HJRS HEC Journal Recognition System Category Y

Vol 3 Issue 1 (July-September 2025)

ISSN (Online): 3006-4740
ISSN (Print): 3006-4732

Cognitive Processing of Event Sequences in *The Alchemist*: A Psycholinguistic Study

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Abstract

Narratives, weather fiction or non-fiction, films or folk tales, work as a means to share the experiences and transfer knowledge. The narratives are crucial in developing and interpreting events. Therefore, the present study aims to identify the core features of events in *The Alchemist* and to explore how these features unfold the events and inform the readers about the cognitive processing of any narrative. The textual analysis of the novel, through the lens of the Event Indexing Model (Zwaan et al., 1995), reveals that the use of EIM features – time, space, protagonists, causation, and motivation – are intricately embedded in the narrative and enhance the comprehension and engagement of the readers. Hence, the effective use of these features assists in the effective construction and cohesion of the text at cognitive levels.

Keywords: Cognitive processing, EIM, Events, Narratives, The Alchemist,

Introduction

Language comprehension and production involve a complex cognitive processing. The cognitive processing behind language use and interpretation has long been studied – to see how language acts as a resource to understand underlying thought processes (Batool et al., 2025; Batool et al., 2025), viewpoints and cognition (Batool et al., 2024; Khawar et al., 2021; Khalfan et al., 2020); and as a means to investigate and understand conceptualization (Jan et al., 2022; Jan et al., 2023; Saba et al., 2024) and everyday tasks like problem solving, planning (Batool et al., 2025; Noreen et al., 2024; Tenbrink & Kuhn, 2011). In the same way, language of literature – be it of prose or poetry – not only reflects the linguistic and cognitive mechanisms involved in the production of the text (Azhar & Batool, 2025; Altaf & Batool, 2024; Altaf & Batool, 2024; Sikander et al.,

2022), but also informs about the ways readers employ to comprehend the text (Altaf et al., 2024; Gohar et al., 2023; Batool et al., 2022; Bass, 2021).

Narratives, whether in the form of fiction or non-fiction, films or folk tales, work as a means for story-teller to share their experiences and transfer knowledge and enable readers to understand the world in the context of their own experiences (Gabriel, 2004; Hutto, 2007; Short, 2012; Ritivoi, 2016). These narratives are crucial in developing perceptions and interpreting the events (Zacks & Tversky, 2001). Cognitive processing with narratives involves complex mental representation of events by the individuals (Kendeou, et al., 2014). This mental mechanism reflects the deep interplay between the narrative's structure and the reader's cognitive processes. Despite the increasing interest in cognitive processing of narratives (Aluya, & Uduma, 2024; Eekhof et al., 2022; Eekhof et al., 2021), there is a notable gap in understanding how specific narrative structures influence readers' comprehension.

The cognitive processing of the narratives requires the interplay and integration of readers' mental schemas with the components of the text (Kendeou, et al., 2014). Such components include changes in time, cause-effect relationship and motivation of the character(s) (Zwaan, 2004). Moreover, readers continually enhance their mental frames to incorporate new information and to maintain coherence when there is a shift in the events and contexts (Radvansky & Zwaan, 2009). These cognitive processes are crucial in increasing the engagement of readers with the text and in increasing their comprehension of the text (Guthrie et al., 2004).

Event Index Model is a prominent framework, that provides a systematic approach to analyze the narratives to understand how readers integrate narrative features and to explore cognitive processing during this whole process. The Event Indexing Model (EIM) (Zwaan et al., 1995) explains how readers build their mental representations of the narratives by indexing events based on five core features – time, space, protagonists, causation, and motivation. These features act as cognitive guideposts and enable readers to monitor and organize the flow of the events within the narrative. Zwaan and Radvansky (1998) assert that the model highlights the dynamic construction of events at mental level by creating the relationship of the core features in the story. The disruption or any inconsistency in these features can impede the comprehension and their significance in the narrative building process.

EIM also describes the active role of the readers as they synchronize the textual evidences with their background knowledge. Zwaan (2004) further explains that temporal markers, spatial descriptions and character's motivation work collectively to create the cohesive mental framework that reflects the narrative structure (Dutke, & Rinck, 2006).

EIM in this regard, serves as a suitable framework for this dynamic shift in the events: i.e the temporal sequence helps readers to develop causality by presenting how events progress over time, while spatial features allow to visualize the physical settings of the narrative. Graesser et al. (1994) demonstrates that readers wholly rely on such markers to understand the relationship between the events and predict outcomes to interpret actions of the character – all of this is fundamental in narrative comprehension.

Narrative comprehension includes the construction of the events, settings and characters. The relationship of the EIM features play vital role in this process. For example, temporal markers direct readers to follow event sequences, while space description provides contextual information. The motivation driven actions of the character allow deeper understanding of the decisions made by the protagonist, that foster empathy and engagement. Zwaan and Radvansky (1998) further highlights the causation as the backbone to understand the cohesion of the story. It is because of the causation that readers can understand the logical progress of the events. The relationship of the indexing features ensure that readers maintain the understanding of the narrative.

By systematically indexing these features, readers can construct coherent representation of narrative in the mind and can comprehend the narratives by making sense of the sequence of events and their interconnections. While the EIM provides a framework for analyzing how readers understand the narrative text, empirical studies applying this model to specific literary works are limited. Therefore, the present research applies EIM on the novel *The Alchemist* written by Paulo Coelho in 1988.

The Alchemist is the story of Santiago, a shepherd boy, who had a recurring dream about a child who told him that he would find a hidden treasure if he travels to the Egyptian pyramids. Then he embarked on a mission to uncover the treasure and end up exploring his self and his aspiration. This is what the famous novel is about. The universal themes of the Alchemist encourage readers to explore their own goals and search for the meaning of the self and the fate. It is all possible through the series of the events, characterization and philosophical concepts.

Following questions inform the study:

1. What core aspects related to the events of the story are represented in *The Alchemist*?
2. How these features unfold the events and inform the readers about the cognitive processing of the narrative?

The study is significant in examining the piece of literature which has educational implications – that how readers interact with narratives through cognitive processing. It will also help teachers devise reading techniques to help struggling readers by exploring the key elements of EIM in the narratives/ stories so it will raise the reading competence of the students. The research has also other practical implications for the writers and storytellers. They can create their stories/narratives more appealing by figuring out which component persuade and captivate reader at cognitive level for example knowing the interpretation of motivation and causality by the readers can help authors in creating fascinating stories that keep the attention of the readers along with their emotional commitment. Similarly, the knowledge of the temporal and spatial coherence is significant as it may guide in the creation of the realistic environment and setting in the story that widen the reader's experiences. This use of the features of EIM is not only useful in literature but also in other sectors such as marketing and advertisement, education and entertainment, in such sectors the appealing narratives are key in getting audience

Research Methodology

Research Method

The present study uses a qualitative research method to explore the cognitive processing of events sequences work in the novel *The Alchemist* by Paulo Coelho. Qualitative research fits suitable for the present research as it allowed an in-depth investigation of the events of the narrative and of the cognitive processing that the reader is involved in while understanding the text. The Event Indexing Model (EIM) as theoretical framework guides in identifying core features of EIM in the novel and in exploring how these features unfold the events and inform the readers' cognitive processing of the narratives.

Sampling

Through purposive sampling technique, specific passages were selected from the text that illustrate the core features of the Event Indexing Model. This sampling approach ensured that the selected extracts are relevant to answer the research questions and represent the narrative events. It maximized the in-depth investigation of the core features of the EIM and helped to answer research questions while representing the narrative events within the novel. Moreover, textual analysis (Kuckartz, 2014) combined with close reading (Bortolussi & Dixon, 2003) helped in identifying core features of EIM and in investigating their interconnectedness for comprehension and meaning making of the text.

Data Analysis Procedure

The analysis of the novel is done with reference to core features of the EIM within the narrative. They include time, space. protagonist, causation and motivation. EIM provides a lens for investigating the cognitive processes that readers use to comprehend the event sequences. In this regard, specific linguistic terms guided the identification and exploration of each feature of EIM. The analysis procedure of the present research includes the following steps:

Identifying core features of EIM

a) Temporal index: to analyse the chronology of the event and their impacts on the narrative. The temporal markers that help to understand the role of time are *"eg., after, during, meanwhile, years later".* Temporal adverbs, conjunction, and tense shift was examined to explore how time is linguistically encoded,

b) Spatial index: to examine the contribution of physical setting to the narrative structure. The spatial setting influences the experiences, choice and personal growth of the character. It is identified through location in the novel (e.g., Andalusia, the desert, the pyramids etc). Space prepositions, and location terms were examined for constructing spatial context,

c) Protagonist index: It analyses the role and development of the protagonist along with how it interacts with other characters. The function of proper nouns, pronouns, and dialogues which reveals the character's traits, goals and relationship with other things,

d) Causal relationship index: it examines the cause and effects relation that moves the narrative forward. Mapping the causal relationship between the events sequences where one actions leads toward the other. It is examined through causal conjunctions and inferential markers (i.e. because, thus, therefore, as a result),

e) Motivation index: to explore the motivation of the characters and how it influence the narrative progress. It is linked with how the goal of the character is align or clash with the themes of the story. It is examined through modal verbs i.e. *Must, should, will* and intention markers;

1. Selecting the textual extracts after identifying the core features through linguistic terms, to provide the textual evidence;
2. Integrating linguistic features with overall narrative building to see the cognitive processing.

Data Analysis

Representation of core features in "The Alchemist"

Time index

The Analysis of the novel *The Alchemist* reveals that the time feature of EIM is represented through a variety of the linguistic markers of time. These markers assist to develop clear event sequences and help in comprehending the journey of Santiago from his initial dream to discovering the treasures "self". The use of the linguistic terms such as "after, before, during, now, then, later, when, initially, at first, finally, meanwhile, as soon as, in the past, in the future and so on" help in creating structured timeline to have narrative flow. For example, the line "After Santiago had a dream" not only specify the particular point in time but also sets the ground for the upcoming actions and decisions that Protagonist made. The temporal index allows reader to understand the chronology of the events which helps in understanding the plot and the development of the main character in the narrative. Moreover, the use of time markers in the extracts below highlights the same:

After Santiago had the dream, he decided to seek his treasure.
Meanwhile, the merchant was busy with his trade.
Eventually, Santiago reached the pyramids.

Space index

After analyzing the novel Alchemist, it is explored that space index of EIM is represented through linguistic items related to space in the text. The terms related to space establish the sense of location and space and assist in understanding the settings in the plot of the story that is crucial to Santiago's journey. The terms such as "*in, at, on, near, between, within, beyond, across, throughout, toward, around, along, inside, outside*" allow to provide the physical description of the locations which contribute to creating the overall atmosphere and context in the narrative. It allows readers to visualize the settings of the plot and understand the experiences and challenges of the character. The extracts of the novel further illustrate the use of the space items:

In the desert (indicating a specific location).
At the oasis (providing a clear spatial reference).
Across the mountains (describing movement through space).

Protagonist Index

The protagonist feature of the Event Index Model is represented through various linguistic terms either pronoun or proper noun that describe the protagonist of the novel, particularly Santiago. The use of the proper noun, noun phrase and pronoun such as "Santiago, the boy and he/his" allow readers to easily follow the actions and thoughts of the main character throughout the novel. For example, the line "Santiago wanted to find the treasure*"* highlights that protagonist "Santiago*"* along with the understanding of his desires and goals "treasure*"*. In addition, the most common expression used is *"the boy"* that is the references to the Santiago. The referential expressions help to establish the role and relationship with other character with make it engaging for the readers to the narratives. The extracts from the novel further highlights how the referential terms are used in the novel:

Santiago wanted to find his treasure.

The alchemist taught Santiago about the Soul of the World.

Causation Index

In the novel, the causation index of the EIM is represented through cause-effect linguistic terms that indicate the causal relationship between the events. The commonly used cause-effect terms are *"because, therefore, as a result, due to, caused by, leads to, results in, consequently, thus, for this reason, hence, so"*. These terms help in understanding how the action and decisions in the novel lead to the particular outcomes that shape that narrative progression. The lines such as *"because he followed his dream"* and *"the merchant's greed led to his downfall"* demonstrate the direct connections between motivations of the characters and the consequences of their actions. The lines below highlight the reasons behind the events and the moral lessons in the story:

Santiago's determination resulted in his eventual success

Because he followed his dream, he encountered many challenges.

The merchant's greed led to his downfall.

Motivation Index

The last feature of the EIM is motivation, which is represented through linguistic terms that reveal the desires and goals of the characters. The frequently used linguistic items "want, desire, wish, goal, aspiration, motivation, driven by, inspired by, yearn, long for, hope, intent, and purpose" help in comprehending the reasons behind the actions and decisions of the protagonist and other characters in the novel. The lines, for example, *"Santiago wanted to find his treasure"* and *"He* was driven by his desire to fulfill his personal legend" show the motivation of the protagonist which is central to the narrative's progression. The reference to the Santiago's ambitions and aspiration as highlighted in the lines below, emphasize the importance of the motivation in shaping the plot of the narrative and the protagonist's journey.

Santiago wanted to find his treasure.

He was driven by his desire to fulfill his personal legend.

The alchemist inspired Santiago to pursue his dreams.

Cognitive Processing of Events through EIM

Narrative comprehension involves cognitive processes that allow readers to create meaningful mental representation of the events and to understand the events' progress in the narrative. The narrative of *The Alchemist* reveals distinct features that align with Event Index Model (EIM) – time, space, protagonist, causation, and motivation. The identification and interpretation of these features not only assist in unfolding the events and in building the narrative, but also inform the readers' cognitive processing of the narratives.

The time feature plays a crucial role in providing structure to the events, in creating mental representations as the events unfold, and in informing about the cognitive processing of the readers as the story progresses. Besides guiding the sequences of the event, it allows the reader to follow Santiago's journey and to connect with his experiences in varied contexts and events. The linguistic terms related to time enable readers to integrate the events and develop deeper understanding of the novel.

Similarly, the space index is also instrumental in exploring and presenting the physical setting of the narrative, which allows reader to make the map of the journey of Santiago in diverse locations. The description of the places, such as the *Andalusia, the desert, and pyramids*, provide visual representations of the narrative in the mind. Space index terms measure the events within distinct settings that emphasize the role of physical environment in shaping the experiences of the character. This spatial awareness increases cognitive processing of readers by connecting setting with the event's progression.

The representation of the protagonist is also significant as it also contributes to the unfolding of the events. The linguistic cues such as proper nouns, common nouns, and pronouns enable readers to develop clear mental representation of Santiago's identity, his motivation and his growth in the novel. This builds connections between readers and protagonist as they engage in the challenges and celebrations.

Causation index supports the narrative structure and establishes the cause-and-effect relationship for understanding the sequences of the events. Through the terms related to the causal terms, "because, therefore and as a result, etc.", the action of the protagonist influences the upcoming actions in the narrative development. Linguistic encoding enables to trace the flow of the events and their cognitive processing of consequences through it. This causal relationship increases the coherences in the narrative which allows the readers to predict outcomes and engage in the story's progression.

The final index is motivation, that is central to the comprehension of the narrative for the reader, as it reveals forces and inspiration behind the character's actions. This index produces Santiago's wishes and destination that work at mental level to shape the journey of the main character. Through identified linguistic devises, the narrative highlights reader's empathy with the pursuit of self-discovery of the protagonist. The motivation is linked with the actions which emphasize the metal connections required for understanding the motivational development and emotional engagement of the readers.

The core features of the Event Indexing Model played a crucial role in shaping the event sequences in the novel The Alchemist. These event indices guide the cognitive processing of readers by providing clear and coherent depth that enable the understanding of the narrative. Through the interplay, the text enables the readers to follow the progression of the events and also engage them in making meaning of the events through their reading experiences.

Conclusion

In conclusion, the study was able to locate and analyze the most important features of the Event Indexing Model – time, causation, space, protagonist, motivation – in Paulo Coelho's *The Alchemist*. Furthermore, the study highlights the significant role of cognitive processing in the understanding of stories, further enhancing our knowledge of the construction of narrative effects on readers' mental representations. More generally, this research highlights the robust interaction between narrative structure and mental engagement in the creation of readers' experience.

Future studies in psycholinguistics and literary analysis can build on these results by further exploring the ways the central aspects of the Event Indexing Model work across genres and cultures, offering a more comprehensive understanding of narrative processing and emotional attachment. In educational settings, the knowledge of EIM features can facilitate reading instructions for teachers and can boost reading comprehension for and involvement of students. Moreover, in the contexts of literature and creative writing, knowledge of the cognitive effects of narrative cohesion may guide writers in writing better stories.

References

Altaf, Mubashar, Batool, H., & Khan, S., Y. (2024). Exploring colonial legacies: Resistance and de-coloniality in Nadeem Aslam's The Blind Man's Garden. *Panacea Journal of Linguistics & Literature, 3*(1), 93–104. https://journals.airsd.org/index.php/pjll/article/view/388

Aluya, I., & Uduma, A. (2024). A cognitive stylistic study of mind style in selected short stories in Dul Johnson's *Shadows and Ashes*. *Journal in Arts, Commerce, Education & Social Sciences, 12*(4), 51-62.

Batool, H., & Ahmed, H. (2024). Cognitive processing behind slips of tongue (SOTs) in Shina: Insights from WEAVER++ model of speech production. *Tehreer Journal of Languages and Literature, 2*(2), 1-20

Batool, H., & Shehzad, W. (2018). Why do sensory experiences in Autism Vary? An explanation from cognitive linguistics. *International Journal of English Linguistics, 8*(1), 54-70.

Batool, H., Irshad, S., & Nisar, M. (2021). Embodied cognition in morpho-syntactic processing and severity of Autism. *Pakistan Journal of Languages and Translation Studies, 9*(1), 146-161.

Batool, H., Rasool, S., & Shehzad, W. (2022). Content words and their conceptualization: A corpus based study of conversations of children with Autism. *Hayatian Journal of Linguistics and Literature, 6*(1), 207-230.

Bortolussi, M., & Dixon, P. (2003). *Psychonarratology: Foundations for the empirical study of literary response*. Cambridge University Press.

Coelho, P. (1988). *The Alchemist*. HarperCollins.

Dutke, S., & Rinck, M. (2006). Predictability of locomotion: Effects on updating of spatial situation models during narrative comprehension. *Memory & cognition, 34*(6), 1193-1205.

Eekhof, L. S., Van Krieken, K., & Willems, R. M. (2022). Reading about minds: The social-cognitive potential of narratives. *Psychonomic Bulletin & Review, 29*(5), 1703-1718.

Eekhof, L. S., Van Krieken, K., Sanders, J., & Willems, R. M. (2021). Reading minds, reading stories: Social-cognitive abilities affect the linguistic processing of narrative viewpoint. *Frontiers in Psychology, 12*, 698986.

Gabriel, Y. (2004). Narratives, stories and texts. *The Sage handbook of organizational discourse*, (Part I), 61-78.
Guthrie, J. T., Wigfield, A., Barbosa, P., Perencevich, K. C., Taboada, A., Davis, M. H., ... & Tonks, S. (2004). Increasing reading comprehension and engagement through concept-oriented reading instruction. *Journal of educational psychology*, *96*(3), 403.
Graesser, A. C., Singer, M., & Trabasso, T. (1994). Constructing inferences during narrative text comprehension. *Psychological Review, 101*(3), 371–395.
Hutto, D. D. (2007). Narrative and understanding persons. *Royal Institute of Philosophy Supplements*, *60*, 1-16.
Jan, A., Batool, H., & Noor, A. (2022). Use of 'EYE' metaphor in idioms: comparative analysis of English and Urdu. *Pakistan Journal of Society, Education and Language, 9*(1).
Jan, A., Batool, H., & Qadeer, A. (2023). Awareness posters and 1st wave of Covid-19 in Pakistan: A multimodal meta-photonymic analysis. *PalArch's Journal of Archaeology of Egypt/ Egyptology, 20*(1), 499-522
Kendeou, P., Van Den Broek, P., Helder, A., & Karlsson, J. (2014). A cognitive view of reading comprehension: Implications for reading difficulties. *Learning disabilities research & practice*, *29*(1), 10-16.
Khalfan, M., Batool, H., & Shehzad, W. (2020). COVID-19 neologisms and their social use: An analysis from the perspective of linguistic relativism. *Linguistics and Literature Review*, *6*(2), 117-129.
Kuckartz, U. (2014). *Qualitative text analysis: A guide to methods, practice and using software*. Sage.
Khawar, Z., Batool, H., & Qadeer, A. (2021). Covid-19 and social media language change: A perspective of Linguistic determinism. *Pakistan Journal of Languages and Translation Studies, 9*(1), 12-33.
Morrow, D. G. (1985). Prepositions and verb aspect in narrative understanding. *Journal of Memory and Language*, *24*(4), 390-404.
Moriarty, J. (2011). *Qualitative methods overview*. London, UK: NIHR School for Social Care Research.
Noreen, R., Batool, H., & Mobein, S. J. (2024). Language as access point to spatial knowledge: A cognitive discourse analysis (CODA) of planning & navigation accounts. *Journal of Arts and Linguistics Studies*, *2*(4), 2023-2049.
Radvansky, G. A. (2009). Spatial directions and situation model organization. *Memory & Cognition*, *37*(6), 796-806.
Ritivoi, A. D. (2016). Reading stories, reading (others') lives: Empathy, intersubjectivity, and narrative understanding. *Storyworlds: A Journal of Narrative Studies*, *8*(1), 51-75.
Short, K. G. (2012). Story as world making. *Language Arts*, *90*(Local Literacies in a Global World), 9-17.
Tenbrink, T., & Kuhn, W. (2011). A model of spatial reference frames in language. In *Spatial Information Theory: 10th International Conference, COSIT 2011, Belfast, ME, USA, September 12-16, 2011*. Proceedings 10 (pp. 371-390). Springer Berlin Heidelberg. https://doi.org/10.1007/978-3-642-23196-4_20
Zacks, J. M., & Tversky, B. (2001). Event structure in perception and conception. *Psychological bulletin*, *127*(1), 3.
Zwaan, R. A. (2004). The immersed experiencer: Toward an embodied theory of language comprehension. *Psychology of Learning and Motivation, 44*, 35–62.
Zwaan, R. A., & Radvansky, G. A. (1998). Situation models in language comprehension and memory. *Psychological Bulletin, 123*(2), 162–185.
Zwaan, R. A., Langston, M. C., & Graesser, A. C. (1995). The construction of situation models in narrative comprehension: An event-indexing model. *Psychological science*, *6*(5), 292-297.