the two investigated phonological features in the first year of L3 learning, though in different ways. Learners who perceived themselves as capable in the target language, but also those that felt most strongly that learning Polish posed challenges for them were more successful in producing the Polish /r/ sound, while no relationship between metaphonological awareness and the production of Polish /r/ was found.

Conversely, the learners' metaphonological awareness influenced the learners' accuracy in pronouncing the non-reduced vowels in Polish unstressed syllables. In addition, the learners' perceived capability in the target language predicted the accuracy of this phonological feature.

It is thus learners' attitudes towards their own performance in (learning) the target language rather than towards language learning or pronunciation learning in general that were shown to have a significant effect on pronunciation accuracy in this study. In this, our results confirm Moyer's (2007) findings for adults but somewhat differ from Elliott's (1995), who found that L2 learners' attitudes towards achieving native-like pronunciation was the strongest predictor of their actual pronunciation accuracy.

The finding that the statement "I am good at Polish" turned out to be significant for the accurate production of both phonological features in this study can be accounted for by Sardegna/Lee/Kusey's (2018) model, which suggests that learners with higher self-efficacy (that is, perceptions of their language capabilities) are more likely to make an effort to improve their pronunciation skills and to engage in pronunciation-related strategies, such as dedicated practice time. However, the statement might actually imply more than purely attitudes. Especially at T2, after learning Polish for an entire school year, the pupils might have expressed a self-evaluation, where their successful learning experiences might have impacted their answer.

The study found that implicit metaphonological awareness did not significantly affect beginner learners' production of the Polish /r/ sound, while there was a significant relationship with the learners' production of unreduced vowels in Polish unstressed syllables. This appears surprising, especially given that a number of learners voiced a strong awareness of the difference of the Polish trill compared to the German pronunciation of the rhotics in the interviews. Possibly, the articulatory complexity of the trill (cf. e. g. Kopečková 2016; Saito 2015) plays a role here in that some learners, even though they are aware that this sound is different from L1 German sounds, do not succeed in producing it. In the case of an articulatorily less complex phonological feature, such as non-reduced vowels, awareness about the distinction of the phonological feature in the new language may more easily translate into a production execution. Indeed, the intriguing possibility arises that metaphonological awareness as tested here by means of accent mimicry and the learners' production accuracy of the phonological feature may manifest the same procedural knowledge rather than two distinct entities (metaphonological awareness versus pronunciation accuracy). Imitation accuracy partly depends on learners' knowledge of the phonetic properties of the target sounds to be imitated, as well as on their ability to produce them. Another limitation of the accent mimicry task in this study is the loss of approximately

20% of the data due to a high rate of participant refusal. Despite being specifically designed for young foreign language learners, the task appeared to pose challenges for some participants.

After ten months, a strong positive correlation was further observed between the L3 learners' attitudes and their accuracy in pronouncing non-reduced vowels. Initially confident learners seem to have reassessed their capabilities as they gained a more realistic understanding of the language learning task, as reflected in both their rating responses and qualitative comments to the open-ended question about what they (dis)like about learning Polish. Only those learners in this study who maintained high self-efficacy produced unreduced vowels accurately by the end of the school year. In contrast, no developmental changes were found in the relationship between learner attitudes or metaphonological awareness and their production of /r/, likely due to the short learning period and the articulatory complexity of the sound. In a similar acquisition setting, Kopečková (2016) reported, in fact, that even after three years of instructed learning, young L1 German learner of L3 Spanish did not master the production of the target alveolar trill/tap. It is to be recalled that the adolescent learners in this study received three hours of instructed input per week for one year, without focused phonological awareness activities or pronunciation training. Future research should thus consider extending the timeframe when investigating the relationship between language attitudes and/or metaphonological awareness, and foreign language learners' pronunciation of articulatorily challenging sounds over time.

The findings of this study suggest several pedagogical implications. Teachers should boost students' confidence by setting realistic goals and expectations for the acquisition of new pronunciation features and by providing positive feedback also on this aspect of their learning efforts. Enhancing students' self-efficacy can make challenging learning tasks, such as pronouncing complex sounds, seem more manageable, encourage greater practice, and ultimately improve the students' overall pronunciation skills. Additionally, incorporating phonological awareness-raising activities into beginner classrooms seems especially useful for pronunciation features that are articulatorily "easy" for the target learner population.

6 Conclusion

This study demonstrated that both language attitudes and implicit phonological awareness of specific pronunciation features can influence young learners' production of novel phonological features in a foreign language. Future research on additional language learning should thus include the testing of learner attitudes towards pronunciation learning. One promising tool for this purpose is the Learner Attitudes and Motivation for Pronunciation Inventory (LAMP) proposed by Sardegna/Lee/Kusey (2014). Yet, the testing of metaphonological awareness remains challenging. Furthermore, to gain greater insights into individual learners' attitudinal trajectories and metaphonological awareness in relation to their pronunciation development, future research should consider more dense data collection at different stages of foreign language learning.

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