

Beyond Fluency: How Emotional and Physiological Responses Disrupt Reading Comprehension Among Fluent Grade 4 Readers

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Abstract. This study explores how emotional and physiological responses disrupt reading comprehension among Grade 4 learners who demonstrate fluent oral decoding but struggle to construct meaning from text. A qualitative descriptive phenomenological approach was employed in a private school in Digos City, Davao del Sur, Philippines. Ten Grade 4 learners identified as fluent readers with low comprehension were purposively selected through teacher recommendations and standardized fluency assessments. Data were gathered through semi-structured interviews, reading observation checklists, a real-time reading task, and brief observational evaluations of non-verbal behavioral and physical stress markers. The collected data were analyzed using Braun and Clarke's thematic analysis framework, with triangulation across multiple qualitative data sources to ensure trustworthiness and structural credibility. Five core themes emerged from the qualitative analysis: (1) emotional arousal at the immediate moment of meaning-making; (2) physiological responses signaling severe cognitive overload; (3) the hidden burden of instructional performance pressure; (4) surface-level strategies serving as emotional coping mechanisms; and (5) a compounding sequential emotional-physiological cascade. The findings indicate that reading comprehension breakdowns among fluent readers are not merely cognitive or linguistic deficits, but an intricate mind-body collapse triggered by evaluative anxiety. Consequently, the study concludes that educational institutions must reform current instructional paradigms to integrate emotional safety, cognitive pacing, and comprehension-focused evaluation mechanisms.

KEY WORDS

1. Cognitive load
2. Fluent readers
3. Phenomenological approach
4. Reading anxiety
5. Reading comprehension

Date Received: April 18, 2026 — Date Reviewed: April 21, 2026 — Date Published: May 19, 2026

1. Introduction

Reading comprehension serves as an essential foundation of academic literacy, enabling young learners to actively construct meaning, synthesize prior knowledge, and engage critically with nuanced textual materials. In contemporary classroom practice, however, reading competence is disproportionately measured

through oral reading fluency metrics—primarily speed and accuracy—which frequently fosters a superficial veneer of proficiency that masks deep-seated comprehension struggles. While oral fluency remains a valuable developmental marker, empirical evidence consistently establishes that decoding and linguistic compre-

hension evolve along entirely distinct developmental trajectories. This divergence means that learners can easily achieve accurate word recognition and rapid vocalization while fundamentally failing to parse or retain the underlying substance of the text (Washburn, 2022).

Historically, the structural breakdown of literacy processing has been explained by the Simple View of Reading, which isolates reading comprehension as the mathematical product of decoding capacity and language comprehension (Gough Tunmer, 1986). Yet, contemporary educational neuroscience and cognitive psychology suggest that this dualistic framework is insufficient for mapping complex, real-time reading behaviors. To address these theoretical limitations, the Active View of Reading expands the traditional model by establishing executive functioning, behavioral self-regulation, and active affective engagement as vital moderators of text processing (Duke Cartwright, 2021). These systemic self-regulatory processes are necessary for enabling students to monitor their own understanding, distribute limited cognitive reserves, and integrate separate clauses into a coherent mental schema. This evolution in reading psychology proves that text interpretation is not a mechanical linguistic exercise, but an intricate, highly sensitive cognitive-affective process.

Beyond traditional cognitive architectures, localized affective barriers, specifically reading anxiety, exert a powerful influence on student performance. Anxious elementary learners experience marked disruptions in executive functioning, attention control, and functional working memory capacities during academic evaluations (Chow et al., 2021; Leshem Altman, 2021; Pickering et al., 2022). These performance impediments directly align with the Affective Filter Theory, which posits that intense emotional stress constructs a psychological barrier, blocking raw inputs from being successfully processed by internal language mechanisms (Krashen, 1982). This systemic

interaction between emotional states and cognitive processing can be further parsed through Cognitive Load Theory, which declares that human working memory operates with a finite capacity that can be rapidly overwhelmed by extraneous demands (Sweller, 1994). Recent research validates that situational anxiety serves as a heavy extraneous cognitive load, exhausting working memory resources and leaving insufficient capacity for deep structural integration (Bohn-Gettler Kaakinen, 2021; Fredericks et al., 2021; Gkintoni et al., 2025). In an evaluative reading setting, this means that acute emotional arousal can instantly trigger physiological strain, leading to severe muscle tension, elevated heart rates, mental fatigue, and unexpected cognitive blanking.

The educational landscape of the Philippines provides a crucial setting for examining these intersecting dynamics. While domestic literacy interventions have successfully improved oral reading speeds and decoding accuracy across elementary schools, large-scale international benchmarks demonstrate a profound, persistent deficit in conceptual processing. The Programme for International Student Assessment (PISA) 2022 confirmed that Filipino students continue to rank among the lowest performers in reading comprehension on a global scale (OECD, 2023). This systemic trend highlights the reality that improvements in superficial decoding speed do not automatically yield corresponding advancements in text comprehension, uncovering deep-seated instructional mismatches in domestic reading education (Idulog et al., 2023; Marvas et al., 2024).

Despite these extensive developments in global reading research, a substantial literature gap persists regarding the immediate, moment-to-moment intersection of emotional and physiological stress among otherwise fluent decoders. The vast majority of reading difficulties studies target individuals with pronounced phonological or decoding deficits,

leaving "fluent-but-struggling" readers under-researched (Fishstrom et al., 2024). Furthermore, there is a distinct lack of empirical inquiry exploring how immediate, situational emotional spikes—elicited specifically by comprehension questioning—can initiate a somatic stress response that leads to cognitive shutdown.

To effectively address this gap, this study explores the lived experiences of Grade 4 fluent readers who encounter persistent comprehension failures within the local context of Digos City. Utilizing a qualitative descriptive phenomenological approach, this paper evaluates an original Conceptual Framework titled the Emotional-Physiological-Cognitive

Cascade Model of Reading Comprehension. This model posits that reading breakdown is not a structural intellectual deficit, but a sequential, compounding cascade wherein systemic classroom conditions trigger immediate emotional arousal, which in turn induces physiological strain that depletes cognitive reserves and prevents successful meaning-making. By elevating and analyzing the direct voices of these young learners, this research aims to provide actionable instructional insights to assist educators in designing reading environments that are both cognitively supportive and emotionally responsive.

2. Methodology

This chapter presents the research methods used to explore how emotional and physiological responses affect the reading comprehension of fluent Grade 4 readers. It discusses the research design, participants, sampling technique, research instruments, data gathering procedure, data analysis process, and ethical considerations. Since the study focuses on learners' lived experiences during reading tasks, a qualitative descriptive phenomenological approach was used to gather meaningful insights into their emotional reactions, physical stress responses, and comprehension difficulties.

2.1. Research Design —This study utilized a qualitative descriptive phenomenological approach to explore how emotional and physiological reactions systematically disrupt textual interpretation among young learners. Phenomenological inquiry was selected because it allows for a rigorous examination of the live, moment-to-moment personal experiences of individuals encountering a shared phenomenon. By centering the investigation on individual narratives, this design was ideal for gathering and clarifying student accounts of fear, anxiety, embarrassment, physical fatigue, and cognitive blanking. This framework shifts the research focus beyond external test parameters, enabling an understanding of how distinct somatic and psychological stress points explicitly impede reading comprehension processes despite intact

oral word recognition skills.

2.2. Participants and Sampling Technique —The participants consisted of 10 Grade 4 students purposely selected from a private elementary education institution located in Digos City, Davao del Sur, Philippines. To address the specific phenomenon of "fluent-but-struggling" readers, a strict purposive sampling method was implemented based on predefined inclusion criteria. Potential participants were initially identified through formal classroom teacher recommendations highlighting students who displayed rapid, accurate oral decoding during daily instruction but consistently failed subcomponents of comprehension evaluations. These recommendations were subsequently verified through standardized oral reading fluency assessments conducted by the researcher to guar-

antee that every selected learner achieved age-appropriate verbal reading speed and accurate phonetic pronunciation but scored critically low on reading comprehension tasks. This rigorous baseline screening process guaranteed that the study isolated emotional-physiological interferences from foundational phonological decoding deficits.

2.3. Research Instrument—Data collection relied on a comprehensive suite of qualitative and descriptive instruments designed to capture the emotional, physiological, and cognitive dimensions of the reading experience. First, a semi-structured interview guide was utilized to encourage learners to express their lived experiences, internal processing, and personal accounts of fear, anxiety, embarrassment, and cognitive stress during reading tasks. Second, a standardized reading observation checklist was implemented to document non-verbal behavioral stress indicators—such as localized fidgeting, task avoidance, physical hesitation, and shrinking body posture—manifested during evaluations. Third, a short, real-time reading exercise was designed and administered to elicit genuine, moment-specific affective and physical responses under supervised classroom conditions. Finally, somatic and behavioral observations were integrated alongside field assessments for visible stress markers, such as sweaty palms or visible muscle tension, manifested during the reading tasks. This multi-method instrumentation provided robust triangulation to cross-verify the subjective narratives with observable physical and behavioral phenomena.

2.4. Data Gathering Procedure—The data collection process followed an organized, institutionally approved sequence. Formal administrative approval was secured from the school director, followed by the acquisition of written parental informed consent and written participant assent from each student. Screening assessments, including a short spoken decoding exercise and a baseline comprehension check,

were performed to confirm that each student met all inclusion criteria.

The primary data-gathering sessions were conducted individually in a quiet classroom to optimize psychological safety. Each participant was given a designated Grade 4 reading text and asked to read aloud before being presented with a series of analytical comprehension questions. Throughout this reading session, the researcher systematically noted behavioral variations and physical stress indicators on the observation checklist during both the reading and questioning phases. Immediately following the reading exercise, the semi-structured phenomenological interview was conducted to capture immediate reflections on the experience. All interviews were recorded using an electronic audio format, transcribed verbatim, and integrated with the observational checklists and field notes to build unified participant profile files for structural coding.

2.5. Data Analysis Procedure—The transcribed texts and accompanying field observations were analyzed using Braun and Clarke's (2006) six-phase thematic analysis framework. The analysis began with immersive readings of the complete transcripts to achieve comprehensive data familiarization. Open initial codes were systematically assigned line-by-line to extract meaningful statements regarding performance anxieties, somatic symptoms, cognitive blocks, and behavioral shifts. These preliminary codes were then categorized into broader patterns of meaning to generate candidate themes detailing emotional arousal, physiological stress patterns, moments of meaning-making breakdown, and surface-level coping mechanisms. Rigorous triangulation was achieved by continuously cross-referencing interview quotes with the corresponding observational field notes and behavioral checklists to ensure structural credibility and trustworthiness. The finalized themes were mapped against the proposed conceptual model to illustrate the precise interactions driv-

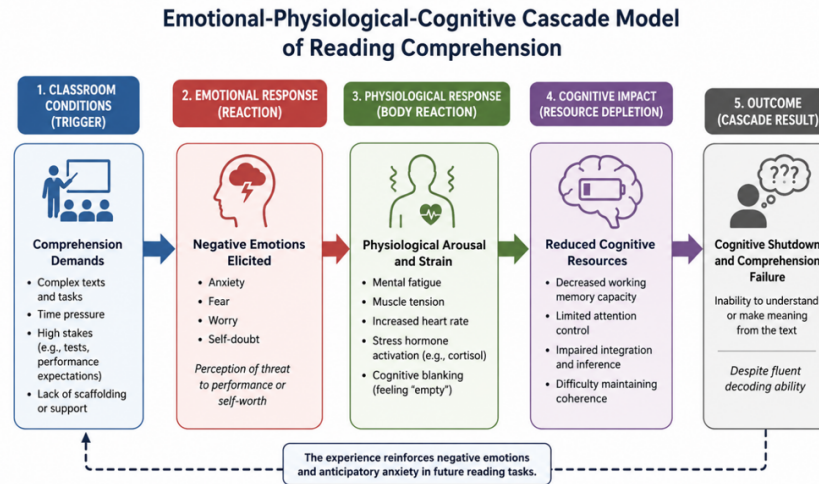


Fig. 1. Emotional-Physiological-Cognitive Cascade Model of Reading Comprehension

ing comprehension failure.

2.6. Ethical Considerations—This research strictly adhered to institutional and national ethical guidelines governing educational research with young populations. Voluntary participation was guaranteed through the collection of formal parental consent and child assent, with the explicit understanding that participants could withdraw at any moment without penalty. To preserve complete anonymity and data confidentiality, all identifiable information was removed, and students were assigned per-

manent alphanumeric codes ranging from S-1 to S-10. Given that the study examined stress responses, psychological safety was prioritized. Assessments and interviews were conducted in a highly supportive environment, and participants were explicitly reassured that errors are normal and would have no bearing on their official academic standing. All physical and digital research documents were safely secured in encrypted storage folders, accessible only to the primary researcher, and maintained transparently to uphold the integrity of the findings.

3. Results and Discussion

Qualitative analysis of the phenomenological data collected from the 10 fluent Grade 4 readers revealed a compounding sequence of psychological and physiological interferences that disrupt text comprehension. The emergent narratives produced five core themes that demonstrate that reading comprehension breakdowns are not merely cognitive or linguistic deficits, but an intricate mind-body collapse triggered by evaluative anxiety.

3.1. Emotional-Physiological-Cognitive Cascade Model of Reading Comprehension—These structural themes directly validate the

progressive phases outlined in the Emotional-Physiological-Cognitive Cascade Model of Reading Comprehension (Figure 1).

3.1.1. Theme 1: Emotional Arousal at the Moment of Meaning-Making—Across interviews, learners revealed that comprehension

questions—not reading itself—triggered emotional reactions such as fear, embarrassment, and nervousness. Classroom observations confirmed avoidance behaviors, shrinking posture,

hesitation, and silence during comprehension tasks. These reactions did not occur during oral reading, only during meaning-making demands. This finding provides new knowledge by identifying a precise emotional trigger point: Comprehension tasks activate fear and anxiety even among fluent readers. Existing studies acknowledge that anxiety affects learning in general, but few explore moment-based emotional spikes that occur right when a child is asked to interpret meaning. This research thus advances the understanding of how emotional arousal interrupts cognitive processing in real time, aligning with affective neuroscience which shows that fear reduces working memory capacity needed for comprehension (Owens Tanner, 2017). This emotional interference explains why children who appear confident while reading aloud suddenly “freeze” during questioning.

The findings suggest that teachers should move away from rapid-fire questioning in reading instruction, as it can increase anxiety and disrupt comprehension, and instead use low-stakes, exploratory questions that promote psychological safety and support meaning-making. Emotional support strategies such as wait time, validating uncertainty, and normalizing mistakes can also help reduce learners’ emotional burden during comprehension tasks. For instance, a study by Chow et al. (2021) found that reading anxiety significantly predicts lower comprehension performance because anxious learners experience reduced working memory capacity during meaning-making tasks. Similarly, Pickering et al. (2022) demonstrated that anxiety interferes with children’s working memory and language abilities, limiting their ability to process and retain information during academic activities. However, the study is limited by its reliance on self-reported emotional experiences, which are subjective, so future research should include objective physiological measures like heart rate or cortisol levels to more accurately capture and validate emotional

and cognitive responses during reading.

3.1.2. Theme 2: Physiological Responses Signaling Cognitive Overload—Learners described physical sensations during comprehension tasks—indicators of stress, cognitive overload, and reduced executive functioning. These bodily sensations—mental blanking, fatigue, heaviness, tension—appeared consistently during comprehension work. This theme contributes new, non-obvious insights: comprehension failure is not purely cognitive; it is embodied. Learners’ descriptions correspond to physiological stress responses known in cognitive load theory (Sweller, 2019): emotional pressure → physiological overload → working memory shutdown. This adds a novel layer to reading comprehension research in the Philippines, where physiological dimensions of reading are rarely explored. The findings suggest that many “fluent but non-comprehending readers” are not lacking ability; they are experiencing physiological interference that interrupts meaning-making. The study suggests that teachers should provide cognitive rest time after reading tasks to help learners recover from mental strain and improve comprehension. It also recommends using short, chunked passages to reduce physiological overload and make reading more manageable, especially for learners experiencing cognitive fatigue. Schools are encouraged to view comprehension as a mind-body process influenced by both cognitive effort and physiological responses. However, the study is limited by its reliance on inferred physiological reactions based on participants’ statements and visible field indicators, so future research should use psychophysiological tools such as heart rate monitoring or other biometric measures for more accurate assessment.

3.1.3. Theme 3: The Hidden Burden of Performance Pressure—Learners consistently equated “good reading” with fast, flawless oral reading—not understanding. They felt evaluated based on fluency, not meaning-making.

Because fluency was rewarded, comprehension became a danger zone where mistakes risked embarrassment. This theme reveals a systemic, non-obvious phenomenon: classroom culture creates conditions that shut down comprehension. This expands current literature by showing that external expectations directly intensify internal emotional and physiological responses. According to Hamilton and Shinn (2003), “word callers” perform fluently but lack deep processing; however, this study finds that performance pressure itself fuels the word-caller pattern—a new contribution. This demonstrates that poor comprehension is not solely an individual problem but a classroom-constructed one.

The study suggests that schools should shift from performance-based reading assessments to comprehension-based evaluation, emphasizing learners’ understanding and meaning-making rather than speed or fluency. Teachers are encouraged to prioritize and praise deep comprehension over fast reading, and instruction should adopt a “comprehension-first” approach that focuses on interpretation and engagement with texts. However, the findings are limited by being conducted in only one school, meaning the results may reflect that institution’s specific context and may not be fully generalizable to other schools with different practices and learner populations.

3.1.4. Theme 4: Surface-Level Strategies as Coping Mechanisms for Emotional Discomfort—Learners relied heavily on shallow strategies—guessing, copying words, scanning for familiar terms, and memorizing lines—to cope with comprehension pressure. These strategies were not signs of laziness but self-protective behaviors under stress. Current research often interprets shallow strategy use as low metacognition or weak comprehension skills. However, these findings show something new—shallow strategies are emotional survival strategies, not cognitive deficiencies. This reframes the phenomenon entirely. Learners were not unwill-

ing to think deeply; their emotional and physiological states made deep processing unsafe or impossible. This aligns with developmental frameworks of coping under stress (Zimmer-Gembeck & Skinner, 2016), showing that children avoid meaning-making when it threatens self-esteem or psychological safety.

The study suggests that teachers should explicitly teach deeper comprehension strategies after first addressing learners’ emotional barriers that may hinder understanding. Instruction should create a safe, supportive environment where mistakes are normalized, and strategy teaching should integrate both cognitive and emotional regulation techniques to help learners manage anxiety and other affective challenges during reading. However, the study is limited by the possibility that students’ self-reports of their strategies may be incomplete or inaccurate, so future research should use deeper observational triangulation, such as longitudinal classroom observations or teacher assessments, to better validate how comprehension strategies are actually applied.

3.1.5. Theme 5: The Emotional–Physiological Cascade Leading to Comprehension Breakdown—Across all participants, a consistent pattern emerged: Fluent decoding → Teacher asks comprehension question → Emotional spike (fear, embarrassment, pressure) → Physiological reaction (blinking out, tension, fatigue) → Cognitive shutdown → Inability to understand. This theme offers the strongest original contribution. This mechanism integrates emotional, cognitive, and physiological processes and explains why fluent readers suddenly lose comprehension, filling a major gap in reading research. While international studies acknowledge that fluency does not automatically guarantee semantic mastery (Washburn, 2022), they rarely map the precise somatic path driving this collapse. These findings provide the missing explanation: meaning-making collapses when acute emotional arousal triggers a physiological

strain that rapidly exhausts working memory resources. This sequential process directly exemplifies the interaction between an activated affective barrier (Krashen, 1982) and the sudden depletion of finite intellectual capacities under situational duress (Sweller, 2019). This adds an important perspective to local literacy studies, shifting the narrative from “students lack comprehension skills” to “students experience a systemic comprehension shutdown under emotional-physiological stress”.

The study suggests that reading comprehension should be taught with explicit attention to both emotional and physiological processes,

recognizing that understanding texts is shaped not only by language structures but also by learners’ affective and bodily responses (Duke Cartwright, 2021). Interventions such as breathing exercises, structured wait time, and stress reduction strategies are recommended to help regulate emotional arousal during reading, while teacher training programs should include affective and physiological literacy to better support learners. However, the proposed sequential cascade model is limited by the need for further validation through larger and more diverse samples to determine its generalizability across different educational contexts and learner populations.

4. Conclusion

This study establishes that reading comprehension failures among fluent Grade 4 learners are not merely a reflection of isolated cognitive or linguistic deficits, but an intricate mind–body collapse triggered by evaluative anxiety. By examining the lived experiences of these students, the research validates the Emotional–Physiological–Cognitive Cascade Model of Reading Comprehension. The findings demonstrate that while oral fluency metrics indicate superficial reading proficiency, they frequently mask deep-seated affective and physiological stress points that disrupt text processing (Washburn, 2022). When learners transition from automatic verbal decoding to the immediate moment of meaning-making, intense performance pressures trigger immediate emotional arousal. This internal distress rapidly manifests as somatic strain—characterized by subjective mental blanking and perceived cognitive fatigue—which consumes finite working memory capacity, prevents successful textual interpretation (Chow et al., 2021; Sweller, 2019), and forces students to rely on shallow, surface-level coping mechanisms as defensive maneuvers (Zimmer-Gembeck & Skinner, 2016).

These insights present significant implications for educational theory and classroom practice. Theoretically, this research challenges traditional, purely mechanical literacy frameworks by proving that modern text processing models cannot treat cognitive and linguistic variables in isolation from affective conditions (Duke & Cartwright, 2021). In practice, the findings highlight a critical need to reform current reading instruction paradigms. Educational institutions must shift away from instructional environments that overemphasize oral reading speed and phonetic performance (Hamilton & Shinn, 2003). Instead, educators should design classroom settings that prioritize emotional safety, incorporate extended wait times, utilize low-stakes comprehension-focused evaluations, and teach active physical regulation strategies—such as deep breathing exercises and structured cognitive pacing—to prevent systemic affective filtering (Krashen, 1982). Addressing these underlying emotional barriers is essential to ensure that young readers maintain the cognitive availability necessary to construct meaning and achieve genuine literacy.

While this inquiry provides important in-

sights into the cognitive-affective dynamics of reading, certain limitations point to vital directions for future research. Because this study relied on a qualitative descriptive phenomenological design with a purposive sample of 10 participants within a private school setting in Digos City, the findings cannot be broadly generalized across different institutional, geographic, or cultural contexts. Future investigations should employ large-scale quantitative or mixed-methods methodologies to evaluate the scalability and biometric validation of the Emotional–Physiological–Cognitive Cascade Model across diverse student demographics. Additionally, longitudinal studies are needed to monitor how stress-induced cognitive shutdowns evolve over time and to measure the long-term effectiveness of emotionally responsive reading interventions on student reading comprehension outcomes.

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