

Facilitating Second Language Acquisition: Examining the Influence of Sequential Event Alignment (the Structure Building Based) vs. Shifting in the Reading Proficiency of Upper Intermediate Iranian EFL Learners

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The current study was conducted to comparatively investigate the effects of sequential alignment and shifting strategies on the reading proficiency of Iranian English as Foreign Language (EFL) learners. For the purpose of quantitative research, 130 students studying at the “IELTS Online Academy” language institute were selected. Then IELTS placement test was run to verify their level. The participants were divided into three groups with 30 members in each. As the instruments of the study, two tests were used; one reading pretest of IELTS that was run before the treatment and one posttest of reading IELTS that were run after the treatment. The results of paired-sample t-tests and one-way ANOVA tests revealed that both Sequential Alignment and shifting statistically significantly promoted learners’ reading comprehension ability. However, it was found that the sequential event alignment group had significantly outscored the Shifting one.

Keywords: *sequential alignment, shifting the events, EFL teaching, reading proficiency, IELTS tests*

Introduction

In today's complex field of language learning, it is essential to grasp how reading skills develop. Two key mechanisms involved are sequential alignment and shifting. This research explores how these processes affect the reading abilities of Iranian students learning English as a foreign language (Traxler 2012, p. 201).

Reading proficiency is a crucial skill for EFL learners, affecting their academic success, communication abilities, and overall language competence. Understanding the cognitive mechanisms involved in reading—specifically sequential alignment and shifting—can lead to more effective instructional strategies (Traxler 2012, p. 201).

Despite extensive research on reading comprehension, the specific impact of sequential alignment and shifting has remained underexplored. This study touches this gap by examining their influence on Iranian EFL learners’ reading performance. When readers encounter a passage, their minds naturally seek coherence by connecting adjacent elements. The smooth flow of information relies on the reader’s ability to align these linguistic units sequentially. How does this alignment affect

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comprehension, retention, and overall reading proficiency? Can it serve as a scaffold for learners navigating complex texts?

On the other hand, imagine a reader encountering a sentence with multiple layers of meaning—a shifting mindset allows them to explore various interpretations, adapt to context, and extract nuanced information. But how does this mental agility impact reading comprehension? And can it be cultivated in EFL learners?

The current study explores the impact of Sequential Alignment vs. Shifting in the Reading Proficiency of Iranian EFL Learners. There does appear to be a strong correlation between sequential alignment Vs shifting the goals and actions of protagonists with developing reading abilities, especially in the early stages of learning process.

Research Questions

Consistent with the background of the study above, the research problem formulations are:

1. Do Sequential Event Alignment strategies significantly enhance the reading proficiency of Iranian EFL learners?
2. Does event index-based shifting have any significant effect on developing Iranian EFL learners' reading ability?
3. Is there any significant difference between sequential event alignment and shifting events in their effect on reading ability?

Literature Review

Reading Proficiency in EFL Contexts

With the advent of technology, we are now standing at the threshold of a new era. Society seriously demands learners who can find their way through the maze of this ever-changing world. It also applies in the case of reading a story. When comprehending a simple story, readers construct representations of the characters, events, states, goals, and actions that are described in the story. Readers create, as if were, a micro world of what is conveyed in the story. The linguistic structure of the story can be regarded as a set of processing cues on how to construct such a world (Rolf et al. 1998). Promoting reading ability has always been highlighted in the literature.

To put it simply whatever your pupil knows, he/she should know not because you have told him, but because he has grasped it himself. “Knowledge of language learning strategies, on the other hand, is important to the learning process. The term learning strategies, has been defined by many researchers.” (Kabgani et al. 2015).

Wenden and Rubin (1987) have defined learning strategies as “any set of operations , steps, plans, routines used by the learner to facilitate the obtaining, storage, retrieval and the use of information” (Rubin & Wenden 1987, p. 19).

Hence, as Oxford (1990) mentioned, many different strategies can be applied by comprehenders and language learners. Metacognitive techniques for organizing, focusing and evaluation of one's own learning; Affecting strategies for handling emotions or attitudes; social strategies for cooperating with others; cognitive strategies for linking new information with existing schemata and for analyzing and classifying it; Memory strategies for entering new information into memory storage and for retrieving it when needed; and comprehension strategies such as guessing or using gestures to overcome deficiencies and gaps in one's current language knowledge (Kabgani et al. 2015).

A wealth of empirically validated cognitive research has demonstrated key features that the mind uses to store and retrieve events in short term memory when experiencing a story (Kives et al. 2015). This study has taken into consideration the same orientation, attempting to investigate the audiences' understanding and attention as they experience a story.

Theoretical Framework

We introduce the theoretical framework that underpins our study. Drawing from cognitive psychology and language acquisition theories, meanwhile we discuss how sequential alignment and shifting align with existing models of reading comprehension.

Narratologists categorize a narrative into story (people, places, things, and events) and discourse (how the story is told), (Kives et al. 2015). Historically, computational models of narrative have focused on presentation of the diverse structural properties of narratives (as cited in Kives et al. 2015). However, authors of many books, intentionally design stories to affect their audience in specific ways (Bordwell 1989, Lard 1989).

According to Szilas (2003, as cited in Kives et al. 2015) a model of narrative must go beyond simple story structure and account for how the experience receives the narrative. A decade prior to the coining of the terms mental model and situational model, Bransford et al. (2012, as cited in Kives et al. 2015) had demonstrated empirically that the nature of the described situation can have a powerful effect on the readers' memory (Kives et al. 2015).

It is not surprising that Bransford et al. (1972) drew the conclusion that "sentences are information which people can use to construct semantic description of situation" (Traxler 2012, p. 144). Over the past 15 years, many researchers have argued that the construction of a coherent situation model is tantamount to the successful comprehension of a text (Traxler 2012).

The event Indexing model is among situation models. It is a cognitive model of online narrative comprehension. Cognitive psychologists studying narrative comprehension define a situation model as an integrated mental representation of a particular situation in the story world. Situation models are formed by a reader from an amalgamation of information explicitly stated in a narrative and inferred by the reader (Kives et al. 2015).

The Event indexing model posits that as we perceive a narrative, we discretize the narrative into events, or chunks of narratively important action (Zwaan et al.

1995). Each event is indexed by the reader relative to a number of key factors or dimensions including;

- Time index: the time frame in which the events occur.
- Space index: the space in which the event takes place.
- Protagonist index: whether or not the event involves the protagonist.
- Casual index: the event's causal status with regards to previous events.
- Intention index: the event's relatedness to the intentions of a character (Kives et al. 2015).

The event indexing model, as proposed by Zwaan et al. (1995) suggests that events form the foundation of our understanding of situations. As we read text, we create mental representations of these events based on five dimensions: time, characters, causation, motivation, and location. The more similarities between an event and our existing mental model, the easier it is to integrate it. These mental models, including the event indexing model, encompass information about entities (characters, objects) and their characteristics (both physical and mental). These entities represent real-world elements and their relationships with each other in a situation. These entities are represented by tokens in a situation model. Typically, the aforementioned properties are most relevant for understanding a situation (Zwaan et al. 1995).

Identifying Gaps

Although there's an abundance of studies on reading strategies, limited research focuses on contrasting sequential alignment and shifting. This paper highlights the gaps in existing literature and stresses the importance of conducting empirical studies to delve deeper into these techniques.

Methodology

Participants

The study included a sample population of 130 female EFL learners aged between 24 and 40 years old ($M = 23.54$, $SD = 6.63$). These learners were attending a private English language institute called 'IELTS Online Academy' in Tehran, Iran. The institute was chosen due to its diverse levels and student age ranges. All participants were selected from those studying the first level of the upper intermediate course. The learners were enrolled in a course aimed at enhancing speaking, reading, writing, and listening skills, totaling 20 learning hours. In addition to their course book, the Upper Intermediate book of cutting edge series, active reading, was utilized for the sake of this study. Classes were conducted two days a week, with each session lasting 60 minutes.

Research Design

We choose a quantitative design, allowing us to compare learners' performance across different reading tasks.

The study did not involve the manipulation of variables. Quantitative procedures such as tests were used to evaluate learners' reading abilities. The study focused on two independent variables, which were the sequential alignment and shifting. The dependent variable was the students' reading development according to the sequential model. Initially, pretests (O1, O3, and O5) were conducted, followed by the application of experimental treatments (X1, X2), and finally, post-tests were administered to the groups (O2, O4, and O6) at the conclusion of the treatment period. The control group underwent a regular process (C) and did not receive any specific treatments, instead working on exercises in their books.

Instruments

Our data collection tools include standardized reading tests and self-report surveys to assess learners' strategy preferences. The data collection involved the administration of the IELTS General Tests 2023 version, a respected exam by The British Council to assess the English proficiency level of the participants. The IELTS General tests consisted of four sections: listening, reading, writing, and speaking. In this study, the IELTS test served a dual purpose - to ensure the participants had similar proficiency levels before the treatment and to gather data on their reading comprehension abilities in the pretest. Specifically, the reading section, where participants answered 40 questions, was used to evaluate the reading comprehension performance of the learners in the pretest.

Procedures

This study attempts to assess the reading ability of EFL learners, based on sequential alignment and text shifting events. For this purpose, a sample of 90 EFL learners, all English learners with upper intermediate proficiency at IELTS online Language Academy, was selected. Participants attended six intact upper intermediate levels. The sample IELTS test was distributed to the learners. The reading section consists of three parts and 40 questions, distributed to the participants. After analyzing the results of these tests ($M = 63.55$, $SD = 16.75$), the researcher selected 15 students whose scores fell within one standard deviation of each student's mean score to participate in this study. Each layer was then randomly assigned to a mapping, migration, or control group. All lessons were taught by the researcher. After some time, participants from all three groups were post-tested. Another version of the IELTS reading test was given to participants, which included 40 questions and 3 sections.

Two experimental groups read the text throughout the semester. The researcher read the texts containing the sequential alignment for the first group built upon the elements of the previously fired event button. 10 readings selected from the book titled "active reading". Participants were expected to answer reading comprehension questions. They also work in groups and describe events in the text, based on an event indexing model.

Texts containing changes to the events of the story were distributed to another group. The information in the texts contains changes that indicate a discontinuity between the previously triggered event and the new information. The control group received a placebo and participants were assessed by asking them to retell stories and take a reading comprehension test. Additionally, fill-in-the-blank texts were arranged for both groups.

The researcher asked participants in both the sequential alignment and the shifting group to continue the story. Additionally, the speed at which participants completed the task was also recorded.

1. Students in both groups were given a word related to the characters that they had to complete using information they had in mind about each character in the text.
2. Matching task: Students are given two rows of sentences; they must match, based on the information in the tests.
3. Sentence completion task: Students in the map and move group were given incomplete sentences and had to fill in the blanks.
4. Clustering task: Students read a list of verbs and place the verbs into a set of boxes. Students are asked to put two verbs in the same box if they think they go together.

The control group received no treatment. Students regularly do speaking and listening exercises in their books. They did not receive any messages. Students do some of the listening and speaking exercises found in the cutting edge course book.

Students in the experimental group received two types of treatment depending on their group: the sequential alignment or transforming story events.

Students in the sequential alignment group got access to texts from active reading. Parts of the text containing a map of events were tested. Some tasks used that fit this category are:

1. Students in this group are given reading comprehension questions about each character as well as the events in the story. They must choose the correct answer.
2. Matching task: Students are given two rows of sentences; they must match, based on the information in the tests.
3. Sentence completion task: Students in the mapping group were given incomplete sentences and they had to fill in the blanks.
4. Grouping task: Students read the list of verbs and put the verbs into the empty boxes. Students are asked to put two verbs in the same box if they think they go together. For example: go out and cry.

Results

Preliminary Checks

To find out whether parametric test such as paired sample t-test and one-way ANOVA could be employed to analyze the data, the researcher ran the preliminary checks. Preliminary checks included the examination of the normality of the pre and posttest scores and homogeneity of variances. Table 1 demonstrates the test of normality for pretest scores.

Table 1. *Test of Normality for the Pretest*

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
Pretest	.108	89	.021	.960	89	.008

As Table 1 shows, in the pretest there was no violation of the normality assumption as tested by Kolmogorov-Smirnov and Shapiro-Wilk tests. Table 2 displays the results of the test of homogeneity of variance for the pretest.

Table 2. *Test of Homogeneity of Variance: Levene's Test for the Pretest*

F	df1	df2	Sig.
2.750	2	87	.070

Tests the null hypothesis that the error variance of the dependent variable is equal across groups

a. Design: Intercept + pre individual metacognition + Groups + Proficiency + Groups * Proficiency

As Table 2 illustrates, the error variance was equal across groups, and there was no violation of the assumption, indicating that parametric tests could be applied to compare the differences among the groups in the pretest.

Next, preliminary checks including the examination of the normality of the scores and homogeneity of variances were done for posttest results. Shown in Table 3 is the result of the test of normality for posttest scores.

Table 3. *Test of Normality for the Posttest*

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
Pretest	.11	90	.00	.95	90	.00

As Table 3 demonstrates, in the posttest, similar to the pretest, there was no violation of the normality assumption as tested by Kolmogorov-Smirnov and Shapiro-Wilk tests. Table 4 displays the results of the test of homogeneity of variance for the posttest.

Table 4. *Test of Homogeneity of Variance: Levene's Test for the Posttest*

F	df1	df2	Sig.
.33	2	87	.71
Tests the null hypothesis that the error variance of the dependent variable is equal across groups.			
a. Design: Intercept + pre individual metacognition + Groups + Proficiency + Groups * Proficiency			

As Table 4 illustrates, the error variance was equal across groups, and there was no violation of the assumption, indicating that parametric tests could be applied to compare the differences among the groups in the pretest.

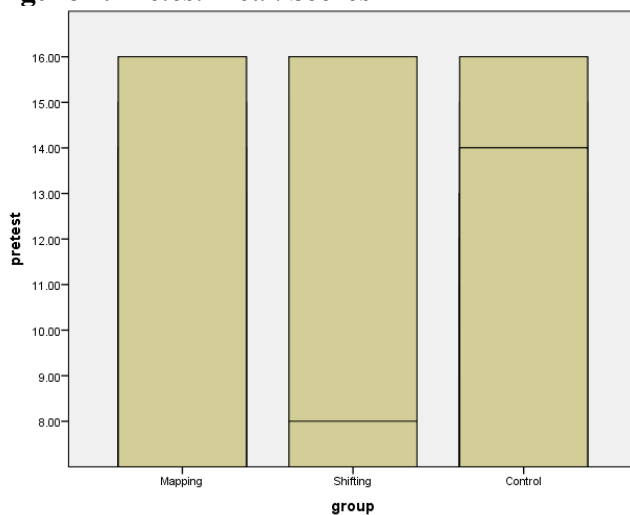
Reading Skill Homogeneity Test

To further ensure the homogeneity of the learners in all groups in terms of reading ability the results of the pretest scores in the three groups were compared using a one-way ANOVA test. Table 4 shows the Mean and Standard Deviation for all the groups in the pretest. Figure 1, similarly illustrates the mean scores of the groups in the pretest.

Table 5. Mean and Standard Deviation for All the Groups in the Pretest

Group	N	Mean	Standard Deviation
Sequential alignment	30	12.26	1.85
Shifting	30	12.50	2.40
Control	30	12.20	1.88
Total	90	12.32	2.04

Figure 1. Pretest Mean Scores



As it can be seen in Table 5 and Figure 1 all groups had almost the same mean score in the reading comprehension pretest measured by the test. Table 6 depicts the results of the ANOVA for the pretest scores.

Table 6. *Pretest Analysis of Variance*

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.48	2	.74	.17	.84
Within Groups	370.16	87	4.25		
Total	371.65	89			

As illustrated in Table 6 the results of the one-way ANOVA yielded no significant difference in mean scores, $F(2, 87) = .175$, $p = .84$, indicating that the participants in all groups were homogeneous in terms of the reading comprehension skill prior to the treatment.

Research Question One

Given the results of the preliminary checks, it was concluded that parametric tests could be used to analyze the data. The first research question in the current study examined whether Sequential Event Alignment strategies had any significant effect on developing learners' reading ability. To find the answer to this question, the researcher ran a paired-sample t-test to find the difference between the performance of the learners in the Sequential Event Alignment strategies prior to and after the treatment.

Table 7 demonstrates the paired-samples t-test results for the Sequential Event Alignment experimental conditions.

Table 7. *Paired-samples t-test Results for the Sequential Event Alignment Strategies*

Source	Mean	SD	T	df	sig
Pretest alignment					
Posttest-alignment	-16.43	1.30	-68.98	29	.00

As Table 7 shows, a statistically significant increase could be detected in the Mapping group ($M = 16.43$, $SD = 1.30$) when pretest scores were compared against the ones obtained on the posttest, $t(29) = 68.98$, $p = .00$. Thus, it was concluded that Sequential Event Alignment strategies statistically significantly increased learners' reading comprehension ability. Thus, the first null hypothesis was rejected.

Research Question Two

The second research question in the present study examined whether event index based shifting had any significant effect on developing learners' reading ability. To answer this question, the researcher ran another paired-sample t-test to find the difference between the performance of the learners in the shifting group prior to and after the treatment.

Table 8 demonstrates the paired-samples t-test results for the Shifting experimental conditions.

Table 8. Paired-samples *t*-test Results for the Shifting Group

Source	Mean	SD	T	df	sig
Pretest shifting	-7.96	1.21	-35.84	29	.00
Posttest-shifting					

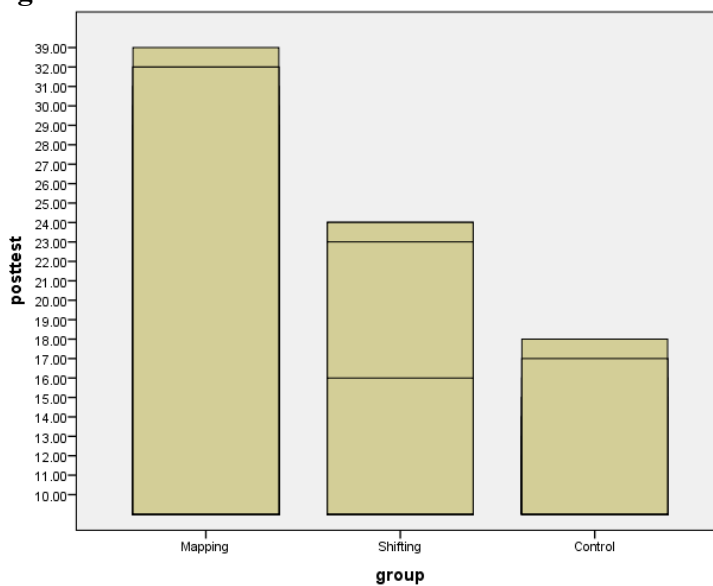
As Table 8 shows, a statistically significant increase could be detected in the Mapping group ($M = 7.96$, $SD = 1.21$) when pretest scores were compared against the ones obtained on the posttest, $t(29) = 35.84$, $p = .00$. Thus, it was concluded that event-based shifting statistically significantly increased learners' reading comprehension ability. Therefore, the second null hypothesis was rejected.

Research Question Three

The third research question posed in this study was aimed at finding out whether Sequential Event Alignment strategies had an advantage over shifting on promoting learners' reading comprehension skill. To answer this question, firstly, the descriptive statistics for the posttest were calculated. Table 9 shows the Mean and Standard Deviation for all the groups in the posttest. Figure 2, similarly illustrates the mean scores of the groups in the posttest.

Table 9. Mean and Standard Deviation for All the Groups in the Posttest

Group	N	Mean	Standard Deviation
Sequential	30	28.70	2.64
Shifting	30	20.46	2.16
Control	30	13.76	1.95
Total	90	17.97	3.75

Figure 2. Posttest Mean Scores

As shown in Table 9 and Figure 2, in the posttest, the mean score gained by the two experimental groups were higher than that of the control group. Besides, the Sequential Event Alignment group means score was higher than that of the Shifting group. To find out whether the difference between the Sequential Event Alignment strategies ($M = 28.70$, $SD = 2.64$) and shifting ($M = 20.46$, $SD = 2.16$), and control ($M = 13.76$, $SD = 1.95$) groups were statistically meaningful, the researcher ran a one-way ANOVA to compare the mean scores in the posttest. Table 10 depicts the results of the ANOVA for the posttest scores.

Table 10. *Posttest Analysis of Variance*

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3356.82	2	1678.41	325.11	.00
Within Groups	449.13	87	5.16		
Total	3805.95	89			

As shown in Table 10 the results of the one-way ANOVA in the posttest yielded a significant difference in mean scores, $F(2, 87) = 325.11$, $p = .00$. A post hoc Scheffe's test was run to determine where the differences existed. Table 11 depicts the results of the post hoc Scheffe's test.

Table 11. *Posttest Post hoc Scheffe's Test*

Group	Shifting	Control
alignment	8.23*	14.93*
Shifting		6.70*

*. The mean difference is significant at the 0.05 level.

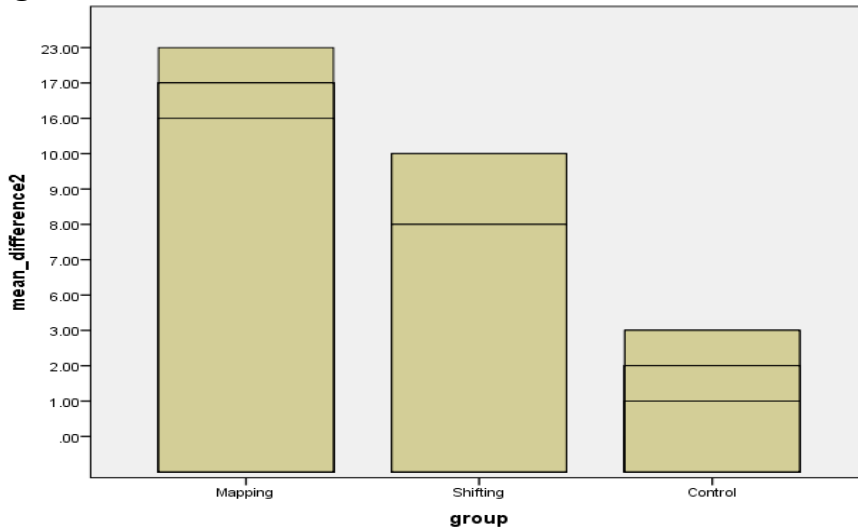
As Table 11. illustrates, the difference between the two experimental groups (i.e. sequential alignment ($M = 28.70$, $SD = 2.64$) and shifting ($M = 20.46$, $SD = 2.16$)) was detected to be statistically significant. Besides, both experimental groups were found to statistically significantly outperform the control group ($M = 13.76$, $SD = 1.95$).

Besides, to ensure the Sequential Event Alignment group had superiority to the Shifting one, the researcher ran a one-way ANOVA to compare the gains in the groups. The gains were calculated through subtracting the pretest scores from the posttest ones. Table 12 shows the Mean and Standard Deviation for all the groups when the gains were calculated. Figure 3, similarly illustrates the gain mean scores of the groups when pretest scores when subtracted from the posttest scores.

Table 12. *Gain Mean and Standard Deviation for All the Groups (Posttest – Pretest)*

Group	N	Mean	Standard Deviation
Sequential alignment	30	16.43	1.30
Shifting	30	7.96	1.21
Control	30	1.56	.77
Total	90	5.65	3.11

Figure 3. Gained Mean Scores



As illustrated in Table 12 and Figure 3, when the gains were compared, the mean score gained by the two experimental groups were higher than that of the control group. Moreover, the Sequential Event Alignment group means score was higher than that of the Shifting group. To find out whether the difference between the Sequential Event Alignment group ($M = 16.43, SD = 1.30$) and shifting ($M = 7.96, SD = 1.21$), and control ($M = 1.56, SD = .77$) groups were statistically meaningful, the researcher ran a one-way ANOVA to compare the mean scores in posttest-pretest differences. Table 13 shows the results of the ANOVA for the gains.

Table 13. Gains Analysis of Variance

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3336.62	2	1668.31	1323.09	.00
Within Groups	109.70	87	1.26		
Total	3446.32	89			

As displayed in Table 13 the results of the one-way ANOVA when the gains were compared yielded a significant difference in mean scores, $F(2, 87) = 1322.09, p = .00$. A post hoc Scheffe’s test was further run to find out where the differences existed. Table 14 depicts the results of the post hoc Scheffe’s test.

Table 14. Posttest Post hoc Scheffe’s Test

Group	Shifting	Control
Mapping	8.46*	14.86*
Shifting		6.40*

*. The mean difference is significant at the 0.05 level

As Table 14 displays, the difference between the Sequential Event Alignment strategies ($M = 16.43, SD = 1.30$) and shifting ($M = 7.96, SD = 1.21$) groups was detected to be statistically significant. Besides, both experimental groups were

found to have obtained mean score statistically significantly higher than the control group ($M = 1.56$, $SD = .77$).

Given the results of the two one-way ANOVA tests run to compare the mean scores in the posttest and the gains, it was concluded that Sequential Event Alignment was significantly more effective than event index based shifting on developing Iranian EFL learners' reading ability. Thus, the third null hypothesis was rejected.

Discussion and Conclusions

The current study aimed at examining whether Sequential Event Alignment vs. Shifting had any effects on developing Iranian reading proficiency. Besides, the present study investigated whether shifting was significantly more effective than sequential event alignment on developing learners' reading ability. The result of paired-sample t-tests and one-way ANOVA tests revealed that both sequential event alignment and shifting statistically significantly promoted learners' reading comprehension ability. Besides, it was found that the sequential event alignment group had significantly outscored the Shifting one.

The results are commensurate with the postulations regarding the significant role of the construction of a coherent situation model in the successful comprehension of a text (Traxler 2012).

The findings of the present study also echo those hinting at the impact of the nature of the described situation on the readers' memory (Bransford et al. 1972, Kives et al. 2015). Like those studies, the current study highlighted the role of events in a narrative in making the narrative comprehensible for the readers.

It presented the statistical procedures taken to analyze the pre and posttest data to answer the three research questions. The first two null hypotheses were rejected as it was found that both sequential alignment and shifting statistically significantly promoted learners' reading comprehension ability. Moreover, an advantage was found for the sequential alignment group over the shifting one. Thus, the third null hypothesis was also rejected. The findings of this study are consistent with the claims made by EIM as the learners in the mapping group gained significantly higher scores when their pretest scores were compared with those of their posttests. In the sequential alignment group, the learners were given texts in which the new information cohered with the previous ones. Besides, in the study at hand, significant differences were detected between the performance of the learners in the sequential alignment and shifting groups.

The fact that mapping was found to be more effective in promoting reading comprehension ability as opposed to shifting, also echoes the premises of the EIM. It predicts that the more common indexes the new information has with the previously presented one, the easier it integrates with the old one and the less the processing load. So according to the predictions made by the model, temporal and spatial continuity with previous information facilitates the processing of the new information. The model also predicts that continuity in indexes lead to a coherent mental representation in long-term memory. The long-term memory representation

of a situation model consists of a network of nodes each coding the event referred to in the story. The links between these nodes strengthens as the number of common event nodes increases.

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