Chapter 2 - Exploring the Landscape: A Systematic Review of the Tamil Reading Development Framework

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Chapter Highlights

- Reading exerts a profound and lasting influence on children's lives, commencing in early childhood and extending throughout their entire lifespan.
- While the science of reading has predominantly drawn upon research conducted in English and other languages, the application of certain reading framework components to Tamil language-based instruction poses challenges.
- Tamil possesses unique linguistic features that diverge from English and Western languages. In response, this study aims to introduce a Smart Reading Module-based (SRM) teaching intervention designed for Tamil children, whether they encounter reading difficulties or not.
- To formulate this intervention, the researcher conducted an extensive systematic review, encompassing 90 empirical studies conducted between 2016 and 2023, all endorsing skill-based interventions targeting reading development.
- The findings robustly support the efficacy of the SRM-based teaching intervention model in cultivating reading fluency among children, especially those grappling with reading challenges.
- This comprehensive intervention encompasses critical elements, including phonological awareness, word-sound mapping, syllabic and morphological comprehension, syntactic understanding, semantic proficiency, and adeptness in reading comprehension.
- By accommodating the distinct linguistic characteristics of the Tamil language, this SRM-based approach strives to empower Tamil children on their journey towards becoming proficient and confident readers.

Introduction

The Reading comprehension is the main goal, where the objective is to understand the meaning that the written text is trying to convey. Consequently, the focus of reading development should revolve around establishing a framework that enables children to construct an understanding of printed material. The foundation of reading is knowledge acquisition, cultural engagement, democratic participation, and career success (Castles et al., 2018). Reading literacy assumes a pivotal role in people's daily routines (Britt et al., 2018).

Reading holds fundamental importance in our lives, as it is essential for survival, and any hindrance in acquiring literacy skills can significantly impede individual, societal, and national progress (Khateb & Bar-Kochva, 2018). Proficient readers possess the capacity to extract meaning from text both accurately and efficiently, underscoring the value of reading competence (Petscher et al., 2019). The problem of illiteracy or difficulties acquiring literacy skills has become a critical concern in our society that is becoming more and more reliant on technology (Joshi & McBride, 2019). Addressing these challenges in literacy acquisition is paramount to ensuring individual and collective progress in the modern world.

Literature

Reading Development

Empirical research and reading science both explain the reading process. The children approach the task of learning to read with significant inter-individual differences in vocabulary, phonology, and orthographic skills, so understanding the learning-to-read process is crucial before developing the interventions (Ziegler et al., 2020). Children's reading abilities vary from person to person, just like their performance on other tasks. While research can help educators better understand how children learn and how written language functions, researchers cannot eliminate these differences between students (Treiman, 2018).

Phonology, morphology, syntax, semantics, and other language aspects are all involved in the highly complex process of reading; mastery of these areas of language is correlated with early development (Jasińska & Petitto, 2017). Beginning readers pick up on sound-symbol correlations and learn how to sound out words by gathering the sounds of all the letters, going from left to right, and combining them to form a word (Mather & Jaffe, 2021). In order to

read words from memory, beginning readers combine their different identities—orthographic, phonological, morphological, syntactic, and semantic identities—to create single lexical units in memory (Ehri, 2020). In contrast, the Simple View of Reading (SVR) (Hoover & Gough, 1990) views reading as a simple process that results from linguistic comprehension and decoding ability. This explanation made it easy to understand the reading process and develop reading frameworks.

Children who struggle with reading acquisition should receive effective reading interventions (Schmitterer & Brod, 2021). Teaching reading skills requires a complex mental process that involves experiencing, predicting, verifying, and acknowledging information based on the readers' prior knowledge, experience, and information (Paul & Christopher, 2017). An early reading program specifically addresses the orthographic, morpho-semantic, syntactic, and metalinguistic levels of the language within a language-focused framework for literacy instruction (Mathur & Nag, 2019).

Studies on reading development underscore several key elements and skill-based intervention models critical for achieving reading proficiency. The importance of phonemic awareness, phonics, fluency, vocabulary, and comprehension as critical reading skills has been highlighted by the National Reading Panel (NRP, 2000). Three elements of word knowledge are proposed by the Supermodel of Literacy Development: meaning, spoken language sound structure, and written language letters (Breadmore et al., 2019).

Furthermore, the International Dyslexia Association (IDA, 2019) has advocated for a comprehensive approach to reading comprehension, encompassing various elements such as phonological awareness, sound-symbol association, syllable instruction, morphological awareness, syntactic awareness, and semantic awareness. According to Moats (2019), structured literacy is very beneficial, especially for students who have very difficult time learning to read and spell printed words. Structured literacy includes phonological awareness, sound-symbol association, orthography/syllable instruction, morphology, syntax, and semantics.

However, it's worth noting that the implications of these established frameworks may not align perfectly with studies focused on the fluency development of Tamil-speaking children

encountering reading difficulties. Tailoring reading interventions to the unique linguistic characteristics of the Tamil language may require a nuanced approach.

Reading Frameworks and Tamil Language

Reading War focuses on reading development and aims to help kids who have reading difficulties by suggesting reading frameworks and different skills or components of reading development. All writing systems are essentially codes for spoken language, and children must decipher the code specific to their language in order to learn to read. The code differs from language to language (Castles et al., 2018).

The Tamil language has distinctive features that set it apart from English or other Western languages. Reading and writing studies have historically concentrated on a small group of European languages, especially English (Winskel, 2013). Tamil is one of the about 26 indigenous languages of the Indian subcontinent that make up the Dravidian language family, which is divided into its southern branch (Bhuvaneshwari & Padakannaya, 2013).

Though the phrasal order in Tamil is flexible, the language is consistently verb-final, with the verb appearing at the end of the clause and the typical word order of subject, object, and verb. The learners encounter difficulties with the word arrangement, particularly with the non-cognate group (Shakunthala, 2017). Tamil is a post-positional inflectional language with rich morphology; it is an agglutinative language in which suffixes make up the majority of the categories expressed (Rekha et al., 2012).

Some components of the reading frameworks do not comply with Tamil languages, and the Tamil language-based reading development framework was not created to help Tamil children who have reading difficulties. Traditional teaching strategies are used to develop Tamil language proficiency; however, these strategies are not focused on the development of children who have reading difficulties or reading-related difficulties. To identify the crucial abilities for SRM-based teaching reading to Tamil children with reading difficulties, this review is theoretically oriented with the SVR theory. Decoding and linguistic comprehension from the SVR are used to report a framework for teaching reading that is based on SRM and is meant for Tamil language reading development programs.

SRM Conceptual Framework

This teaching intervention model, based on the Smart Reading Module (SRM), was designed to enhance SVR-based decoding and linguistic comprehension. It also aimed to establish a conceptual framework for module-based teaching interventions in the context of reading development for Tamil children, whether they face reading difficulties or not. The SRM approach focuses a lot of emphasis on the idea that reading development is a process of gradually deriving meaning from text, which is accomplished by developing different components in a methodical way. Within this framework, the researchers constructed a comprehensive teaching model that harnesses linguistic abilities such as phonological awareness, sound-symbol association, syllable identification, and morphology. These elements were strategically employed to foster the development of decoding skills, while simultaneously nurturing syntactic, semantic, and comprehension abilities to enhance linguistic comprehension. It is noteworthy that the enhancement of one subcomponent can positively influence the enhancement of another subcomponent either directly or indirectly, indicating the interdependence of these aspects of reading development (Nation, 2019). The conceptual model of the SRM is shown in Figure 1.

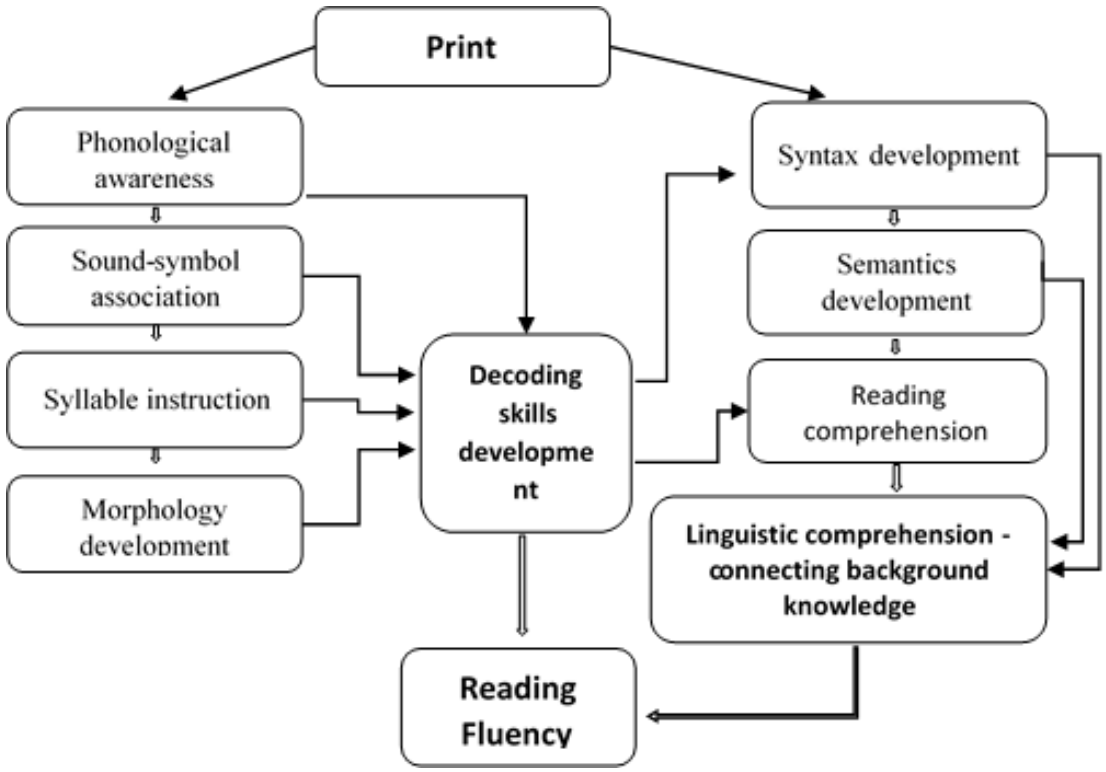

Figure 1: The conceptual model for SRM.

Aim of the study

This study aims to introduce a reading instruction framework grounded in the (SVR), specifically designed for Tamil language reading programs. The framework utilizes SVR's key components, focusing on decoding and linguistic comprehension.

Methodology

This study serves as a foundational exploration into the pedagogy of teaching reading to Tamil children encountering reading challenges. The research adheres to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) (Page et al., 2021) guidelines to structure this comprehensive review. The review's scope includes empirical studies on reading development as well as studies that look at reading development components entwined with the nuances of Tamil language within different English-language reading frameworks.

However, it's important to clarify that this review does not encompass aspects of language development such as print awareness and writing skills. The selection of empirical studies within the review is confined to the timeframe spanning from 2016 to 2023.

This timeframe ensures that the research encompasses contemporary findings and insights relevant to the teaching of reading to Tamil children, particularly those who encounter challenges in this domain. Figure 2 displays the inclusion and exclusion criteria for the review.

The researchers conducted an exhaustive search for scholarly materials encompassing full articles and book chapters. This search was carried out across reputable platforms, including Google Scholar, Research Gate, ScienceDirect, and Wiley's online library. To facilitate a comprehensive exploration of the subject matter, a set of keywords was employed, including "science of reading," "reading development," "reading frameworks," "Simple View of Reading," "Tamil reading development," and "Tamil language development." In total, this search yielded 136 empirical study articles within the field.

Following a meticulous screening process, specific criteria were applied to filter the results.

Consequently, duplicate articles (n=6), conference proceedings (n=4), articles that did not align with the study's objectives (n=12), outdated articles (n=14), articles lacking publication year details (n=2), and articles not written in English (n=8) were excluded from consideration. After rigorous evaluation, 90 articles were deemed suitable for inclusion in the review based on their relevance and applicability to the research topic. These selected articles were then obtained in their entirety, and their relevance to the study was further assessed by examining their titles, abstracts, and findings.

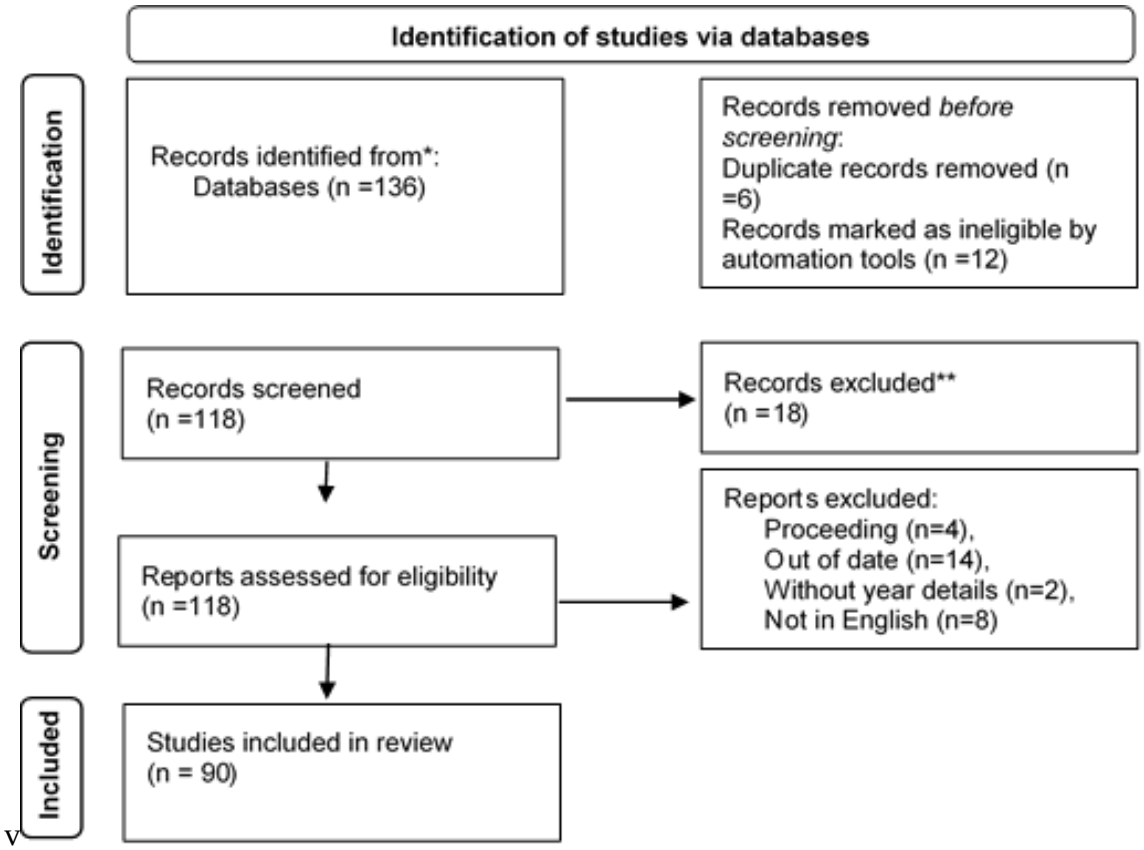

Figure 2: Flow chart of the inclusion and exclusion criteria. Adapted from the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) (Page et al., 2021).

The selected articles underwent an additional quality assessment, ensuring they were well-crafted, inclusive of proper citations, and indexed appropriately. Within this comprehensive review, a primary emphasis was placed on empirical articles that substantiated skills-based interventions and proposed essential skills about the science of reading.

Data extraction was meticulously conducted in adherence to the systematic review methodology. This approach aimed to furnish a comprehensive overview of the empirical

findings associated with skills-based interventions designed to enhance reading fluency. Throughout this process, the researchers upheld a commitment to neutral reporting, diligently avoiding any biased interpretations.

Findings

Phonological Awareness

Understanding the smallest, mostly meaningless units of sound in a language—that is, knowing that words have syllables, rhymes, and phonemes is known as phonological awareness, a metalinguistic skill connected to reading proficiency (Bishara, 2020). Tamil, which has several spoken varieties, is the only language that has phonological awareness. Since several early-acquired Tamil words end in closed syllables that can only be written using a phonemic Akshara, the early introduction of the phonemic consonant is helpful to initiate the reading of authentic texts. Tamil is a strongly diglossic language, and apparent differences among scholars in their account of the phonology of the language are primarily because of the form described (Nag & Narayanan, 2019). Tamil vowels are divided into two categories: short (Kuril) and long (Netil). There are five short vowels and seven long vowels, including two diphthongs. Three categories of consonants—hard, soft, and medium—have six consonants each, for a total of 18 consonants. The combination of vowels and consonants results in 216 compound characters, plus one additional special letter, aytham (∴). The standard Tamil alphabet has 247 characters (Thangarajan et al., 2009).

Young readers' development depends on phonological awareness. This is because phonological awareness enhances our understanding of how words in our language are printed (Kanapathy, 2019). Combining different words, learning the allophonic rules, word segmentation, the task of identifying words, and tracking the statistical distributions of sounds and syllables help children develop phonological awareness (Lidz & Perkins, 2018).

Studies on this topic indicate that phonological awareness, which also predicts the development of reading, has a significant impact on the early stages of reading development. The phonological awareness and naming speed are significant and unique predictors (Tibi & Kirby, 2018), later reading ability (Erskine et al., 2020), early reading at word level between the ages of 4 and 6 (Cunningham et al., 2021), enhanced spelling and word decoding abilities in first grade, and that this beneficial development extended to enhanced decoding abilities,

which enhanced reading comprehension in subsequent grades (Kjeldsen et al., 2019), and that when lesson plans provide ample opportunity for students to pair verbal labels with letter forms, it is advantageous to teach letter sounds before letter names (Roberts et al., 2019). Rapid naming was a significant predictor of automatic word recognition and comprehension, whereas phonological awareness was a significant predictor of decoding. However, relying too heavily on phonological awareness composites could mask task-specific issues that are hurting a child's reading ability (Mundy & Hannant, 2020).

Training in phonological awareness is important for improving reading abilities. The impact of the intervention on kids' letter knowledge and phonological awareness (Pfost et al., 2019), the considerably moderate relationship in Spanish-speaking children's reading tasks and phonological awareness (Villanueva-Villar et al., 2021), at the post-test on the overall composites of phonological processing, the intervention group showed a higher use of phonological awareness (Hodgins & Harrison, 2021), following the intervention, the children in the experimental condition made significantly more progress than the control group in terms of phonological awareness, alphabet knowledge, non-word reading, and spelling (Kelly et al., 2019), children with higher levels of education typically experience phonemic awareness development concurrent with syllabic awareness development (Cárnio et al., 2017), and the benefits of print knowledge and phonological awareness for the development of reading comprehension and decoding skills (Layes et al., 2020).

Research on phonological awareness that encompassed additional abilities demonstrated a noteworthy enhancement in the development of reading skills. Phonological awareness and early reading skills are enhanced by early phonological instruction (Wolff & Gustafsson, 2022), acquiring a lexicon and orthography, as well as developing reading comprehension, are all correlated with increasing phonological and morphological awareness (Bishara, 2020), reading comprehension is enhanced by language intervention programs that incorporate phonological, morphological, and semantic exercises (Lyster et al., 2021), and both synthetic and analytic phonics are useful techniques for teaching beginning and struggling readers how to read words (Henbest & Apel, 2017).

Sound-Symbol Association

The sound-symbol association called phoneme-grapheme mapping takes place next to

phonology learning. Phonological development helps children to identify sounds and associate them with letters and symbols. Learning letter-sound association, or letter knowledge, in alphabetic scripts is an essential first step toward learning to read and a reliable indicator of future reading abilities (Plewko et al., 2018). One of the most important aspects of early literacy development is learning the correspondences between letters and sounds (Sunde et al., 2019). Orthographic mapping is the process of associating pronunciations with the written letters that correspond to those pronunciations in memory in order to store written words for later instant recall (Miles & Ehri, 2019).

Labels are available for intra-symbol elements in Tamil, and the language has a rich vocabulary for sets of symbols in orthography (Nag & Narayanan, 2019). The Tamil script is an alpha-syllabary that is a part of the Brahmi script family (Joshi & McBride, 2019). The complicated orthographic mapping with sounds in Tamil is essential, which may help in paired association, backward recall, and word recognition, linking visual and sound elements, word identification, and multi-syllable reading.

Training is most effective when kids struggle with reading, according to empirical studies on sound-symbol associations. The orthographic and sound mapping instructions are effective, that help the children to efficient word reading. The group of letters to syllables increases more as a result of phonemic awareness intervention than the group of letters to phonemes (Vazeux et al., 2020), phonics teaching impacts positively word reading development (Flynn et al., 2021), word spelling and word and pseudo-word reading efficiency (Van Rijthoven et al., 2020), Chinese word reading was aided by paired associate learning (Liu et al., 2020), poor spelling, letter-sound knowledge, phonological output, and poor reading accuracy for regular words, non-words, and irregular words can all be effectively treated with phonics training (McArthur et al., 2018), and the majority of kids in the experiment and control groups were able to learn the new correspondences between letters and sounds in speech in the allocated amount of time (Law et al., 2018).

Research on the relationship between sound and symbol results in the development of decoding, which foreshadows the eventual development of reading. The sound-symbol paradigm proved to be a significant predictor of subsequent reading success in a language where spelling-to-sound relationships are statistically stable (Horbach et al., 2018), students' reading progress is aided by remediation sessions that concentrate on written word

identification (Gallet et al., 2020), when it came to word reading, spelling, decoding, and grapheme-phoneme correspondences, the kids who got mixed instruction performed better (Vadasy & Sanders, 2020), and grapheme-phoneme decoding training was far more successful in helping novices read consonant-vowel syllables, multisyllabic words, and pseudo words than both whole-syllable decoding and individual grapheme-phoneme instruction (Sargiani et al., 2021).

Syllable Instruction

The process of developing reading skills includes instruction in spelling and orthography. Spelling is significant because of its role in successful reading and writing, and orthographic knowledge plays a significant part in both reading and spelling (International Literacy Association, 2019). Knowledge of spelling and orthography serves as the fundamental basis for the quick and effective encoding and decoding of words, giving people more time to reflect and plan as they write and read (Templeton, 2020). Strong mental representations of words—including their spellings, meanings, and pronunciations—are essential for efficient word identification. Orthographic learning is the process through which individual word spellings are learned (Ginestet et al., 2020).

The Tamil language has difficult characteristics like agglutination and morpho-phonology. In Tamil, there is a special feature called a prosodic syllable (asai). The prosodic syllabic representation in the Tamil language consists of the combinations of short vowels, long vowels, and consonants. A syllable is a larger unit than a phone, so it addresses the severe contextual variations between phones within it (Thangarajan et al., 2009). Since mastery of the Tamil akshara system is required at multiple levels and learning the large number of symbols in Tamil is expected to take some time, it is an especially interesting system for studying spelling development (Nag & Narayanan, 2019). When a sequence of vocoids follows an onset consonant, the consonant and the first vocoid are represented by a single letter, and the second vocoid, as in words, is denoted by a separate letter in the Tamil spelling system. In other words, the onset of syllables and the subsequent vowel are indicated by a single letter, regardless of the length of the vowel (Srinivas & Ganesh Kumar, 2018).

Syllable teaching and the development of reading fluency were found to be closely related in empirical studies based on literacy development. Phonological awareness and letter naming

were important indicators of spelling knowledge (Paige et al., 2018), orthographic knowledge is believed to support both literacy skills and to have a strong developmental correlation with reading and spelling abilities (Gangl et al., 2018), spelling was more frequently and earlier predicted by orthographic knowledge than by reading (Querido et al., 2021), previous reading indicated the spelling that would follow (Georgiou et al., 2019), beyond tests of phonological awareness, letter-sound knowledge, and other skills prior to Grade 1, post-kindergarten spelling was typically a significant predictor of word reading ability in subsequent grades (Treiman, et al., 2019), and the primary source of decoding's contribution to reading comprehension is accurate word reading (Ho et al., 2017).

The orthographic and sound mapping intervention has a positive effect on how well children read. Enhancing the word recognition abilities of struggling readers through syllable-based reading intervention is a promising strategy (Müller et al., 2020), the dyslexic children's intervention resulted in a decrease in all error types (Van Rijthoven et al., 2021), reducing moments of frustration and increasing the child's motivation to read as they get closer to proficient reading in terms of reading performance metrics like speed and comprehension (Lunte & Boll, 2020), orthographic learning predicted word reading directly (Mimeau et al., 2018), orthographic similarity helped adults and kids read silent sentences without preprocessing (Milledge et al., 2022), and the development of language reading was contingent upon the attainment of a superior orthographic lexicon and print-to-sound mapping (Siok & Tan, 2022). Additionally, Galuschka, et al.'s (2020) comprehensive review and meta-analysis found that spelling performance was significantly impacted by treatment approaches that included phonics, orthographic, and morphological instruction.

Morphological Awareness

The smallest units of meaning from which new words are formed in any given language are called morphemes (Deacon et al., 2019). The basic building blocks that encode meaning are morphemes, which are the smallest units of meaning in a language. Morphological skills allow for the efficient use of morphemes in both oral and written language. Morphological awareness affects the indirect pathways through which morphological analysis and decoding occur during reading to support children's comprehension of what they read (Levesque et al., 2020).

Tamil morphology is quite different from English which includes several thousands of the word stems. Tamil stands out due to its morphological richness, with its agglutinating nature making it especially intriguing (Sarma, 2014). In Tamil, nouns and verbs exhibit simplicity or complexity, varying according to their meanings. Adjectives and adverbs can be formed through derivation, and the language features numerous instances of compounding (Nag & Narayanan, 2019).

The word forms in Tamil are long and consist of two to as many eight or nine or more (Sakkan, 2017). Tamil possesses a wealth of morphological intricacies and follows a relatively flexible word order. It adopts an (Subject) Object-Verb (S-OV) structure with a preference for left-branching constructions (Krishnamurthy & Sarveswaran, 2021). Tamil is characterized by its morphological richness and utilizes an agglutinative grammar structure. This involves the use of suffixes to indicate various grammatical features such as noun class, number, case, and verb tense. The language exhibits flexibility in word order, though it typically leans towards a subject–object–verb (SOV) arrangement (Winskel, 2020).

Children's language skills in this language are nurtured through the development of morphological awareness, which plays a crucial role in predicting their proficiency in reading, spelling, and reading comprehension. The longitudinal predictors of reading and spelling abilities from preschool to the end of the first grade include both morphological and phonological awareness skills (Diamanti et al., 2017), morphology plays distinctive roles in shaping language and influencing literacy outcomes, exhibiting stronger connections to specific aspects of literacy (Goodwin et al., 2020), the language skills acquired during preschool not only have direct impacts but also exert long-range effects, both directly and indirectly, on the development of reading comprehension (Lyster et al., 2020), in German, spelling proficiency is a more accurate predictor than reading fluency (Görgen et al., 2021), additionally, it serves as a significant predictor for both reading and spelling, especially when dealing with multisyllabic words (Enderby et al., 2021).

The development of morphology is greatly aided by the intervention focusing on sight words, high-frequency words, and multi-syllabic words. Enhancing morphological awareness has shown positive outcomes, including improved reading fluency and accuracy, and a notable shift in reading level according to national norms (Vaknin-Nusbaum, 2021). This improvement holds promise as an effective intervention method for children facing reading

difficulties (Georgiou et al., 2020). Additionally, research indicates a correlation between reading comprehension and derivational morphology, with the distributional aspect showing the strongest correlation (Amirjalili & Jabbari, 2018). Furthermore, the teaching of morphological skills has been proven to significantly enhance overall reading proficiency (Rothou & Padeliadu, 2019).

Furthermore, it's important to have a strong sight vocabulary. Sight words. Being able to read high-frequency words with automaticity provides a significant boost in early reading (Anderson & Scanlon, 2020), the correlation between morphological fluency and morphological awareness for pseudo-words was observed across all grades, showing a connection with both reading and spelling skills (Haase & Steinbrink, 2022). Additionally, there is an emphasis on promoting morphological awareness and prosodic fluency to encourage more profound and meaningful interactions between students and texts (Bart-Addison & Griffin, 2021).

Syntactic Development

Syntax refers to the set of principles governing the arrangement and role of words in a sentence to convey meaning. Learning syntax facilitates the transformation of short, disjointed sentences into longer, grammatically correct ones (Spear-Swerling, 2018). These rules encompass the sequence and function of words, as well as the necessary punctuation for comprehensible written language (Ray, 2020). As a component of grammar, syntax in Tamil education should prioritize functional grammar over traditional structural mastery, emphasizing meaning and usage rather than strict form. This approach can help mitigate learning difficulties (Shakunthala, 2017). Understanding Tamil grammar involves knowledge of verb forms, agreement inflection, argument structure (including case relations), and associated auxiliary elements expressing tense, aspects, attitudes, reflexivity, voice, moods, negations, embedding, etc. (Sarma, 2014).

Tamil-speaking children may exhibit a broader acceptance of various relational structures that can be associated with a verb. However, their comprehension appears more explicit when an argument is expressed, particularly with verbs accompanied by overtly expressed arguments, unlike bare verbs. The learning task for Tamil-speaking children differs fundamentally from that of English-speaking children due to the distinct linguistic contexts in

which adults use verbs, potentially directing attention to different aspects of a scene (Sethuraman et al., 2011).

Tamil verbs can serve as either major or auxiliary, existing in finite and non-finite forms similar to English. Notably, Tamil finite verbs convey more grammatical information compared to their English counterparts, marking features such as number, person, gender, case, tense, mood, etc. (Thangarasu & Inbarani, 2016). The fundamental word order in Tamil is Subject-Object-Verb (S-O-V), offering a pragmatically neutral interpretation. However, due to the scrambling of phrases to the left and right of the verb, alternative surface orders like Object-Subject-Verb (O-S-V), Subject-Verb-Object (S-V-O), and Object-Verb-Subject (O-V-S) are also feasible (Lakshmanan, 2021).

The instruction of syntactic structures plays a crucial role in enhancing children's reading comprehension. The impact of syntax on reading comprehension is particularly pronounced when oral vocabulary levels are low (Rodríguez-Ortiz et al., 2021). Children possessing adequate syntactic awareness demonstrate greater competence in elaborating written narratives, showcasing proficiency in orthographic aspects and the development of textual coherence (Soares et al., 2020). Syntactic knowledge contributes indirectly to reading comprehension through activities such as inference making, comprehension monitoring, and word reading (Zhao et al., 2021). In Grade 3, syntactic awareness serves as a predictor for gains in reading comprehension between Grades 3 and 4 (Deacon & Kieffer, 2018). Additionally, both syntactic awareness and morphological awareness are skills that show a correlation with reading comprehension (Simpson et al., 2019).

Understanding syntax enhances reading and significantly affects reading comprehension. The utilization of visual-syntactic text formatting, coupled with targeted guidance on aligning such formatting with sentence structures, has been identified as an effective approach to enhance reading comprehension (Gao et al., 2021). the capacity to chunk information shows an increase in narrative parameters, and this tendency grows with age, indicating a gradual improvement in the observed performance of narrative tasks (Venkatraman & Thiruvalluvan, 2021), syntactic awareness correlate with reading comprehension, and it was confirmed that syntactic awareness affects reading comprehension (Cho & Kim, 2019), furthermore, it is worth noting that syntactic awareness exhibited the most robust correlation with reading comprehension (Shen & Park's, 2018).

Semantic Development

The term semantics denotes both a specific component of language and the linguistic discipline that studies this component. Semantics also deals with questions such as the nature of linguistic meaning, the semantic properties of linguistic units, and the types of relations between those units. Semantics is conceptualized as a structured set of rules linking a representation of meaning to a representation of the sentence, as per Mel'Čuk et al. (2020). The exploration and elaboration of meanings for topical nouns or verbs can be achieved through semantic feature mapping, with semantic features representing specific component meanings associated with words (Haynes et al., 2019). The pre-existing semantic associations occur in the brain during the learning reading process (Healey & Uitvlugt, 2019). The distinction between good and poor comprehenders extends beyond differences in lexical semantic knowledge to encompass variations in lexical-semantic processing (Bender de Sousa et al., 2020). Word reading can be achieved through graphic-phonological processing and lexico-semantic processing (Mathur et al., 2020).

Tamil classical literature is rich in figurative and literal meanings that convey moral, philosophical, and ethical principles. Tamil verbs exhibit a predictable and unpredictable expansion of their range of meanings or usage, as highlighted by Sankaravelayuthan (2021). Notably, verbs are fewer in number than nouns in Tamil, yet they are more polysemous. The meanings of verbs can vary depending on the types of noun arguments with which they co-occur, while the meanings of nouns tend to be more stable across different verbs (Rajendran, 2006).

In Tamil, numerous nouns can be considered as the epicene form, devoid of gender markings, of gender-marked nouns (Sankaralingam et al., 2017). The vocabulary of Tamil is initially categorized into four domains: entities, which encompass referential meanings of concrete concepts; events, primarily composed of verbs; abstracts, consisting predominantly of adjectives and adverbs in addition to abstract nouns; and relations, comprising functional words such as postpositions, connectives, and coordinators. Examining verbs in terms of semantic relations can offer insights into understanding their syntactic behavior (Rajendran et al., 2020).

The inclusion of semantically transparent radicals has been found to enhance children's

orthographic recognition. The amalgamation of semantic information with phonological and orthographic details contributes to an improved recognition of words. In tasks requiring recognition, children tend to depend more on meaningful information rather than solely on phonological cues (Li et al., 2019). Understanding both the meaning and phonological form of words not only aids in the formation of orthographic representations but also enhances children's overall reading performance (Álvarez-Cañizo et al., 2018).

The teaching intervention focused on word reading and learning complex abstracts to increase reading fluency and develop semantic knowledge. The development of verb vocabulary is influenced by both the syntactic and semantic properties of verbs, and this influence shows variation based on age and language ability (Horvath et al., 2021). Transparent semantic radicals have been observed to ease the process of orthographic and vocabulary learning (Li et al., 2021). In interventions, improvements in children's word-finding abilities were noted, with statistically significant changes occurring specifically during treatment phases and not during baseline periods (Best et al., 2021). Furthermore, the positive impact of semantic knowledge extends to working memory recognition performance (Artuso et al., 2019).

The early comprehension, production, and learning of language are influenced by lexical–semantic relations (Wojcik, 2017). The initial processing and learning of novel words are distinctly shaped by orthographic, semantic, and contextual factors (Yi et al., 2022). Semantic learning is a direct predictor of reading comprehension (Mimeau et al., 2018). For all children, phonological awareness and semantic knowledge emerge as robust predictors of reading development (Jasińska & Petitto, 2017). Additionally, word semantic knowledge has a positive impact on content inference, receptive vocabulary, word recognition, and the attainment of reading mastery goals (Dong et al., 2020).

Reading Comprehension

Reading comprehension is not only essential for understanding specific texts but also plays a crucial role in broader learning and education (Oakhill et al., 2019). It encompasses the transformation of written text into thoughts or meaning, constituting a simultaneous extraction and construction of meaning through interaction with the text (Kong, 2019). A complex process, reading comprehension involves a range of cognitive and linguistic skills (Nation, 2019). It stems from the development of decoding and understanding the written

form of a language, with the progress in reading development significantly influenced by the typological and orthographical features of a language (Nesan et al., 2019). Understanding written passages requires the development of language comprehension abilities, which are particularly important in the written modality (Caplan et al., 2016).

The primary determinants of reading comprehension in children are background knowledge and their decoding abilities. To enhance comprehension skills, it is essential to place early and sustained emphasis on developing background knowledge, expanding vocabulary, fostering inference abilities, and honing comprehension monitoring skills throughout the developmental process (Elleman & Oslund, 2019), background knowledge impacts differentially on stronger and weaker readers (Smith et al., 2021), the significance of background knowledge, vocabulary, word reading, strategies, and inferencing on comprehension is evident through both direct and indirect effects, maintaining significance across various grade levels and treatment conditions (Ahmed et al., 2021).

Scientific research has identified numerous individual and combined instructional strategies that contribute to the development of reading comprehension. Accurate reading of words is emphasized because it forms a foundation for building an accurate understanding of the text (Duke et al., 2021). Instructional practices that involve modeling, guided practice opportunities, and corrective feedback have demonstrated significant impacts on improving reading comprehension performance (Joseph et al., 2021). Reading fluency, reading accuracy, and oral comprehension skills have a direct influence on reading comprehension (Angelelli et al., 2021). Cognitive flexibility interventions that integrate graphophonological and semantic aspects impact reading comprehension (Cartwright et al., 2020). Early morphological and vocabulary knowledge directly predict reading comprehension in children (Verhoeven et al., 2019). Additionally, word reading and receptive vocabulary stand out as significant and unique predictors of English reading comprehension (Al Janaideh et al., 2020).

Comprehension is also improved by teaching intervention through questioning, sequencing, and drawing inferences. Inference-making becomes increasingly crucial as a child grows, significantly impacting language and social development (Aishwarya & Deborah, 2020). Metacognitive and inferential skills, particularly effective in fostering both improved comprehension and meta-comprehension, play a vital role in cognitive development (Soto et

al., 2019). Sequencing is identified as a pivotal skill for comprehending narrative texts (Gouldthorp et al., 2017). Asking questions has been found to enhance critical thinking and contribute to the growth of reading comprehension in elementary students (Hale & Kim, 2020).

Various strategies, including the use of graphic organizers, questioning, story mapping, peer-assisted strategies, think aloud, discussing the text with students, and employing different grouping methods, have been shown to improve reading comprehension (Almutairi, 2018). Contextual Teaching and Learning have been associated with increased student motivation and improved reading comprehension (Haerazi et al., 2019). Additionally, students undergoing specific treatments maintained higher levels of reading comprehension (Wanzek et al., 2019). Implementing evidence-based literacy instruction across various content areas has proven to be an effective approach for improving reading comprehension (Gutierrez de Blume et al., 2020). The interplay between language and knowledge can synergistically impact linguistic comprehension, ultimately contributing to improved reading comprehension (Cabell & Hwang, 2020). Furthermore, individuals struggling with comprehension can successfully engage with challenging texts when accompanied by appropriate instructional support (Lupo et al., 2019).

Conclusion and Limitations

In conclusion, the attainment of successful reading fluency is intricately tied to linguistic and decoding abilities, with later reading fluency being shaped by the trajectory of these foundational skills. Our findings highlight the pivotal role of phonological awareness development, which enables children to discern various sound patterns, ultimately connecting them to written symbols. Once this milestone is achieved, children embark on a journey of word spelling proficiency. Additionally, the cultivation of word morphology understanding equips them with the knowledge of word origins and formation. Furthermore, our research underscores the importance of syntactic knowledge in constructing coherent sentences and comprehending the grammatical nuances of language. This linguistic competence is further complemented by semantic knowledge, which enables children to grasp the meanings of words within the context of a sentence. Moreover, we emphasize the significance of comprehension exercises and activities that leverage background knowledge to enhance reading comprehension skills. These practices serve as valuable tools for improving overall

reading proficiency.

Based on these findings, it is clear that a teaching intervention grounded in the SRM framework holds promise for enhancing the reading fluency of Tamil children, irrespective of whether they face initial reading difficulties. This framework provides a structured and effective approach to nurturing the essential skills that underpin fluent reading, paving the way for improved literacy outcomes.

Based on our extensive review, we recommend the adoption of a teaching intervention grounded in the Smart Reading Module (SRM) for Tamil children facing reading challenges. While our review predominantly revolves around SRM-based strategies, it's crucial to underscore our primary focus on specific reading skills harmonized with the Tamil language. Moreover, our analysis primarily focuses on skills development that aligns with the Simple View of Reading (SVR) theory.

It's imperative to recognize that our review has deliberately focused on specific reading components supported by empirical research within the context of Tamil reading development, primarily emphasizing SVR-based decoding and linguistic growth. We strongly encourage future investigations to encompass a broader spectrum of reading development components, potentially offering invaluable support to Tamil children grappling with reading difficulties. In essence, our recommendation centers on the implementation of SRM-based teaching interventions thoughtfully tailored to meet the unique needs of Tamil children experiencing reading challenges. We acknowledge the untapped potential of exploring a wider array of reading development facets, which could significantly contribute to enhancing the reading proficiency of these children in the future.

The insights derived from this scoping review carry profound significance, serving as an invaluable resource for a diverse range of stakeholders. Educators, researchers, policymakers, and all individuals deeply invested in elevating the reading competence of Tamil readers will find this compilation of findings an indispensable guide and reference point.

Implications and Future Research

This study, offering a comprehensive review of Tamil reading development, illuminates both

its present implications and future research avenues. This underscores the dynamic nature of the field, emphasizing the need for continuous exploration and innovation to bolster Tamil children's reading skills. The study delves into the challenges faced by Tamil-speaking children and proposes a Smart Reading Module-based teaching intervention, enriching the field of reading development for Tamil children with difficulties.

Educators, especially in Tamil-speaking regions, can extract valuable insights from this research, emphasizing the importance of tailored instruction in Tamil. Integrating the SRM-based model into their teaching practices can enhance reading fluency for struggling students. Policymakers in Tamil-speaking areas can draw from this study to craft language-specific reading policies and curriculum frameworks that align with Tamil's unique linguistic characteristics.

Furthermore, this research underscores the significance of preserving and promoting the Tamil language in education. By aligning reading frameworks with its distinctive features, it contributes to safeguarding Tamil as a rich and distinct linguistic heritage. The proposed Smart Reading Module-based teaching intervention model can be explored and implemented in schools, particularly for children encountering reading challenges in Tamil. It offers a practical, research-backed approach to tackle these issues effectively.

Future research should delve into comparative studies between Tamil and languages with complex orthographic systems, revealing insights to shape effective interventions. Multilingual regions like Tamil Nadu should be studied to understand how multilingualism influences reading development, necessitating tailored interventions. Longitudinal studies can trace the long-term impact of SRM interventions, from early childhood to adolescence, enhancing comprehension and fluency.

The influence of cultural and socioeconomic factors on Tamil-speaking children's reading proficiency requires investigation, enriching our understanding. Leveraging technology, research can explore digital tools and resources that align with Tamil's unique characteristics, improving reading development. Rigorous assessments via large-scale empirical studies are needed to validate the Smart Reading Module-based teaching intervention's efficacy in enhancing reading fluency and comprehension.

Finally, research should explore the adaptability of this model to languages with similar linguistic features, broadening its impact. This article lays the foundation for further research, emphasizing the importance of language-specific approaches and fostering continued innovation in supporting Tamil-speaking children's reading skills, particularly those facing difficulties.

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