

REVIEW

Considerations of dialect on the identification of speech sound disorder in Vietnamese-speaking children

Ben Phạm^{1,2}  | Sharynne McLeod² 

¹Faculty of Special Education, Hanoi National University of Education, Hanoi, Vietnam

²School of Education, Charles Sturt University, Bathurst, NSW, Australia

Correspondence

Ben Phạm, Faculty of Special Education, Hanoi National University of Education, Hanoi, Vietnam.

Email: ben.phamthi@hnue.edu.vn

Funding information

Vietnam National Foundation for Science and Technology Development, Grant/Award Number: 503.02-2020.312

Abstract

Background: The dialect spoken by children influences diagnostic decision-making regarding the identification and severity of speech sound disorder (SSD).

Aims: The primary objective was to review papers that examined the influence of dialect on the identification of SSD in Vietnamese-speaking children.

Methods & Procedures: Five studies of mono- and multilingual Vietnamese-speaking children living in Vietnam and Australia were reviewed to examine the influence of dialect on the assessment and analysis children's speech. The main Vietnamese dialects (Standard, Northern, Central, Southern) differ in the production of consonants, vowels and tones.

Main contribution: Most speech assessments define correct production using the standard dialect of a language. Insights from recent studies of Vietnamese provide recommendations for also considering dialect in diagnostic decision-making. First, we recommend adding column(s) to the assessment score sheet that includes the dialectal variants spoken by adults in the child's family or community. Second, we calculate the accuracy of production twice, based on the standard form and dialectal form. Third, we report the percentage of consonants correct—standard (PCC-S) and percentage of consonants correct—dialect (PCC-D).

Conclusions & Implications: Diagnostic decision-making is influenced by dialectal variation in children's speech, so speech and language therapists need to compare standard and dialectal productions when undertaking assessments, analysis and diagnostic decision-making.

KEYWORDS

analysis, assessment, children, dialect, multilingual, speech sound disorder, Vietnamese

This is an open access article under the terms of the [Creative Commons Attribution-NonCommercial License](https://creativecommons.org/licenses/by-nc/4.0/), which permits use, distribution and reproduction in any medium, provided the original work is properly cited and is not used for commercial purposes.

© 2023 The Authors. *International Journal of Language & Communication Disorders* published by John Wiley & Sons Ltd on behalf of Royal College of Speech and Language Therapists.

WHAT THIS PAPER ADDS

What is already known on the subject

- Most speech assessments use the standard form of a dialect as the correct production. The standard dialect is used for diagnosis of SSD and identification of intervention targets.

What this paper adds to the existing knowledge

- This paper examines five research studies of Vietnamese to identify ways to consider dialect in speech and language therapy assessment and analysis. Vietnamese provides a complex environment for this examination since there are numerous Vietnamese dialects and they differ according to consonants, vowels and tones.

What are the potential or actual clinical implications of this work?

- Speech and language therapists are encouraged to add column(s) to their assessment score sheet that includes the dialectal variants spoken by adults and to report the PCC-S and PCC-D.

INTRODUCTION

Many children with speech sound disorders (SSD) attend speech and language therapy (SALT) clinics for assessment and evidence-based interventions to enable them to speak more intelligibly. According to the International Expert Panel on Multilingual Children's Speech (2012):

children with SSD can have any combination of difficulties with perception, articulation/motor production, and/or phonological representation of speech segments (consonants and vowels), phonotactics (syllable and word shapes), and prosody (lexical and grammatical tones, rhythm, stress, intonation) that may impact speech intelligibility and acceptability.

Speech assessment frequently involves administration of a standardised speech assessment in the language(s) spoken by the child and can also include sampling spontaneous speech. Diagnosis of SSD from these speech samples often includes a consideration of the percentage of consonants correct (PCC; Shriberg et al., 1997). PCC also has been used as a metric to determine the severity of SSD in many different languages (McLeod & Crowe, 2018). Analysis of speech samples also can include the consideration of the occurrence of phonological processes, syllable shapes, word length, phonetic inventory, prosody and loss of phonemic

contrast (McLeod & Baker, 2017). Intelligibility is another measure considered in the diagnosis of SSD (e.g., Kok & To, 2019; Lousada et al., 2019; McLeod et al., 2012). Additionally, parents' and children's concerns about their speech can also be considered in the diagnosis of SSD (e.g., Harrison et al., 2017; McCormack et al., 2019; Van Doornik et al., 2018).

STANDARD AND DIALECTAL FORMS

Standardised speech assessments typically define 'correct' productions as those that match the standard form of a language. The number of 'correct' productions of consonants are used to calculate PCC and thus diagnose SSD and determine severity of SSD. For example, there are two versions of the Diagnostic Evaluation of Articulation and Phonology (DEAP) and one score sheet defines the standard/correct form based on British English (Dodd et al., 2002) and the other based on General American English (Dodd et al., 2006). Many English speech assessments published in the United States state that any deviation from General American English constitutes an error (Flipsen & Ogiela, 2015). This practice of using the standard dialect of a language as the 'correct' form is common in speech assessments across the world (McLeod & Verdon, 2014).

Throughout the world there are over 7000 languages (Eberhard et al., 2023), and many of these languages have standard and dialectal forms. Many languages are well

known for their dialects (McLeod, 2023), including English (e.g., African American, Appalachian, Australian, Canadian, Cajun, English, Fiji, General American, Irish, New Zealand, Scottish, South African), French (e.g., Canadian, France, Swiss), Greek (e.g., Cypriot, Standard), Portuguese (e.g., Brazilian, European) and Spanish (e.g., Castilian, Andalusian, Chilean, Colombian, Mexican, Peruvian). Arabic has been described as a 'macrolanguage' and ethnologue (Eberhard et al., 2023) includes 28 Arabic languages (sometimes called dialects) including Standard Arabic, Egyptian Arabic, Moroccan Arabic, Sudanese Arabic, and Uzbeki Arabic. If a speech and language therapist (SLT) follows speech assessment manuals as written, scoring and diagnosis of SSD is often based on the standard dialect and production of other dialects or productions that are influenced by cross-linguistic transfer are marked as an error; thus, dialectal variation can impact differential diagnosis of SSD.

Numerous studies demonstrate that dialect can have a significant impact on the diagnosis of the presence and severity of SSD. A significant difference in PCC has been recorded in the following studies that have compared dialectal and standard productions for speakers of: Australian Aboriginal English (9.26% difference; Toohill et al., 2012); Fiji English (10.20% difference; McAlister et al., 2023); Singaporean English (6.42% difference; Low et al., 2019); Spanish English (14.7% difference for typical 3-year-olds; 7.2% difference for typical 4-year-olds; Goldstein & Iglesias, 2001); and Vietnamese spoken by Vietnamese-English-speaking children in Australia (17.42% difference; McLeod et al., 2023). Other researchers have begun the task of collecting normative data for a range of dialects (e.g., South African English; Pascoe et al., 2018). In the absence of relevant normative data, some authors provide advice regarding 'speech differences for linguistically diverse contexts' and caution that common 'substitutions' (i.e., dialectal productions) 'should not be considered targets for remediation' (Camarata, 2021: 352).

VIETNAMESE LINGUISTIC CONTEXT

Vietnamese is a subbranch of Vietic in Austroasiatic language families. It is the 20th most commonly spoken language in the world (Eberhard et al., 2023) and is spoken in Vietnam as either a first or a second language (General Statistics Office of Vietnam, 2016). Vietnamese is also a diasporic language, and is commonly spoken in countries including Australia, Canada, Czech Republic, France, the UK and the US (Australian Bureau of Statistics, 2017; Czech Statistics Office, 2009; Ryan, 2013; Statistics Canada, 2012).

The Vietnamese linguistic context provides a unique perspective to demonstrate that dialect can have a significant impact on diagnosis of the presence and severity of SSD. Standard Vietnamese (*chuẩn phát âm*) is well defined by the Vietnamese government and is used in government, education, culture, science and the military (Huỳnh, 1999). Vietnamese linguists have documented numerous Vietnamese regional variants or dialects (*phương ngữ*) (some authors suggest there are over 50 spoken dialects) (Cao, 2006; Huỳnh, 1996, 2014; Kirby, 2011; Nguyễn, 1992; Phạm, 1988; Trần, 2010; Vu, 1982). These are frequently grouped into Northern, Central and Southern Vietnamese dialects (Đình & Nguyễn, 1998; Đoàn, 2003; Hoàng, 2004; Nguyễn, 1997; Vu, 1982). These dialects differ in the production of consonants, vowels and tones.

Vietnamese

Vietnamese is a syllabic and tonal language (Phạm & McLeod, 2016, 2019b). The Vietnamese syllable shape is $C_1(w)V(w/C_2) + \text{tone}$ (where $C = \text{consonant}$, $V = \text{vowel}$, $w = \text{semivowel}$) (Cao, 2006; Đỗ & Lê, 2005; Đoàn, 2003; Nguyễn, 2011). Vietnamese has six tones: (1) level (named in Vietnamese as either *thanh không dấu* or *thanh ngang*), (2) falling (*thanh huyền*), (3) creaky (*thanh ngã*), (4) dipping-rising (*thanh hỏi*), (5) rising (*thanh sắc*) and (6) constricted (*thanh nặng*). Changing tones results in changing a word's meaning. For example, the word 'Dừa' spoken with tone 1 means *melon*. 'Dừa' spoken with tone 2 means *coconut*. 'Dừa' spoken with tone 5 means *pineapple*. Vietnamese orthography signals written tones (*thanh điệu*) using diacritic tone markings (*dấu thanh*) (Phạm & McLeod, 2019b).

There are phonological differences between Standard, Northern, Central and Southern Vietnamese for the number of syllable-initial consonants (*phụ âm đầu*), syllable-final consonants (*phụ âm cuối*), vowels (monophthongs) and tones, but not for semivowels or vowels (diphthongs) (Table 1) (Phạm & McLeod, 2019a, 2019b). For example, the number of syllable-initial consonants differ between dialect: Standard (23 syllable-initial consonants), Northern (20), Central (23) and Southern (21) dialects. Furthermore, Figure 1 demonstrates the distribution of the Vietnamese consonants /p, b, t^h, t, d, t, c, k, ʔ, m, n, ɲ, ɳ, f, v, s, z, ʃ, ʒ, x, ɣ, h, j, l, w/ across Northern, Central and Southern dialects. The following consonants are used in Northern, Central and Southern Vietnamese dialects: syllable initial /b, t^h, t, d, c, k, m, n, ɲ, f, s, x, ɣ, h, l/ and syllable final /-p, -t, -k, -k^p, -m, -n, -ɳ, -ɳ^m, -j, -w/. Consonants that are unique to the Southern dialect are /j, w/. Consonants that are used in both the Northern and Central dialects (but not the

TABLE 1 Phonological differences between Standard, Northern, Central and Southern Vietnamese.

Dialect	Standard	Northern	Central	Southern
Initial consonants	23	20	23	21
Final consonants	6	10	10	8
Semivowels	2	2	2	2
Vowels (monophthongs)	11	13	11	12
Vowels (diphthongs)	3	3	3	3
Tones	6	6	5	5

Source: Adapted from Phạm and McLeod (2016).

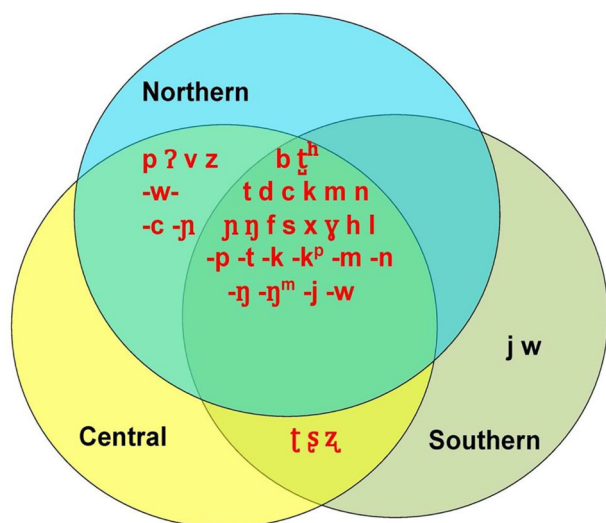


FIGURE 1 Vietnamese consonants across Northern, Central and Southern dialects. [Colour figure can be viewed at wileyonlinelibrary.com]

Source: Adapted from Phạm and McLeod (2016).

Southern dialect) are /p, ʔ, v, z, -w-, -c, -ɲ/. Consonants that are used in both the Central and Southern dialects (but not the Northern dialect) are /t, s, z/. Differences in dialect can be seen in the pronunciation of words such as *rau* 'vegetable'. In the word *rau*, the letter 'r' is pronounced in the Standard dialect as a retroflex consonant /zɑw̃¹/, the Northern dialect as the voiced alveolar fricative /zaw̃¹/, the Central dialect as the trill /raw̃¹/, and in the Southern dialect as the voiced velar fricative /ɣaw̃¹/.

The following section will demonstrate that dialect can have a significant impact on consideration of typical speech acquisition as well as the diagnosis of SSD in Vietnamese-speaking children. In each of the studies below, the children's speech was assessed using the Vietnamese Speech Assessment (VSA; Phạm et al., 2016). The VSA is a single-word picture-naming task of 77 single words. It was designed so that the score sheet has separate columns documenting the correct production(s) for each word with the main Vietnamese dialects (Phạm et al.,

2016/2018). Therefore, a correct production is recorded for a standard production and/or acceptable dialectal variants. The VSA has been used to describe monolingual acquisition of children speaking Northern Vietnamese in Vietnam (Phạm et al., 2019a), Southern Vietnamese in Vietnam (Le et al., 2022), multilingual Vietnamese in Australia within the VietSpeech Study (Margetson et al., 2023a; McLeod et al., 2022a, 2023; Margetson et al., 2023b) and children with SSD in Vietnam (Phạm, 2021). Most of these studies have included a component to determine the impact of dialect.

Vietnamese speech sound acquisition

Four studies of Vietnamese-speaking children's speech acquisition have demonstrated the impact of dialect.

Monolingual acquisition of Northern Vietnamese in Vietnam (Phạm and McLeod, 2019a)

This was the first large-scale study to comprehensively examine children's acquisition of Vietnamese consonants, vowels and tones. Participants were 195 children aged 2;2–5;11 years who spoke monolingual Northern Vietnamese and lived in Northern Vietnam. A correct production was recorded when children produced either a standard production or an acceptable dialectal variant. Across the sample there were marked differences in the documentation of correct production if dialectal variants were included in the definition of correct. For example, the standard /p/ was produced correctly 28.2% of the time, but if the dialectal variant /b/ was also allowed, then it was produced correctly 82.8% of the time. The standard /n/ was produced correctly 66.8% of the time, but if the dialectal variant /l/ was also allowed, then it was produced correctly 90.0% of the time. The standard /t/ was produced correctly 0.3% of the time, but if the dialectal variants /c/ or /ts/ were also allowed, then it was produced correctly 84.8% of the

time. By the age of 5 years the children had acquired almost all Vietnamese consonants, semivowels, vowels and tones.

Multilingual acquisition of Vietnamese in Australia (McLeod et al., 2023)

This landmark study presented a:

large-scale example of culturally-responsive assessment and analysis using the VietSpeech Protocol involving: (a) examining all languages spoken by the child, (b) comparing ambient phonology produced by family members, (c) including dialectal variants in the definition of accuracy, and (d) clustering participants with similar language experience. (p. 3)

Participants were 69 children aged 2;0–8;10 years who spoke multilingual Vietnamese and English and lived in Australia. When Standard Vietnamese was accepted as the correct production the mean PCC was 70.34% (SD = 8.78). When dialectal variants were accepted the mean PCC was 87.76% (SD = 8.18); that is, Vietnamese consonant accuracy was significantly higher when dialectal variants were considered (Cohen's $d = 3.55$, large effect).

Three-generation family speaking Vietnamese in Australia (McLeod et al., 2022a)

This study described a three-generation family from the VietSpeech study (McLeod et al., 2023) who spoke multilingual Vietnamese and English and lived in Australia. The family included two brothers aged 3;10 and 5;6 years, their mother, grandmother and grandfather. The mother spoke Southern Vietnamese and English; the grandfather spoke Southern and Central Vietnamese, English, French, and Russian; and the grandmother spoke Northern Vietnamese and had learned English. The children's speech production was influenced by developmental, assimilation, ambient language, cross-linguistic, and cross-dialectal factors (McLeod et al., 2022a). Calculations were made of the percentage of consonants, vowels and tones correct using the Standard Vietnamese dialect as the target, then including dialectal variants in the definition of correct. In almost every instance, percentages were higher when dialectal variants spoken by the child and family members were included, especially for vowels and tones (Table 2).

Longitudinal multilingual acquisition of Vietnamese in Australia (Margetson et al., 2023a)

This longitudinal case study described a girl (PE) from the VietSpeech study (McLeod et al., 2023) over four time points between the ages of 3;10–6;10 years. She and her family lived in Australia and spoke English and Vietnamese at home, using Northern and Southern Vietnamese dialects. Overall, her Vietnamese and English speech production was influenced by cross-dialectal, cross-linguistic, and ambient phonology factors, especially at time 1 (3;10). For example, her production of /s/ in both Vietnamese and English speech assessments was influenced by dialectal variation since Vietnamese words beginning with 's' can be produced with /s/ or /ʃ/ depending on dialect. There were few true errors in either language.

SSD in Vietnamese

One study of Vietnamese-speaking children's speech acquisition demonstrated the impact of dialect (Phạm, 2021).

Monolingual children with SSD in Northern Vietnam (Pham 2021)

Participants were 51 children aged 4;0–5;11 years who spoke monolingual Northern Vietnamese and lived in Northern Vietnam. Similar to the study of 195 children who were typically developing as described by Phạm & McLeod (2019a, 2019b), there were marked differences if the definition of correct included dialectal variants. For example, the standard /p/ was produced correctly 0.0% of the time, but if the dialectal variant /b/ was also allowed, then it was produced correctly 96.2% of the time. The standard /n/ was produced correctly 74.5% of the time, but if the dialectal variant /l/ was also allowed, then it was produced correctly 81.4% of the time. The standard /t/ was produced correctly 0.0% of the time, but if the dialectal variants /c/ or /ts/ were also allowed, then it was produced correctly 75.8% of the time. Including dialectal variants in the definition of correct enables a more nuanced diagnosis of SSD compared with whether their productions only differ from standard productions.

CLINICAL IMPLICATIONS

Most speech assessments across the world define correct production using the standard dialect of a language.

TABLE 2 Impact of dialect on the calculation of percentage of consonants, vowels and tones correct in a three-generation case study.

Measure	Definition of correct	Child 1 (5;6)	Child 2 (3;10)	Mother	Grandfather	Grandmother
PCC-S	Standard	89.05%	86.13%	96.35%	97.81%	98.54%
PCC-D	Dialect	89.05%	87.50%	96.35%	98.54%	98.54%
PVC-S	Standard	86.08%	79.75%	93.67%	89.87%	91.14%
PVC-D	Dialect	100.00%	97.44%	100.00%	100.00%	100.00%
PTC-S	Standard	88.61%	96.20%	89.87%	94.94%	100.00%
PTC-D	Dialect	94.87%	100.00%	100.00%	100.00%	100.00%

Abbreviations: PCC-S, percentage of consonants correct—standard; PCC-D, percentage of consonants correct—dialect; PVC-S, percentage of vowels correct—standard; PVC-D, percentage of vowels correct—dialect; PTC-S, percentage of tones correct—standard; PTC-D, percentage of tones correct—dialect.

Source: Adapted from McLeod et al. (2022a).

Insights from these recent studies of Vietnamese children's speech provide three recommendations for considering dialect in diagnostic decision-making. First, add column(s) to the assessment score sheet to include the dialectal variants spoken. In order to add dialectal columns SLTs need to confirm which dialects are spoken by the child and their family members, and consider transcribing the speech of significant adults in the child's life as a dialectal model. If SLTs are working with an interpreter to complete this task, then determine the dialect(s) spoken by the interpreter and if their dialect matches the family's dialect. Second, calculate the accuracy of the child's production twice, based on the standard form and the dialectal form. Third, report the PCC twice: based on the standard form (PCC-S) and the dialectal form (PCC-D).

Although Vietnamese is one of the most commonly spoken languages in the world there are many Vietnamese children who have not received services to support their communication skills (Phạm et al., 2022). SALT is a new profession in Vietnam (Atherton et al., 2020). This research provides information to support the recent Vietnamese review of diagnostic criteria for SSD (Pham et al., 2021) and can be used to encourage Vietnamese SALTs to include dialect in their definition of correct production. Vietnamese SALTs also can enhance their understanding of the impact of children's speech abilities by using the Intelligibly in Context Scale (McLeod et al., 2012) which is a brief parent-report measure that has been translated into Vietnamese. The ICS-VN has been tested and validated with 181 Vietnamese-speaking children (Phạm et al., 2017), was found to have good psychometric properties, and correlated with PCC scores on the VSA.

This research also has clinical applicability for SLTs who work in English-speaking countries and do not speak Vietnamese. Some SLTs have been found to have linguistic bias towards non-standard dialects of English (Clark et al., 2021; Robinson & Stockman, 2009). Recently, studies have been undertaken to support English-speaking SLTs to work with Vietnamese-speaking children. Margetson et al. (2023c) developed and tested the four-step VietSpeech

Multilingual Transcription Protocol to support SLTs to assess and transcribe multilingual Vietnamese–English speaking children and adults' speech. Furthermore, Masso et al. (2020) found that 20 English-speaking SLTs correctly transcribed 69.2% of Vietnamese consonants when provided with an audio file of the target production. The SLTs were more accurate when transcribing shared English and Vietnamese consonantal articulations (e.g., /b, m/). Three types of Vietnamese–English transcription errors were identified (e.g., plosive voicing errors when place of articulation matched the target consonant (e.g., /p/ transcribed as [b]) and the SLTs' accuracy of transcription increased to 83.8% allowing for these common Vietnamese–English transcription errors.

CONCLUSIONS

Dialectal variants have a significant impact on PCC mean scores in Vietnamese studies on typically developing children and children with SSD. When dialectal variants are marked as correct productions, there is a decrease in the number of children who are diagnosed with SSD and a decrease in the severity descriptors used for children who are diagnosed with SSD. Therefore, SLTs and other professionals need to consider children's dialect when identifying SSD in Vietnamese children.

ACKNOWLEDGMENTS

This research was funded by Vietnam National Foundation for Science and Technology Development (Nafosted) under grant number 503.02-2020.312.


Open access publishing facilitated by Charles Sturt University, as part of the Wiley - Charles Sturt University agreement via the Council of Australian University Librarians.

CONFLICT OF INTEREST STATEMENT

The authors created the Vietnamese Speech Assessment described within the current research.

ORCID

Ben Phạm  <https://orcid.org/0000-0002-9708-7901>

Sharynne McLeod  <https://orcid.org/0000-0002-7279-7851>

REFERENCES

- Atherton, M., Davidson, B. & McAllister, L. (2020) Growing a profession: clinician perspectives on the evolving practice of speech–language pathology in Vietnam. *International Journal of Speech–Language Pathology*, 22(1), 1–11. <https://doi.org/10.1080/17549507.2018.1559358>
- Australian Bureau of Statistics. (2017) Cultural diversity in Australia, 2016. <https://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/2071.0~2016~Main%20Features~Cultural%20Diversity%20Article~60#>
- Camarata, S. (2021) Naturalistic recast intervention. In Williams A.L., McLeod, S. & McCauley, R.J. (Eds.) *Interventions for speech sound disorders in children*, 2nd edition, Paul H. Brookes, pp. 337–362.
- Cao, X.H. (2006) *Tiếng Việt mấy vấn đề ngữ âm-ngữ pháp-ngữ nghĩa [Vietnamese some issues in phonology–syntax–semantics]*. Khoa học xã hội.
- Clark, E.L., Easton, C. & Verdon, S. (2021) The impact of linguistic bias upon speech–language pathologists’ attitudes towards non-standard dialects of English. *Clinical Linguistics and Phonetics*, 35(6), 542–559. <https://doi.org/10.1080/02699206.2020.1803405>
- Czech Statistics Office. (2009) Foreigners by type of residence, sex and citizenship. [http://www.czso.cz/csu/cizinci.nsf/eng/8200578577/\\$File/c01t01.pdf](http://www.czso.cz/csu/cizinci.nsf/eng/8200578577/$File/c01t01.pdf)
- Đinh, L.T. & Nguyễn, V.H. (1998) *Cơ cấu ngữ âm tiếng Việt [The structure of Vietnamese phonology]*. Hà Nội, Việt Nam: Giáo dục.
- Đỗ, X.T. & Lê, H.T. (2005) *Tiếng Việt 2 [Vietnamese 2]*. Hà Nội, Việt Nam: Đại học Sư phạm Hà Nội.
- Đoàn, T.T. (2003) *Ngữ âm tiếng Việt [Vietnamese phonetics]*. Hà Nội, Việt Nam: Đại học Quốc gia Hà Nội.
- Dodd, B., Hua, Z., Crosbie, S., Holm, A. & Ozanne, A. (2002) *Diagnostic Evaluation of Articulation and Phonology (DEAP)*. Psychological Corporation.
- Dodd, B., Hua, Z., Crosbie, S., Holm, A. & Ozanne, A. (2006) *Diagnostic Evaluation of Articulation and Phonology (DEAP)*. Harcourt Assessment.
- Eberhard, D.M., Simons, G.F. & Fennig, C.D. (2023) *Ethnologue: languages of the world*, 26th edition, SIL International. <http://www.ethnologue.com>
- Flipsen, J.P. & Ogiela, D.A. (2015) Psychometric characteristics of single-word tests of children’s speech sound production. *Language, Speech, and Hearing Services in Schools*, 46(2), 166–178. https://doi.org/10.1044/2015_LSHSS-14-0055
- General Statistics Office of Viet Nam. (2016) Area, population, and population density by province. https://www.gso.gov.vn/default_en.aspx?tabid=774
- Goldstein, B.A. & Iglesias, A. (2001) The effect of dialect on phonological analysis: evidence from Spanish-speaking children. *American Journal of Speech–Language Pathology*, 10(4), 394–406. [https://doi.org/10.1044/1058-0360\(2001\)034](https://doi.org/10.1044/1058-0360(2001)034)
- Harrison, L.J., McLeod, S., McAllister, L. & McCormack, J. (2017) Speech sound disorders in preschool children: correspondence between clinical diagnosis and teacher and parent report. *Australian Journal of Learning Difficulties*, 22(1), 35–48. <https://doi.org/10.1080/19404158.2017.1289964>
- Hoàng, T.C. (2004) *Phương ngữ học Tiếng Việt [Vietnamese dialectology]*. Hà Nội, Việt Nam: Đại học Quốc gia Hà Nội.
- Huỳnh, C.T. (1996) Tiếng Việt và vấn đề phân vùng phương ngữ [Vietnamese language and regions of dialects]. In Viện Ngôn ngữ học Việt N (Ed.), *Ngữ học trẻ ’96*. Hà Nội, Việt Nam: Hội ngôn ngữ học Việt Nam, pp. 30–33.
- Huỳnh, C.T. (1999) Hệ thống ngữ âm của phương ngữ Sài Gòn (so với phương ngữ Hà Nội và một số phương ngữ khác ở Việt Nam) [The phonetic system of the Saigon dialect, compared with the Ha Noi and other dialects of Vietnamese]. (Doctoral dissertation), Đại học quốc gia Thành phố Hồ Chí Minh, Trường Đại học Khoa học xã hội và nhân văn, Thành phố Hồ Chí Minh, Việt Nam. http://lib.hcmush.edu.vn/Duy/He%20thong%20ngu%20am_1103.pdf
- Huỳnh, C.T. (2014) *Tiếng Sài Gòn [The Saigon dialect]*. Hà Nội, Việt Nam: Chính trị quốc gia—Sự thật.
- International Expert Panel on Multilingual Children’s Speech. (2012) *Multilingual children with speech sound disorders: position paper*. Bathurst, Australia: Charles Sturt University. <http://www.csu.edu.au/research/multilingual-speech/position-paper>
- Kirby, J.P. (2011) Vietnamese (Hanoi Vietnamese). *Journal of the International Phonetic Association*, 41(3), 381–392. <https://doi.org/10.1017/S0025100311000181>
- Kok, E.C.E. & To, C.K.S. (2019) Revisiting the cutoff criteria of Intelligence in Context Scale-Traditional Chinese. *Language, Speech, and Hearing Services in Schools*, 50(4), 629–638. https://doi.org/10.1044/2019_LSHSS-18-0073
- Le, X.T.T., McLeod, S. & Phạm, B. (2022) Consonant accuracy and intelligibility of Southern Vietnamese children. *Speech, Language and Hearing*, 25(3), 315–324. <https://doi.org/10.1080/2050571X.2021.1888195>
- Lousada, M., Sa-Couto, P., Sutare, D., Figueiredo, C., Fazenda, M., Lousada, M.J. & Valente, A.R. (2019) Validity and reliability of the Intelligibility in Context Scale: European Portuguese version. *Clinical Linguistics and Phonetics*, 33(12), 1125–1138. <https://doi.org/10.1080/02699206.2019.1589579>
- Low, A., Koh, G., Young, S.E.-I. & Chandler-Yeo, H. (2019) Effect of dialect on phonological analysis. *Clinical Linguistics and Phonetics*, 33(5), 457–478. <https://doi.org/10.1080/02699206.2018.1550812>
- Margetson, K., McLeod, S. & Verdon, S. (2023a) Cross-linguistic transfer and ambient phonology: impact on diagnosis of speech sound disorders in a longitudinal bilingual case study. *Journal of Monolingual and Bilingual Speech*, 4(3), 311–339. <https://doi.org/10.1558/jmbs.23672>
- Margetson, K., McLeod, S. & Verdon, S. (2023b) Diagnosing speech sound disorder in bilingual Vietnamese–English-speaking children: are English-only assessments sufficient? In: Babatsouli, E. (Ed.) *Multilingual acquisition and learning: towards an ecosystemic view of diversity*. John Benjamins Publishing.
- Margetson, K., McLeod, S., Verdon, S. & Tran, V.H. (2023c) Transcribing multilingual children’s and adults’ speech. *Clinical Linguistics & Phonetics*, 37(4–6), 415–435. <https://doi.org/10.1080/02699206.2022.2051073>
- Masso, S., McLeod, S., Cronin, A. & Phạm, B. (2020) Transcription of Vietnamese adults’ and children’s consonants by English-speaking speech–language pathologists. *Folia Phoniatrica et Logopaedica*, 72(2), 92–107. <https://doi.org/10.1159/000500245>
- McAlister, H., Hopf, S.C. & McLeod, S. (2023) Effect of dialect on identification and severity of speech sound disorder in Fijian

- children. *Speech, Language and Hearing*, 26(1), 48–60. <https://doi.org/10.1080/2050571X.2022.2052506>
- McCormack, J., McLeod, S. & Crowe, K. (2019) What do children with speech sound disorders think about their talking? *Seminars in Speech and Language*, 40(02), 94–104. <https://doi.org/10.1055/s-0039-1677760>
- McLeod, S. (Ed). (2023, in process) *The Oxford handbook of speech development in languages of the world*. Oxford University Press.
- McLeod, S. & Baker, E. (2017) *Children's speech: an evidence-based approach to assessment and intervention*. Pearson Education.
- McLeod, S. & Crowe, K. (2018) Children's consonant acquisition in 27 languages: a cross-linguistic review. *American Journal of Speech–Language Pathology*, 27(4), 1546–1571. https://doi.org/10.1044/2018_AJSLP-17-0100
- McLeod, S. & Verdon, S. (2014) A review of 30 speech assessments in 19 languages other than English. *American Journal of Speech–Language Pathology*, 23(4), 708–723. https://doi.org/10.1044/2014_AJSLP-13-0066
- McLeod, S., Harrison, L.J. & McCormack, J. (2012) Intelligibility in context scale: validity and reliability of a subjective rating measure. *Journal of Speech, Language, and Hearing Research*, 55, 648–656. [https://doi.org/10.1044/1092-4388\(2011/10-0130](https://doi.org/10.1044/1092-4388(2011/10-0130)
- McLeod, S., Margetson, K., Wang, C., Tran, V.H., Verdon, S., White, K. & Phạm, B. (2022a) Speech acquisition within a 3-generation Vietnamese–English family: the influence of maturation and ambient phonology. *Clinical Linguistics and Phonetics*, 36(4–5), 470–493. <https://doi.org/10.1080/02699206.2020.1862915>
- McLeod, S., Verdon, S., Margetson, K., Tran, V.H., Wang, C., Phạm, B., To, L. & Huynh, K. (2023) Multilingual speech acquisition by Vietnamese–English–speaking children and adult family members. *Journal of Speech, Language, and Hearing Research*, 66(7), 2184–2229. https://doi.org/10.1044/2023_JSLHR-21-00669
- Nguyễn, N.B. (1992) Hướng tiếp cận phương ngữ [Perspectives in the dialect]. *Thông báo khoa học Trường Đại học Sư phạm Vinh*, 6, 1–3.
- Nguyễn, T.C. (1997) *Giáo trình lịch sử ngữ âm tiếng Việt [Textbook of Vietnamese historical phonology]*. Hà Nội, Việt Nam: Giáo dục.
- Nguyễn, T.L.K. (2011) Nội dung đánh giá khả năng phát âm âm tiết tiếng Việt của trẻ mẫu giáo [The assessment content of pronunciation ability of Vietnamese syllable of preschoolers]. *Ngôn ngữ*, 9, 6–17.
- Pascoe, M., Mahura, O. & Le Roux, J. (2018) South African English speech development: preliminary data from typically developing preschool children in Cape Town. *Clinical Linguistics and Phonetics*, 32(12), 1145–1161. <https://doi.org/10.1080/02699206.2018.1510985>
- Pham, T.V. (2021) *Characteristics of speech sound production of Vietnamese-speaking children with speech sound disorders*. [Unpublished Master's thesis]. Ho Chi Minh City University of Medical and Pharmacy, Viet Nam.
- Pham, T.V., Phạm, B., McLeod, S. & Trung, V. (2021) Tổng quan các tiêu chuẩn chẩn đoán rối loạn âm lời nói ở trẻ em [Review of diagnostic criteria for speech sound disorders in children]. *Tạp chí Khoa học trường Đại học Sư phạm Hà Nội: Khoa học Giáo dục [HNUE Journal of Science: Educational Sciences]*, 66(4AB), 82–97. <https://doi.org/10.18173/2354-1075.2021-0063>
- Phạm, B. & McLeod, S. (2016) Consonants, vowels and tones across Vietnamese dialects. *International Journal of Speech–Language Pathology*, 18(2), 122–134. <https://doi.org/10.3109/17549507.2015.1101162>
- Phạm, B. & McLeod, S. (2019a) Vietnamese-speaking children's acquisition of consonants, semivowels, vowels, and tones in Northern Viet Nam. *Journal of Speech, Language, and Hearing Research*, 62(8), 2645–2670. https://doi.org/10.1044/2019_JSLHR-S-17-0405
- Phạm, B. & McLeod, S. (2019b) Tone languages and communication disorders. In Damico, J.S. & Ball, M.J. (Eds.), *The SAGE encyclopedia of human communication sciences and disorders*. Thousand Oaks, CA: SAGE Publications, pp. 1977–1980. <https://doi.org/10.4135/9781483380810.n639>
- Phạm, B., Le, X.T.T. & McLeod, S. (2016) *Vietnamese Speech Assessment (Research version)*. Bathurst, Australia: Author.
- Phạm, B., McLeod, S. & Harrison, L.J. (2017) Validation and norming of the intelligibility in context scale in Northern Viet Nam. *Clinical Linguistics and Phonetics*, 31(7–9), 665–681. <https://doi.org/10.1080/02699206.2017.1306110>
- Phạm, B., McLeod, S. & Le, X.T.T. (2018) Xây dựng bộ trắc nghiệm đánh giá lời nói Việt: nghiên cứu định khung [Development of the Vietnamese Speech Assessment]. *Ngôn ngữ [Language]*, 4(347), 33–45. (translation of Phạm, McLeod, & Le, 2016)
- Phạm, B., McLeod, S. & Verdon, S., Margetson, K. & Tran, V.H. (2022) Supporting the communication of underserved children in Vietnam. In: Levey, S. & Enderby, P. (Eds.). *Addressing communication disorders in unserved and underserved populations*. J&R Press, pp. 73–83.
- Phạm, B., McLeod, S. & Le, X.T.T. (2016) Development of the Vietnamese speech assessment. *Journal of Clinical Practice in Speech–Language Pathology*, 18(3), 126–130.
- Phạm, V.H. (1988) Về đặc trưng một số đường đồng ngữ trong các phương ngữ tiếng Việt [About typical characteristics of the same linguistic lines in Vietnamese dialects.]. In: Viện ử học Việt Nam (Ed.), *Tiếng Việt và các ngôn ngữ Đông Nam Á [Vietnamese and South East Asian languages]*. Hà Nội, Việt Nam: Khoa học xã hội.
- Robinson, G.C. & Stockman, I.J. (2009) Cross-dialectal perceptual experiences of speech–language pathologists in predominantly Caucasian American school districts. *Language, Speech, and Hearing Services in Schools*, 40(2), 138–149. [https://doi.org/10.1044/0161-1461\(2008/07-0063](https://doi.org/10.1044/0161-1461(2008/07-0063)
- Ryan, C. (2013) Language use in the United States: 2011. <http://www.census.gov/prod/2013pubs/acs-22.pdf>
- Shriberg, L.D., Austin, D., Lewis, B.A., McSweeney, J.L. & Wilson, D.L. (1997) The percentage of consonants correct (PCC) metric: extensions and reliability data. *Journal of Speech, Language, and Hearing Research*, 40(4), 708–722. <http://jslhr.asha.org/cgi/content/abstract/40/4/708>
- Statistics Canada. (2012) *Linguistic characteristics of Canadians: language, 2011 census of population. (98-314-X2011001)*. Ottawa, Canada: Minister of Industry, Statistics Canada. <http://www12.statcan.gc.ca/census-recensement/2011/as-sa/98-314-x/98-314-x2011001-eng.cfm>
- Toohill, B.J., McLeod, S. & McCormack, J. (2012) Effect of dialect on identification and severity of speech impairment in Indigenous Australian children. *Clinical Linguistics and Phonetics*, 26(2), 101–119. <https://doi.org/10.3109/02699206.2011.595523>
- Trần, T.D. (2010) 65 năm thành lập ngành ngôn ngữ: Thành tựu 'giữ gìn sự trong sáng của tiếng Việt' và những vấn đề đặt ra hiện nay [65 years of linguistic discipline: Result of 'conservation of Vietnamese beauty' and current challenges]. Paper presented at the Nghiên cứu và đào tạo khoa học xã hội và nhân văn ở Việt Nam: Thành tựu và kinh nghiệm [Researching and training humanity



- and social sciences in Vietnam: results and experience], Hà Nội, Việt Nam. <http://hdl.handle.net/123456789/678>
- Van Doornik, A., Gerrits, E., McLeod, S. & Terband, H. (2018) Impact of communication partner familiarity and speech accuracy on parents' ratings of their child for the Intelligibility in Context Scale: Dutch. *International Journal of Speech–Language Pathology*, 20(3), 350–360. <https://doi.org/10.1080/17549507.2018.1472808>
- Vu, T.P. (1982) Phonetic properties of Vietnamese tones across dialects. *Papers in South East Asian Linguistics, Canberra*, 55–76.

How to cite this article: Phạm, B. & McLeod, S. (2023) Considerations of dialect on the identification of speech sound disorder in Vietnamese-speaking children. *International Journal of Language & Communication Disorders*, 1–9. <https://doi.org/10.1111/1460-6984.12992>