

Landau (2003, 2004) in order to see in which system Persian works better. Nevertheless, before beginning those tests, I would review the works of a few other researchers done on Persian control constructions.

A Short Review of Literature on Persian Control

Let's see how control discussions have altered during a period of ten years. Hashemipour (1989) discusses the binding effects of pronominals and controlled elements in Persian within GB framework, where she remarks the controlled element is controlled by an inherently referential antecedent. She further distinguishes between nonfinite and finite control structures regarding Case assignment. She comments since in Persian, VP is a head-final category, unlike the other categories (NP, PP, AP), θ -role assignment and subsequently Case assignment is from right to left. Therefore, in Persian, she asserts "The embedded [NP, IP] is assigned Case, instead of the operator." (Hashemipour, 1989:314)

Ghomeshi (2001) asserts that Persian is a null subject language; however, there is a subject agreement on the verb since the embedded verb is inflected for subject agreement. Therefore, she concludes, there seems to be no difference between these embedded clauses and any other clause with a null pronominal subject. Nevertheless, she argues that these clauses lack certain syntactic structures, mainly CPs and TPs, which lead to the lack of a Case position for their subjects. She states that in Persian, verb agreement is checked within vP assigning its external θ -role rather than Case assignment. Throughout her paper, Ghomeshi equates subjunctive clauses in Persian to infinitival clauses in English.

(20) a. Sima dust=dar-e [ketab be-xun-e].

(2000) matching, valuation, and deletion. Landau bases his argument, which is in favor of PRO's being Case-marked like any other DP, on the data from languages like Russian and Icelandic that show subject-oriented Case concord in control infinitives, as well as languages like Persian, Greek, Hebrew, and Romanian that exhibit control subjunctives.

Landau is also against Culicover and Jackendoff's (2001) Thematic Approach to control, suggesting that one should establish control syntactically by Agree/Move before resorting to pragmatics. Here he seems to see eye to eye with Hornstein in believing control to be syntactic. The only case where Landau prefers reductionist approach to control rather than PRO-based ones is in Backward Control, which is a pretty rare phenomenon, for instance in Tsez, only two verbs exhibit such a structure. In some languages, this number can be as great as five. Most backward control verbs are aspectuals (begin, continue, stop, etc.). According to reductionist approach to control, backward control is the covert movement of the controller to its matrix thematic position, which requires PRO to be licensed and interpreted in a position higher than that of the controller. Landau confesses that the evidence for backward control is a true challenge to standard theories of OC.

In the end, Landau admits two major problems of the Agree-based analysis of OC to be Split Control and Backward Control.

Having discussed the ideas held by the proponents of the Movement Theory of Control at one end of the control continuum and those held by the advocates of the Standard Theory of Control as the other end of the continuum, I am going to assess the Persian data in the tests of control put forth by Hornstein (1999, 2003, 2004) as well as those proposed by

B & H claim that in order to satisfy the minimalist approaches to grammar, one needs to achieve some reductions, which to them is the aim of the MTC.

They even assert Landau himself considers control to be an instance of Agree, and Agree in Minimalism has to do with movement; therefore, he is on their side in a way. B & H themselves seem to be moving a step backward after all the critiques to their theory, saying that control *approximates* raising rather than control *is* raising. They assert unlike raising, control makes the moving element appear in a θ -position before reaching [Spec, TP].

B & H do not agree with Landau, who believes θ -roles cannot license movement since they are not features. They believe θ -roles are required to be treated as features in order to license movement since movement is collapsed into two Merge operations, namely, Merge (internal) and Move (external). They argue if greed motivates internal Merge to check a feature, then external Merge is no exception since it is a similar operation. To them, a featural perspective of θ -role will reduce redundancy and ultimately meet the Economy Principle.

In the end, they claim since the MTC is a movement theory of Control rather than a Raising one, there might be some inconsistencies between Control and Raising.

Finally, Landau (2004) argues against the proposed solutions put forth by B & H (2004). He proposes an Agree-based Approach to OC. To Landau, an abstract Agree relation is what forms OC, whereas, to Hornstein, it is A-movement that is an instance of raising that forms OC. Landau admits that his Agree-based approach to control is adopted from Chomsky's

Landau (2003) criticizes Hornstein's reducing control to movement. He argues that Hornstein's data are not exhaustive enough to draw generalizations from. Landau resorts to the Standard view of control, which states there exists a PRO quite distinct from NP-trace since control involves two argument chains, whereas, raising involves only one. As a result, he proves the existence of the control module.

Landau makes a distinction between Partial Control and Exhaustive Control. He attributes Partial Control to desiderative, factive, propositional, and interrogative infinitives, whereas, Exhaustive Control is motivated by implicative, modal, and aspectual infinitives. Furthermore, Landau declares that Partial Control does exist, but Partial Raising does not.

- (19) a. We thought that the chair_i preferred [PRO_i to gather at 6].
 b. *We thought that the chair appeared to be gathering once a week.

(Landau, 2003:493)

Therefore partial readings are not extracted from raising contexts. As a result, Hornstein's project of doing away with PRO and the control module is voided. Landau believes the Case properties of the Matrix verb assigns the raising/control distinction.

Boeckx and Hornstein (2004) argue against the weak points of their theory which are put forth by Landau (2003). They propose that the Movement Theory of Control (MTC) is superior to the Standard Theory of Control both conceptually and methodologically, and that the latter theory has no empirical advantage over the MTC.

(Culicover and Jackendoff, 2001:506)

Therefore, the controller in (15) and (16) are identified thematically rather than syntactically. The only case where control appears to be syntactically based is adjunct structures, where in the absence of an overt subject, the controller is always the Matrix subject, no matter what its thematic role be. In such cases, neither a generic interpretation nor a split antecedent is ever possible.

(17) a. Helen examined Bernie in order/so as to vindicate herself / *himself / *oneself / *themselves.

b. Bernie was examined by Helen in order/so as to vindicate ?himself / *herself / *oneself / *themselves.

(Culicover and Jackendoff, 2001:503)

Nevertheless, even in these cases, C & J believe that there is some sort of nonsyntactic influence to determine the controller.

Boeckx and Hornstein (2003) argue against C & J's arguments against their syntactic approach to control. They object to their treating adjuncts differently.

(18) John saw Mary [before leaving the party].

(Boeckx and Hornstein, 2003:270)

They declare adjunct control constructions display all the properties of OC, that is, the need for a local antecedent that c-commands the controlled element. Just like OC constructions, control in adjuncts only yields a sloppy reading under ellipsis, yet it disallows split antecedents. Moreover, it merely allows de se interpretation. B & H argue that C & J's theory only accounts for the controller selection in nonfinite complements, mainly gerunds and infinitives.

nonfinite CP complements. Culicover and Jackendoff (2001) argue against Hornstein's (1999) Movement Theory of Control. They assert that the data Hornstein presents are not exhaustive to make generalizations from.

C & J base their arguments on some data that show semantic constraints are involved in determining the position of the controller. They believe Hornstein follows generative approaches such as Lexical-Functional Grammar (LFG) and Head-Driven Phrase Structure Grammar (HPSG), all of which believed in the unification of control and raising, while more recent approaches as Extended Standard Theory (EST), Government and Binding (GB) and Minimalist Program (MP) differentiate them.

C & J also comment on *pro* in English and *pro* in pro-drop languages, saying in English, *pro* can be licensed in subject position of untensed clauses; whereas, in pro-drop languages, *pro* can also be licensed in the subject position of tensed clauses. C & J propose a thematically based theory of control rather than a syntactic one.

(15) A: John made Susan a promise.

B: What was it?

C: I think it was to take care of himself/*herself.

(Culicover and Jackendoff, 2001:506)

They believe if control were identified with the semantic role of Source, then the problem would be solved. In (15), the giver of the promise is the controller. However, it is possible for the recipient of the promise to be the controller too.

(16) Susan was promised (by John) to be allowed to take care of herself/*himself.

- (14) a. PRO Hearing the warning, John dodged the falling brick.
b. *Him hearing the warning, John dodged the falling brick.

(Kroeger, 2004:128)

Kroeger asserts there is something in the lexical entry of each and every verb that determines both the existence and the nature of the control relation and assigns the identity of the controller. Therefore, not only syntax, but also semantics has a crucial role in determining the control relation, the controller and the controllee.

Review of “Remarks and Replies” to “Movement and Control”

Hornstein’s (1999) “Movement and Control” has motivated a good number of “Remarks and Replies” by different scholars including Culicover and Jackendoff (2001), Boeckx and Hornstein (2003), Landau (2003), Boeckx and Hornstein (2004), and Landau (2004).

Hornstein (1999) proposes that OC (Obligatory Control) structures are the residue of movement. Basing his classification of control on Williams (1980), Hornstein presents a number of criteria as to distinguish Obligatory Control structures from Non-Obligatory Control ones. He asserts OC PRO can be replaced by reflexives; whereas, NOC PRO can be replaced by pronouns. He assumes OC PRO and NP-trace to be similar in that they both terminate in Case positions (Spec, IP) of the Matrix clause. However, they are different in that, in control, a D/NP raises to a θ -position, while in raising, a D/NP raises to a non- θ -position. As for NOC, he calls it pro and believes it to be licensed at a cost in (Spec, IP) of

to study control in, instead, subjunctives seem to be acting in a similar manner. Consequently, for languages like Persian and Greek, nonfinites do not represent infinitives, but they imply subjunctives. That is why there is no one-to-one correspondence between English control verbs and those in Greek and Persian.

Janke (2003) eliminates Pro completely from the Theory of Control, introducing a new perspective to view control in which both lexical-semantic and lexical-syntactic properties of a predicate are involved in a control relation. Janke holds this proves the absence of controlled objects in control structures. To do so, he takes a binding approach to OC. However, Janke's approach has not been very popular since most other works on control do hold that there is a PRO, but the controversy is mostly on the distribution and interpretation of this structure.

Another issue at stake is whether PRO is anaphoric or pronominal or both. Different scholars have different viewpoints in this regard. Unlike Landau (2000) who treats PRO as anaphoric, Safir (2004) holds that "Logophorically sensitive pronouns are not typically anaphors." (Safir, 2004:271)

Furthermore, Kroeger (2004) distinguishes between anaphoric control (as in gerunds) that can be replaced by an overt pronoun and functional control (as in participles) that cannot be replaced by an overt pronoun.

(13) a. PRO Praising himself got John into trouble.

b. His praising himself got John into trouble.

(Kroeger, 2004:128)

However, PRO cannot be replaced by an overt pronoun, as in ((14) b).

subject and object pro appear in finite clauses. The first type includes languages that allow not only subject pro but also object pro (like Thai and Korean). The second type encompasses languages that do not allow both subject and object pro to occur simultaneously (like English). The third type is attributed to languages like Spanish and Mandarin. These languages do allow subject pro; however, they disallow object pro.

Miller (2002) makes a wild generalization stating that subjunctives do not license PRO. However, in this paper, it will be shown that they do in Persian.

He asserts although the English subjunctive is [-Tense, -Agree], and as a result, it should license PRO, it does not. He calls subjunctive a separate mood.

A great number of theories have been proposed for Control, and subsequently a lot of constraints in different languages were discovered. Nevertheless, the two most influential ones have been that of Hornstein's and that of Landau's each of which has had its own proponents and opponents. Lightfoot (2002) has taken Brazilian Portuguese into these control theories and concluded that the data in this language yield themselves to Hornstein's Movement Theory of Control.

Panagiotidis (2002) draws a distinction between null subject languages and languages that do not allow null subjects (like English). He asserts English-like languages only demonstrate the strong null variety that attracts an XP from Spec vP.

Alexiadou and Anagnostopoulou (2002) observe control in different null subject languages including Greek. Like Persian, Greek lacks verbs that are [-Agree]. Therefore in Persian and Greek, there is no verbal infinitive

(Manzini, 2000, in Coopmans et al., 2000:261-2)

Roeper (2000) views control from a pragmatic perspective suggesting that context might assign the controller of the controllee.

(11) a. John lost the audience's interest. (The audience's interest is lost.)

b. John lost interest. (John's interest is lost.)

c. The audience was enthralled, but as John's voice turned to a monotone,

John lost interest. (The audience's interest was lost.)

(Roeper, 2000, in Coopmans et al., 2000:312)

Equally interestingly, he points out the influence of the lower nominal rather than the higher verbal properties on PRO.

(12) a. John lost interest. \Rightarrow agent

b. John lost support. \Rightarrow object

(Roeper, 2000, in Coopmans et al., 2000:316-7)

He calls this sort of control "Role Control" and believes it to be as important as Syntactic Control. (Roeper, 2000, in Coopmans et al., 2000:318)

Richards (2001) proposes a hypothesis regarding the properties of infinitival complements. He attributes overt raising of the ECM subjects into the matrix clause to "overcrowding" constraint, which does not allow the ECM subjects and the infinitival clause stay in situ. This contrast triggers raising even when the features motivating this raising are weak ones. (Richards, 2001:134)

Speas (2001) classifies all languages into three types regarding where the

(Manzini, 2000, in Coopmans et al., 2000:260)

Similarly, object control is felicitous in embedded infinitival structures; nevertheless, the subject of the subjunctive clause and the matrix subject cannot be coreferenced. However, the very subject of the subjunctive clause can be coreferenced with the matrix object.

(8) a. *Mi chiedono che vadano.

They ask me that they go:SUBJ.

b. Mi chiedono che io vada.

They ask me that I go:SUBJ.

c. Michiedono di andare.

They ask me to go.

(Manzini, 2000, in Coopmans et al., 2000:261)

Furthermore, the matrix subject and the subject of either the subjunctive clause or the gerund (long infinitival) structure can be coreferenced in adjuncts.

(9) a. Vado prima che mi arrabi.

I go before I get:SUBJ angry.

b. Vado prima di arrabbiarmi.

I go before getting angry.

(Manzini, 2000, in Coopmans et al., 2000:261)

However, this generalization does not hold for all adjuncts including rationale clauses.

(10) a. *Vengo perché ti aiuti.

I come in order that I help:SUBJ you.

b. Vengo per aiutarti.

I come to help you.

b) or in free participial and nominal adjuncts ((6) c).

(6) a. John_i asked the policeman [_{cp}where [PRO_i to go]].

b. I sold the book [to help the refugees].

c. Noticing that a crowd had gathered, Bill immediately called the fire department.

(Růžička, 1999:6-11)

Růžička draws a distinction between this last class of control constructions and the others. He emphasizes on the somewhat independence of the controlled participial clause upon the matrix clause. He further treats control with the PRO-theorem under the Minimalist Approach. As in the minimalist view, the issue at stake is checking of feature values, here, in control, too, the constraints for licensing the controller are to be present in the numeration for the arguments to reach the spell-out via merge.

He also predicts that based on where the Minimalist Program is heading to, not only the PRO-theorem, but also the null object and the PRO-drop parameter might be abandoned. (Růžička, 1999:186)

Manzini (2000) speaks of a peculiar type of control, which emerges in particular languages such as Italian. He asserts only in embedded infinitival structures can the subject of the subjunctive clause and the matrix subject of volition verbs be coreferenced; however, this is not the case in subjunctive complements.

(7) a. *Voglio che io vada.

I want that I go:SUBJ.

b. Voglio andare.

I want to go.

They, then, extend this categorization to adjectives and classify them as raising adjectives (such as “*likely*”) and control adjectives (such as “*eager*”).

(3) a. The doctor is likely to examine Pat.

b. Pat is likely to be examined by the doctor.

(4) a. The doctor is eager to examine Pat.

b. Pat is eager to be examined by the doctor.

(Sag and Wasow, 1999:285)

Similarly, Růžička (1999) categorizes different kinds of control based on the influence of the lexical classes and thematic specifications upon control conditions. Preliminary, he differentiates between the control verbs that require the control element (PRO) to be an argument (*promise, ask, persuade, endeavor, try, signal, teach, threaten, help, etc.*) and the control verbs that do not impose any restriction on the thematic properties of PRO (*hope, wish, expect, hate, like, choose, be afraid, want, etc.*), which can often be replaced by a gerund complement.

(5) a. He is afraid [PRO to kiss her].

b. She was afraid of [PRO asking for help].

(Růžička, 1999:6)

The first category is the so-called Obligatory Control class, and the second category is what has been called Non-obligatory Control (Williams, 1980, cited in Růžička, 1999:6).

Unlike Sag and Wasow, Růžička (1999) further discusses two other classes of control structures to be controlled complement clauses with filled C(P), which are found in indirect questions ((6) a) and controlled clauses as adjuncts, which can appear either in infinitival s-structures ((6)

A theory should fulfill both descriptive and explanatory adequacies; moreover, should it be applied to different languages, it can be narrowed down and thus approach Universality. Therefore, in this paper, there has been an attempt to observe Control Theory in Persian under these two Minimalist Approaches to Control Theory.

The first section reviews some recent works on Control Theory in general. The second section discusses a good number of “Remarks and Replies” to Hornstein’s (1999) “Movement and Control”. The third section is a short account on the literature on Persian control constructions. The fourth section investigates how Persian data yield themselves to the Movement Approach of Hornstein’s and the Agree-based Approach of Landau’s respectively. The fifth section concludes what was said throughout the paper.

Review of Literature

In this section, I would present some of the works done on Control on a chronological basis from 1999 to 2004.

Sag and Wasow (1999) differentiate raising verbs (like “*continue*”) and control verbs (like “*try*”) by setting two conditions. The former, unlike the latter, allow nonreferential subjects and preserve meaning when being passivized.

- (1) a. The FBI tried to find Lee.
b. Lee tried to be found by FBI.
- (2) a. The FBI continues to visit Lee.
b. Lee continues to be visited by FBI.

(Sag and Wasow, 1999:278-9)

Control in Persian

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(Part 1)

Abstract

This paper investigates control constructions in Persian by running various tests of control offered by Hornstein (1999, 2003, 2004) in his Movement Theory of Control. And those proposed by Landau (2003, 2004) in his Agree-based Approach to OC under Standard Theory of Control.

The Persian data show consistency with Landau's tests of control, whereas, they prove to be inconsistent with those of Hornstein's. Therefore, Hornstein's theory that OC PRO is the residue of movement is refuted, while Landau's Agree-base Approach is supported by the data in this paper, including Persian showing case concord in its subjunctive control construction.

Key Words: control constructions – Agree-base Approach – Minimalist perspective – Movement Approach.

Introduction

This paper aims at shedding some light on the controversial issue of Control Theory viewed in the Minimalist perspective. Two of those most controversial theories are Hornstein's Movement Approach to OC and Landau's Agree-based Approach to OC.

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should encourage educators to combine concept mapping with other strategies and cognitive tools to help learners relate the new information to their unique mental models. Furthermore, teachers should be cautious in presenting concepts to students. They should never ask students to memorize prepared concept maps because this could merely promote rote learning and so defeat the purpose of encouraging active meaningful learning on the part of the learner.

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strategy would result in better comprehension of the listening passages. It can be argued that concept mapping provides a visual image of the concepts under study in a tangible form which can be focused very easily. Furthermore, it can consolidate a concrete and precise understanding of the meanings and inter-reactions of concepts and this makes learning an active process, not a passive one. After being trained in concept mapping, the students learn to focus on important and key concepts and information and how they are related to subordinate concepts. By stimulating the integration of new knowledge into existing structures, concept mapping helps the students to learn more easily and more effectively.

The results of the study support the findings of a number of other studies which found that organization enhances comprehension and recall (e.g., Pankratius, 1990). Therefore, it can be concluded that concept mapping may increase the learners' capacity to organize and comprehend the materials.

As far as the second aim of this study is concerned, the assumption was that when the subjects are trained in concept mapping strategy, the evaluation of their comprehension through a concept map rather than a traditional multiple choice test would positively affect their level of understanding of the materials. However, the obtained results may indicate that mapping training has greater impact than test type.

One of the most important implications of this study is that since concept mapping models the way human mind organizes knowledge (Stoyanova & Kommers, 2001), the technique can help readers and listeners organize and externalize information in a way that corresponds to human psychological and mental constructs. In general, the study

In order to provide statistical evidence as to whether or not this difference is a significant one, a two-way ANOVA was employed. As the results of this analysis presented in table 5 indicate, the impact of training is significant ($F(1, 60) = 7.182, p < 0.05$):

Table 5: Results of two-way ANOVA for the impact of training and test-type on EFL learners listening comprehension

source	Type III sum of squares	df	Mean Square	F	SIG.
Training	60.048	1	60.048	7.182	0.001
Test type	0.672	1	0.672	0.080	0.862
Training* Test Type	0.193	1	0.193	0.023	0.912
Error	501.612	60	8.360		
Total	562.525	64			

The effect of test type, however, is not significant ($F(1,60) = 0.080$), indicating that irrespective of test type, the group employing concept map training as a listening comprehension strategy has been more successful than the control group, whether the test was of multiple choice type or concept mapping.

Conclusion

The obtained data revealed that concept mapping as a listening

Results of the impact of test type and concept map training on listening comprehension

Addressing the second research question of the study, the following null hypothesis was tested: there is no interaction between the particular test type taken by the students and the usefulness of concept mapping as a listening strategy. Table 4 represents the descriptive statistics for the two groups of students participating in the study: concept map training and non-concept map training, half of whom received a concept map test and the rest a non-concept map test.

An immediate glance at the results in Table 4 shows that the highest mean belongs to the group trained in mapping technique ($M= 14.571$), while there is not a great difference between this mean score and the mean score for the other group ($M= 14.318$) which received training but differed in its test type ($M\ dif= 0.253$). This may indicate that mapping training has a greater impact than test type. This is supported by this fact that the difference between the mean scores of the two groups which were not trained in mapping but differed in their test type is not great ($M\ dif= 0.095$).

Table 4. Descriptive Statistics: Test type & Concept mapping

Training	Test type	Mean	SD	N
CM Training	CM test	14.571	2.625	16
	Non-CM test	14.318	2.451	16
Non-CM Training	CM test	11.919	2.212	16
	Non-CM test	11.824	2.279	16
Total		13.158	2.391	64

Table 2. Descriptive Statistics: post-test

	Group	N	Mean	Std. Deviation
Comprehension Scores	CM group	32	14.444	2.538
	Non-CM group	32	11.871	2.245

For examining the first null hypothesis of this research concerning the impact of concept map training on listening comprehension of the EFL learners, the scores of the subjects participating in the study on 20 comprehension questions were computed. To examine the significance of the mean difference between the two groups, an independent sample t-test was employed. The results of the t-test analysis showed that concept map group did significantly better on the listening comprehension test than the control group ($t(62) = 3.846, p < .05$). Table 3 presents this result:

Table 3: Independent t-test results for the impact of concept map training

	T-test for equality of Means			
	t	df	Sig.(2-tailed)	Mean Differences
Listening comprehension scores	3.846	62	0.001	2.192

significant difference between the experimental and control groups. Table 1 show the result.

Table 1. Independent t-test for the impact of concept map training

	T-test for equality of Means			
	t	df	Sig.(2-tailed)	Mean Differences
Listening comprehension scores	1.699	62	0.001	0.592

The T-value (1.699) shows that there is no significant difference in terms of the two groups' performance at the beginning of the study. Thus, it can be safely concluded that the two groups participating in the study met the condition of homogeneity.

Results of the impact of concept map training on listening comprehension

The main purpose of the present study was to examine whether or not concept map training as a listening comprehension strategy would have any impact on the listening comprehension of the EFL learners.

The scores of the students participating in the study on 20 comprehension questions were computed. A preliminary glance at the mean scores of the concept map training group ($M= 14.444$, $SD= 2.538$) and non-concept map training group ($M= 11.871$, $SD= 2.245$) shows that the concept map group did better on these questions. Table 2 shows the results:

section was conceptually mapped with the subjects' cooperation during the first session. The procedure for training the students on concept mapping was based on the following steps: (a) Identifying the main topics, ideas, the major events, characters or key concepts (b) Designing focus questions or statements to elicit information from the students during the brainstorming sessions (c) Developing concept maps on the board in response to questions asked by the teacher. (d) Allowing the students to change and complete their own concept maps according to their understanding of the passage.

The control group received no training on mapping technique and their practice was confined to answering multiple-choice questions; however, both treatment and experimental groups were given identical pre-listening instructions.

At the end of the course, all subjects took a pre-tested achievement test based on the listening comprehension sections of the New Headway (1999) at the Upper-Intermediate level as the post-test. Half of the subjects in each group received a multiple choice comprehension test including 20 questions and the other half took a concept map test based on five listening comprehension passages including 20 questions. The concept map test was piloted with 30 second-term freshmen university students and the necessary modifications were made. The objective as mentioned before, was to examine the effectiveness of concept mapping across different test types.

Results of the Pre-test Stage

The technique of T-test was employed to see if there was any

They were randomly selected from among those who had passed their lab (I). The subjects were randomly assigned to two different classes each consisting of 32 female subjects serving as the experimental and the control group of the study.

Instrumentation

The instruments used for data collection included a multiple choice listening comprehension test serving as the pre-test as well as a multiple choice listening and a concept map listening comprehension test both functioning as the post-test of the study.

Procedure

The following steps were followed in the process of conducting the study:

First, at the very beginning of the course, a pre-test listening comprehension consisting of 20 multiple-choice questions based on the contents of NEW HEADWAY (1999) at the Intermediate level was administered to all subjects participating in the study. The purpose was to ensure the homogeneity of the subjects with respect to their listening comprehension proficiency in particular.

To check the homogeneity of the two groups at the outset of the experiment, a t-test was performed.

Then, through the six sessions devoted to listening comprehension practice in the Lab (II) course, the procedure for conceptually mapping a heard conversation or talk was explained to the subjects in the experimental group, and as an example, a listening comprehension

Reutzel (1984) investigated the effect of a story mapping as a post-reading review strategy on comprehension. He found that the strategy significantly improved students' comprehension over the control.

Although the use of story maps and other mapping techniques are becoming common classroom practice, research specifically examining the effectiveness of maps to facilitate comprehension has been relatively limited. Furthermore, no research so far has investigated the impact of concept mapping strategy on EFL learners' listening comprehension. This study aims at answering the following research questions:

Research Questions

- 1) Does concept map training as a post-listening strategy have any impact on EFL learners' listening comprehension?
- 2) Is there any interaction between the particular test taken by the students and the usefulness of concept mapping as a listening strategy?

To examine the two research questions of this study two null hypotheses were formulated:

Ho₁: Concept mapping as a listening strategy has no impact on EFL learners' listening comprehension.

Ho₂: There is no interaction between the particular test taken by the students and the usefulness of concept mapping as a listening strategy.

Research method and procedure

Subjects

The subjects participating in this study were 64 Iranian female second-term freshmen studying English as their major at Zahedan University.

between them and assess its meaning, analyze the nature of the relationship, and from the link or connection which engages the most critical thinking (Jonassen, 1996).

As it was mentioned before, a concept map visually describes the relationship between ideas in a knowledge domain. Visual representation has several advantages (Plotnick, 1997) which are alone sufficient to justify the employment of concept mapping as a useful strategy. The first benefit of visual representation is that visual symbols are quickly and easily recognized. The second advantage is that minimum use of text makes it easy to scan for central words and concepts. The last important benefit is that it provides the learner with a holistic understanding that words alone can not convey.

Research on Mapping Strategy and the significance of the study

Several studies have found support for the use of mapping strategy to enhance comprehension. Pankratius (1990) found that mapping concepts prior to, during, and subsequent to instruction led to greater achievement for high school physics students. A meta-analysis of 19 studies on the use of concept mapping as an instructional tool revealed that concept mapping had positive effects on both student achievement and student attitude toward science (Horton, Gallo, Woods, Senn & Hamelin, 1993).

Beck, Omanson, and McKeown (1982) investigated the effectiveness of a redesigned reading lesson, which included the use of a story map as a pre-reading treatment, on students' recall. Students taught using the redesigned story lesson, of which a story map was a part, significantly outperformed the controls on the dependent measures.

form. There are several types of methods that all currently go by names like “concept mapping” (Novak & Gowin, 1984), “mind maps” (Buzan & Buzan, 1993), “concept circles” (Wandersee, 1990), semantic networks” (Fisher, 1990) and mental mapping. All of them are similar in that they result in a picture of someone’s ideas.

In essence, concept maps are tools for organizing and representing knowledge. However, they go beyond the typical outline in that they show relationships between concepts, including bi-directional relationships. They include concepts, usually enclosed in circles or boxes of some type (nodes), and relationships (links) between concepts, indicated by a connection between two concepts(Novak, 1990). A node is a simple geometric object such as an oval, a circle, or a box, containing a textual concept name. Inter-node relationship links are represented by textually labeled lines with an arrowhead at one or both ends. So, the links between the concepts can be one-way, two-way or non-directional. The line specifies the relationship between two concepts. Words used to label the links help depict relationships more explicitly (Anderson, Inman, & Zeitz, 1993). Together, nodes and links define propositions. Thus, propositions are two or more concepts linked by words to form a semantic unit.

Mapping technique falls into the large category of mediating tools (Stoyanova & Kommers, 2001). The concept of mediation refers to the fact that our relation with the outside world including other people is always mediated by signs and artifacts. The technique forces students to think meaningfully about the content domain in order to identify and verify important concepts, classify them, describe the relationship

which one or more participants create a map using keywords that are representative of a specific concept. The result of a concept mapping session, he adds, is a concept map: “a series of words laid out in a graphical representation, with reciprocal connections and links” (p. 153).

What is a Concept Map?

Fundamentally a concept map provides a visualization of how an individual’s procedural or declarative knowledge is organized (Lavoie, 1997). This commonly involves concepts that are connected to other concepts in some hierarchical manner by propositional statements describing the relationship between such concepts. Concepts and propositions, as for knowledge in any domain, constitute the building blocks of concept mapping. Therefore, before dealing with the definition of a concept mapping technique, it is necessary to know what concepts and propositions are.

It can be said that concepts are like the atoms of matter and propositions are like the molecules of matter. In essence, a “concept” means a regularity in an object or event that is labeled with a word, like “books”, “air”, and “pollution”. It is simply a mental representation of something (Neath, 1998).

A concept is given new meaning when it is linked with other concept, as in “pollution in the air”, thus forming a proposition. A proposition is simply a relationship between two concepts that has a truth value (Neath, 1998, p.262).

Concept mapping is a general method that can be used to help any individual or group to describe their ideas about some topic in a pictorial

Description of Concept Maps

According to Oxford (1990), concept mapping is classified under memory strategies. She defines it as follows:

..... making an arrangement of words into a picture, which has a key concept at the center or at the top, and related concepts linked with the key concept by means of lines or arrows. Mapping is not just a good memory strategy but it is also useful as a pre-listening or pre-reading strategy for aiding comprehension (p.41).

Sopoehr (1994, cited in Dabbagh, 2001) defines concept mapping as follows:

It is a powerful and effective cognitive tool that encourages the students to organize their knowledge about a concept domain and to be explicit about the nature of relationship between ideas. Depending on how concept mapping strategy is utilized in an instructional context, it can alter the encoding process that in turn affects the learning outcome and performance of students (p.22).

Jonassen (1996) defines concept mapping as a tool that can enhance the interdependence of declarative and procedural knowledge to produce a third type of knowledge called structural knowledge. Novak (1990) defines concept mapping strategy as a tool for organizing and representing knowledge that includes concepts or propositions enclosed in circles or boxes of some type and connecting lines including the relationship between the concepts.

According to Cieognani (2000) concept mapping is a process through

Introduction

The use of concept maps as a teaching strategy was first developed by J.D. Novak in the early 1980's. It was derived from Ausubel's learning theory which places central emphasis on the influence of students' prior knowledge on subsequent meaningful learning. According to Ausubel (1968), the most important single factor influencing learning is what the learner already knows. When meaningful learning occurs, it produces a series of changes within our entire cognitive structure, modifying existing concepts and forming new linkages between concepts.

The power of concept maps has been best justified by the Model of Spatial/Verbal Processing proposed by Lambiotte et al. (1989). According to this model the presentation of a graphical display advocates both the spatial (i.e. perceptual and imaginative) and the verbal (i.e. syntactic and propositional) processing systems of the user. Concept mapping serves as a kind of template to help to organize knowledge and to structure it. Many learners and teachers are surprised to see how this simple tool facilitates meaningful learning and the creation of powerful knowledge frameworks that not only permit utilization of the knowledge in new contexts, but also retention of the knowledge for long period of time (Novak & Wandersee, 1991). There is still relatively little known about memory processes and how knowledge finally gets incorporated into our brain, but it seems evident from diverse sources of research that our brain works to organize knowledge in hierarchical frameworks and that learning approaches that facilitate this process significantly enhance the learning capacity of all learners (Novak, 1990).

The impact of concept map training as a post- listening strategy on efl learners' listening comprehension

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Abstract

This study aimed to investigate the impact of concept map training as well as the interaction between concept mapping and test type on EFL learners' listening comprehension. Sixty-four female second-term freshmen university students studying English Translation as their major were randomly divided into four groups. The first two groups, serving as the experimental group, received concept map training during a period consisting of six sessions but the other two groups, functioning as the control group, received no map training during this period. At the end of the term one of the groups in the experimental group and one of the groups in the control group were randomly given a concept map comprehension test type while the two remaining groups took a multiple choice test type. The obtained results revealed that concept mapping leads to an improvement in the students' comprehension; however, the effect of test type was not significant.

Key Words: concept map training – experimental group – control group – test type – comprehension.

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