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# Arabic diglossia: advocating for a non-deficit model in comparative analysis of reading and language acquisition

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Arabic diglossia is a linguistic scenario in which Modern Standard Arabic (MSA) and Spoken Arabic (SpA) coexist within the same community, creating a unique context for literacy development. Research on the phonological and lexical distances between these varieties reveals significant effects on performance during reading and phonological awareness (PA) tasks, which are critical components of literacy development. Researchers have indicated that the phonemic and lexical distances between MSA and SpA can complicate PA, affecting reading skills, particularly among younger students. Initially intended as a systematic review, the limited number of studies fitting the criteria of this critical review led to the adoption of a narrative review approach, allowing for a critical review of the research on the effect of phonological and lexical distance on reading processes. Although these studies show differences in performance in PA and reading tasks due to lexical distances between SpA and MSA, the author of this article suggests that diglossia should be regarded as an inherent element in its native linguistic context and thus advocates against using a deficit model to interpret the results.

## KEYWORDS

Arabic, diglossia, reading skills, phonological distance, lexical distance

## Introduction

Ferguson used the concept of “diglossia” in 1959 to describe a scenario where two language varieties, high (H) and low (L), coexist and serve different purposes (Ferguson, 1959). Fishman (1971), expanded the concept of diglossia to include multilingual societies and distinguished it from bilingualism by its social implications. Ferguson revisited his theory in 1996, recognizing its limited applicability to creole and dialect-standard continua and called for a more refined understanding of diglossia (Ferguson, 1996). Hudson expanded on Ferguson’s criteria in 2002, emphasizing functional and acquisitional differences between H and L varieties over structural relatedness to distinguish diglossia from societal bilingualism (Hudson, 2002).

In Arabic-speaking countries Modern Standard Arabic (MSA) and Spoken Arabic (SpA) coexist within the same community, creating a unique context for literacy development (Waked et al., 2024). Modern Standard Arabic is mostly used in formal settings like education and writing, while SpA is naturally acquired and used for daily verbal interactions (Abu Kwaik et al., 2018; Shahbari-Kassem et al., 2024). The number of Arabic speakers worldwide ranges from 290 million to 313 million (United Nations Educational, Scientific and Cultural Organization, n.d.). Abu Kwaik et al. (2018) found that not all regional dialects are equally distant from MSA; nor are all regional dialects equally divergent from each other. Most of the metrics that researchers

have used implies that the Levantine dialects are generally closest to MSA, whereas North African dialects are the most distant. Researchers have also found convergence among the dialects of the Levant, with great linguistic overlap. Therefore, the differences within SpA and between SpA and MSA highlight the need to contextualize research within specific linguistic and cultural contexts in Arabic-speaking regions (Abu Kwaik et al., 2018; Shahbari-Kassem et al., 2024).

Synthesizing research on the impact of diglossia on Arabic-speaking children and literacy development shows the complex relationship between linguistic structure, cognitive development, and educational outcomes. It raises important questions about diglossic conditions and how MSA-SpA linguistic distances affect literacy development. Researchers found significant semantic, syntactic, morphological, and phonological differences between MSA and SpA, affecting language acquisition and cognitive processing.

Amayreh and Dyson (1998) studied phonological development in 180 Jordanian children. Results highlighted that children acquired certain consonants (/k/, /h/, and /l/) earlier due to their higher frequency in Arabic compared to English. This suggests familiarity with dialect-specific sounds facilitated earlier acquisition, indicating better performance with dialect elements over MSA. Dyson and Amayreh (2000) analyzed consonant production errors in 50 Jordanian children, focusing on dialectal variations. The findings indicated significant variations across dialects, suggesting that children's phonological errors are influenced more by their native dialect than MSA, with better performance typically noted on dialectal sounds.

Other studies assessed phonemic awareness and decoding abilities in Palestinian children. These studies found that children performed poorly on tasks involving phonemes and syllabic structures unique to MSA compared to those shared with their dialect, illustrating better performance with dialectal elements due to greater familiarity. The results of phoneme isolation in MSA and Palestinian dialect words among children revealed that children found it more difficult to isolate MSA phonemes than those of the dialect, again indicating better performance with dialect elements, which are more closely aligned with their everyday linguistic environment (Asadi and Abu-Rabia, 2019; Saiegh-Haddad, 2003, 2004).

The study of morphosyntactic development in Arabic has been a focal point of research across various dialects, with significant emphasis on how children acquire complex linguistic structures such as plural formation, negation, interrogatives, and word order. An examination of how vernacular Arabic influences the learning of MSA revealed that oral production of negation across tenses, among different groups of learners in the U.S., showed that native dialect influences the acquisition of MSA's morphosyntactic properties (Albirini, 2014). Other studies explored the development of morphosyntactic competence in children exposed to both MSA and Palestinian vernacular, finding that vernacular interference affects MSA acquisition, particularly in negation, with performance disparities diminishing as children aged, depending on the structural complexity (Khamis-Dakwar et al., 2012).

Previous research on Lexico-semantics development in Arabic language acquisition indicates a great need for more

thorough and systematic studies. It emphasizes the importance of considering how typical language exposure evolves during a child's development and the shifting dynamics between MS and vernacular usage as children grow (Khamis-Dakwar and Froud, 2019). Maamouri (1998) study focused on the importance of improving vocabulary teaching in MSA to enhance academic success among school-age children. Maamouri proposed strategies to augment vocabulary acquisition, notably through increased exposure to MSA. Research on lexical development in bilingual Arabic speakers, employing comparative analyses to explore vocabulary acquisition complexities in bilingual contexts, highlight the intricate process of vocabulary development among bilingual individuals who speak Arabic and another language (Holmström et al., 2016).

Khwaileh et al. (2014) developed the first normative database for spoken Arabic, focusing particularly on Levantine Arabic. This initiative aimed to create a frequency corpus for spoken Arabic to complement existing corpora predominantly based on written MSA. The study highlights the need for such resources to understand the lexical norms of spoken Arabic better. Khamis-Dakwar and Makhoul (2012) developed the Arabic Diglossic Knowledge and Awareness Test (ADAT), a tool designed to assess language-based emergent literacy skills, including receptive vocabulary in Arabic-speaking children. The study involved testing children's comprehension of MSA words, categorized by their phonological overlap with the vernacular, through a picture selection task. Preliminary results with Palestinian Arabic-speaking children showed that first graders performed better with fully overlapping or non-overlapping words compared to partially overlapping words.

These studies emphasize the impact of diglossia across various domains of language development. However, Khamis-Dakwar and Froud (2019) noted the previous scarcity of studies in the dynamic role of language development across educational environments and other influencing factors. They recommended considering the intricate interplay between native dialects and MSA, particularly adopting a non-binary approach to language acquisition. Viewing the two language varieties as separate leads to an incomplete understanding of language development in Arabic. For example, the use of optional short vowels or diacritical marks in Arabic, which distinguishes between deep and shallow orthography, has been consistently studied in a binary manner (Abu-Rabia, 1998, 1999, 2001; Abu-Rabia and Taha, 2004; Asadi and Khateb, 2017; Seraye, 2004), where participants' performance in reading lists of vowelized and unvowelized words was compared. Although this experimental approach effectively isolates the effects of vowelization, it does not correspond directly to binary approaches in Eurocentric studies, such as those involving the reading of lists of non-words vs. exception words in English. In other words, reading non-words and exception words reveals unique cognitive processes in the readers of that language, whereas the binary approach in Arabic studies, focusing primarily on unvowelized isolated word, may inadvertently pathologize the language rather than reveal the learner's cognitive processes. It is also important to note that readers are rarely asked to read an unvowelized words that can be articulated in multiple ways to mean different things (homographic heterophones) without any context

or minimal level of vowelization to disambiguate the pronunciation and meaning.

Another important example of binary examination in language studies is the investigation of phonological elements and lexical differences between MSA and SpA to infer their impact on reading acquisition. This research suggests that differences in phonology between MSA and SpA negatively affect phonological awareness (PA), which is positively correlated with reading acquisition (Vellutino et al., 2004); thus, researchers argue that these phonological and lexical differences could be key factors in explaining delays or failures in reading acquisition in Arabic (Asaad and Eviatar, 2013; Taha, 2017). It is, therefore, particularly important to deepen our understanding of how researchers have examined the phonological and lexical differences between MSA and SpA, as well as the contexts in which these studies have been conducted. This critical review aims to evaluate these studies, exploring the methodologies used and assessing the broader applicability of their findings. The following questions are addressed in this review:

- How have studies assessed diglossic conditions, particularly those demonstrating the phonological and lexical distances between speakers of MSA and SpA?
- How have previous studies interpreted the impact of linguistic distance between MSA and SpA on literacy development in Arabic-speaking children?

## Method

To investigate the effects of phonological and lexical distances in Arabic diglossia on reading performance, a search was conducted across several databases, including Academic Search Complete, APA PsycArticles, APA PsycInfo, Education Research Complete, ERIC, Arabic EBSCOhost, Shamaa, and Al-Manhal. The keywords “Arabic” and “diglossi\*” brought up 303 articles at first. The pool was reduced to 115 articles after applying peer-review and relevance filters that excluded fields such as “labor productivity” and “surveys.” These articles were thoroughly reviewed in accordance with three criteria: (1) studies must examine the impact of phonological/lexical distance on reading performance, (2) describe the nature of the tasks used, (3) focus on native Arabic speakers who have been educated in Arabic. Applying the three criteria resulted in the exclusion of 55 papers that did not meet the first criterion and 47 papers for working with Arabic as a second language or bilingual/multilingual contexts. The final selection comprised 12 studies that met all of the specified criteria (Figure 1). Table 1 shows the details of the retained studies, which were analyzed based on their purpose, method, and results. For analysis, an inter-rater negotiated agreement method was used, with the author reviewing data individually before working with a native Arabic speaker research assistant to resolve discrepancies and refine interpretations.

This review sought to conduct a systematic evaluation of studies that investigate the effects of phonological and lexical distances on reading tasks. Despite the wide geographic coverage and diverse range of inquiries into diglossia, identifying studies with

comparable methodological approaches proved difficult. Despite extensive database searches, only 12 studies met the review criteria, necessitating a combination of systematic and narrative review techniques to improve understanding of the relevant literature.

## Results

In Table 1, all studies included participants who were native Arabic speakers, primarily using Northern Palestinian dialects, and were consistently recruited from schools of middle socioeconomic status (SES) affiliated with the Israeli Ministry of Education. The research context across all studies focused on linguistic variation between MSA and SpA, specifically targeting phonological and/or lexical distances between these varieties. Furthermore, the studies examined foundational reading skills, including phonemic awareness, phonological processing, decoding accuracy, reading fluency, and comprehension. Methodologically, two studies employed longitudinal designs (Asadi and Abu-Rabia, 2021; Asadi and Asli-Badarneh, 2023), tracking students from kindergarten to first grade and from first to second grade, respectively. The remaining studies utilized cross-sectional designs, examining multiple grades simultaneously. Participant age ranges and grade levels varied: some studies involved younger participants primarily from kindergarten and early elementary grades (e.g., Asadi and Abu-Rabia, 2019; Saiegh-Haddad, 2003, 2004, 2005; Saiegh-Haddad and Ghawi-Dakwar, 2017), while others spanned broader age ranges, including older students from grades 6 to 12 (e.g., Asadi and Ibrahim, 2014; Saiegh-Haddad and Schiff, 2016; Schiff and Saiegh-Haddad, 2018). Variation was also evident in the dependent variables and tasks. Some studies explicitly investigated phonemic isolation and phonological awareness tasks in relation to lexical distance (e.g., Asadi and Abu-Rabia, 2019; Saiegh-Haddad, 2004), whereas others explored broader linguistic domains such as morphological awareness (Schiff and Saiegh-Haddad, 2018), reading comprehension (Abu-Liel et al., 2021), and word recognition (Saiegh-Haddad and Haj, 2018). Additionally, certain studies uniquely included specific populations, such as children with Speech and Language Impairments (SLI) (Saiegh-Haddad and Ghawi-Dakwar, 2017).

According to Table 2, the reviewed studies consistently show that the phonological and lexical distance between SpA and MSA significantly affects reading-related tasks, though the degree and nature of this impact vary by age, task type, and linguistic condition. Most studies agree that children perform better with SpA elements compared to MSA elements, especially in early grades. For example, researchers found that tasks involving SpA phonemes or shared SpA-MSA words led to higher phonological awareness and reading accuracy (Asadi and Abu-Rabia, 2019, 2021; Asadi and Asli-Badarneh, 2023; Saiegh-Haddad, 2003, 2004, 2005; Saiegh-Haddad and Schiff, 2016; Schiff and Saiegh-Haddad, 2018). However, some studies found specific conditions where MSA components can be beneficial or at least equally challenging. For instance, Asadi and Ibrahim (2014) reported that participants performed better with MSA words in deletion tasks, and Saiegh-Haddad (2005) noted MSA phoneme isolation moderately predicted reading fluency.

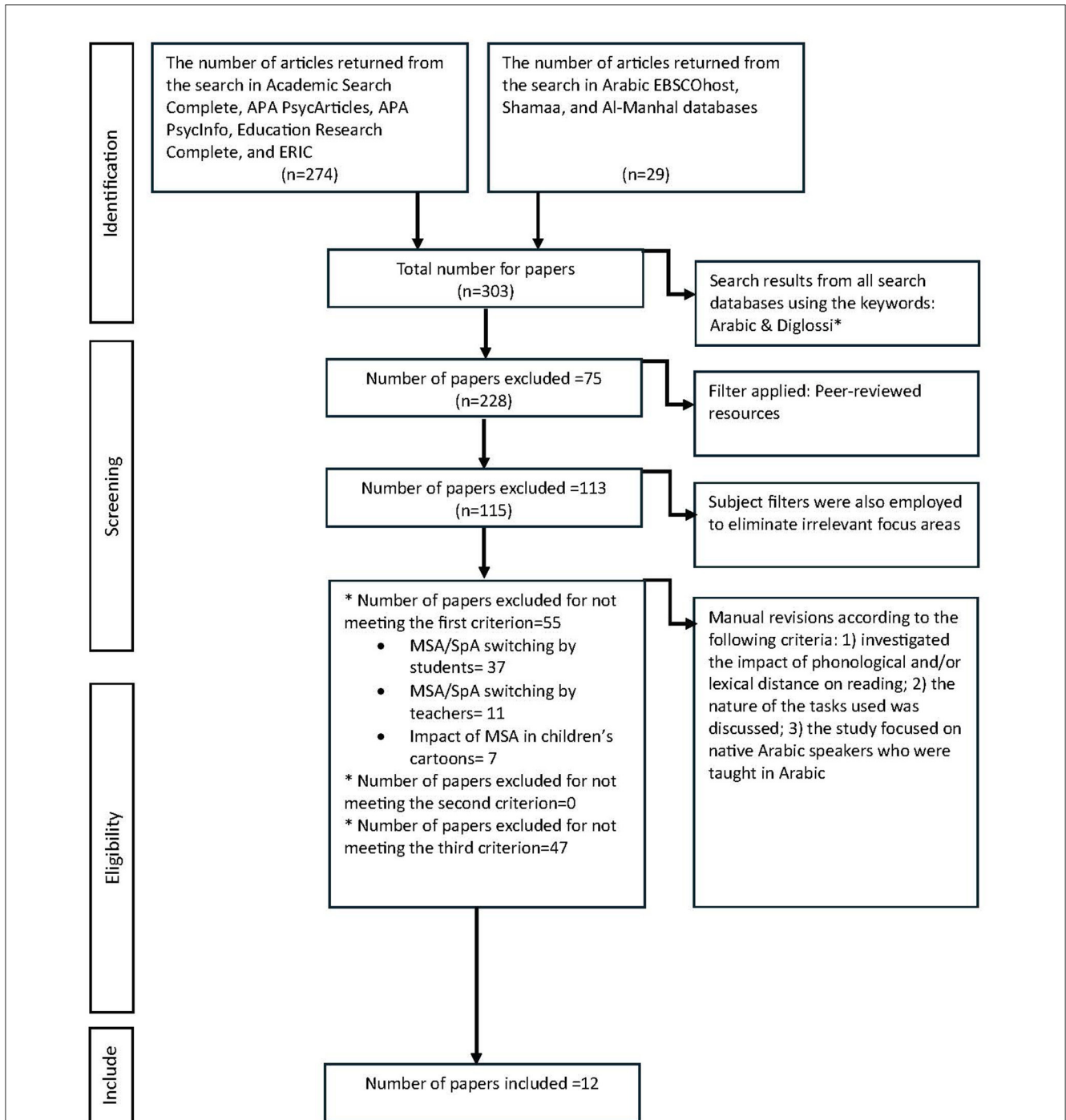


FIGURE 1 Identifying papers that explored the impact of phonological and lexical distance among native Arabic speakers. \*Modern Standard Arabic (MSA), Spoken Arabic (SpA), EBSCO Information Services online research platform (EBSCOhost), American Psychological Association’s database of scholarly journal articles (APA PsycArticles).

Equally important, from a developmental perspective and in relation to the distance between SpA and MSA, several studies (e.g., Asadi and Abu-Rabia, 2019; Saiegh-Haddad and Haj, 2018; Schiff and Saiegh-Haddad, 2018), found that the impact of PA and lexical distance between MSA and SpA lessens, and in some cases disappears, by late elementary school. However, a notable difference in morphological awareness between younger and older readers remains, impacting reading proficiency.

This suggests possible advantages from focused morphological awareness interventions for SpA speakers (Schiff and Saiegh-Haddad, 2018).

Researchers investigated the effects of diglossia on students with SLI. Saiegh-Haddad and Ghawi-Dakwar (2017) examined the word reading abilities of students with SLI in comparison to their typically developing counterparts, uncovering increased difficulties in phonological memory attributed to diglossia. This highlights

TABLE 1 Analysis of studies based on demographic information, research design, and dependent variables.

Study	Demographic information	Study design and dependent variables
Asadi and Abu-Rabia (2021)	The study included 261 kindergarten (KG) and 1 <sup>st</sup> grade students: 125 girls and 136 boys from various socioeconomic backgrounds (SES), who were native Arabic speakers of north Palestinian dialects.	Longitudinal, following children from kindergarten to 1 <sup>st</sup> grade, assessing the longitudinal effects on phonemic isolation and Rapid Automatic Naming (RAN) across different lexical clusters of Modern Standard Arabic (MSA) and Spoken Arabic (SpA).
Abu-Liel et al. (2021)	The study involved 77 eighth graders, aged 13 to 15 years; 37 females and 40 males. Analyses indicated no significant SES differences. All participants were native Arabic speakers of the North Palestinian dialects.	Cross-sectional examining. Skilled eighth-grade readers were engaged in oral reading efficiency test for isolated vowelized, unvowelized, and Arabizi words; oral reading efficiency for vowelized, unvowelized, and Arabizi texts (narrative and expository); and silent reading comprehension for vowelized, unvowelized, and Arabizi texts (narrative and expository).
Asadi and Abu-Rabia (2019)	The groups included 487 second year Kindergarten students (K2): 185 boys and 302 girls, and 533 third year Kindergarten students (K3): 230 boys and 303 girls. K2 students had a mean age of 4.74 years, while K3 students averaged 5.71 years. The kindergarteners were native speakers of Arabic and spoke various Palestinian dialects.	Cross-sectional analysis assessing phonemic isolation abilities across K2 and K3. Participants engaged in PA tasks using initial and final phoneme isolation in shared SpA- MSA words, SpA-only words, MSA-only words, and pseudo-words.
Asadi and Asli-Badarneh (2023)	A total of 139 children, including 74 girls and 65 boys aged 5-6, were tracked from 1 <sup>st</sup> to 2 <sup>nd</sup> grade. These students, from middle SES schools, all spoke a local dialect of the Northern Palestinian vernacular.	Longitudinal study following children from 1st to 2nd grade. Participants engaged in decoding accuracy and reading fluency test across two word lists: shared MSA-SpA words and MSA only words.
Asadi and Ibrahim (2014)	The study included 571 students from grades 1, 7, 9, 11, and 12, distributed across various SES. Participants were native Arabic speakers who spoke various dialects of Palestinian Arabic.	Cross-sectional study examining participants from multiple grade levels to assess development of phonological skills across age and educational exposure. Participants engaged in phonemic segmentation and deletion tasks. Both tasks used words from SpA and MSA.
Saiegh-Haddad (2003)	The study involved 65 students, aged 5-7 years: kindergarteners with a mean age of 5.11 years, and 1 <sup>st</sup> graders with a mean age of 6.11 years. Students from an average SES were all native speakers of the same local form of the Northern Palestinian Arabic vernacular.	Cross-sectional study focusing on phonemic awareness and pseudoword decoding across two grade levels. Participants engaged in PA tasks and pseudoword decoding accuracy tasks across different linguistic distances between MSA and SpA phonemes and syllabic structure.
Saiegh-Haddad (2004)	The study included 66 children: 24 kindergarteners and 42 first graders. Participants from middle SES schools. All participants were native speakers of Arabic, specifically a northern Palestinian vernacular.	Cross-sectional, examining the impact of phonemic and lexical distance. Participants engaged in phoneme isolation tasks of the initial vs. final phonemes across different word type types (real vs. pseudoword), and phoneme origin (MSA vs. SpA).
Saiegh-Haddad (2005)	The study included 42 first graders with an average age of approximately 7 years. Participants from middle SES schools. All participants were native speakers of Arabic, specifically a northern Palestinian vernacular.	Cross-sectional study assessing students' RAN, short-term working memory, phonemic discrimination, phonemic isolation, and letter recoding speed with respect to the MSA and SpA variables.
Saiegh-Haddad and Ghawi-Dakwar (2017)	One hundred children: 50 with Speech and Language Impairments (SLI) and 50 Typically Developing children (TD). From kindergarten and 1st grade: Kindergarten (mean age 5.5 years) and 1st grade (mean age 6.11 years). All participants were native speakers of Arabic, specifically a northern Palestinian vernacular.	Cross-sectional study that engaged participants in repetition tasks of real words and pseudowords that varied in lexical distance and the encoding of novel MSA phonemes.
Saiegh-Haddad and Haj (2018)	The study included four age groups: Senior KG (n = 30, mean age 5.9), 1st grade (n = 30, age 7.2), 2nd grade (n = 30, age 7.7), and 6th grade (n = 30, age 11.4), with balanced gender distribution and participants from middle SES schools. All were native Arabic speakers of a northern Palestinian dialect.	Cross-sectional study design examining kindergarten through 6th grade students' ability to recognize and pronounce MSA words that varied in phonological familiarity from SpA words.
Saiegh-Haddad and Schiff (2016)	The study included 100 participants, ranging in age from 7 to 15 years, from grades 2, 4, 6, 8, and 10. Each grade level had an equal distribution of participants, with 10 females and 10 males. All participants were native speakers of a northern Palestinian vernacular of Arabic and attended middle SES schools	Cross-sectional study that examined students' accuracy and fluency of reading vowelized and unvowelized real and pseudowords in both MSA and SpA.
Schiff and Saiegh-Haddad (2018)	The study included 100 students from grades 2, 4, 6, 8, and 10 (20 per grade; 10 females, 10 males). Average ages were 7.7, 9.6, 11.6, 13.6, and 15.5 years, respectively. All were native speakers of northern Palestinian Arabic and attended middle SES schools.	A cross-sectional study was conducted to examine participants' phonological and morphological awareness in both SpA and MSA across vowelized and unvowelized words in both language varieties.

All participating schools follow the Israeli Ministry of Education.

the importance of customizing assessment and intervention for Arabic-speaking children with SLI.

The function of a Latin alphabet-based orthography for Arabic (Arabizi) has been examined in relation to diglossia and its impact on reading proficiency. Abu-Liel et al. (2021) found that

reading performance significantly differs based on the orthography employed; reading unvowelized MSA texts produced the quickest and most precise reading outcomes, whereas reading vowelized MSA texts demonstrated the least efficiency, with Arabizi in between. Nonetheless, comprehension was greatest with reading vowelized

TABLE 2 Analysis of studies based on their purpose, domains, tasks, and outcomes.

Study	Purpose and domain	Tasks	Findings
Asadi and Abu-Rabia (2021)	This study investigated the impact of unique and shared phonemes between Modern Standard Arabic (MSA) and Spoken Arabic (SpA), in both real and pseudowords, on Phonological Awareness (PA) and Rapid Automatized Naming (RAN), focusing on the domains of phonological and lexical distances between MSA and SpA.	*Phonological Awareness tasks: Each child was presented the items individually, required to repeat the word spoken by the examiner and then isolate the targeted phonemes at either the beginning or end of the word. The words used were classified into four groups: (1) Words occurring in Spoken Arabic (SpA) only, (2) Words occurring only in Modern Standard Arabic (MSA), many of which include the targeted sounds /ð <sup>s</sup> /, /ð/, or /θ/, (3) Shared words between MSA and SpA, and (4) Pseudowords. *The Naming Speed task was specifically designed to assess the lexical retrieval speed of visually presented objects among children using three versions of a Rapid Automatized Naming (RAN) task: (1) RAN for SpA words, (2) RAN for MSA words, (3) RAN for shared words.	There was a significant effect of lexical distance on both PA and RAN. Participants performed better in tasks with SpA elements compared to those with MSA elements. There was a slower naming speed for elements of both SpA and MSA compared to shared words. The influence of lexical distance varied with the length of the items but not the phonemic position.
Abu-Liel et al. (2021)	This study explored how diglossia and orthography affect reading proficiency, focusing on different domains of Arabic (Arabizi and MSA) in both vowelized (shallow) and unvowelized (deep) forms.	*Isolated words for oral reading efficiency: The study utilized the Isolated Words for Oral Reading Efficiency test to measure the oral reading efficiency: (1) List 1, consisted of vowelized words. (2) List 2, unvowelized words (3) List 3, Arabizi words. *Texts for oral reading efficiency: This task aimed to measure how quickly and accurately students could read aloud. Six different texts: (1) Vowelized MSA, unvowelized MSA, and Arabizi. Each orthographic form included texts in two genres, Narrative and Expository. *Texts for Silent Reading Comprehension aimed at assessing students' ability to understand and interpret written text without vocalizing it: (1) Vowelized MSA, (2) Unvowelized MSA, and (3) Arabizi. The texts spanned two genres, Narrative and Expository. Following each text, students answered 9–12 multiple-choice questions designed to evaluate different comprehension skills.	Participants were faster and more accurate when reading unvowelized MSA words compared to vowelized MSA words, with Arabizi in between. Comprehension was best for vowelized MSA texts. Narrative texts were read more effectively in Arabizi, while expository texts showed better performance in MSA, highlighting the impact of text genre and orthographic familiarity.
Asadi and Abu-Rabia (2019)	The research examined the effects of phonological distance between phonemes and their lexical status (MSA, SpA, and shared) on phonemic isolation skills, focusing on the domains of phonological distance between phonemes and lexical status as factors influencing phonemic isolation skills.	*Phonemic Awareness Assessment: Testing the ability of children to isolate initial and final phonemes in words. The words used: (1) Shared words in both SpA and MSA (2) Words exclusive to SpA (3) Words exclusive to the MSA (4) Pseudo-Words. A list of examples for each of these types was not provided.	Significant developmental improvements from K2 to K3 across variables. Higher accuracy in initial than final phoneme isolation. Gap in initial vs. final phoneme performance decreased in K3. No significant performance differences between shared, SpA, and MSA clusters; but all outperformed pseudowords.
Asadi and Asli-Badarneh (2023)	This study explored the effects of diglossia on reading ability in Arabic by examining the domain of lexical distance between SpA and MSA and its impact on reading progression from first to second grade.	Two lists of words each, differing by linguistic affiliation (the word is identical in MSA and SpA vs. unique MSA words), participants read words aloud and were timed for accuracy and speed. Decoding accuracy (number of words correctly read), reading fluency (speed of reading in seconds).	The reading performance improved from 1st to 2nd grade. Reading identical words showed consistently better performance than unique words. The effect of lexical distance on reading ability is stable across these early grades.
Asadi and Ibrahim (2014)	The study examined the impact of diglossia on phonemic segmentation and phonemic deletion. The two targeted domains were the phonological and lexical distance between SpA and MSA, exploring how these affect phonological awareness in different grade levels.	Task accuracy measured by percentage correct responses in phonemic segmentation and deletion. Two specific tasks to examine PA: Phonemic segmentation and phonemic deletion. *Phonemic segmentation task: words from SpA and words from MSA (50% of the examples were words that contained the sounds /t <sup>s</sup> /, /ð <sup>s</sup> /, or /q/uvular). *Phonemic deletion task: words from SpA and words from MSA (examples included markedly fewer /t <sup>s</sup> /, /ð <sup>s</sup> /, or /q/uvular sounds than those in the phonemic segmentation task).	Children show progress in phonemic segmentation across grades with a notable dip in 4th grade performance. SpA words yield better segmentation results than MSA. In deletion tasks MSA outperforms SpA.
Saiegh-Haddad (2003)	This research investigated the effects of diglossia on PA and pseudoword decoding across MSA and SpA. The targeted domains were the phonological and lexical distances between MSA and SpA, examining specific phonemes and syllable structures.	Key dependent variables were PA and pseudoword decoding accuracy, particularly looking at the impact of linguistic distance on these skills. *Phonemic awareness tasks included the isolation of phonemes from pseudowords, focusing on both initial and final positions. These tasks targeted phonemes from SpA and MSA. The MSA phonemes examples focus on /t <sup>s</sup> /, /ð <sup>s</sup> /, or /θ/ sounds. *Decoding task to assess the ability to read pseudowords. The words were classified into: SpA structure and SpA phoneme, SpA structure and MSA phoneme, MSA structure and SpA phoneme, and MSA structure and MSA phoneme.	MSA phonemes were harder to isolate than SpA phonemes. More pronounced difficulty in kindergarten (KG). First graders outperformed kindergartners; lower isolation for initial versus final phonemes. More challenging to isolate initial phonemes in MSA structures. Higher errors with MSA phonemes and structures. MSA structural complexity significantly impacts decoding skills.

(Continued)

TABLE 2 (Continued)

Study	Purpose and domain	Tasks	Findings
Saiegh-Haddad (2004)	The study aimed to investigate the impact of the lexical status of words and the linguistic affiliation of target phonemes on phonemic isolation. The targeted domains were tge phonemic and lexical distance between MSA and SpA, particularly how these distances impact phonological analysis.	Phoneme isolation accuracy, comparing performances based on the type of word and the phoneme's position (initial vs. final). PA tasks involved phoneme isolation from initial or final positions. The targeted phonemes were either from MSA only or SpA, and included both real words and pseudowords. MSA phonemic focus was on the /t <sup>h</sup> /, /ð <sup>h</sup> /, or /q/uvular sounds.	First graders generally did better on all tasks. The lexical status of words vs. pseudowords did not influence phonemic isolation when the words consisted solely of SpA sounds. But, children faced difficulties with MSA words that contained both SpA and MSA phonemes, a challenge that is especially pronounced for initial phonemes and kindergarteners.
Saiegh-Haddad (2005)	This study assessed how well 1st graders could read pseudowords in vowelized Arabic, comparing performance across MSA and SpA phonemes. The focus was on the interaction between phonological representations from MSA and SpA, and their impact on reading fluency.	Independent Measures: *Rapid automatized naming for colors (RAN). Children were shown circles painted in five colors (red, yellow, blue, green, and black). Each color had a disyllabic name consistent in structure across the participants' SpA. *Short-term working memory of forward and backward digit span tests (WISC-R). *Letter Recoding Speed of letters from SpA sounds or MSA sounds. *Phoneme discrimination: Children listened to pairs of consonantal phonemes followed by a schwa sound. The children had to determine whether the phonemes in each pair sounded the same or different. The first test included only SpA phonemes, while the second mixed SpA and MSA phonemes or included only MSA phonemes. *Phoneme isolation: listening to pseudowords and isolating the initial phoneme of each word. The pseudowords were either composed entirely of SpA phonemes or started with an MSA phoneme. Dependent Measures: *Reading fluency which consisted of reading pseudowords that incorporated both SpA only phonemes and those including an MSA phoneme. The measure of reading fluency was based on the number of words correctly read per minute. MSA phonemic focus was on the /t <sup>h</sup> /, /ð <sup>h</sup> /, or /q/uvular sounds.	Higher phoneme isolation and discrimination scores for SpA vs. MSA phonemes, with ceiling effects in the latter. Rapid naming showed a moderate negative correlation with reading fluency, while memory and letter recoding speed both positively correlated. Phoneme isolation for both MSA and SpA phonemes moderately correlated with reading fluency, with MSA slightly stronger. Regression analyses confirmed letter recoding speed as the primary predictor of reading fluency.
Saiegh-Haddad and Ghawi-Dakwar (2017)	The research explored the impact of phonological and lexical distance between SpA and MSA on word and non-word repetition tasks among children with Speech and Language Impairments (SLI) and Typically Developing (TD) children.	Performance on word and non-word repetition tasks, highlighting decoding and fluency where applicable. Two specific tasks, word repetition and non-word repetition were designed to test the impact of linguistic distance between SpA and MSA. *Word repetition task evaluates how lexical and phonological distances between SpA and MSA affect children's ability to repeat words. Including words are classified into: Identical words that are common in both SpA and MSA and are used as the baseline performance, cognate words that are common to SpA but phonologically novel which tests the children's ability to handle familiar words that contain unfamiliar sound, lexically unique words that are novel in SpA but use phonemes familiar to the children from SpA, and lexically and phonologically unique words that are entirely novel both lexically and phonologically and represents the highest level of difficulty. *Non-word repetition task included: Phonologically novel non-words containing at least one MSA phoneme and phonologically non-novel non-words that are made up only of phonemes from SpA.	Specifically, in non-word repetition, KG-TD children surpass 1st grade SLI children. Lexical and phonological distance: Phonological novelty (MSA) consistently impacts children across all syllable lengths. Non-word repetition: Phonological novelty significantly affects performance across all syllable lengths in non-word repetition tasks.
Saiegh-Haddad and Haj (2018)	This study examined the impact of phonological distance between SpA and MSA on the quality of phonological representations in Arabic-speaking children across kindergarten, 1st, 2nd, and 6th grades. The domains in focus were phonological distance and lexical distance in relationship to SpA and MSA word forms.	The primary dependent variable was the accuracy of pronunciation judgments, reflecting the quality of phonological representations. Each word was used in a sentence and shown with pictures of different activities. Children had to identify the picture that corresponded to the use of the targeted word in the sentence. Words can be classified into: words with identical phonological forms in both SpA and MSA, words with forms in MSA that are entirely different from their SpA forms, words related phonologically but showing partial overlap in form between SpA and MSA. Another task was the phoneme substitution procedure for pseudo-words. Only medial consonants were substituted.	No significant differences in pronunciation accuracy between 1st-graders and kindergarteners, while 2nd and 6th graders demonstrated significantly improved accuracy, indicating developmental progress. In kindergarteners, identical words were easier to judge compared to unique words and most cognates, but by 6th grade, cognates differing by one or two phonemes were judged similarly to identical words, reflecting enhanced phonological awareness and capacity to discern linguistic differences.
Saiegh-Haddad and Schiff (2016)	This research investigated how diglossia impacts word reading accuracy and fluency in MSA and SpA from childhood to adolescence, exploring the effects of linguistic distance on reading both vowelized and unvowelized words.	Specific dependent variables were the accuracy and fluency of reading real words and pseudowords, both vowelized and unvowelized. The study assessed both accuracy and fluency in MSA and SpA real and pseudowords, in vowelized and unvowelized formats. *Real words reading tasks: Words that have identical forms in both SpA and MSA, words that exist only in MSA, or words exist in similar forms in both MSA and SpA. *Pseudowords reading tasks:	There were significant differences in reading accuracy and fluency between MSA and SpA across all grades, with reading in SpA resulting in higher accuracy and fluency. Vowelization did not significantly impact reading accuracy but did affect reading fluency, with unvowelized reading being faster than vowelized reading.

(Continued)

TABLE 2 (Continued)

Study	Purpose and domain	Tasks	Findings
Schiff and Saiegh-Haddad (2018)	The study explored the development of phonological and morphological awareness and their relationship to word reading skills in reading vowelized and unvowelized words across SpA and MSA.	<p>Derived from vowelized SpA words by altering one or two graphemes. These assess phonotactic compliance and the ability to read non-existing but phonologically plausible words in the SpA context or pseudowords that are derived from MSA words by modifying graphemes to create new, non-existing words that follow MSA phonotactic rules. Each task presented words in both vowelized and unvowelized formats.</p> <p>Focused on decoding and fluency across tasks that varied in linguistic complexity and frequency.</p> <p>*Phonological awareness tasks: SpA Phoneme segmentation equally targeting initial, final, and medial phonemes, SpA phoneme deletion, MSA phoneme segmentation, and MSA phoneme deletion. *Morphological awareness tasks: SpA morphological awareness task that includes an equal number of items focused on inflectional and derivational morphology, and MSA morphological awareness tasks that include an equal balance of inflectional and derivational morphology items. These oral tasks require students to change the word's morphological structure to fit a new sentence context.</p>	<p>Students performed better in SpA than in MSA across all tests.</p> <p>Phonological awareness: Students' abilities improved as they advanced in grade levels. Students in 2nd and 4th grades showed better performance in SpA compared to MSA. But this difference was not observed in 6th, 8th, and 10th grades.</p> <p>Morphological awareness: Similar trends were observed; 2nd, 4th, and 6th graders performed better in SpA than in MSA, with no differences in the 8th and 10th grades. Reading accuracy and reading fluency: Greater performance in SpA, but with no differences in the 6th, 8th, and 10th grades.</p>

\*Modern Standard Arabic (MSA), Spoken Arabic (SpA), Phonological Awareness (PA), Rapid Automated Naming (RAIN), Kindergarten (KG), Kindergarten Year 2 (K2), Kindergarten Year 3 (K3), Typically Developing (TD), Speech and Language Impairments (SLI), Wechsler Intelligence Scale for Children - Revised (WISC-R).

MSA texts. The findings demonstrate the collective impact of text type, phonological encoding, and orthographic complexity on reading proficiency.

The following are some conclusions that researchers have drawn from their studies. Saiegh-Haddad (2003) stated, "Do linguistic differences between the two varieties of the language, the local vernacular and the written standard, obstruct the development of basic reading processes? The present study is an attempt to address these questions" (p. 432). Saiegh-Haddad (2003) and Saiegh-Haddad (2005) suggested, "The orthography encodes MSA phonological structures that are not within the oral language experience of children. Thus, reading may suffer because of unfamiliar phonological structures not present in the child's SAV" (p. 564). Asadi and Abu-Rabia (2021) remarked: "As for the pedagogical implications, the gap found between the different clusters and especially between [SpA] and [MSA] may explain some of the difficulties in the Arabic reading process" (p. 696). Asadi and Asli-Badarnah (2023) indicated, "In recent decades, reading in the Arabic language has been a core interest of researchers, primarily due to the challenges facing [Arabic-speaking] children [when learning to read] (Saiegh-Haddad and Joshi, 2014) and their low performance on international reading tests (International Association for the Evaluation of Educational Achievement (IEA), 2003)" (p. 1919).

## Discussion

While some research has focused on the impact of phonological and lexical distance between MSA and SpA over time, from early to later grade levels, other studies have examined this impact using a cross-sectional design. Several studies encompass a wide spectrum of age cohorts, ranging from kindergarten and first-grade students (e.g., Saiegh-Haddad, 2003) to students at the elementary, middle, and high school levels (e.g., Schiff and Saiegh-Haddad, 2018).

### Moving beyond the deficit model in explaining diglossia

To assess the impact of phonemic distance on PA, researchers have created lists of spoken words containing sounds (initial, middle, or final positions) that belong to MSA or SpA or are shared by both (Table 2). Researchers have concluded that participants who were more familiar with SpA faced significant challenges when introduced to MSA phonemes. In most of these studies, researchers have highlighted the need for educational strategies that are sensitive to the linguistic realities of Arabic diglossia, advocating for approaches that facilitate bridging the gap between SpA and MSA to support effective language development and literacy acquisition.

As highlighted in the results section, researchers expressed that research findings consistently demonstrate the negative impact of infrequently encountered MSA phonemes and words on psycholinguistic tasks. While the current understanding, as detailed by Vellutino et al. (2004), suggests that the PA deficit that influences reading skills is a psycholinguistic condition independent of a person's familiarity with the sounds of a language, the conclusions



drawn in the reviewed studies prompt further investigation. It is important to consider whether PA deficits are truly reflected by diagnostics that are based on lower performance in tasks involving a limited number of less frequent sounds. Moreover, the connection between PA deficits and future reading challenges, particularly when based on limited exposure to infrequent sounds, requires rigorous examination to validate or challenge existing theories.

Studies on the impact of phonological and lexical distances have not included comparable research that extends across different areas within Arabic-speaking regions (Table 2). The lexical and phonological distances between MSA and SpA in one region may not be the same in another region (Abu Kwaik et al., 2018). For instance, the corresponding sound of the letter “ق, q”—which is pronounced farther back in the throat compared to /k/—was regarded as part of MSA-only phonology in the reviewed research (Asadi and Abu-Rabia, 2021; Saiegh-Haddad, 2003, 2004, 2005). Nonetheless, in many parts of Syria, Iraq, and North Africa, this sound is naturally included in words during informal daily conversations. Additionally, the emphatic and pharyngealized  $\delta^{\text{f}}$  (which has no equivalent in English) was regarded as a phonological variation in MSA only. However, this sound is present in the southern parts of Jordan and many areas of the Arab Peninsula as part of informal SpA. It is important to emphasize that the studies under review primarily based their phonological distance tasks on 2–3 sounds. The investigation of variations in dialects and MSA has been the focus of numerous related studies (Abd-El-Jawad, 1987; Al Ani, 1970; Davis, 1995; Kirchoff and Vergyri, 2005; Zaidan and Callison-Burch, 2014). Given the phonetic variations in MSA and SpA, future research should prioritize samples that reflect these differences to better understand phonological and lexical distances across different Arabic-speaking communities. Moreover, it is important to examine PA across different diglossic situations, emphasizing that these variations should not be viewed merely as deficits but as complexities with varied levels of challenges.

Moreover, some researchers argue that the concept of a dialect is contingent upon the existence of a standard form. This implies that dialects are fundamentally linked to and evolve from a standard version, which allows for a more fluid interchange between these variants. Boussofara-Omar (2003) suggested that the concept of diagglossia, where MSA and SpA are fluid, especially in educated spoken Arabic (ESA), which combines MSA and dialectal patterns. This linguistic fluidity may affect vocabulary, morphemic, and syntactic development in young Arabic speakers, most likely through education and ESA. These perspectives suggest a dynamic interaction between MSA and SpA that affects literacy development and requires diverse theoretical approaches to fully understand Arabic diglossia.

It is also important to incorporate studies on speech and language development that investigate the age of sound acquisition in Arabic-speaking children. For example, Amayreh (2003) found that children aged 7.8 to 8.4 years, compared to those aged 6.6 to 7.4, demonstrated full mastery of all consonants in their acceptable forms. Consonants such as /d/, /z/, and /ʔ/ were acquired earlier, while others, such as /t<sup>f</sup>/, /d<sup>f</sup>/, and /ð<sup>f</sup>/—were acquired later. Integrating these findings into broader discussions of phonological development can deepen our understanding of delayed acquisition by emphasizing the role of articulatory complexity in sound mastery (Amayreh, 2003). Finally, it is important to note that the

linguistic landscape of a language is not always consistent in its level of complexity. For example, while English is often considered to have a relatively regular orthography, it retains original spellings of many borrowed words or roots, resulting in numerous exceptions. This, along with inconsistencies in sound patterns, contributes to challenges at early reading stages, but manageable with appropriate instruction. Similarly, the Arabic language presents different type of difficulty for emerging readers. However, as many of the reviewed studies have shown, the effects of phonological and lexical distance tend to diminish, and in some cases disappear, by late elementary school (Asadi and Abu-Rabia, 2019; Saiegh-Haddad and Haj, 2018; Schiff and Saiegh-Haddad, 2018), suggesting that these challenges can be addressed over time with continued exposure and practice.

## Differences within and between diglossic contexts and sociopolitical considerations

It is important to identify the factors that unequivocally influence literacy development. The Institute for Statistics (UIS) of the United Nations Educational, Scientific, and Cultural Organization (UNESCO) provides essential educational, scientific, cultural, and communication data that informed this analysis. This collaboration ensures that data from different countries are comparable and that global indicators, such as those for the Sustainable Development Goals (SDGs), are reliable. One indicator that the UIS tracks is the percentage of students below minimum reading proficiency at the end of primary school (a low Global Alliance to Monitor Learning [GAML] threshold). This denotes the share of students who, at the end of their primary education, fail to meet the GAML minimum reading proficiency standards. The suggestion that diglossia has a negative impact on reading proficiency levels conflicts with some of the data provided by the UIS. A comparison of minimum reading proficiency rates at the end of primary school between non-diglossic and diglossic countries suggests that diglossia in some countries is not a definitive factor in reading success. According to Table 3, Brazil, a non-diglossic upper-middle-income country, had a minimum reading proficiency rate of 43.5% in 2019, which is comparable to Egypt's 44.57% in 2021 and Jordan's 46.64% in 2021, despite both countries' diglossic status (UNESCO-UIS Institute for Statistics, n.d.). Similarly, Mexico, which is also non-diglossic, had a percentage of 41.7% in 2019, which is lower than that of diglossic Egypt (46.64%) in 2021 (UNESCO-UIS Institute for Statistics, n.d.).

Table 3 shows that within the subset of diglossic regions, there are substantial differences in reading proficiency. For example, according to the UNESCO-UIS Institute for Statistics (n.d.), while Egypt, a lower-middle-income diglossic country, had a minimum reading proficiency rate of 44.57% in 2021, Qatar and the United Arab Emirates, high-income diglossic countries, had much higher minimum rates of 80.39 and 80.94%, respectively. Additionally, Jordan, with an income classification similar to that of Egypt, had a minimal reading proficiency rate of 46.64% in 2021 (Table 3). The disparities within diglossic nations imply that socioeconomic factors, educational policies, and investment in education (among other variables) play critical roles in determining reading proficiency outcomes. These data show that the minimum

TABLE 3 Percentage of students at the end of primary education achieving at least a minimum proficiency level in reading, both sexes (%).

Country	Income level	Percentage of students at the end of primary education achieving at least a minimum proficiency level in reading, both sexes (%)		Percentage of students at the end of primary education achieving at least a minimum proficiency level in reading, very poor socioeconomic background, both sexes (%)		Percentage of students at the end of primary education achieving at least a minimum proficiency level in reading, very affluent socioeconomic background, both sexes (%)	
Brazil	UMI	43.5	2019	23.27	2019	66.79	2019
Egypt	LMI	44.57	2021	37.81	2021	NP	2021
Jordan	LMI	46.64	2021	36.25	2021	77.99	2021
Mexico	UMI	41.7	2019	28.07	2019	65.98	2019
Qatar	HI	80.39	2021	72.21	2021	80.88	2021
United Arab Emirates	HI	80.94	2021	27.85	2022	NP	NP

Reprinted from [United Nations Educational, Scientific and Cultural Organization \(n.d.\)](#). H, High income; LMI, lower middle income; UMI, upper middle income; NP, not provided [NP].

reading proficiency in some non-diglossic nations is comparable to that of their diglossic counterparts. Nonetheless, a factor they share is the socioeconomic status of their populations.

Although many studies and opinion papers have addressed the claimed negative impact of diglossia, this paper critically evaluates only those studies whose conclusions were specifically supported by correlational or experimental analyses investigating the effects of diglossia on reading skills and reading development. As illustrated in [Figure 1](#), the primary inclusion criterion used during the manual review was the selection of studies examining the impact of phonological and/or lexical distance on reading. The resulting studies inadvertently focused primarily on certain varieties of the Palestinian vernacular used by students in schools affiliated with the Israeli Ministry of Education. No geographical filter was explicitly applied to isolate studies from these particular dialects or geopolitical regions. However, the emergence of this regional concentration can be understood through the lens of institutional research ecosystems, which highlight how geographic proximity and institutional affiliations foster interconnected research communities ([Collins, 2009](#)). According to [Table 1](#), all of these studies were conducted in a context that, while extremely important, does not represent the broader geopolitical regions where diglossia exists. Palestinians in Israel attend separate schools overseen by Israeli authorities, where segregation is paired with unequal access to resources such as school infrastructure, funding, and curriculum ([Abu-Saad, 2004](#); [Halabi, 2025](#)). These disparities are often designed to weaken students' ties to their cultural identity. Since the 19<sup>th</sup> century, Arabic has been associated with various political and social aims, including promoting pan-Arab unity, supporting colonization, and advancing national independence ([Columbu, 2022](#)), highlighting how language can be politicized ([Aboeazz, 2018](#)). In higher education, the dominance of Hebrew creates significant linguistic barriers that hinder Arab students' sense of belonging ([Ali and Da'as, 2019](#); [Mizel, 2021](#)). Moreover, the wider backdrop of discrimination and exclusion, shaped by the Israeli-Palestinian conflict, further complicates equitable integration in academic settings ([Mizel, 2021](#)). The findings highlight the need to examine language across diverse geopolitical, economic, educational, and sociopolitical contexts.

## Conclusion

The author of this review advocates for recognizing linguistic variations as integral components of the linguistic landscape, enriching—rather than detracting from—our understanding. This highlights the importance of maintaining a dynamic equilibrium between top-down and bottom-up research methods: by constantly cross-verifying them, a deeper appreciation of the phonological and lexical distances between MSA and SpA can be gained. This balanced approach not only fosters more robust academic inquiry but also supports the development of educational strategies attuned to the unique realities of Arabic diglossia, ultimately improving literacy outcomes for learners within this linguistic context.

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