

A Study of Impact of Learners' Personal Constructs on Reading Comprehension through Induction-Deduction Strategies

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Abstract: *This study is an attempt to investigate the role of personal constructs through Induction-Deduction strategies on Iranian EFL learners' reading comprehension. People cannot understand the world except through their own constructs. Therefore, in order to understand a person's response to events, we have to understand the constructs through which he or she has perceived those events. Also the intended meaning is communicatively successful only if the speaker's illocutionary intention is recognized by the hearer. These intentions are essentially communicative because the fulfillment of illocutionary intentions consists in hearer's understanding. Not only are such intentions reflexive, their fulfillment consists in their recognition. The purpose of this study was to inspect the Iranian English learners to see how individuals vary in the perception of reading texts from their personal constructs point of view. It also serves to explain why individuals have different kinds of perception. Therefore, a quantitative approach was used to carry out this study. The assessment program involved Oxford Placement Test (OPT), Eysenck Personality Questionnaire (EPQ), Comprehension Reading Test (CRT) and Repertory Grid Technique (RGT) which were administered to 60 upper-intermediate EFL learners. The assessment components were developed by the teacher and students collaboratively during two weeks. Interaction between learners' personal constructs and Induction-Deduction strategies lead to new viewpoints in psycholinguistic analysis and shed light on teaching process and can be used by teachers, curriculum planners and even students.*

Keywords: *Induction-Deduction strategies, personal constructs theory, reading comprehension*

1. INTRODUCTION

This study is an attempt to investigate the role of personal constructs through Induction-Deduction strategies in English foreign language learners' reading comprehension. It starts with the analysis of the term of Induction-Deduction strategies in relation to reading comprehension. Then it deals with the personal constructs theory and its essence. Interaction between learner's personal construct and Induction-Deduction strategies leads to new point of view at English teaching process and psycholinguistic analysis. This study will investigate whether there is any significant factors that influence reading comprehension among EFL Iranian learners. To this end, it was tried to find answers to the following questions:

RQ1: Does personal construct determine the induction of reading texts?

H0: Personal construct does not determine the induction of reading texts.

A H: Personal construct determine the induction of reading texts.

RQ2: Are personal constructs and Induction-Deduction strategies similar in comprehension process?

H0: Personal construct and Induction-Deduction strategies are not similar in comprehension process.

A H: Personal construct and Induction-Deduction strategies are similar in comprehension process.

RQ3: Which factors cause individuals to be different in induction of reading texts from personal constructs point of view?

2. REVIEW OF THE RELATED LITERATURE

2.1. Reading Comprehension Strategy

Reading can be seen as an “interactive” process between a reader and a text which leads to automaticity or (reading fluency). In this process, the reader interacts dynamically with the text as he/she tries to elicit the meaning and where various kinds of knowledge are being used: linguistic or systemic knowledge (through bottom-up processing) as well as schematic knowledge (through top-down processing). Since reading is a complex process, Grabe (1991, p. 379) argues that “many researchers attempt to understand and explain the fluent reading process by analyzing the process into a set of component skills” in reading.

First language reading has been characterized as a constructive process which involves creating a mental representation of the text, i.e. a gist which includes the author’s intent and the text content, shaped by the reader’s prior knowledge and goals (Van Dijk & Kintsch, 1983; Flower, 1987; Gernsbacher, 1990). In perhaps the classic study in the field of reading comprehension, Bransford and Franks (1971) concluded that the comprehension process consists of synthesizing simple propositions into larger conceptual units rather than analyzing complex units into small propositions. According to Kintsch and Van Dijk (1978) and Kintsch (1988), the propositions in a text are transformed and condensed into the gist, made up of the reader’s schema, the microstructure and macrostructure of the text.

In her research on L2 readers, Carrell (1988) noted that lower proficiency students tended to rely more heavily on bottom-up, text-based strategies, while more advanced English as Second Language (ESL) readers were able to engage top-down processes based on prior knowledge and schemata. These top-down processes include knowledge of content (background knowledge and cultural schemata) as well as knowledge of text structure (formal schemata of different text genres). Carrell’s L2 research (1992) on the awareness of text structure, replicating the results of L1 research by Meyer et al. (1980), shows that seeing relations between ideas and between main ideas and details aids L2 readers in recall. Students using text structure to guide their reading show better recall both quantitatively and qualitatively. For L2 readers, whose lack of appropriate culture schemata often puts them at a disadvantage when processing text, there is more need for a basic structure, a skeleton on which to build further structures in their construction of meaning.

Research conducted over the last three decades has changed our view of reading as a mere process of decoding. As Carrell and Eisterhold state, EFL/ESL reading theory has been influenced during the past decades by Goodman (from the mid- to late 1970s) who views reading as a “guessing game” in which the “reader reconstructs, as best as he can, a message which has been encoded by a writer” (1983, p. 554).

2.2. Induction-Deduction Strategy (Bottom-up and Top-down)

In accounts of foreign-language listening and reading, perceptual information is often described as ‘bottom-up’, while information provided by context is said to be ‘top-down’. The terms have been borrowed from cognitive psychology, but derive originally from computer science, where they distinguish processes that are data-driven from those that are knowledge-driven.

Underlying the metaphors ‘top’ and ‘bottom’ is a hierarchical view of the stages through which listening or reading proceeds. In listening, the lowest level (i.e. the smallest unit) is the phonetic feature. A simple analysis might present the listener as combining groups of features into phonemes, phonemes into syllables, syllables into words, words into clauses, and clauses into propositions. At the ‘top’ is the overall meaning of the utterance, into which new information is integrated as it emerges. Drawing on this concept of levels of processing, many ELT commentators present a picture of listening and reading in which bottom-up information from the signal is assembled step by step, and is influenced throughout by top-down information from context.

The truth is rather more complex. First, it is not certain that bottom-up processing involves all the levels described. Some psychologists believe that we process speech into syllables without passing through a phonemic level; others that we construct words directly from phonetic features. Nor does bottom-up processing deal with one level at a time. There is evidence that in listening it takes place at a delay of only a quarter of a second behind the speaker _ which implies that the tasks of analyzing the phonetic signal, identifying words, and assembling sentences must all be going on in parallel.

2.3. Repertory Grid Technique

The original method is devised by George Kelly and is based on his Personal Construct Theory (Jankowicz, 2004). Kelly (1963) compares the motivation of all humans with the motivation he suggests is the driving force for scientists, to predict and control. Each individual tries to construct a rational world based on their experience. Our experiences shape a pattern which Kelly calls constructs. With time more constructs will be added and old ones modified. Finally, each individual person holds a complex and unique set of constructs. With these, we try to predict and interpret events and understand the world around us.

RGT includes two concepts: 'elements' and 'constructs'. The elements are the objects of people's thinking to which they relate their concepts or values. The constructs are the discriminations that people make to describe the elements in their personal, individual world. An essential characteristic of constructs is that they are 'bipolar' (e.g., cold-hot, good-bad). Basically, RGT relates the construct of an individual directly to the elements. The basic idea of RGT is that the minds of people are 'construct systems', a construct system being defined as the set of qualities, or dimensions, that people use in their everyday efforts to make sense of the world. These construct systems are highly individual in nature and may guide people's behavior, provided that they develop a reflective awareness of how 'negative' constructs that impede their behavior can be changed. People observe, draw conclusions about patterns of cause and effect, and behave according to those conclusions. People's construct systems are not static, but are confirmed or challenged every moment they are conscious. RGT procedure can best be characterized as a semi-structured interview (face-to-face, computerized, or a phone interview) in which the respondent is confronted with a triad of elements and is then asked to specify some important way in which two of the elements are alike and thereby different from the third. The characteristic that the respondent uses to distinguish between the elements is the construct. Since the construct is bipolar, it can be presented on a scale. After that, the respondent is asked to rate the elements (that are possible/desirable to rate) on the scale that represents the construct, and to indicate which pole of the construct he or she prefers. Then, the interviewer moves on to the next triad of options. Typically, these steps are repeated until the respondent mentions no new constructs anymore (Fransella, Bannister, & Bell, R. 1977, pp. 1-14).

3. THE STUDY

3.1. Design of the Study

A quantitative approach was adopted to conduct the present study.

3.2. Participants

To fulfill the objectives of this study, 60 (30 male and 30 female) upper-intermediate EFL learners with the age range of 19-29 studying English in 3 English Language institutes (ParsehNovin, Sobhe Engelab and Shokuhe Omid) in Tabriz, participated. It consists of students whose native language is Turkish and their Foreign Language is English.

The subjects who participated in the present study were 86 (40 male and 46 female) from 3 English Language institutes in Tabriz. So, in order to homogenize the participants, on the first session of the class, the Oxford Placement Test (OPT) was administered and 67 (32 male and 35 female) students' scores fell between 60 and 80 as acceptable for upper-intermediate level. Among the participants, one got 60, two persons got 80 and four persons got more than 80. So, in order to select the homogenized participants, the scores 60, 80 and more than 80 were omitted.

At the next session of the class, the students received the Eysenck Personality Questionnaire (EPQ), which identifies the degree of a person's introversion, extroversion, neurotic and psychotic. Then the RCT and the RGT was administered simultaneously. After reading each passage and answering the questions, the participants turned to RGT to score their related constructs to passages.

After administering the OPT, 60 students (30 in each gender) acquired the acceptable range of 61-79, and after administering EPQ, 30 male were divided into 4 traits (15 extroversion, 8 introversion, 5 neurotic, and 2 psychotic) and 30 female were divided into 3 traits (6 extroversion, 9 introversion, and 15 neurotic).

3.3. Instruments

To accomplish the objectives of this research, OPT, EPQ, RGT and RCT were administered.

Oxford Placement Test (OPT): Placement test means a test to determine a student's level of ability in one or more subjects in order to place the student with others of the same approximate ability. This test is designed to find the appropriate level for students in a course or program of study.

As noted earlier, the OPT was used for the homogenization process prior to selection of participants. The OPT is one of the most widely used batteries of assessment of English, which measures the ability of nonnative proficiency of English that is published by Oxford University (see Appendix A). This 60-minutes test comprises two separate sections which are: Threshold or intermediate and Vantage or upper-intermediate. The reliability of the OPT in this actual administration for homogenization of the subjects was calculated by Kuder-Richardson 21 (KR-21) formula and an index of 0.96 reassured the researchers of the test reliability.

The rating scale with answer key appears in the Appendices.

Eysenck Personality Questionnaire (EPQ): In psychology, Eysenck Personality Questionnaire (EPQ) is a questionnaire to assess the personality traits of a person. It was devised by the psychologists Hans Jürgen Eysenck and his wife Sybil B. G. Eysenck.

Hans Eysenck's theory is based primarily on physiology and genetics. Although he was a behaviorist who considered learned habits of great importance, he considers personality differences as growing out of our genetic inheritance. He is, therefore, primarily interested in what is usually called temperament.

Temperament is that aspect of our personality that is genetically based, inborn, there from birth or even before. That does not mean that a temperament theory says we don't also have aspects of our personality that are learned, it's just that Eysenck focused on "nature," and left "nurture" to other theorists.

This hugely validated test consists of 90 Yes/No items. Those who fill out the EPQ, receive four different kinds of scores: the E score which is related to how much extrovert a person is and characterized by being outgoing, talkative and high on positive affect, the I score which is related to being introversion and people who are chronically over-aroused and jittery, the N score measuring the neuroticism and characterized by high levels of negative affect such as depression and anxiety, and the P score which tries to measure how psychotic a person is and characterized by being loss of contact with reality that can be manifested as schizophrenia and hallucinations. The E score is computed out of 21, since it consists of 21 items, the N score is out of 23, the P score is out of 25 and the I score is out of 21. The Yes/No answers should be given based on the usual way of acting or thinking of an individual. The researchers used the Persian version provided and validated by Puya-Azmoonyar Institute of Behavioral Sciences Research. The EPQ test, the answer key and the standard rating scales are also provided in the appendices (see Appendix B).

The Eysenck Personality questionnaire (EPQ) was used in this study to determine the extroverts, introverts, neurotics and psychotics from among the learners who took part in the study. It included 90 questions and the allotted time for the participants to answer the EPQ was 30 minutes. The EPQ reliability from KR-21 formula was an average reliability value of $r = 0.94$ was obtained for the test.

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Reading Comprehension Test (RCT): The RCT comprised 10 questions within 5 passages of TOEFL since 1990 to 2004. Each passage assessed and specified to one or two constructs of RGT test. The passages were short and had 2 questions. All the questions were multiple choices. The participants read the passages and checked the answers. The reliability of this RCT was checked by employing KR-21 formula. After calculations, an average reliability value of $r = 0.87$ was obtained for the test.

The passages and the answer key were appeared in appendices.

Repertory Grid Technique (RGT): RGT includes two concepts: elements and constructs. The elements are the objects of people's thinking to which they relate their concepts or values. In this study there are 8 passages as elements that each one is related to one or more constructs. The constructs are the discriminations that people make to describe the elements in their personal, individual world. An essential characteristic of constructs is that they are bipolar. There are 10 constructs in each two poles of Grid. The constructs of Emergent pole and Explicit pole are bipolar in each line. The Grid rates vertically in each column for each specific passage (see Appendix C). The rating scale is qualitative and numbering as 1 to 5. Each constructs evaluated by specific passages. The significant reliability of each constructs is presented in Table 6. The numbers of rating scale stand as:

- Strongly agree with the left pole
- Agree with the left pole
- Natural
- Agree with the right pole
- Strongly agree with the right pole

The participants, after reading each passages and checking the answer of RCT, turned back to RGT and completed the Grid. The time that dedicated to answer the passages and RGT was an hour.

The rating scale scores relation with constructs of the RGT is up to the hypothesis of thesis, determined by designer and analyzed by SPSS software V.21.

4. FINDINGS

4.1. Results of OPT

To select the participants required for this study, first of all, the researchers used OPT. This was to define those learners who gain more than 60 and those who gain less than 80. The mete scores omitted in order to select homogeneous participants in terms of their English proficiency level.

Here, the results of the placement test administered at the outset of the study are presented. The main purpose of this placement test was to select upper-intermediate students and as a result to homogenize the participants in terms of their L2 proficiency. This placement test was given to 86 students who were supposed to be upper-intermediate. After scoring the answer sheets, 19 students, whose total score was below 60 were considered as intermediate and therefore were omitted from the study (see Appendix A). Among those 67 students, 7 students who had the mete scores at each side of the acceptable ranges, in order to select homogeneous participants in terms of their English proficiency level, were intentionally omitted. Afterwards, the remaining 60 students were selected to administer the other 3 tests. Table 1 presents the descriptive statistics of the results of OPT.

Table1. Descriptive Statistics of OPT

Rating	Frequency	Frequency Percentage	Cumulative Frequency Percent
0 -20	0	0	0
20- 39.9	4	4.65	4.65
40-59.9	15	17.44	22.09
60- 79.9	61	70.93	93.02
80- 100	6	6.97	99.99
Total	86	100	

According to the statistical data presented in Table 1 and appendix D as a reference, it can be said that all these 60 participants were in upper-intermediate level.

The 30 participants were male (50%) and 30 participants were female (50%).

Table 2, presents the results of Sex.

Table2. *Results of Sex*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	male	30	50.0	50.0	50.0
	female	30	50.0	50.0	100.0
	Total	60	100.0	100.0	

4.2. Results of EPQ

The Eysenck Personality Questionnaire (EPQ) was used in this study to determine the extroverts, introverts, neurotics and psychotics among the learners who took part in the study. The researchers administered the EPQ through 30 males and 30 females. Table 3 presents the descriptive statistics of the EPQ results.

Table3. *Descriptive Statistics of EPQ*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	E	21	35.0	35.0	35.0
	I	18	30.0	30.0	65.0
	N	19	31.7	31.7	96.7
	P	2	3.3	3.3	100.0
	Total	60	100.0	100.0	

From 60 participants who took EPQ, 21(35%) were Extroverts (15 males and 6 females), 18 (30%) were Introverts (8 males and 8 females), 19 (31.7%) were Neurotics (4 males and 15 females) and 2 (3.3%) were Psychotics (2 males).

4.3. Results of RCT

Table 4, shows the results of RCT. The RCT comprises 10 questions within 5 passages of TOEFL. The maximum score for RCT was 10 if the participants answered all of questions correctly. So the true marks of all passages were summed up and analyzed as a total score. The distribution of this variable is shown in the following table.

Table4. *Total score Distribution of RCT*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.00	1	1.7	1.7	1.7
	3.00	9	15.0	15.0	16.7
	4.00	16	26.7	26.7	43.3
	5.00	18	30.0	30.0	73.3
	6.00	8	13.3	13.3	86.7
	7.00	4	6.7	6.7	93.3
	8.00	4	6.7	6.7	100.0
	Total	60	100.0	100.0	

The descriptive statistics of this variable are provided in Table 5.

Table5. *Descriptive Statistics of True Total Scores (RCT)*

N	Valid	60
	Missing	0
Mean		4.8500
Median		5.0000
Mode		5.00
Std. Deviation		1.42407
Variance		2.028
Range		6.00
Skewness		0.528
Minimum		2.00
Maximum		8.00

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As Table 5 shows, a mean score of summed up all passages scores from 10 is 4.85 with a median score of 5.00, standard deviation of 1.42407 and Skewness ratio of 0.528.

4.4. Results of RGT

The repertory grid technique in this study comprised of 5 elements and 10 constructs (5 bipolar constructs). Each element of grid specifically evaluated by one construct. They were scored by participant with a 5 point scale. In order to fulfill the analysis grid of the study, the grid has been divided into separate sections as discussed below in details.

4.5. Results of Constructs

There are 5 bipolar constructs in RGT. To infer and check the reliability of constructs, the distribution normalized test –Kolmogorov-Smirnov Z test– utilized to illustrate the normality of constructs before any analysis. The following Table provides the descriptive One-Sample Kolmogorov-Smirnov Test.

Table6. One-Sample Kolmogorov-Smirnov Test

		D-I	A-C	B-F	C-P	G-T
N		60	60	60	60	60
Normal Parameters ^{a,b}	Mean	2.8767	2.7933	2.9567	3.0167	3.7400
	Std. Deviation	.85734	.74102	.80092	1.18539	.67928
Most Extreme Differences	Absolute	.085	.119	.107	.154	.170
	Positive	.085	.119	.107	.154	.170
	Negative	-.063	-.075	-.093	-.141	-.134
Kolmogorov-Smirnov Z		.659	.921	.826	1.196	1.317
Asymp. Sig. (2-tailed)		.779	.365	.503	.114	.062
a. Test distribution is Normal.						
b. Calculated from data.						

D-I: Deduction-Induction

A-C: Anticipation-Certainty

B-F: Background knowledge-Foreground knowledge

C-P: Context meaning induction-Prepositional meaning induction

G-T: Graphical representation-Text based representation

Table 6 indicates that the distribution in 0.01 level of significance for all of 5 constructs is normal and meaningful.

4.6. Results of Deduction-Induction Construct Analysis

In order to scrutinize the Deduction-Induction construct, it was assessed by the first text. The main characteristic of the first text is that after reading the passage, when the reader wants to answer the first question, s/he realized that there was no necessity to read the whole passage, because the answer exists in the first line and either the second question. By this strategy the grid administered and participants scored. Table 7 shows frequency distribution of the Deduction-Induction construct text-1.

Table7. Frequency Distribution of Deduction-Induction construct in Text-1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	45	75.0	75.0	75.0
	2.00	11	18.3	18.3	93.3
	3.00	4	6.7	6.7	100.0
	Total	60	100.0	100.0	

The descriptive statistics of Deduction-Induction construct in text-1 provided in the Table 8.

Table8. Descriptive Statistics of Deduction-Induction Construct in Text-1

N	Valid	60
	Missing	0
Mean		1.31
Median		1.00
Mode		1.00
Std. Deviation		0.596
Variance		0.356
Skewness		1.74
Std. Error of Skewness		.309
Range		2.00
Minimum		1.00
Maximum		3.00

Table 8 indicates the mean score of 1.33, the median score of 1.00 and the positive skewness ratio of distribution is 1.74.

4.7. Results of Anticipation-Certainty Construct Analysis

To conduct with analysis of second bipolar construct, second text, as an element was considered to be evaluated. The correct answers of these two questions from all participants involved with Anticipation-Certainty construct in order to be analyzed.

Table9. Frequency Distribution of Anticipation-Certainty construct in Text-2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0.00	37	61.7	61.7	61.7
	1.00	23	38.3	38.3	100.0
	Total	60	100.0	100.0	

The descriptive statistics was also provided in the next Table.

Table10. Descriptive Statistics of Anticipation-Certainty construct in Text-2

N	Valid	60
	Missing	0
Mean		0.38
Median		0.00
Skewness		0.492
Std. Error of Skewness		.309
Minimum		0.00
Maximum		1.00

Table 9 and Table 10 indicate that the mean score of this constructs in both of questions, is 0.38, the median score is 0.00, and the positive skewness ratio of 0.492. Therefore, the skew of distribution odds to left pole of grid and the majority of participants for comprehension of this text used Anticipation. It means that the marks of 1 and 2 to this construct were more than marks of 4 and 5. The result is in line with Kelly’s (1955, p. 46) viewpoint that:

“a major goal of both individuals and social systems is anticipation. We simulate to improve the ‘accuracy’ of our anticipation of aspects of the future that is important to us. Action is a form of active anticipation, that seeks to make desirable outcomes more likely”.

He organized personal construct theory into a fundamental postulate and 11 corollaries. His fundamental postulate says this: “A person's processes are psychologically channelized by the ways in which he anticipates event” (ibid.).

4.8. Results of Background Knowledge-Foreground Knowledge Construct Analysis

The third bipolar construct is Background Knowledge-Foreground Knowledge. The main purpose is to find out to what extent participants tend to use background knowledge or foreground knowledge in perception process? So the third text selected to be evaluated with this construct. The Table 11 shows the frequency of distributions.

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Table11. *Frequency Distribution of Background knowledge-Foreground knowledge in Text-3*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	30	5.0	5.0	5.0
	2.00	25	41.7	41.7	91.7
	3.00	5	8.3	8.3	100.0
	Total	60	100.0	100.0	

The descriptive statistics are provided in Table 12.

Table12. *Descriptive Statistics of Background knowledge-Foreground knowledge in Text-3*

N	Valid	60
	Missing	0
Mean		1.58
Median		1.50
Skewness		0.656
Std. Error of Skewness		0.309
Minimum		1.00
Maximum		3.00

The above Table clearly illustrates that the skewness of distribution is positive and the tendency of distribution is toward left side of grid pole. The table shows that the mean score of 1.58, the median score of 1.50 and the positive skewness ratio of 0.656. The participants used background-knowledge to understand this text. It means that the marks of 1 and 2 to this construct were more than marks of 4 and 5.

The findings are in line with Krashen and Terrell (1983) comments who: There are several predictable stages that have been identified as the learner progresses towards language proficiency; comprehension, early production and extending production. Also it can be generated with Vacca and Vacca (2002) who stated: the single most important variable in learning with texts is a reader's prior knowledge.

4.9. Results of Context Meaning Induction-Prepositional Meaning Induction Construct Analysis

In analysis of Context Meaning Induction-Prepositional Meaning Induction construct, fourth text was selected. The grid score of those participants who answered this text correctly in Context Meaning Induction-Prepositional Meaning Induction construct were considered to be analyzed. The result appears in the following Tables.

Table13. *Frequency Distribution of Context Meaning Induction-Prepositional Meaning Induction in Text-4*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0.00	10	16.7	16.7	16.7
	1.00	49	81.7	81.7	98.3
	2.00	1	1.7	1.7	100.0
	Total	60	100.0	100.0	

The descriptive statistics are provided in the following Table.

Table14. *Descriptive Statistics of Context Meaning Induction-Prepositional Meaning Induction in Text-4*

N	Valid	60
	Missing	0
Mean		0.85
Median		1.00
Skewness		-1.181
Std. Error of Skewness		.369
Minimum		0.00
Maximum		2.00

In conjoining the Table 13, and Table 14, to achieve main conclusion, the mean score of 0.85, the median score of 1.00 and the negative skewness ratio of -1.181 were obtained.

4.10. Results of Graphical Representation-Text Based Representation Construct Analysis

In order to check the result of current section, the text-5 which participants marked as having graphical representation in mind, had been selected. Mentioned texts, scored more than others by 1 and 2 instead of 4 and 5. The following tables illustrate the distribution and descriptive statistics of Graphical Representation-Text Based Representation in text 1 and text 4.

Table15. Frequency Distribution of Graphical Representation-Text Based Representation Construct in Text-5

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	11	18.33	18.33	18.33
	2.00	16	26.66	26.66	44.99
	3.00	11	18.33	18.33	63.32
	4.00	13	21.66	21.66	84.98
	5.00	9	15	15	99.99
	Total	60	100.0	100.0	

The descriptive statistics are provided in Table 16.

Table16. Descriptive Statistics of Graphical Representation-Text Based Representation construct in Text-5

N	Valid	60
	Missing	0
Mean		1.07
Median		3.00
Skewness		0.233
Std. Error of Skewness		0.026
Minimum		1.00
Maximum		5.00

Table 16 indicates the mean score of 1.07, the median score of 3.00 and the skewness ratio of 0.233. Notwithstanding the positive skewness, there are not more sensible odds skew to sides of histogram or poles of grid. But it can be understood that in text 5 the participants received the graphical representation in mind from the texts.

In order to have better understanding about the distribution of personality traits in poles of grid (personal constructs), the tendency of learners' personality traits will be analyzed in next sections.

4.11. Responding to RQ1

To meet the aim of the study, one of the questions, "Does personal construct determine the induction of reading texts?" was posed and to find a (set of) proper answer(s), one null hypothesis was suggested. The null hypothesis of this question is, "Personal construct does not determine the induction of reading texts." In order for this null hypothesis to be tested, three descriptive analyses were employed. Administering analyses of RGT-EPQ, RCT-EPQ and RGT-RCT were utilized to analysis of this null hypothesis.

At first RGT-EPQ analysis was administered. To elucidate descriptive analysis of 10 personal constructs in 4 types of participants' personality traits, the total scores that participants wrote in grid from their viewpoint for induction of texts meaning, the One-Way Analysis Variance was utilized for each construct. Table 17 illustrates descriptive analysis of constructs in interaction with 4 types of personality traits.

Table17. Descriptive RGT-EPQ Analysis

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum	
					Lower Bound	Upper Bound			
D-I	Extrovert	21	2.4000	.59666	.13020	2.1284	2.6716	1.40	3.80
	Introvert	17	3.1529	.81710	.19818	2.7328	3.5731	1.80	4.80
	Neurotic	20	3.0200	.91514	.20463	2.5917	3.4483	1.00	5.00
	Psychotic	2	4.1000	.42426	.30000	.2881	7.9119	3.80	4.40
	Total	60	2.8767	.85734	.11068	2.6552	3.0981	1.00	5.00
A-C	Extrovert	21	2.2571	.56265	.12278	2.0010	2.5133	1.20	3.20
	Introvert	17	3.3412	.69557	.16870	2.9835	3.6988	2.00	4.40

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	Neurotic	20	2.9100	.58571	.13097	2.6359	3.1841	1.80	4.20
	Psychotic	2	2.6000	.56569	.40000	-2.4825	7.6825	2.20	3.00
	Total	60	2.7933	.74102	.09566	2.6019	2.9848	1.20	4.40
B-F	Extrovert	21	3.4381	.48008	.10476	3.2196	3.6566	2.60	4.80
	Introvert	17	2.8235	.77098	.18699	2.4271	3.2199	1.60	4.80
	Neurotic	20	2.6100	.90954	.20338	2.1843	3.0357	1.20	4.80
	Psychotic	2	2.5000	.14142	.10000	1.2294	3.7706	2.40	2.60
	Total	60	2.9567	.80092	.10340	2.7498	3.1636	1.20	4.80
C-P	Extrovert	21	4.3810	.32805	.07159	4.2316	4.5303	3.80	4.80
	Introvert	17	2.2000	.63246	.15339	1.8748	2.5252	1.00	3.40
	Neurotic	20	2.2200	.74240	.16601	1.8725	2.5675	1.00	4.40
	Psychotic	2	3.6000	.28284	.20000	1.0588	6.1412	3.40	3.80
	Total	60	3.0167	1.18539	.15303	2.7104	3.3229	1.00	4.80
G-T	Extrovert	21	3.5143	.70305	.15342	3.1943	3.8343	2.80	4.80
	Introvert	17	3.6824	.70731	.17155	3.3187	4.0460	2.40	5.00
	Neurotic	20	3.9500	.56148	.12555	3.6872	4.2128	2.80	5.00
	Psychotic	2	4.5000	.42426	.30000	.6881	8.3119	4.20	4.80
	Total	60	3.7400	.67928	.08769	3.5645	3.9155	2.40	5.00
* Constructs number: 1. Deduction-Induction 2. Anticipation-Certainty 3. Background knowledge-Foreground knowledge 4. Context Meaning Induction-Prepositional Meaning 5. Graphical Representation-Text Based									

The ANOVA analysis used for each construct was shown in the following table.

Table18. ANOVA – Each Constructs Analysis

		Sum of Squares	df	Mean Square	F	Sig.
D-I	Between Groups	9.473	3	3.158	5.217	.003
	Within Groups	33.894	56	.605		
	Total	43.367	59			
A-C	Between Groups	11.487	3	3.829	10.254	.000
	Within Groups	20.911	56	.373		
	Total	32.397	59			
B-F	Between Groups	7.989	3	2.663	4.995	.004
	Within Groups	29.858	56	.533		
	Total	37.847	59			
C-P	Between Groups	63.799	3	21.266	62.337	.000
	Within Groups	19.104	56	.341		
	Total	82.903	59			
G-T	Between Groups	3.164	3	1.055	2.454	.073
	Within Groups	24.060	56	.430		
	Total	27.224	59			
* Constructs: D-I: Deduction-Induction A-C: Anticipation-Certainty G-T: Graphical representation-Text based representation B-F: Background knowledge-Foreground knowledge C-P: Context meaning induction-Prepositional meaning induction						

The ANOVA analysis of 10 personal constructs in 4 types of personality traits in participants indicates that participants with different types of personality traits in all constructs except Graphical representation-Text based representation had a meaningful relevance from the $P < 0.01$ level of significance.

Therefore, for better understanding, the Multiple Comparisons Turkey HSD test was administered for each constructs.

Table19. Multiple Comparisons of RGT and EPQ Analysis

Dependent Variable	(I) personality	(J) personality	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
D-I	Extrovert	Introvert	-.75294*	.25382	.022	-1.4250	-.0809
		Neurotic	-.62000	.24307	.063	-1.2636	.0236
		Psychotic	-1.70000*	.57572	.023	-3.2244	-.1756
	Introvert	Extrovert	.75294*	.25382	.022	.0809	1.4250
		Neurotic	.13294	.25664	.954	-.5466	.8125
		Psychotic	-.94706	.58158	.371	-2.4870	.5929
	Neurotic	Extrovert	.62000	.24307	.063	-.0236	1.2636
		Introvert	-.13294	.25664	.954	-.8125	.5466
		Psychotic	-1.08000	.57697	.252	-2.6077	.4477
	Psychotic	Extrovert	1.70000*	.57572	.023	.1756	3.2244
		Introvert	.94706	.58158	.371	-.5929	2.4870
		Neurotic	1.08000	.57697	.252	-.4477	2.6077
A-C	Extrovert	Introvert	-1.08403*	.19936	.000	-1.6119	-.5561
		Neurotic	-.65286*	.19092	.006	-1.1584	-.1473
		Psychotic	-.34286	.45220	.873	-1.5402	.8545
	Introvert	Extrovert	1.08403*	.19936	.000	.5561	1.6119
		Neurotic	.43118	.20158	.153	-.1026	.9649
		Psychotic	.74118	.45680	.375	-.4684	1.9507
	Neurotic	Extrovert	.65286*	.19092	.006	.1473	1.1584
		Introvert	-.43118	.20158	.153	-.9649	.1026
		Psychotic	.31000	.45318	.903	-.8900	1.5100
	Psychotic	Extrovert	.34286	.45220	.873	-.8545	1.5402
		Introvert	-.74118	.45680	.375	-1.9507	.4684
		Neurotic	-.31000	.45318	.903	-1.5100	.8900
B-F	Extrovert	Introvert	.61457	.23823	.059	-.0162	1.2454
		Neurotic	.82810*	.22814	.003	.2240	1.4322
		Psychotic	.93810	.54035	.315	-.4927	2.3689
	Introvert	Extrovert	-.61457	.23823	.059	-1.2454	.0162
		Neurotic	.21353	.24088	.812	-.4243	.8513
		Psychotic	.32353	.54585	.934	-1.1218	1.7689
	Neurotic	Extrovert	-.82810*	.22814	.003	-1.4322	-.2240
		Introvert	-.21353	.24088	.812	-.8513	.4243
		Psychotic	.11000	.54152	.997	-1.3239	1.5439
	Psychotic	Extrovert	-.93810	.54035	.315	-2.3689	.4927
		Introvert	-.32353	.54585	.934	-1.7689	1.1218
		Neurotic	-.11000	.54152	.997	-1.5439	1.3239
C-P	Extrovert	Introvert	2.18095*	.19056	.000	1.6764	2.6855
		Neurotic	2.16095*	.18249	.000	1.6777	2.6442
		Psychotic	.78095	.43223	.281	-.3635	1.9254
	Introvert	Extrovert	-2.18095*	.19056	.000	-2.6855	-1.6764
		Neurotic	-.02000	.19268	1.000	-.5302	.4902
		Psychotic	-1.40000*	.43663	.012	-2.5561	-.2439
	Neurotic	Extrovert	-2.16095*	.18249	.000	-2.6442	-1.6777
		Introvert	.02000	.19268	1.000	-.4902	.5302
		Psychotic	-1.38000*	.43317	.012	-2.5270	-.2330
	Psychotic	Extrovert	-.78095	.43223	.281	-1.9254	.3635
		Introvert	1.40000*	.43663	.012	.2439	2.5561
		Neurotic	1.38000*	.43317	.012	.2330	2.5270
G-T	Extrovert	Introvert	-.16807	.21385	.861	-.7343	.3982
		Neurotic	-.43571	.20480	.157	-.9780	.1066
		Psychotic	-.98571	.48506	.189	-2.2701	.2987
	Introvert	Extrovert	.16807	.21385	.861	-.3982	.7343
		Neurotic	-.26765	.21623	.606	-.8402	.3049
		Psychotic	-.81765	.49000	.350	-2.1151	.4798
Neurotic	Extrovert	.43571	.20480	.157	-.1066	.9780	
	Introvert	.26765	.21623	.606	-.3049	.8402	

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		Psychotic	-.55000	.48611	.672	-1.8372	.7372
	Psychotic	Extrovert	.98571	.48506	.189	-.2987	2.2701
		Introvert	.81765	.49000	.350	-.4798	2.1151
		Neurotic	.55000	.48611	.672	-.7372	1.8372

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

*. Constructs number:

1. Deduction-Induction
2. Anticipation-Certainty
3. Background knowledge-Foreground knowledge
4. Context Meaning Induction-Prepositional Meaning
5. Graphical Representation-Text Based

The Multiple Comparisons Turkey HSD test shows the comparison of all constructs in each personality traits.

On the bases of these findings in Induction-Deduction construct, the Extroverts had more tendencies to Deduction than Introverts and Psychotics. In Anticipation-Certainty construct, Extroverts had more tendencies to Anticipation than Introverts and Psychotics. In Background knowledge-Foreground knowledge construct, the Extroverts had more tendencies than Neurotics to Foreground knowledge and Introverts had more tendencies than Extroverts to Background knowledge. And also in Context meaning-Prepositional meaning constructs, the Extroverts had more tendencies to Prepositional meaning than Introverts and Neurotics. The tendency towards Context meaning construct in Psychotics were more than Extroverts and Neurotics. At the last there were no meaningful difference between personality traits and Graphical representation-Text based representation construct.

The mentioned analyses indicate that there is a meaningful difference between personality traits with personal constructs in the process of induction. Table 19 of Multiple Comparisons of RGT and EPQ Analysis, indicates that the personal constructs in 4 types of personality traits in $p < 0.05$ are meaningful.

The RGT-EPQ analysis and given data in Table 17, Table 18 and Table 19, reveal that there is a meaningful relevance between constructs that individual personally created to understand the world and their inductions. The Descriptive Analysis of RCT and EPQ clearly confirm the fact that total correct answered questions in 4 types of personality traits from constructs point of view are meaningful.

This finding is in line with Kelly (1955, p. 61), who expressed: "people cannot understand the world except through their own constructs. Therefore, in order to understand a person's response to events, we have to understand the constructs through which he or she has perceived those events". The results illustrated the Kelley's (1955) theory which provides a rich characterization of the efforts of individuals to actively anticipate and control their environment.

Kelly's (1955) notion of *personal scientist* assumes that all people actively seek to predict and control events by forming relevant hypotheses, and then testing them against their experience (Mischel, 1964). Personality change, for Kelly (1955), is tantamount to a change in the individual's personal construct system: new construals can be added to the individual's repertoire, or construals that were previously preferred can now be avoided. When personality changes, the individual literally perceives the world differently. The conclusion of obtained results is in line with the Sperber and Wilson's (1986) comments who, communication is successful not when hearers recognize the linguistic meaning of the utterance, but when they infer the speaker's "meaning" from it (Pütz, & Sicola, 2010, p. 23).

To be even more ascertained about this judgment, the RGT-RCT analysis was administered. In order to calculate the inter-rater reliability between the constructs and correct answered questions of participants (RCT), the researchers used the Pearson correlation coefficient. The results showed that there was a significant correlation between constructs and correct answered questions as it is shown in Table 4.20.

Table20. Inter-rater Reliability of Constructs with Total Correct Answered Questions

		totaltextscore	D-I	A-C	B-F	C-P
totaltextscore	Pearson Correlation	1	.149	-.070	-.178	-.200
	Sig. (2-tailed)		.257	.598	.174	.126
	N	60	60	60	60	60
D-I	Pearson Correlation	.149	1	.421**	-.267*	-.296*
	Sig. (2-tailed)	.257		.001	.039	.022
	N	60	60	60	60	60
A-C	Pearson Correlation	-.070	.421**	1	-.396**	-.524**
	Sig. (2-tailed)	.598	.001		.002	.000
	N	60	60	60	60	60
B-F	Pearson Correlation	-.178	-.267*	-.396**	1	.521**
	Sig. (2-tailed)	.174	.039	.002		.000
	N	60	60	60	60	60
C-T	Pearson Correlation	-.200	-.296*	-.524**	.521**	1
	Sig. (2-tailed)	.126	.022	.000	.000	
	N	60	60	60	60	60
**. Correlation is significant at the 0.01 level (2-tailed).						
*. Correlation is significant at the 0.05 level (2-tailed).						

The researchers used the Pearson correlation coefficient in order to calculate the inter-rater reliability between the raters (personal constructs and reading induction marks). The result shows that there was a significant correlation between the two raters. Therefore, this gave assurance to the researchers that personal constructs determine the induction of reading texts. The personal constructs in the process of induction in participants, have a meaningful relation.

According to Kelly (1955), constructs function to guide the individual's perception and memory of events, and response to them. Personal constructs are important because these cognitive categories differ for each person (p. 84). Based on these findings, the first research null hypothesis is rejected.

4.12. Responding to RQ2

To meet the aim of the study, one of the questions, "Are personal constructs and Induction-Deduction strategies similar in comprehension process?" was posed and to find a (set of) proper answer(s), one null hypothesis was suggested. The null hypothesis of this question is, "Personal construct and Induction-Deduction strategies are not similar in comprehension process" In order for this null hypothesis to be tested, the descriptive analyses were employed in 4.6.1.1 section.

Based on the research findings in 12, the second research null hypothesis is rejected.

4.13. Responding to RQ3

To meet the aim of the study, the last questions, "Which factors cause individuals to be different in induction of reading texts from personal constructs point of view?" was posed to find a (set of) proper answer (s).

The last question reveals the unknown answer because this study is dealing with new and/or unexplored areas and the answer cannot be generated unless the research will have finished (Mackey & Susan, 2005, p. 19).

In order to conduct with analysis of this question, Table 21 provided a descriptive statistics from all texts and questions. Each text represented as one construct. The texts with the high number of correct answered questions and the texts with the high number of incorrect answered questions were selected in order to find the pivotal constructs that caused individuals to be different in induction of reading meaning.

Table 21 illustrates that one maximum percentile of incorrect answered questions pertain to text-2 with 64.2. The dependent constructs to this text was *Anticipation-Certainty*. Two maximum percentile of correct answered questions pertain to text-1 and text-3 with 57.5% and 55.5%. The common dependant constructs to both texts were *Deduction-Induction* and *Background knowledge-Foreground knowledge*. The result clearly illustrate that the constructs of *Deduction-*

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Induction, Anticipation-Certainty and Background knowledge-Foreground knowledge caused individually to have different induction.

Table21. Descriptive Statistics from All Texts and Questions

Correct subtract Incorrect / Construct	Percentage	Number	Answer	Passage
18 Constructs ¹	57.5	69	Correct	Text 1
	42.5	51	Incorrect	
	0	0	Unanswerable	
	100	120	Total	
-34 Constructs ²	35.8	43	Correct	Text 2
	64.2	77	Incorrect	
	0	0	Unanswerable	
	100	120	Total	
12 Constructs ³	55.5	66	Correct	Text 3
	44.5	54	Incorrect	
	0	0	Unanswerable	
	100	120	Total	
6 Constructs ⁴	52.5	63	Correct	Text 4
	47.5	57	Incorrect	
	0	0	Unanswerable	
	100	120	Total	
-8 Constructs ⁵	46.6	56	Correct	Text 5
	53.4	64	Incorrect	
	0	0	Unanswerable	
	100	120	Total	

*. Constructs number:

1. Deduction-Induction

2. Anticipation-Certainty

3. Background knowledge-Foreground knowledge

4. Context Meaning Induction-Prepositional Meaning

5. Graphical Representation-Text Based

To be even more confirmed about this judgment, Table 18 (The ANOVA analysis of 10 personal constructs in 4 types of personality traits) clearly indicated participants with different types of personality traits, in constructs of *Deduction-Induction, Anticipation-Certainty* and *Background knowledge-Foreground knowledge* had a meaningful value at $p < 0.01$.

Second language learners vary greatly in their acquisition of the new language. There are several predictable stages that have been identified as the learner progresses towards language proficiency. Krashen and Terrell (1983) mentioned three: comprehension, early production, and extending production.

5. DISCUSSION

According to Austin (1962, p.16), language is meaning. Austin argues that the intended meaning induction is connected with the production of effects upon the feelings, thoughts, or actions of the audience, or of the speaker, or of other persons (ibid.). Kelly's (1955) personal construct theory, provides a rich characterization of the efforts of individuals to actively anticipate and control their environment. He draws explicit parallels between the processes that guide scientific research and those involved in everyday activities. His notion of *personal scientist* assumes that all people actively seek to predict and control events by forming relevant hypotheses, and then testing them against their experience (Mischel, 1964). In Kelly's (1955, p.43) own words, "the aspirations of the scientist are essentially the aspirations of all men". As Einstein (1936) put it, "The whole of science is nothing more than a refinement of everyday thinking."

According to Kelly (1955, p.61), people cannot understand the world except through their own constructs. Therefore, in order to understand a person's response to events, we have to understand the constructs through which he or she has perceived those events.

Sperber and Wilson (1986) stated that communication is successful not when hearers recognize the linguistic meaning of the utterance, but when they infer the speaker's "meaning" from it (Pütz, & Sicola, 2010, p. 23). Findings of this study supported the belief that individuals create moulds through the process of induction; if the speaker recognizes the moulds of individuals (hearer), s/he can transfer the things that must be learned in the best way.

Personal constructs belongs to psychology school of thought and reading comprehension belongs to linguistics. The methodology of this psycholinguistics study illustrates the interaction between these two schools of thought; present a new wide insight of existence relevance between them. The personal construct in psychology and induction process in linguistics according to posed theories of Kelly and Searle, are in parallelism.

For the reason that no prior study has been accomplished in this field, this psycholinguistics innovation study cannot be fully referenced to any other scholar's work. Though, this study can be referenced separately to psychology and linguistics schools of thought.

The main invention of this study is designing and administering the RGT. One reason why repertory grid technique is popular is that they have three major advantages over other quantitative and qualitative techniques. These advantages are the ability to determine the relationship between constructs, ease of use, and the absence of researcher bias. Repertory grids allow for the precise defining of concepts and the relationship between these concepts (Boyle, 2005). Of the main focuses of repertory grid is on understanding, before developing theories that can be subsequently proved or disproved (Edwards et al., 2009).

In psychology field the findings are in line with the studies of Kelly (1955), Fransella (1977), Jankowics (2004), Banister et al., (1994), Bannister and Mair, (1968), Boeree (2006), Mahoncy (1988), Pope and Keen, (1981), and etc.

As well in the linguistics field, the results are in line with Austin (1962), Sperber and Wilson (1986), Bach & Harnish (1979), van Dijk & Kintsch (1983), Flower (1987), Gernsbacher (1990), Carrell and Eisterhold (1983), Codd's (1970) and etc.

The findings of this psycholinguistic research are also in line with Behnam, B. and et., al. (2008) about the participants' personality traits and their verities in reading comprehension.

6. CONCLUSION

The results were presented in two main sections: first, the procedures whereby the data were analyzed descriptively and elaborated on; second, the results of the inferential statistic of the study were discussed. Both sections took advantage of illustrations such as tables and charts in order to ease understanding.

Regarding the questions of the study, the statistical analysis of the data revealed that the constructs that individuals construe, determined the induction of reading texts. Moreover, based on the statistical analysis of the data which were done for the comparison between the RGT, EPQ, and RCT the following findings can be concluded:

- The first text is designed in a manner that if the question was read prior the text, there was no need to read the whole text. So, the statistical data analysis revealed that the majority of participant used *Deduction* to answer the first text.
- In text-2 the participant used *Anticipation* in order to understand the meaning of passage (see Table 9 and Table 10). The result is in line with Kelly's (1955) viewpoint that a major goal of both individuals and social systems is anticipation.
- The texts-3 designed to evaluate the *Background knowledge-Foreground knowledge* construct. The result clearly illustrated that the participants used *foreground knowledge* to comprehend this three text. The result clearly is in line with Kendeou, Rapp & van den Broek (2003) who argued and worked in the fields of text processing (a subset of psycholinguistics, which itself is a subset of cognitive science) and science education (a subset of educational psychology, which itself is a subset of the learning sciences) to describe the underlying mechanisms involved in learning and comprehension and focused specifically on the ways that background knowledge influences readers' text comprehension and learning.

- Another important finding of the study is that there are factors causing individuals to be different in induction of writer's intended meaning. These factors are: *Deduction-Induction*, *Anticipation-Certainty* and *Background knowledge-Foreground knowledge*.
- On the bases of this research findings, in Induction-Deduction construct, the Extroverts had more tendencies to Deduction than Introverts and Psychotics. In Anticipation-Certainty construct, Extroverts had more tendencies to Anticipation than Introverts and Psychotics. In Background knowledge-Foreground knowledge construct, the Extroverts had more tendencies than Neurotics to Foreground knowledge and Introverts had more tendencies than Extroverts to Background knowledge. And also in Context meaning-Prepositional meaning constructs, the Extroverts had more tendencies to Prepositional meaning than Introverts and Neurotics. The tendency towards Context meaning construct in Psychotics were more than Extroverts and Neurotics. At the last there were no meaningful difference between personality traits and Graphical representation-Text based representation construct.

The findings of this study created a great insight as a new window to see linguistics from psychoanalysis viewpoint. So this research is a threshold to find new techniques and methods for EFL teaching process and EFL learner's process of induction.

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