

EMBODIED MEANING CONSTRUCTION IN EFL LITERARY READING: A READER-RESPONSE STUDY OF THE OLD MAN AND THE SEA

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ABSTRACT

This study investigates how meaning is constructed through embodied cognitive processes when EFL learners engage with *The Old Man and the Sea*. Grounded in Barsalou's Embodied Cognition Theory (1999, 2008), which conceptualizes language comprehension as the reactivation of perceptual, motor, bodily, and affective systems rather than abstract symbol manipulation, the study examines reader responses to a literary text characterized by narrative restraint and minimal explicit emotional description. The participants were undergraduate students from the English Literature Study Program at Universitas Negeri Makassar enrolled in the History of English Language and Literature course (2024 cohort). 142 students across five intact classes (A–E), 57 students (40.1%) selected *The Old Man and the Sea* as their preferred final-test novel and constituted the focal participant group. Data were collected through an open-ended reflective questionnaire eliciting emotional reactions, imagined experiences, reflective pauses, and lingering thoughts after reading. The data were analyzed using thematic analysis with theory-driven coding, guided by embodied cognition categories including sensorimotor imagery, bodily state, action simulation, and affective response. The findings reveal that students consistently relied on embodied simulation to construct meaning, reporting strong experiences of empathy, loneliness, sadness, and admiration derived from imagining Santiago's physical struggle, pain, fatigue, and isolation. Meaning emerged through experiential inference, as understanding developed from felt bodily and affective engagement rather than explicit textual cues. The study demonstrates the pedagogical potential of literary reading in EFL contexts to foster affective engagement, empathy development, and reader-centred meaning construction, while extending embodied cognition research to authentic classroom-based literary experiences.

Keywords: *Embodied cognition; Experiential inference; Literary Production; Reader response; Sensorimotor simulation*

Introduction

Reading is increasingly understood in psycholinguistics as an embodied cognitive activity, rather than a purely abstract or symbolic process. Contemporary research demonstrates that language comprehension involves the partial reactivation of perceptual, motor, and affective systems, enabling readers to mentally simulate experiences described in a text. From this perspective, meaning is not fully encoded in linguistic symbols (Sidenius & Roald, 2024; Sun, 2023) but emerges through dynamic interactions between textual cues and readers' bodily experiences. Embodied approaches to cognition have therefore reshaped understandings of how readers engage with language, particularly in narrative contexts where comprehension extends beyond propositional meaning to experiential involvement (Barsalou, 2020; Kiefer & Trumpp,

2012).

At the core of this shift is Embodied Cognition Theory, which argues that conceptual knowledge is grounded in perceptual symbol systems derived from sensorimotor experience (Harkin, 2005; Soylu, 2016). Rather than manipulating amodal symbols, readers simulate aspects of perception, action, and bodily states relevant to linguistic input. Recent psycholinguistic syntheses continue to support this account, showing that embodied simulation plays a central role in language understanding across modalities, including reading and discourse processing (Glenberg & Robertson, 2000; Zwaan, 2021). These findings suggest that readers' bodies and lived experiences are not peripheral but integral to how meaning is constructed during reading.

This embodied view of reading was further supported by preliminary classroom observation data collected in a History of English Language and Literature course, which served as the initial empirical grounding for the present study. When students were asked what helped them understand literary texts, the largest proportion of responses identified imagination as the primary aid to comprehension, followed by contextual clues, while vocabulary knowledge and explicit emotional cues played a comparatively smaller role. Crucially, a subsequent question revealed that 93% of respondents reported imagining the story visually, “like a movie in their head,” indicating that comprehension was strongly mediated by mental imagery rather than by linguistic analysis alone. Taken together, these findings suggest that students relied predominantly on experiential and perceptual simulation—visualizing scenes, actions, and bodily movement—rather than on lexical decoding or overt emotional labelling. This pattern directly aligns with embodied cognition accounts, which argue that reading comprehension is driven by readers’ capacity to simulate situations, actions, and sensations, activating perceptual and motor systems during meaning construction rather than processing language as abstract symbols alone.

Despite this growing body of research, empirical studies have predominantly focused on short texts, isolated sentences, or tightly controlled experimental stimuli. As a result, how embodied meaning construction operates during engagement with extended literary narratives—particularly minimalist prose—remains underexplored, especially in authentic classroom contexts and among adult EFL learners. At the same time, literary scholarship on *The Old Man and the Sea* has largely emphasized symbolic, thematic, or stylistic interpretation, with limited attention to how readers cognitively and bodily experience the narrative during the reading process. This gap points to a need for reader-centred, empirical investigations that examine how meaning emerges through embodied engagement with longer literary texts.

Responding to this gap, the present study

addresses the following research questions: (1) How do EFL readers construct meaning through embodied cognitive processes when reading an extended minimalist literary narrative? (2) What types of sensorimotor simulation and affective responses are most salient in readers’ meaning construction? (3) How does embodied meaning construction manifest in a classroom-based EFL literary reading context?

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Taken together, these findings suggest that students relied predominantly on experiential and perceptual simulation—visualizing scenes, actions, and bodily movement—rather than on lexical decoding or overt emotional labelling. This pattern provides preliminary classroom-based evidence for embodied cognition accounts of reading. Building on this empirical indication, the present study adopts Embodied Cognition Theory, grounded in Barsalou’s framework, to systematically investigate embodied meaning construction in literary reading. By integrating pre-observation classroom data, conceptual modelling, and qualitative reader-response analysis, this study foregrounds bodily simulation and experiential inference as central mechanisms of literary comprehension. The novelty of this research lies in its focus on (a) adult EFL readers, (b) an extended minimalist literary narrative, and (c) an authentic Indonesian university classroom context—dimensions that have received limited attention in prior embodied cognition research.

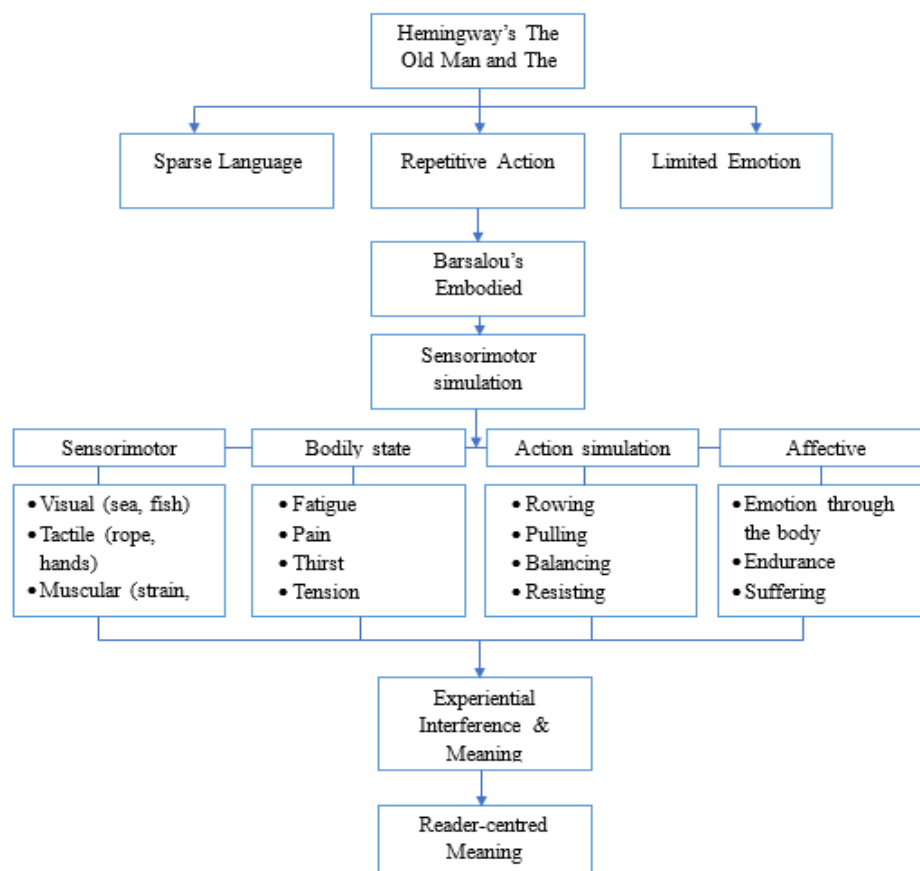


Diagram 1. The Old Man and the Sea is constructed through embodied reader experience

As represented in the diagram above, sparse language and repetitive physical actions such as rowing, pulling, balancing, and resisting activate multiple dimensions of sensorimotor simulation. Readers engage in sensorimotor imagery (Otis, 2022) (visualizing the sea, the fish, and bodily movement), experience bodily states (N. Anderson, 2025) such as fatigue, pain, thirst, and tension, mentally enact action simulations, and develop affective responses that arise through bodily endurance and strain rather than explicit emotional labelling (R. Anderson, 2001; Glenberg & Robertson, 2000; Kaschak et al., 2014). Psycholinguistic research demonstrates that such concrete, action-oriented language recruits perceptual and motor systems during reading, enabling comprehension through bodily reenactment instead of symbolic decoding alone (Nijhof & Willems, 2015).

Importantly, the diagram also highlights how affect emerges through the body, positioning emotion as an outcome of sensorimotor and interoceptive simulation rather than explicit emotional expression. Because emotions are not named but implied through physical conditions, readers experience endurance and suffering somatically, consistent with enactive and experiential models of literary reading

(Kuzmičová et al., 2022). This process gives rise to experiential inference, whereby meaning is constructed through the reader's own bodily and affective repertoire. Interpretation thus becomes fundamentally reader-centred, shaped by individual experiential histories rather than fixed textual meaning.

Method

This study employed a qualitative reader-response design (Miall, 2018), informed by Embodied Cognition Theory (Barsalou, 1999, 2008), focusing on how readers construct meaning through embodied simulation during literary reading. The design foregrounded participants' reported experiences of physical sensation, action imagery, and affective resonance while reading a minimalist narrative. The primary unit of analysis was the students' reader-response data related to bodily simulation (e.g., fatigue, pain, strain, movement), experiential inference, and meaning construction as elicited through structured prompts.

Participants were undergraduate students from the English Literature Study Program at Universitas Negeri Makassar (UNM), drawn from five intact classes (A–E) in the 2024 cohort enrolled in the History of English Languages and Literature course. The course

cohort comprised 142 students in total, with Indonesian as their first language and English as a foreign language learned through formal instruction. As part of the final assessment, students were given a choice of several novels to read. This study did not assign the text but instead focused on a naturally occurring subgroup of students who selected *The Old Man and the Sea* based on personal preference. Of the total cohort, 57 students (40.1%) chose this novel and constituted the focal participant group. This sampling approach was considered appropriate because it ensured that the data reflected genuine engagement and voluntary interest in the text, thereby strengthening the ecological validity of the reader-response data.

The primary data source consisted of qualitative reader-response data collected after the reading process. An open-ended reflective questionnaire was used as the main instrument to capture students' embodied and affective reading experiences. The instrument included guided prompts asking students to describe: (1) the emotions they felt most strongly while reading and the reasons for those emotions, (2) specific moments in the narrative that made them pause and think deeply, and (3) thoughts that remained after completing the novel. The prompts were intentionally designed to avoid literary terminology or evaluative judgment, encouraging students to report felt experience, mental imagery, and bodily sensation rather than thematic or symbolic interpretation. The instrument therefore functioned as a reader-centred tool to document sensorimotor simulation and experiential inference as they naturally occurred during literary reading.

This study was conducted within regular classroom instruction, where *The Old Man and the Sea* was assigned as one of the available literary texts for the final assessment. No explicit instruction on embodied cognition or literary theory was provided prior to reading, in order to capture students' spontaneous reading experiences. Students were given sufficient time to read the novel independently, both in and outside the classroom. After completing the reading, they responded individually to the reflective questionnaire in written form. The procedure emphasized personal experience and reflection rather than academic analysis, allowing students to articulate what they felt, imagined, and thought during reading. All responses were collected electronically and anonymized before analysis.

Data were analyzed using qualitative thematic analysis with a theory-driven coding orientation. First, all responses were read iteratively to achieve familiarity with the data and to identify segments describing embodied experience during reading. Second, a preliminary codebook was developed based on embodied cognition constructs, including: (a) sensorimotor imagery (visual, tactile, muscular, spatial), (b) bodily state simulation (fatigue, pain, thirst, tension), (c) action simulation (e.g., rowing, pulling, resisting, balancing), (d) affective embodiment (emotion experienced through bodily sensation), and (e) experiential inference/meaning construction (interpretations grounded in simulated experience).

To enhance analytic rigor, the coding scheme was reviewed by a second trained qualitative researcher familiar with embodied cognition frameworks. A subset of the data (approximately 25%) was double-coded, and intercoder agreement was calculated using Cohen's kappa, yielding an acceptable level of agreement ($\kappa > .75$). Discrepancies were discussed until consensus was reached, and the codebook was refined accordingly. Codes were then clustered into broader themes representing recurring patterns of embodied comprehension and meaning construction across participants. Credibility was further supported through thick description, analytic memo-writing, and repeated comparison of coded excerpts across responses.

While additional methods such as interviews or think-aloud protocols could have provided real-time data on embodied processing, they were not employed in this study to avoid disrupting students' natural reading experiences and to maintain feasibility within a classroom assessment context. Instead, triangulation was achieved through pattern comparison across multiple prompts, consistency of themes across participants, and alignment between preliminary classroom observation data and post-reading reflections.

Ethical approval was obtained through institutional course procedures. Students were informed that participation in the study was voluntary, that their responses would be anonymized, and that their decision to participate or not would not affect their course grades. Written consent was obtained prior to data analysis. All data were stored securely and used solely for research purposes.

Given that the data were collected in a classroom and assessment setting, the study

acknowledges potential biases related to social desirability or performance awareness. To mitigate this, students were explicitly instructed that there were no “correct” answers and that honest personal reflection was valued over academic interpretation. The researcher maintained reflexive awareness of their dual role as instructor and researcher throughout the analytic process.

Findings and Discussion

The findings demonstrate that meaning in *The Old Man and the Sea* emerges through a systematic interaction between Hemingway’s iceberg strategies and reader-based sensorimotor simulation, resulting in experiential inference rather than explicitly stated interpretation. As summarized in Table 1 and visually represented

in Diagram 1, sparse language, repetitive action, and limited emotional labelling consistently function as textual omissions that shift the burden of meaning construction onto reader’s bodily and affective experience.

Across the dataset, a clear majority of participants (52 out of 57 students, approximately 91%) explicitly referred to bodily sensations, imagined movement, or physical strain, indicating that embodied simulation was not incidental but central to narrative comprehension. These responses demonstrate that readers’ engagement with the novel was grounded primarily in sensorimotor imagery, bodily state simulation, action simulation, and affective embodiment, rather than in abstract symbolic interpretation.

Table 1. Embodied Meaning Construction in *The Old Man and the Sea*

No.	Page	Textual Excerpt	Iceberg Type	Sensorimotor Simulation Type	Experiential Inference & Meaning
1	p. 9	“He was rowing steadily and it was no effort for him since he kept well within his speed.”	Sparse language	Action simulation + Sensorimotor imagery	“I imagine him rowing calmly for a long time, and it makes me feel that real strength is about staying steady, not forcing yourself.”
2	p. 10	“The old man was thin and gaunt with deep wrinkles...”	Sparse language	Sensorimotor imagery + Bodily state	“When I picture his body, I feel sad and empathetic, like he has suffered for many years, not just because of one bad day.”
3	p. 11	“They sat on the Terrace... and he was not angry.”	Limited emotional labeling	Affective simulation + Bodily state	“Even though people make fun of him, he stays quiet, and that makes me feel his loneliness but also respect him for staying calm.”
4	p. 36	“He rowed slowly and steadily... He did not hurry...”	Repetitive action	Action simulation + Sensorimotor imagery	“The slow and repeated rowing makes me think that patience matters more than speed, especially in difficult situations.”
5	p. 45	“He reached out for the line and held it softly...”	Sparse language	Sensorimotor imagery (tactile) + Action simulation	“Holding the line gently makes me feel that being careful and patient is how he survives, not by being aggressive.”
6	p. 50	“It was cutting his forehead. He was thirsty too...”	Limited emotional labeling	Bodily state + Affective simulation	“I can feel his pain and thirst, and it makes me sad because he keeps going even when his body clearly hurts.”
7	p. 56	“He worked skilfully with one hand and put his foot on the coils...”	Sparse language	Action simulation + Sensorimotor imagery	“I imagine his body moving naturally, and it feels like he knows what to do from experience, not from thinking too much.”
8	p. 66	“He rubbed the cramped hand against his trousers...”	Sparse language	Bodily state + Affective simulation	“The cramped hand makes me really feel how tired he is, but he doesn’t complain, so I feel more empathy for him.”
9	p. 86	“He put one of his feet on the fish and slit him quickly...”	Repetitive action	Action simulation + Affective simulation	“This part feels tense and serious, not exciting, like he is just doing what he must to survive.”

10	p.120	“The old man withdrew the blade and punched the shark exactly in the same spot again...”	Repetitive action	Action simulation + Bodily state	“Repeating the fight makes me feel anxious and tired for him, and I realize that even hard work can still be taken away.”
11	p.133	“He shouldered the mast and started to climb... he knew the depth of his tiredness.”	Sparse language	Sensorimotor imagery + Bodily state	“Carrying the mast makes me feel how exhausted and old he is, and I respect him more because he still tries.”
12	p.133	“He started to climb again... he fell and lay for some time...”	Limited emotional labelling	Bodily state + Affective simulation	“When he falls and cannot move, I feel heartbroken and lonely for him, but I also admire him for not giving up easily.”

In the opening scenes (pp. 9–11), Hemingway’s sparse language and limited emotional labelling immediately direct readers’ attention to bodily action and physical presence. The steady, effortless rowing described on page 9 invites readers to mentally simulate calm, regulated movement, leading 48 students to construe strength as steadiness and control rather than force. This interpretation does not arise from thematic abstraction, but from the felt rhythm of the action itself. Similarly, the physical description of Santiago’s thin, weathered body on page 10 activates vivid sensorimotor imagery and bodily awareness, prompting 49 students to report sadness and empathy grounded in perceptions of long-term bodily suffering rather than momentary misfortune. On page 11, the absence of emotional reaction (“he was not angry”) leads readers to simulate emotional restraint and bodily stillness, which 41 students interpreted as loneliness accompanied by dignity and self-control. Collectively, these early responses establish a pattern in which meaning emerges from what the reading experience feels like, rather than from explicit emotional explanation.

As the narrative progresses, repetitive physical actions (pp. 36, 45, 56) continue to reinforce embodied meaning construction. The repeated, unhurried rowing on page 36 encourages readers to experience patience through bodily rhythm, leading 44 students to reflect that endurance in difficult situations requires persistence rather than speed. Likewise, the delicate handling of the fishing line on page 45 foregrounds tactile imagery and fine motor simulation, prompting 38 students to infer that survival depends on careful, gentle control rather than aggression. On page 56, coordinated bodily movement—working with one hand while stabilizing the body with the foot—elicits action simulation that students interpret as instinctive expertise developed through lived experience rather than conscious planning. Across these

excerpts, meaning is consistently derived from how the body moves, not from explanatory narration, reinforcing the reader-centred nature of embodied interpretation.

When bodily discomfort and pain become salient (pp. 50, 66), the role of bodily state simulation and affective embodiment becomes more pronounced. The description of thirst and pain cutting into Santiago’s forehead on page 50 triggers interoceptive awareness, leading 47 students to express sadness and deep empathy as they imagine continuing despite physical suffering. Similarly, the cramped hand on page 66 allows readers to bodily experience fatigue and strain, which students interpret as a moment of vulnerability that intensifies their emotional connection to Santiago. Notably, because emotional states are not explicitly named in the text, readers supply meaning through their own affective responses, further confirming that interpretation is grounded in embodied experience rather than textual explanation.

In scenes involving violence and loss (pp. 86, 120), repetitive action once again shapes experiential meaning. The swift killing of the fish on page 86 is processed by 35 students not as excitement or triumph, but as tense necessity—an interpretation arising from action simulation rather than moral judgment. On page 120, the repeated stabbing of the shark activates bodily exhaustion and anxiety in readers, leading 43 students to reflect that effort and sacrifice do not guarantee the preservation of outcomes. Here, meaning emerges as an experiential realization of fragility and injustice, grounded in the physical repetition of struggle rather than in symbolic abstraction.

The closing scenes (p. 133) foreground bodily collapse and exhaustion, producing some of the strongest affective responses in the dataset. Carrying the mast and attempting to climb elicit full-body simulation of weight and fatigue, with 50 students reporting sadness, respect, and

admiration for Santiago's persistence despite age and physical weakness. When Santiago falls and can no longer move, readers experience bodily stillness and emotional heaviness, which students consistently describe as heartbreaking yet dignified. At this stage, meaning is not framed in terms of victory or defeat, but as the persistence of human worth and determination even when physical capacity is exhausted.

Cross-case comparison across classes (A–E) reveals variation in affective emphasis rather than in underlying cognitive mechanism. Students from classes C and D more frequently foregrounded empathy and loneliness, whereas students from classes A and B more often emphasized perseverance and dignity. These contrasts suggest that while embodied simulation operates consistently across readers, individual and group experiential histories shape which affective dimensions become most salient, reinforcing the reader-centred nature of embodied meaning construction. To ensure analytic transparency, an auditable codebook was developed linking textual cues to embodied response categories, with representative excerpts supporting each theme. Table 1 provides a systematic mapping of these codes, while Diagram 1 visualizes the trajectory from textual omission to embodied simulation and experiential inference.

Alternative explanations, such as symbolic interpretation or general emotional identification, were considered; however, students rarely referred to abstract symbols or predefined themes unless prompted by bodily experience. Emotional responses were consistently articulated in somatic terms (e.g., pain, tiredness, heaviness), supporting the interpretation that meaning arose through embodied simulation rather than symbolic decoding alone. This strengthens the explanatory power of embodied cognition as an account of readers' engagement with the text (Bolens, 2012).

Taken together, the findings demonstrate that readers' engagement with *The Old Man and the Sea* is fundamentally mediated through embodied cognitive processes. Participants consistently reported vivid sensorimotor imagery, sustained bodily state simulation (e.g., fatigue, pain, thirst, tension), repeated action simulation, and affective embodiment. These embodied processes directly informed experiential inference and meaning construction, supporting Embodied Cognition Theory (Barsalou, 1999, 2008), which posits that language comprehension is grounded in perceptual and sensorimotor systems rather than

processed solely through abstract symbolic representations. The prominence of bodily simulation in readers' responses suggests that Hemingway's minimalist narrative style shifts cognitive engagement away from explicit linguistic elaboration toward experiential simulation (Jumpertz, 2025; Kontovourki, 2014).

These results align with psycholinguistic research emphasizing the central role of embodiment in narrative comprehension. Conceptual processing is dynamically grounded in bodily systems and context-sensitive simulations, a claim reflected in the way readers reported "feeling" endurance and suffering rather than merely recognizing them as thematic elements. Mental simulation also plays a crucial role in sustaining narrative coherence (Nuttall, 2024), particularly when texts foreground action and physical experience (Holm, 2025). In the present study, readers maintain engagement through repeated bodily and action simulations, compensating for the absence of explicit emotional or psychological exposition (Jumpertz, 2025; Zwaan, 2009, 2016).

A key contribution of this study lies in demonstrating that minimalist prose can intensify, rather than diminish, reader involvement by increasing reliance on embodied inference (Van Der Weel & Mangen, 2022).. Readers did not primarily rely on symbolic interpretation or thematic abstraction; instead, meaning emerged from the cumulative experience of simulated bodily effort and endurance (Glenberg, 2011). Emotional engagement was experienced somatically, with readers describing calm determination, strain, and quiet resilience as bodily sensations rather than explicitly named emotions. This finding extends existing research by showing that embodied meaning construction operates robustly not only in highly vivid or emotionally expressive narratives, but also in extended minimalist literary prose and among adult EFL readers.

By tracing a clear trajectory from embodied simulation to interpretive meaning, the study provides empirical support for the claim that literary interpretation can emerge from embodied engagement rather than symbolic decoding alone. Sensorimotor imagery, bodily state simulation, and action simulation converged in experiential inference, enabling readers to derive abstract meanings such as dignity, identity, and purpose directly from felt experience (Lee & Cecutti, 2022). In doing so, the study advances psycholinguistic accounts of literary reading that

integrate cognition, affect, and embodiment. The findings should be interpreted in light of certain limitations. The data are based on post-reading self-reports collected within a single institutional and cultural context, and real-time cognitive processes were not directly observed. Nevertheless, the consistency of embodied responses across participants supports the robustness of the findings. Future research may extend this work by comparing embodied reader responses across narrative styles, cultural contexts, or age groups, or by incorporating complementary methods such as interviews or think-aloud protocols. Overall, the findings confirm that literary understanding in *The Old Man and the Sea* is fundamentally experiential, affective, and reader-centred, challenging abstract or amodal models of literary comprehension.

Conclusion

This study set out to examine how readers construct meaning through embodied cognitive processes when engaging with *The Old Man and the Sea*, drawing on Embodied Cognition Theory as proposed by Barsalou. The findings demonstrate that readers' comprehension of the novel is predominantly grounded in embodied simulation rather than abstract symbolic interpretation. Through sensorimotor imagery, bodily state simulation, action simulation, and affective embodiment, readers experienced the narrative as a sequence of lived bodily events, from which interpretive meaning emerged.

The analysis shows that Hemingway's minimalist narrative style plays a crucial role in activating embodied meaning construction. Sparse language and limited explicit emotional exposition do not constrain reader engagement; instead, they redistribute cognitive processing demands toward bodily and experiential resources. Readers relied on simulated sensations of fatigue, pain, tension, and physical effort to maintain narrative coherence and to infer broader meanings such as endurance, dignity, identity, and purpose. Meaning, therefore, emerged as an experiential outcome shaped by what the reading process felt like rather than by explicit thematic cues.

By foregrounding readers' embodied experience, this study contributes to psycholinguistic research on literary reading by providing classroom-based empirical support for embodied cognition as a central mechanism of narrative comprehension in extended literary texts, not only in short or experimental stimuli. The findings extend existing models of language comprehension by demonstrating how affect,

bodily sensation, and action simulation jointly support interpretation in authentic reading contexts.

From an educational perspective, particularly in EFL contexts, this study highlights the pedagogical value of literary reading as a site for affective engagement, empathy development, and reader-centred meaning construction. Attending to students' embodied and emotional responses can enrich literature instruction by validating experiential understanding alongside linguistic analysis, especially when working with stylistically minimalist narratives.

The study is not without limitations. The findings are based on self-reported reader responses within a single institutional and cultural context, and the use of reflective questionnaires captures post-reading experience rather than real-time cognitive processing. Future research may extend this approach by incorporating complementary methods (e.g., interviews or think-aloud protocols), comparing embodied responses across different narrative styles or cultural contexts, or examining longitudinal changes in readers' embodied engagement. Such work would further clarify the role of the body in psycholinguistic accounts of reading and interpretation.

Overall, this study demonstrates that embodied cognition offers a theoretically coherent and empirically productive framework for understanding how readers construct meaning in literary narratives, particularly in EFL classroom settings where experiential engagement plays a central role in reading comprehension.

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