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READING FLUENCY TERMINOLOGY: DEFINITIONS AND CLASSIFICATION

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Abstract

This study defines and classifies the terms used in relation to fluent reading. Using a compilation method, studies conducted in this field from the 1960s to the present were examined, and the terms produced in this area were identified. The identified terms were classified according to the fundamental characteristics of fluent reading accuracy, fluency, and prosodic features and examples were provided. Thus, to prevent misconceptions among those working in this field and to enable them to correctly define fluent reading problems, terms were classified and defined according to their subject area. Fluent reading errors were reclassified, defined, and explained with examples in four basic dimensions: structural and formal, prosodic and rhythmic, cognitive and analytical, and physical and behavioral. Structural and formal reading errors include skipping, adding, changing, correcting, reversing, repeating, and going back; prosodic and rhythmic errors include pausing, spelling, monotonous reading, incorrect melody and emphasis, and linking; cognitive and analytical errors include incorrect pronunciation, sound and syllable mixing, misreading, and word invention; Physical and behavioral errors have been classified as physical tracking, head and eye movements, sitting angle and distance, lip movement or silent reading, body rocking, and inability to control breath. Thus, the terminology produced in the field of fluent reading has been systematically reorganized, eliminating conceptual fragmentation in the literature. A common terminology has been proposed for teachers and specialists working in this field. This can facilitate more accurate diagnosis and assessment of fluent reading problems and the determination of appropriate intervention techniques.

Keywords: Prosody, reading errors, reading fluency, reading fluency terminology.

INTRODUCTION

Reading is not merely the act of decoding written symbols; rather, it is a complex and interactive process in which readers construct meaning from a text by drawing on their

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prior knowledge and engaging with the author's intended message. One of the fundamental components of this process is reading fluency. Reading fluency can be defined as the ability to recognize words accurately and effortlessly while simultaneously constructing meaning from the text. It consists of three essential components. The first is accuracy, which involves recognizing and pronouncing words correctly without errors. The second is automaticity, referring to the rapid and effortless recognition of words with minimal cognitive effort, allowing words to be read smoothly and continuously. The third component is prosody, which refers to reading with appropriate intonation, stress, rhythm, and pausing in accordance with the meaning, emotion, and structure of the text.

According to the theory of automatic information processing proposed by LaBerge and Samuels (1974), fluent readers automatize the processes of word recognition and decoding, enabling them to devote most of their cognitive resources to constructing meaning rather than merely decoding words. From this perspective, reading fluency is not only a mechanical skill but also a prerequisite for effective reading comprehension, meaningful learning, and efficient access to information.

The importance of reading fluency extends beyond academic achievement, as it directly influences readers' psychological and social development. Students with well-developed reading fluency tend to demonstrate higher reading motivation and stronger reading self-efficacy, whereas those who experience difficulties in reading fluency are more likely to develop feelings of failure, reading anxiety, and reduced self-confidence. Previous research has shown that reading fluency contributes positively to reading motivation and comprehension, enhances overall academic achievement, and serves as a strong predictor of success across different subject areas. Failure to develop this skill during the first years of primary education may result in increasing academic difficulties in later years and may also hinder individuals' social independence and participation.

Reading Fluency

A chronological review of the literature on reading fluency reveals that one of the earliest and most influential definitions of the concept was proposed by LaBerge and Samuels (1974). According to these authors, the foundations of reading fluency are based on the Theory of Automatic Information Processing. Within this framework, fluency is achieved when word recognition and decoding processes become automatic, allowing readers to allocate their limited cognitive resources to comprehension rather than to word identification and decoding.

Zutell and Rasinski (1991) expanded this perspective by incorporating expressive and structural aspects of oral reading into the concept of fluency. They defined reading fluency as the ability to read with appropriate phrasing, stress, and intonation while recognizing words effortlessly and conveying the author's intended meaning and emotions through oral reading. Subsequently, the National Reading Panel (2000) proposed a widely accepted definition of reading fluency, describing it as the ability to read text accurately, quickly, and with appropriate expression.

Similarly, Samuels (2006) defined reading fluency as a holistic oral reading process encompassing three essential components: accuracy, reading rate, and prosody (i.e., appropriate stress and intonation). According to Akyol (2006), fluent reading is characterized by oral reading that resembles natural speech, with appropriate attention to punctuation, stress, and intonation, and without unnecessary pauses or regressions. Pikulski and Chard (2005) described reading fluency as the ability to recognize words efficiently and effectively, thereby enabling readers to construct meaning from the text.

Based on these definitions, reading fluency can be broadly defined as the ability to read accurately, automatically, continuously, and with appropriate prosody, thereby facilitating effective comprehension and meaningful interpretation of written texts.

The Importance of Reading Fluency

Reading fluency serves as a crucial bridge between word recognition and reading comprehension. According to the Theory of Automatic Information Processing, fluent readers automatize the processes of word recognition and decoding, enabling them to devote their cognitive resources to constructing meaning rather than to decoding individual words. In contrast, readers with poor reading fluency expend much of their cognitive capacity on accurate word decoding, leaving fewer resources available for comprehension and meaning construction (Black et al., 2007).

The structural equation model developed by Yıldız (2013) demonstrated that reading motivation, reading fluency, and reading comprehension together accounted for 61% of the variance in fifth-grade students' academic achievement. Similarly, Paige (2011) reported that the same model explained 83% of the academic achievement of sixth-grade students and 89% of that of seventh-grade students with reading difficulties. These findings highlight the significant contribution of reading-related variables to students' academic success. Students with well-developed reading fluency demonstrate higher levels of achievement not only in language arts but also in other academic disciplines, such as mathematics and science (Akyol, 2008).

Reading fluency also has a direct influence on students' self-perception and motivation. Individuals who read fluently are more likely to enjoy the reading process and develop lifelong reading habits. In contrast, for students who experience difficulties with reading fluency, reading may become a frustrating and stressful experience, leading to reading anxiety, feelings of failure, and diminished self-confidence (Sidekli, 2010).

Reading is one of the fundamental life skills that enables individuals to access information, communicate effectively with others, and participate actively in society (Güneş, 2012). Failure to develop adequate reading fluency during the early years of primary education may negatively affect not only students' academic achievement but also their social relationships and their ability to function independently in daily life (Yıldız, 2013). Therefore, reading fluency should be regarded not only as a prerequisite for academic success but also as a critical competency for professional, cultural, and social participation. According to Uzunkol (2013), reading fluency extends beyond reading quickly; it represents a meaningful communication process and is one of the most important indicators of effective learning and quality education.

A review of the literature reveals that many of the terms related to reading fluency have been used inconsistently. Reading errors such as omissions, insertions, repetitions, and reversals are often defined differently and classified under different categories across studies. The primary purpose of this study is to classify the terminology used in the field of reading fluency according to the relevant conceptual domains in order to reduce conceptual ambiguity and promote consistent terminology.

Although reading fluency has generally been conceptualized through accuracy, automaticity, and prosody, the terminology used to describe difficulties in these dimensions has not developed within a similarly unified framework. Terms such as omission, insertion, repetition, reversal, mispronunciation, hesitation, word-by-word reading, finger tracking, and prosodic error have been defined and classified differently across studies. More recent research has further broadened this field by drawing attention to process-related, behavioral, semantic, and comprehension-related aspects of reading performance (Avşar

Tuncay, 2021; Şahin & Melanloğlu, 2021; Erbasan & Erbasan, 2022; İpek & Dölek, 2023; Garip & Karadağ, 2024). This diversity demonstrates that reading fluency difficulties cannot be adequately represented through structural oral reading errors alone. A classification that brings together structural, prosodic, cognitive, and behavioral dimensions may therefore contribute to greater conceptual consistency in both research and educational practice. Accordingly, the aim of the present study is to identify the terminology associated with reading fluency and related difficulties in the literature, examine how these terms have developed over time, and reorganize them within a comprehensive conceptual framework. Through this classification, the study seeks to reduce terminological ambiguity, support more accurate identification of reading fluency difficulties, and provide a clearer basis for selecting appropriate assessment and instructional interventions.

METHOD

This study was designed as a qualitative literature review focusing on the terminology developed to describe reading fluency and related difficulties. The review approach was selected because the primary purpose of the study was not to test the effectiveness of a particular instructional intervention or to collect data from a participant group, but to examine how reading fluency and related difficulties have been conceptualized, defined, and classified in the relevant literature over time. Accordingly, studies addressing reading fluency, oral reading errors, reading difficulties, word recognition, prosody, decoding, reading behavior, and the assessment of oral reading performance were examined within a document-based analytical framework.

The scope of the review covers studies published from the 1960s to the present. This period was selected because some of the earliest systematic classifications of oral reading errors emerged during the 1960s and 1970s, while subsequent studies gradually broadened the conceptualization of reading fluency to include prosodic, cognitive, and behavioral dimensions in addition to structural decoding accuracy. The reviewed documents included journal articles, books, book chapters, graduate theses, assessment instruments, reports, and other scholarly publications directly related to reading fluency and reading error terminology. Studies were included when they provided an explicit definition, classification, assessment category, or conceptual explanation of reading fluency terminology or related difficulties. Publications that addressed reading achievement or comprehension without contributing directly to the definition or classification of reading fluency terminology were not treated as primary sources for the classification.

The analysis was conducted in several interconnected stages. First, the terminology reported in the reviewed literature was identified chronologically in order to trace changes in the conceptualization of reading fluency and related difficulties. Particular attention was given to recurring terms such as omission, insertion, substitution, repetition, reversal, mispronunciation, pausing, word-by-word reading, prosodic difficulty, finger tracking, and other reading-related behaviors. Second, terms that referred to similar reading processes were compared across studies in order to determine similarities and differences in their definitions and uses. This comparison made it possible to identify cases in which different terms described similar reading behaviors as well as cases in which the same term was used with different meanings.

In the final stage, the identified terminology was reorganized according to the primary reading process or performance dimension with which each term was conceptually associated, rather than solely according to its observable secondary effects. Through comparative document analysis and author consensus, the terms were organized into four complementary dimensions: structural and formal reading errors, prosodic and rhythmic reading errors, cognitive and decoding-related reading difficulties, and physical and

behavioral indicators associated with reading fluency. The classification process considered both the observable characteristics of each phenomenon and its conceptual relationship with accuracy, automaticity, prosody, decoding, and reading behavior. The two authors examined the proposed categories jointly, discussed cases in which a term could potentially be associated with more than one dimension, and reached consensus on its primary placement and definition. The resulting framework was then compared with earlier classifications in the literature to maintain conceptual continuity while addressing terminological overlap and fragmentation across previous studies.

Studies on Reading Fluency and the Terminology Developed in The Literature

The earliest concepts and classifications related to reading fluency errors emerged between 1960 and 1980. In 1965, Goodman identified six types of oral reading errors: substitutions, insertions, omissions, repetitions, self-corrections, and reversals. Liberman and Shankweiler (1971) focused primarily on reversal errors observed in reading materials. In 1978, Salvia and Ysseldyke described omissions, insertions, repetitions, reversals, misreadings, and pronunciation errors, and introduced the two-second rule for identifying pauses during oral reading. Jenkins and Larson (1979) also examined oral reading errors, emphasizing the identification and correction of omissions, misreadings, pronunciation errors, repetitions, and pauses.

Between 1981 and 1999, increasing attention was given to prosody and to the theoretical foundations of reading fluency. Arnold (1982) classified reading errors using a listening-based approach. Frith (1986) proposed a developmental model of reading acquisition and provided theoretical explanations for the causes of reading errors, including the inappropriate use of alphabetic cues. In 1986, May developed oral reading rating scales for assessing reading errors, which later served as the basis for the Informal Reading Inventory (IRI).

In studies published between 1987 and 1991, Dowhower focused on prosodic aspects of reading fluency, identifying word-by-word reading, monotonic reading, and inappropriate pausing as indicators of fluency difficulties. Harris and Sipay (1990) examined pronunciation errors and pausing behavior in relation to word recognition ability. Zutell and Rasinski (1991) developed the Multidimensional Fluency Scale to evaluate prosodic features of oral reading. In Türkiye, Akyol (1994–1997) conducted one of the earliest studies on reading fluency, classifying reading difficulties as letter or word reversals, impulsive reading without adequate processing, and word recognition problems.

Between 2000 and 2010, comprehensive studies conducted in Türkiye made important contributions to the classification of reading fluency errors. Öz (2001) identified common reading errors among children with poor word recognition skills, including mispronunciations, pauses, regressions, repetitions, and omissions. In studies published between 2003 and 2005, Akyol classified reading errors into four main categories: reversals, omissions (at the letter, syllable, or word level), insertions, and repetitions. Akyol and Temur (2006) categorized reading errors as self-corrections, repetitions, insertions, segmented omission reading, and omissions. In the same year, Çaycı and Demir (2006) analyzed omission and insertion errors occurring at the word, syllable, and letter levels.

Yılmaz (2006, 2008) classified oral reading errors into seven major categories: omissions (intentional and unintentional), insertions, repetitions, mispronunciations, reversals, pauses, and misreadings. Sidekli (2010) proposed a broader classification consisting of nine categories: stress and intonation, reading duration, unnecessary pauses and regressions, loss of place while reading, punctuation, voice quality, attention, and breath control. Similarly, Dağ (2010) classified reading errors as omissions (intentional and unintentional),

insertions, repetitions, reversals (classified into four subtypes), mispronunciations, and misreadings.

According to Baydık (2012), the Text Reading Skills Assessment Form classifies reading errors into two main categories: word-level errors and structural/phonological errors. Baydık, Ergül, and Bahap Kudret (2012) grouped reading errors according to the core components of reading fluency, namely prosody, accuracy, and automaticity (reading rate). Duran and Sezgin (2012) examined oral reading errors under six categories: omissions, insertions, misreadings, repetitions, self-corrections, and pauses. According to Seçkin (2015), reading errors consist of omissions (at the letter or syllable level), insertions, substitutions (including positional substitutions, letter substitutions, and reversals), and word endings supplied by guessing. Yamaç (2015) classified reading errors in terms of stress and intonation, finger tracking, insertions, omissions, decoding errors, subvocalization, and self-correction behaviors.

Since 2016, classifications of reading fluency errors have increasingly adopted a holistic perspective. Bilge and Sağır (2017) divided reading errors into two overarching themes: Oral Reading Errors (e.g., insertions, omissions, and repetitions) and Reading Behavior Errors (e.g., head movement, reading distance, and finger tracking). Kuruoğlu and Şen (2018) proposed an original classification by distinguishing between Error Types, referring to the location of the error within the word (letter, suffix, or whole word), and Error Patterns, referring to the nature of the error (omission, insertion, or substitution). Şahin and Melanlıoğlu (2021) categorized reading errors into word-level errors, syllable- and letter-level errors, process and tracking errors, and semantic errors. Avşar Tuncay (2021) identified seven categories of reading fluency errors: substitutions, insertions, omissions, mispronunciations, regressions, pauses, and misreadings. Erbasan (2022) classified reading errors as misreadings, omissions, insertions, repetitions, syllabification, finger tracking, and prosodic errors. Finally, İpek and Dölek (2023) developed the Reading Error Identification Form (REIF), which identifies ten types of reading errors: omissions, insertions, repetitions, reversals, mispronunciations, sound substitutions, syllabification, pauses, substitutions with different words, and punctuation errors.

Table 1. Terminology Related to Reading Fluency Reported in the Literature

Researcher(s)	Year	Reported Reading Fluency Terms/Characteristics
Goodman	1965	Substitutions, insertions, omissions, repetitions, self-corrections, reversals
Liberman & Shankweiler	1971	Reversal errors
Salvia & Ysseldyke	1978	Omissions, insertions, repetitions, reversals, misreadings, pronunciation errors, pauses
Jenkins & Larson	1979	Omissions, misreadings, pronunciation errors, repetitions, pauses
Arnold	1982	Listening-based reading errors
Frith	1986	Misuse of alphabetic cues, decoding errors
May	1986	Oral reading errors forming the basis of the Informal Reading Inventory
Dowhower	1987–1991	Word-by-word reading, monotonic reading, inappropriate pausing
Harris & Sipay	1990	Pronunciation errors and pauses
Zutell & Rasinski	1991	Prosody-based errors

Researcher(s)	Year	Reported Reading Fluency Terms/Characteristics
Akyol	1994–1997	Letter/word reversals, impulsive reading, word recognition problems
Öz	2001	Mispronunciations, pauses, regressions, repetitions, omissions
Akyol	2003–2005	Reversals, omissions, insertions, repetitions
Akyol & Temur	2006	Self-corrections, repetitions, insertions, segmented word reading, omissions
Çaycı & Demir	2006	Omissions and insertions at the letter, syllable, and word levels
Yılmaz	2006–2008	Omissions, insertions, repetitions, mispronunciations, reversals, pauses, misreadings
Sidekli	2010	Stress and intonation, reading duration, unnecessary pauses, loss of place while reading, punctuation, voice quality, attention, breath control
Dağ	2010	Omissions, insertions, repetitions, reversals, pronunciation errors, misreadings
Baydık	2012	Word-level errors and structural/phonological errors
Baydık, Ergül, & Bahap Kudret	2012	Prosody, accuracy, automaticity/reading rate
Duran & Sezgin	2012	Omissions, insertions, misreadings, repetitions, self-corrections, pauses
Seçkin	2015	Omissions, insertions, substitutions, word-ending guessing
Yamaç	2015	Stress and intonation, finger tracking, insertions, omissions, decoding errors, subvocalization
Bilge & Sağır	2017	Oral reading errors and reading behavior errors
Kuruoğlu & Şen	2018	Omissions, insertions, substitutions; letter-, suffix-, and word-level errors
Şahin Melanlıoğlu &	2021	Word-level errors, letter/syllable-level errors, process and semantic errors
Avşar Tuncay	2021	Substitutions, insertions, omissions, mispronunciations, regressions, pauses, misreadings
Erbaşan	2022	Misreadings, omissions, insertions, repetitions, syllabification, finger tracking, prosodic errors
İpek & Dölek	2023	Omissions, insertions, repetitions, reversals, mispronunciations, sound substitutions, syllabification, pauses, word substitutions, punctuation errors

An examination of Table 1 indicates that early studies primarily focused on observable deviations in oral reading, including omissions, insertions, substitutions, repetitions, and reversals. Over time, however, the terminology used to describe reading fluency expanded to include prosodic characteristics, word-recognition and decoding difficulties, automaticity-related behaviors, and physical or behavioral indicators associated with reading performance. Particularly in more recent studies, reading fluency has increasingly been approached as a multidimensional construct rather than solely in terms of oral

reading errors. This terminological expansion also demonstrates that the concepts reported in the literature do not always operate at the same analytical level: some describe observable reading errors, whereas others refer to underlying difficulties, performance characteristics, analytical concepts, or behavioral indicators. This distinction provides the conceptual basis for the classification framework proposed in the present study.

Analysis and Reclassification of Reading Fluency Terminology

The terminology associated with reading fluency is organized into four complementary dimensions: structural and formal reading errors, prosodic and rhythmic reading errors, cognitive and decoding-related reading difficulties, and physical and behavioral indicators associated with reading fluency.

1. Structural and Formal Reading Errors

Structural and formal reading errors refer to observable changes that occur in the written structure of a text during oral reading. These errors involve letters (graphemes), syllables, suffixes, words, or larger textual units and directly influence reading accuracy. Since accurate word recognition constitutes the foundation of reading fluency, structural errors are generally considered the most visible indicators of difficulties in decoding written language. Earlier studies in the literature have consistently identified omission, insertion, substitution, reversal, repetition, regression, and self-correction as the most common structural reading errors (Goodman, 1965; Akyol, 2006; Yılmaz, 2008).

One of the most frequently encountered structural errors is omission, which occurs when the reader fails to read a letter, syllable, suffix, word, or even an entire line that appears in the written text. Omissions may occur at different linguistic levels depending on the reader's decoding ability. For example, a reader may omit a letter (kitap → ktap), a syllable (masalar → maslar), a suffix (evlerden → evler), or an entire word within a sentence (Ali went to school → Ali went). Such omissions reduce reading accuracy and may also alter the meaning of the text.

Another common structural error is insertion, which refers to adding linguistic elements that are not present in the original text. Insertions may involve letters, syllables, suffixes, or complete words and usually occur when readers attempt to complete unfamiliar words by relying on prediction rather than visual decoding. Examples include reading masa as masada, geldi as hemen geldi, or çocuk as çocuklar. These additions change the original structure of the text and may interfere with accurate comprehension.

Substitution occurs when a reader replaces a grapheme, syllable, suffix, or whole word in the printed text with another linguistic unit without reversing the sequential order of the original elements. Substitutions may arise from visual or phonological similarity, incomplete word recognition, or contextual expectations during reading. For example, a reader may produce b instead of d, kapak instead of kapı, or park instead of bahçe. Although some substitutions may preserve aspects of the intended meaning, they represent deviations from the printed form and therefore affect reading accuracy. Importantly, substitution should be distinguished from reversal: substitution involves the replacement of one linguistic unit with another, whereas reversal involves a change in the sequential organization of the elements being read.

Reversal refers to a reading deviation in which the sequential order of graphemes, syllables, or other written symbols is reversed during oral reading. Unlike substitution, in which one linguistic unit is replaced by another, reversal primarily involves a change in the order of the elements represented in the written form. For example, reading ev as ve involves a reversal of letter order, while reading 12 as 21 involves a reversal of numerical sequence. In contrast, reading d as b or replacing one word with another should not automatically be

classified as reversal, because such responses may represent letter confusion or substitution rather than a true change in sequential order. Maintaining this distinction helps prevent conceptual overlap between reversal and substitution in the classification of oral reading errors.

Repetition refers to rereading a letter, syllable, word, or group of words more than once during oral reading. Readers may repeat individual words or short phrases because of uncertainty in decoding or difficulties maintaining reading fluency. For example, a reader may say "Ali, Ali went to school" or "This, this child...". Although repetitions may occasionally function as self-monitoring strategies, excessive repetition interrupts the natural flow of reading.

Another frequently observed behavior is regression, in which readers unnecessarily return to previously read portions of the text despite having decoded them correctly. For instance, after reading the sentence "Today the weather was very nice," a reader may return to the beginning and reread "Today the weather...". Such regressions generally reduce reading rate and indicate a disruption in fluent processing.

Finally, self-correction occurs when readers recognize their own reading errors and immediately repair them during oral reading. Although self-correction demonstrates active monitoring of reading performance, it temporarily interrupts fluency because readers pause to revise their responses. For example, a reader may initially pronounce "pe..." before correctly producing "pen" in the sentence "He put his pen on the desk." Therefore, self-corrections should not simply be regarded as reading errors but also as indicators of readers' metacognitive awareness and their ability to monitor decoding accuracy.

Within this context, structural and formal errors primarily reflect deviations in the accurate decoding of written symbols. However, fluent reading cannot be evaluated solely through word-recognition accuracy. Readers may decode words correctly while still experiencing difficulties in rhythm, intonation, phrasing, and expressive reading. For this reason, the following section examines prosodic and rhythmic reading errors, which represent another essential dimension of reading fluency and contribute directly to meaningful oral reading.

2. Prosodic and Rhythmic Reading Errors

While structural reading errors primarily affect the accuracy of word recognition, fluent reading also depends on the reader's ability to convey meaning through appropriate rhythm, intonation, stress, phrasing, and pacing. These prosodic features enable oral reading to resemble natural speech and support listeners' comprehension of the intended message. Consequently, readers may decode words accurately but still fail to read fluently if prosodic characteristics are not adequately developed. Previous studies have consistently emphasized that prosody constitutes one of the three fundamental dimensions of reading fluency alongside accuracy and automaticity (Zutell & Rasinski, 1991; National Reading Panel, 2000; Samuels, 2006).

One of the most important prosodic difficulties involves expression and prosody errors, which occur when readers fail to use appropriate stress, intonation, phrasing, or expressiveness during oral reading. As a result, emotional and semantic cues embedded in the text cannot be conveyed effectively. For instance, reading the sentence "Really?" with a flat, expressionless voice instead of an interrogative intonation weakens the communicative function of oral reading and limits listeners' understanding of the speaker's intention.

Another common prosodic difficulty is punctuation errors. These occur when readers ignore punctuation marks and fail to produce the pauses, stress patterns, or intonation required by the written text. For example, reading the sentence "Ali, Ayşe, and Mehmet arrived." without pausing at the comma disrupts sentence structure and reduces comprehensibility.

Such errors demonstrate that punctuation should be interpreted not merely as a visual feature of written language but also as an important guide for oral reading performance.

Monotonic reading represents another frequently observed prosodic error. Readers exhibiting this behavior maintain nearly identical pitch, rhythm, and vocal expression throughout the text regardless of emotional content or sentence type. Consequently, statements expressing excitement, surprise, sadness, or questioning are all read with the same tone of voice, making oral reading sound mechanical and reducing meaningful interpretation.

Prosodic difficulties also include inappropriate stress, in which readers place emphasis on words or phrases that do not correspond to the intended meaning of the sentence. Because stress patterns contribute directly to semantic interpretation, shifting emphasis from one word to another may alter the listener's understanding of the message even when every word has been decoded correctly.

Inappropriate prosodic pausing occurs when a reader places pauses at locations or for durations that are inconsistent with the syntactic, semantic, or punctuation structure of the text. Unlike hesitation resulting from difficulty in immediate word recognition, prosodic pausing concerns the organization of oral reading into meaningful phrases and rhythmic units. For example, pausing within a syntactically unified phrase or failing to pause appropriately at a major phrase boundary may disrupt phrasing, rhythm, and the communication of meaning. Therefore, inappropriate prosodic pausing should be distinguished from hesitation associated with inefficient decoding or limited automaticity.

A related prosodic difficulty is word-by-word reading, in which readers produce consecutive words as isolated units rather than grouping them into meaningful syntactic and semantic phrases. This pattern introduces unnecessary boundaries between words and disrupts natural phrasing and rhythm. Although limited automaticity may contribute to word-by-word reading, its most direct observable effect is a breakdown in phrasing; it is therefore treated here primarily as a prosodic and rhythmic difficulty.

Finally, inappropriate linking (improper juncture) occurs when readers incorrectly connect adjacent words or cross natural word boundaries during oral reading. Instead of respecting syntactic divisions, words may be merged into one uninterrupted sequence, obscuring the intended phrasing of the sentence. This behavior interferes with both oral expression and comprehension because listeners rely on appropriate phrasing to interpret meaning accurately.

Although prosodic errors influence the expressive quality of oral reading, some observable disruptions may originate from deeper cognitive processes involved in word recognition and decoding. Difficulties in phonological processing, visual discrimination, lexical access, and automatic word recognition may affect both reading accuracy and prosodic performance. For this reason, the next section focuses on cognitive and decoding-related reading difficulties and distinguishes them from primarily prosodic deviations.

3. Cognitive and Decoding-Related Reading Difficulties

Although structural and prosodic deviations are directly observable during oral reading, some fluency difficulties primarily reflect underlying processes involved in word recognition and decoding. Cognitive and decoding-related reading difficulties may involve phonological processing, visual discrimination, lexical access, automatic word recognition, and the integration of orthographic and phonological information. Because these processes operate simultaneously during fluent reading, weaknesses in any of them may reduce accuracy, automaticity, and ultimately comprehension. In this section, terms are classified according

to their primary relationship with these underlying processes rather than solely according to their secondary effects on rhythm or oral expression.

Hesitation refers to a noticeable delay before or during the production of a word when the reader is unable to recognize or decode it immediately. Although hesitation is observable as a pause in oral reading, its primary source should be distinguished from prosodic pausing. Whereas prosodic pauses are related to phrasing, rhythm, syntactic structure, and expressive reading, hesitation typically reflects inefficient word recognition, decoding difficulty, or insufficient automaticity. Assessment protocols use different pause thresholds; for example, pauses of approximately three seconds have been used as indicators of difficulty in some curriculum-based measures (Good & Kaminski, 2002; Shinn, 1989), whereas Running Records traditionally use a threshold of approximately five seconds (Clay, 2000). Accordingly, hesitation is treated here primarily as an indicator of difficulty in automatic word recognition rather than as a prosodic error.

Syllabic reading refers to the observable tendency to decode a word by producing its syllables separately rather than recognizing and articulating the word as an integrated lexical unit. Although syllabic reading disrupts rhythm and may consequently affect prosodic fluency, it should not be classified primarily as a prosodic error. Rather, persistent syllabic reading may indicate that word recognition and decoding have not yet reached an adequate level of automaticity. For example, producing *okula* as *o-ku-la* or *kitabı* as *ki-ta-bı* requires continued segment-by-segment decoding instead of immediate and effortless word recognition. Accordingly, persistent syllabic reading is treated in the present framework as an observable indicator of limited automaticity in word recognition and decoding, while its effects on rhythm and prosody are regarded as secondary consequences.

One of the most frequently reported cognitive errors is mispronunciation, which occurs when readers produce an incorrect pronunciation because of unfamiliarity with the word, insufficient phonological knowledge, dialectal influence, or articulation difficulties. For example, the Turkish words *laboratuvar* and *psikoloji* may be pronounced as *labaratuvar* and *pisikoloji*, respectively. Although these errors are expressed orally, they frequently indicate incomplete phonological representations or inefficient decoding rather than simple articulation problems.

Another important category consists of letter and syllable confusions. These errors occur when readers confuse visually or phonologically similar letters and syllables during decoding. Examples include reading the letter *b* as *d*, *m* as *n*, or pronouncing the syllable *ka* as *ga*. Such confusions are generally associated with weaknesses in visual discrimination and phonological processing, particularly among beginning readers and students experiencing reading difficulties.

The term *miscue* should be distinguished from specific observable error types such as substitution. A substitution describes the observable reading response in which a grapheme, syllable, word, or other linguistic unit in the printed text is replaced by another unit. In contrast, *miscue* is a broader analytical concept used to examine deviations between the printed text and the reader's oral response in relation to the linguistic and contextual cues used during reading. Thus, a word substitution may constitute a *miscue*, but the terms are not conceptually equivalent. For example, reading *park* instead of *bahçe* can be descriptively identified as a word substitution; when this response is examined in terms of the reader's use of semantic, syntactic, or graphophonic information, it may be analyzed within a *miscue* framework. Maintaining this distinction prevents the observable form of a reading deviation from being conflated with the analytical framework used to interpret that deviation.

Another frequently observed behavior is word guessing, in which readers complete part or all of a word without fully processing its written form. Instead of decoding every letter or syllable, readers predict the remainder of the word on the basis of its initial letters or contextual cues. As a result, words such as *kararlılık* may be read as *karanlık*, or *sorumluluk* may become *sorunsuzluk*. Although this strategy may occasionally facilitate rapid reading, excessive guessing reduces reading accuracy and often leads to misunderstandings of the text.

Taken together, these phenomena show that cognitive and decoding-related reading difficulties extend beyond isolated pronunciation mistakes. They may reflect challenges in the interaction among orthographic recognition, phonological processing, lexical retrieval, automatic word recognition, and semantic integration. Distinguishing observable responses from the processes or analytical concepts used to interpret them provides more precise information about the possible sources of reading fluency difficulties and may support instructional interventions that address inefficient or inaccurate processing rather than only its surface manifestations.

Viewed from this perspective, cognitive and decoding-related difficulties help explain processes that may underlie inefficient reading. Fluent reading is also accompanied by observable physical and behavioral characteristics, such as finger tracking, head or eye movements, reading posture, and subvocalization. These behaviors do not, by themselves, constitute reading errors or necessarily indicate deficiencies in decoding. Rather, they may provide supplementary information about reading effort, developing automaticity, visual tracking, or task demands. The following section therefore examines physical and behavioral indicators associated with reading fluency.

4. Physical and Behavioral Indicators Associated with Reading Fluency

Physical and behavioral indicators refer to observable behaviors that may accompany oral or silent reading but do not, by themselves, constitute reading errors. Unlike structural, decoding, or prosodic deviations, these behaviors do not necessarily involve an inaccurate production of the printed text or an inappropriate realization of its linguistic structure. Behaviors such as finger tracking, head or eye movements, reading posture, lip movement or subvocalization, body rocking, and difficulties in breath control may provide supplementary information about visual tracking, reading effort, self-regulation, developing automaticity, or task demands. Their presence, however, should not automatically be interpreted as evidence of deficient reading performance. Accordingly, these behaviors are treated as complementary indicators to be interpreted in conjunction with accuracy, automaticity, decoding, prosody, and comprehension (Bilge & Sağır, 2017; Erbasan & Erbasan, 2022).

One frequently observed behavior is physical tracking, in which readers follow the printed text with a finger, pencil, or another object while reading. This strategy may support visual attention and place keeping, particularly for beginning readers or in specific instructional contexts. Continued reliance on external tracking may sometimes accompany less automatic reading, but finger tracking should not be treated as a reading error in itself. Its interpretation should therefore take account of the reader's developmental level, the task, and the broader pattern of reading performance.

Another observable characteristic involves head and eye movements during reading. Readers vary in how they coordinate visual tracking across lines of text, and noticeable head movement may sometimes accompany slower or less efficient reading. However, such movement does not independently establish a reading error or decoding deficit. It should be interpreted cautiously and, where relevant, considered alongside reading rate, accuracy, visual tracking demands, and other contextual factors.

Reading posture and viewing distance are additional physical characteristics that may affect comfort and sustained attention during reading. An appropriate distance between the eyes and the text and a comfortable sitting posture may support reading endurance, whereas an unsuitable position or excessive proximity to the text may contribute to fatigue. These characteristics are best regarded as contextual or physical indicators rather than direct measures of reading accuracy or fluency.

Lip movement or subvocalization may also accompany reading. Subvocalization can occur as part of reading development and should not automatically be interpreted as a deficit. When overt articulation is persistent or pronounced, it may be considered alongside other evidence concerning reading rate, effort, and automatic word recognition. Its significance therefore depends on developmental level, task demands, and the broader reading profile rather than on the behavior alone.

Some readers also display body rocking while reading. Such movement may accompany concentration, self-regulation, or individual reading habits and is not necessarily problematic in itself. If persistent movement appears to interfere with reading performance, it may provide supplementary observational information; however, it should not be classified as an oral reading error solely on the basis of its presence.

Breath control is particularly relevant to oral reading because respiratory coordination can influence phrasing, pausing, and vocal expression. Difficulty coordinating breath with syntactic and prosodic units may contribute to fragmented oral reading or pauses at inappropriate locations. Nevertheless, breath-control observations should be interpreted as a physical or performance-related indicator and considered together with prosodic evidence rather than treated as an independent decoding error.

Taken together, these findings suggest that physical and behavioral characteristics should not be interpreted simply as undesirable reading habits or independent reading errors. Rather, they may provide supplementary information about visual tracking, reading effort, self-regulation, automaticity, and oral reading performance. Comprehensive assessment should therefore interpret such indicators in conjunction with structural accuracy, prosody, decoding, automaticity, and comprehension, while remaining sensitive to developmental and task-related differences.

The four-dimensional framework proposed in this study extends beyond a list of isolated oral reading errors by distinguishing among observable errors, reading difficulties, analytical concepts, and behavioral indicators associated with reading performance. Examining these dimensions together provides a more comprehensive understanding of reading fluency than classifications focusing on only one aspect of reading behavior. The following discussion interprets these findings in relation to previous research and considers their implications for reading assessment and instructional practice.

DISCUSSION AND CONCLUSION

The present study demonstrates that reading fluency terminology has evolved considerably over the past six decades. Early classifications focused primarily on observable oral reading errors, such as omissions, insertions, substitutions, repetitions, and reversals (Goodman, 1965; Salvia & Ysseldyke, 1978). Over time, however, researchers increasingly recognized that fluent reading extends beyond accurate word recognition and includes automaticity, prosody, cognitive processing, and reading behaviors (LaBerge & Samuels, 1974; Zutell & Rasinski, 1991; National Reading Panel, 2000; Samuels, 2006). Consistent with this development, the present study found that the terminology used in the literature has gradually expanded from isolated decoding errors to a multidimensional conceptualization

of reading fluency. This evolution reflects a broader understanding of reading as a complex cognitive and linguistic process rather than a simple oral decoding activity.

One of the principal contributions of this study is the systematic reorganization of reading fluency terminology into four complementary dimensions: structural and formal reading errors, prosodic and rhythmic reading errors, cognitive and decoding-related reading difficulties, and physical and behavioral indicators associated with reading fluency. Although previous studies have classified particular groups of reading errors or reading behaviors, these classifications generally focused on individual aspects of reading performance or were developed for specific assessment purposes (Akyol & Temur, 2006; Baydık et al., 2012; Bilge & Sağır, 2017; İpek & Dölek, 2023). By integrating terminology reported across different periods and research traditions within a single conceptual framework, the present study provides a more comprehensive classification while preserving distinctions among observable errors, underlying difficulties, analytical concepts, and behavioral indicators. Such a framework may contribute to reducing conceptual inconsistency in the literature while supporting greater consistency in research and educational practice.

Another important finding concerns the multidimensional nature of reading fluency. The findings indicate that similar observable disruptions may arise from different underlying processes and therefore should not be classified solely on the basis of surface appearance. Omission and substitution, for example, describe observable deviations from the printed text, whereas inappropriate prosodic pausing concerns phrasing and rhythmic organization. Hesitation and persistent syllabic reading may be associated more directly with inefficient word recognition, decoding, or limited automaticity. Likewise, behaviors such as finger tracking, subvocalization, or noticeable head movement may accompany reading performance but should not, by themselves, be treated as reading errors. These distinctions support perspectives suggesting that reading fluency should be evaluated through the interaction of multiple dimensions rather than by considering reading speed or accuracy independently (Pikulski & Chard, 2005; Rasinski et al., 2006).

The classification proposed in the present study is also consistent with recent research that has adopted a broader perspective on reading fluency. For instance, Şahin and Melanlıoğlu (2021) argued that reading errors should not be limited to word-level decoding problems but should also include syllable-level, process-related, and semantic errors. Similarly, Erbasan and Erbasan (2022) emphasized that fluent reading difficulties encompass not only omissions, insertions, and repetitions but also syllabification, finger tracking, and prosodic deficiencies. More recently, İpek and Dölek (2023) expanded the scope of reading error assessment by proposing the Reading Error Identification Form (REIF), which includes ten different categories of reading errors. These developments demonstrate that contemporary research increasingly views reading fluency as a multidimensional construct. The four-dimensional classification proposed in the present study is compatible with these recent developments while providing a broader conceptual organization that integrates structural, prosodic, cognitive, and behavioral terminology within a single framework.

Another important implication of the present classification concerns instructional practice. In many educational settings, reading fluency is primarily evaluated according to the number of words read correctly per minute or the frequency of oral reading errors. Although these indicators provide useful information about reading performance, they do not fully explain the underlying sources of reading difficulty. The present classification suggests that teachers should distinguish among observable structural errors, prosodic difficulties, cognitive and decoding-related difficulties, and physical or behavioral indicators when assessing students' reading performance. Such differentiation may facilitate more precise assessment and enable educators to design instructional interventions that address the

specific dimensions in which individual students experience difficulty. Rather than applying the same intervention to every struggling reader, teachers may develop targeted instructional practices based on the nature of the observed reading fluency difficulty.

The findings of this study also have important implications for the assessment of reading fluency. Existing assessment tools, including the Informal Reading Inventory (IRI), Running Records, and the recently developed Reading Error Identification Form (REIF), have made significant contributions to identifying oral reading errors and behaviors. Nevertheless, the terminology used across these instruments is not always conceptually consistent, and similar reading responses are sometimes described under different labels. The four-dimensional framework proposed in this study may therefore contribute to improving conceptual consistency across assessment instruments. Organizing terminology according to structural errors, prosodic difficulties, cognitive and decoding-related difficulties, and physical or behavioral indicators may facilitate more systematic observation, more accurate reporting of assessment results, and more appropriate selection of instructional interventions based on individual learner profiles.

Beyond its practical implications, the present study contributes to the literature by addressing the conceptual fragmentation that has developed over several decades of research on reading fluency. Earlier studies generally introduced new terminology to describe specific reading behaviors without attempting to establish a unified conceptual structure across different classifications. As a result, identical reading behaviors have occasionally been described using different terms, while the same term has sometimes been used to refer to different reading phenomena. By examining terminology historically and reorganizing it within a coherent classification, the present study offers a common conceptual framework that may facilitate clearer communication among researchers, teachers, and specialists working in the field of reading education. Such conceptual consistency is essential for comparing findings across studies, interpreting assessment results, and developing cumulative knowledge about reading fluency.

The present study demonstrates that reading fluency cannot be adequately explained through a single dimension of reading performance. Rather, fluent reading emerges from the interaction of structural accuracy, prosodic competence, cognitive processing, and observable reading behaviors. Examining these dimensions together provides a more comprehensive understanding of reading fluency than approaches that focus exclusively on oral reading speed or word recognition accuracy. The proposed classification therefore offers a broader conceptual perspective for understanding the complex nature of reading fluency and the terminology used to describe reading difficulties.

Another important contribution of the present study is the establishment of a systematic terminology that brings together concepts developed over several decades of research. Because different researchers have often used different terms to describe similar reading behaviors, conceptual inconsistencies have gradually emerged in the literature. By reorganizing these terms within a unified framework, the present study contributes to greater conceptual clarity and may facilitate communication among researchers, teachers, specialists, and graduate students working in reading education. Establishing a common terminology may also improve the comparability of future studies and support the cumulative development of knowledge in this field.

From an educational perspective, the proposed classification may assist teachers in identifying not only the visible characteristics of students' reading performance but also the underlying sources of reading difficulties. Distinguishing whether a student's difficulty originates primarily from structural decoding, prosodic reading, cognitive processing, or behavioral characteristics may enable educators to select more appropriate instructional strategies and intervention techniques. Consequently, assessment may become more

diagnostic, and instructional planning may become more responsive to individual learner needs.

The findings should also be interpreted in light of certain limitations. This study is based on document analysis and therefore reflects the terminology reported in the available literature rather than empirical observations collected from a specific participant group. Although the reviewed studies represent the historical development of reading fluency terminology, future research may validate the proposed classification through empirical studies involving students with different age levels, reading abilities, and linguistic backgrounds. In addition, developing standardized assessment instruments based on the four-dimensional framework proposed in this study may provide further evidence regarding its practical applicability in educational settings.

In conclusion, the findings indicate that reading fluency terminology has gradually evolved from a narrow focus on observable oral reading errors toward a broader, multidimensional understanding of reading performance. The four-dimensional classification proposed in this study synthesizes this historical development into a coherent conceptual framework that distinguishes structural and formal reading errors, prosodic and rhythmic reading errors, cognitive and decoding-related reading difficulties, and physical and behavioral indicators associated with reading fluency. By distinguishing among observable errors, underlying difficulties, analytical concepts, and behavioral indicators, the framework may contribute to greater conceptual consistency in future research, support more comprehensive assessment of reading fluency, and facilitate the development of more targeted instructional practices for addressing students' reading difficulties.

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