

# Effect of Using Image-Schemas on Learning L2 Prepositions and Enhancing Learner Autonomy: A Dynamic System Theory and Cognitive Linguistics-Inspired Approach

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## Abstract

This study investigated the effect of applying the dynamic system theory (DST) and cognitive linguistics (CL) insights into grammar instruction on EFL learners' learning of English prepositions and learner autonomy. Sixty Iranian EFL learners at the lower-intermediate level of language proficiency were randomly assigned to 1 experimental and 1 control group. The 2 groups filled out an autonomy questionnaire and took a test of preposition measuring their knowledge of *on*, *over*, *around*, *for*, and *under*. Then, the experimental group received a DST/CL-based instruction using image-schemas, whereas the control group followed a traditional approach of repetitions, drills, and substitutions for teaching of the same prepositions. Finally, to examine the effectiveness of the DST/CL-based program, the 2 groups were given the posttests of preposition and learner autonomy. Based on the results, the experimental group outperformed the control group on the test of prepositions, but did not show significant differences regarding the perception of learner autonomy. This indicates that the DST/CL-based approach which relies on meaningful motivation of explicit and underlying levels of interactions leads to better retention and learning of prepositions, but may not contribute to learner autonomy if practiced for a limited period of time.

**Keywords:** Grammar Instruction; Dynamic System Theory (DST); Cognitive Linguistics (CL); Preposition; Learner Autonomy

## 1. Introduction

Language as a dynamic system considers grammar as a means of meaning-making in a wide repertoire of contexts (Gebhard, Gunawan, & Chen, 2014). This dynamicity of language, in Halliday's terms (1993), "opens up a universe of meaning, a multidimensional semantic space that can be indefinitely expanded and projected" (p. 97). The point of departure for language as a dynamic system from other perspectives towards the definition of language is the kind of relationship that is assumed between language development and cognition (Elman, 1990, 1995;

Elman et al., 1996). From a dynamical point of view, “rules are not operations on symbols but rather embedded in the dynamics of the system” (Elman, 1995, p. 2). Through the ongoing process and experience of the environment (i.e., the context) and through making relations between the position of states, individuals construct the dynamic language which is not linear in its development and is sensitive to change and temporal conditions (Hohenberger & Peltzer-Karpf, 2009; van Geert, 2008; van Gelder, 1998).

This view of language is in line with the conceptualization of cognitive linguistics (CL), a modern school of linguistics, which argues that our knowledge of the world helps us interpret complex meanings (Evans & Green, 2006). To look in this way, however, is to disrelish the traditional definitions of language according to which concentration is directed towards the formal characteristics of language where there is no room for meaning-making. Grammar is assumed to be built upon rules of habit formation (e.g., repetitions, drills, and substitutions) which emphasize the construction of error-free context-free structures (Holme, 2009; Hyland, 2009).

This exclusive attention to form and neglecting the cognitive processes at work during language learning make internalization and meaningful acquisition of the grammar problematic and complex (Matsumoto, 2008; Poehner, 2008). Language teachers and researchers have maintained that the acquisition of English prepositions, as one of the frequent class of words, constitutes one of the major areas of difficulty for L2 learners within the field of grammar (Celce-Murcia & Larsen-Freeman, 1999; Evans & Tyler, 2005; Lam, 2009). The multiple meanings associated to a single preposition pose most challenges to teaching/learning of this class of words (Tyler & Evans, 2003) because there is a “low contingency of their form-function association” (Ellis, 2008, p. 233). Different meanings of prepositions cannot be predicted from the literal meaning because the range of meanings assigned to prepositions includes nonvisible, abstract concepts such as feelings, thoughts, attitudes, relations, intentions, and so on (Rudzka-Ostyn, 2003). In other words, prepositions are polysemous, and polysemy is “a semantic characteristic of words with multiple meanings” and not a matter of form (Koffie, 2010).

This problem grows even worse within the teacher-centered context of traditional approaches to language teaching where the essence of meaningful learning is neglected; no sense of responsibility for learning on part of L2 learners is encouraged, and they do not play any active and self-conducted role in their own process of learning (Lam, 2009). According to Lüftenegger et al. (2012), “only when learning is driven by internal sources and can be self-managed can successful lifelong learning be ensured . . .” (p. 28). The prerequisite to this self-management or self-regulation ability which entails development of autonomous behavior of L2, however, is to consider the sociocognitive processes like planning a learning action,

volitional control, interest and self-efficacy, and self-reflection in function (Deci & Ryan, 2002; Schmitz & Wiese, 2006; Zimmerman, 2000). With developing a more strategic and autonomous action within a more meaningful context, learners can better solve learning problems and acquire and internalize the complexities of the language (Alibabae, Mehranfar, & Zarei, 2014; Kumaravadivelu, 2006; Novak & Gowin, 1984).

Thus, due to this labyrinth of semantic relationships among different, but related, meanings of prepositions and the processes in question for a more sufficient lifelong learning outcome, a more comprehensive view towards language and language learning is needed to help teachers contextually make the necessary provisions and methodologically assist their learners in overcoming the barriers of learning prepositions and in constructing a capacity for strategic action which, in turn, leads to an increase in their perception of autonomous behavior (Holme, 2009).

## 2. Literature Review

### 2.1 *Dynamic System Theory, Cognitive Linguistics, and Prepositions*

Due to dissatisfactions with the traditional approaches to language teaching and the incapability of the related underlying theories of language and language learning (i.e., formal and generative linguistics) to consider a number of operative factors like cognitive processes and role of meaningful learning, attempts were made to find more comprehensive theories (Holme, 2009). As a result, a rich body of intensive study and research was carried out which placed the issue in a new perspective (Spencer, Perone, & Buss, 2011; Thelen & Smith, 1998). It is worth considering that the new paradigm emerged out of a series of changes in underlying assumptions of sociocultural, psychological, biological, mathematical, and linguistics theories (Baltes, 1987; Elman, 1990; Lerner, 2006; Smith & Thelen, 2003). “These explorations have revealed that simple notions of cause and effect are inadequate to explain development” (Spencer, Perone, & Buss, 2011, p. 260). As such, cognitive development takes the form of a more systematic process which is motivated by the learners’ spatiophysical, psychological, and social interactions with their environment (Evans & Tyler, 2005; Holme, 2009; Vygotsky, 1978).

From this standpoint, then, development is not static and arbitrary but principled, structured, and systematic with different patterns of human physical experience in the environment, bodily action, and manipulation of objects (Johnson, 1987; Lakoff, 1987; Langacker, 1987; Talmy, 1988). This view towards development cues the traces of emergence of the dynamic system theory (DST) into the domain of linguistics and efflorescence of CL.

DST is concerned with “step-by-step processes and multilevel interactions that shape development . . . . Within the DS perspective, organization and structure

come ‘for free’ from the nonlinear and time-dependent interactions that emerge from this multilevel and high-dimensional mix” (Spencer, Perone, & Buss, 2011, pp. 261-262). According to Ellis (2008), EFL learners bear not a tabula rasa, but they are armed with different cognitive predispositions which they bring to the context of L2 learning. What is of significance here is that the dynamic language system provides the potential to canalize and develop the cognitive processes towards acquiring the language in a nonlinear systematic way within the context of different social, cultural, physical, and discourse interactions that learners carry out during language learning process.

On the other hand, CL sheds light on the role of embodied experiences in structuring abstract images (Johnson, 1987). The embodied theory within CL states that bodily experience of abstract concepts makes an image schema that serves meaningful internalization of that abstract concept. According to Johnson (1987) image schemas are a set of conceptual templates which help understand the variety of spatial and metaphorical relationships one experiences in everyday life by bringing them into a general network. For example, individuals experience bodily the concept of containing by seeing something in a container and finding themselves in a closed space.

Bringing the shared ideas of DST/CL to the context of language teaching/learning, one can claim that it is in the sense of consistent nonlinear process of bodily interactions that the DST/CL approaches make learners to subjectively attend to materials and learn language components such as prepositions better (Brugman, 1981; Cuyckens & Radden, 2002; Pütz & Dirven, 1996; Radden, 1989; Tyler & Evans, 2003; Vandeloise, 1994). Dynamic models illustrate how through ongoing experiential processing L2 learners relate relevant previous states to the present complex conditions and make a systematic principled network which results in learning and development (Ellis, 2008; Vygotsky, 1987). These insights are not alien to CL assumptions. CL, too, argues that our knowledge of the world helps us interpret complex meanings (Evans & Green, 2006).

Though DST is still a very young field of enquiry, many researchers have applied its insights to approach complexities of L2 learning/teaching (Ellis, 2008; Hohenberger & Peltzer-Karpf, 2009; Jessner, 2008; Larsen-Freeman, 2006, 2007; Larsen-Freeman & Cameron, 2008; Pienemann, 2007; Plaza-Pust, 2008; Raczaszek-Leonardi & Kelso, 2008; Samuelson, Schutte, & Horst, 2009; Tuller, Jantzen, & Jirsa, 2008; van Geert, 1991, 2007, 2008; van Geert & Steenbeek, 2005; Verspoor, Lowie, & van Dijk, 2008); also, CL ideas were used to solve problems related to teaching of prepositions in idiomatic phrasal verbs (Boers, 2000; Kovecses & Szabo, 1996; Sadri, 2012), figurative expressions like idioms, metaphors, and similes (Talebinejad & Vahid Dastjerdi, 2002), semantics of English prepositions (Tyler,

Muller, & HO, 2011), and instruction of vocabulary and phraseology (Kristiansen et al., 2008; Makni, 2014).

The findings of the abovementioned studies show that applying the DST/CL insights can help L2 learners cope with the difficulties of acquiring these problematic categories. As prepositions are one of the widely used categories of English which consist of figurative and polysemous dimensions, they are the most challenging subjects for students to learn in L2 learning contexts. Studies have also been conducted within the local context of Iran to examine this problem. For example, Delshad (1980) conducted a contrastive study of English and Persian prepositions and found that EFL students have difficulty in the use of English prepositions, and that Iranian EFL learners tend to misuse or omit English prepositions. In another study, Koosha and Jafarpour (2006) examined the amount of the effect L1 has on the use of English prepositions. They found that EFL learners tend to carry over their L1 collocational prepositions to their L2 production. These studies suggest that Iranian EFL learners do not have appropriate collocational knowledge of prepositions, which is mostly related to the type of traditional instructions they receive.

In the studies on prepositions in the local contexts, however, there seems to be lack of a meaningful systematized approach which can iron out the learning barriers in front of the learners. Thus, the current study was an attempt to bridge the gap and involve L2 learners in meaningful learning of prepositions and also investigate how they may take responsibilities for their own learning (i.e., learner autonomy). It has been suggested that taking the responsibility for learning, that is, being autonomous, is the prerequisite for an effective learning/teaching approach (Crabbe, 1993).

## ***2.2 Cognitive Linguistics and Learner Autonomy***

CL states that everything in language is related to meaning; therefore, meaning is considered to be a matter of perception of how particular language users understand the world anthropocentrically, subjectively, and under the influence of a specific cultural surrounding (Lakoff & Johnson, 1999). Furthermore, it is believed that students who are encouraged to take responsibility for their own work are more likely to be able to achieve realistic goals, plan their learning processes, develop strategies for dealing with new and unforeseen situations, and evaluate their own work (Benson, 2001). Cognitive approaches are believed to present a positive attitude to learning and the development of a capacity to reflect on the content and process of learning under conscious control. Students are able to learn how to learn from their own successes and failures in such ways that will help them be more efficient learners in future (Crabbe, 1993). According to Benson (2001), control over learning can be described as control over cognitive processes. The issue, in this way,

is illustrated as a matter of the psychology of learning rather than directly observable learning behaviors, although it will generally be inferred from the observation of independent, strategic-based behaviors (Luftenegger et al., 2012). Effective learning management, then, depends on control of the cognitive processes involved in learning, whereas control of cognitive processes necessarily has consequences for the self-management of learning (Benson, 2001; Luftenegger et al., 2012; Zarei & Alibabae, 2013).

Many studies have been conducted and have emphasized the importance of improving learner autonomy as a prerequisite for learning (Alibabae, Mehranfar, & Zarei, 2014; Artlet et al., 2003; Beréndi & Kövecses, 2008; Holec, 1981; Littlemore & MacArthur, 2007; Schmitz & Wiese, 2006). However, this issue has not been given enough attention within the domestic studies. Thus, there is a great deal yet to be done with regard to examining the effectiveness of applying the DST/CL insights to teaching of prepositions and also its effects on promoting learner autonomy among Iranian EFL learners. As a result, due to the difficulty of learning prepositions in EFL contexts and the importance of developing learner autonomy, this research aimed at investigating the impact of applying images-schemas as an instructional procedure within the domain of DST/CL by answering the following research questions:

1. Does application of image-schemas for instructing prepositions enhance Iranian EFL learners' learning of prepositions?
2. Does application of image-schemas increase perception of learner autonomy among Iranian EFL learners?

### **3. Method**

#### ***3.1 Participants***

The participants were 60 female students of lower-intermediate level, aged between 11 and 15, who were learning English in a language institute in Ahvaz, Iran. All the participants had about 18 months of experience of English language learning and started the process from the elementary stage in this institute and under rather the same policies and directives. The participants shared Persian as their L1, whose selection was based on the results of the Oxford Placement test (OPT, 2001), according to which those who scored the cut-off criterion for the lower-intermediate level were considered as the acceptable L2-sample participants for the purpose of the study. Then, the participants were randomly assigned into two groups: a control group and an experimental group, each with 30 participants.

### **3.2 Instruments**

#### **3.2.1 Preposition test**

The preposition test had 40 items consisting of cloze passages and suppletion items assessing the participants' knowledge of English prepositions, including *on*, *over*, *around*, *for*, and *under*. The cloze passages were selected from Watcyn's (2000) preposition test for lower-intermediate English learners. The participants were supposed to answer the test in 20 min.

To examine the overall quality of the test with regard to the appropriateness of the content-level, the clarity of directions, the time limits, and administration procedures the preposition test was piloted. Five participants were included in the pilot study. It is noteworthy that they were also selected based on the results of the OPT to make sure they would perfectly represent the L2 sample group. The results revealed some instances of misspelling, disorderedness of test-items on print, and ambiguity of directions. So, the modifications were made and the finalized version of the test was used for the purpose of data collection. To analyze the data, each incorrect or blank responses received a score of 0 and each item was scored 1 if the response was correct. Therefore, the total score made a sum of 40.

#### **3.2.2 Autonomy questionnaire**

We used a 38-item learner autonomy questionnaire designed by Zarei and Alibabae (2013) based on Luftenegger et al.'s (2012) criteria for lifelong learning. This questionnaire is designed to measure the perception of autonomous behavior by Iranian EFL learners according to five major determining factors: (1) motivational beliefs, (2) performance/volitional control, (3) self-reflection, (4) individual autonomy while learning, (5) joint social responsibility. To convert the participants' choices in the questionnaire of learner autonomy to an interval scale, the scores were calculated based on a 5-point Likert-scale. The scores from A to E were marked as 1 (*Absolutely Disagree*), 2 (*Disagree*), 3 (*No Idea*), 4 (*Agree*), and 5 (*Absolutely Agree*). It is worth noting that the test proved to have had high construct validity, measured through confirmatory factor analysis which was in line with the measure of validity by Zarei and Alibabae (2013). The study had a high reliability assessed by cronbach's alpha coefficient ( $\alpha = 0.74$ ).

#### **3.2.3 Diagrams and drawings**

A set of diagrams and drawings illustrating the meaning of prepositions and the network of meanings that exist between the different meanings of a preposition was used. The diagrams and drawings were comic to attract the participants' full attention and to be relevant to their age range. These diagrams and drawings were the representations of different image-schemas. The following is one of the drawings:



Figure 1. Drawing Used for Representing Image-Schemas of Prepositions

### 3.3 Procedure

#### 3.3.1 Data collection

The data were collected through a pretest-posttest assessment procedure. At the beginning of the course, a pretest was administered to measure the participants' knowledge about prepositions which was also used later as the posttest at the end of the study. There was also a learner autonomy questionnaire administered to measure the participants' perceptions of learner autonomy.

The experimental and control groups followed an instructional program of 6 weeks. They attended an English course 3 sessions a week, and each class period lasted 90 min. Five prepositions (*over*, *on*, *around*, *for*, and *under*) were taught to the two groups during the course. The experimental group received instructions through the application of image-schemas as indicator of the DST/CL-based approach to teaching, whereas the control group continued with the type of traditional rote learning-based instruction anchored on repetitions, substitutions, and chain-drills.

In the experimental group, the teacher focused on CL-based interpretations of the semantics of prepositions according to Tyler and Evans' (2003) model. She began the instruction by giving a brief explanation of words having a related network of meanings. The central meanings for each preposition represented a real situation for the participants to practice and experience the specified physical-spatial relation.

Then, the participants were presented with some drawings or diagrams which visualized the meaning of different prepositions. Each diagram was the representation of an image-schema. They were asked to think about the various uses of the prepositions in terms of networks of relations which they could draw among different meanings and uses of prepositions. In this way, the abstract image of polysemous networks extended from a central spatial scene and became concrete through the active meaningful interaction of the participants with the diagrams,



drawings, and their surroundings. Moreover, the participants were asked to think about and find examples of how prepositions were used to make sense in different contexts and, in this way, were engaged in an ongoing process of meaning-making.

For the control group though, the teacher wrote a preposition on the whiteboard and asked the participants to look it up in a dictionary, and then each meaning of each preposition was practiced through substitution drills and repetitions. As such, the participants learned prepositions by memorization and rote learning. Finally, at the end of the six-session instruction and practice, the posttest of preposition and the learner autonomy questionnaire were administered to assess the effect of the DST/CL-based instruction on the participants.

### 3.3.2 Data analysis

The data collected through administrating the preposition test and the autonomy questionnaire, both the pre/posttests were, then, statistically analyzed running *t* tests in the SPSS software. The results were compared with regard to the mean scores and their corresponding *p* values for each group to find whether the differences between the performance of the two groups on the tests and the questionnaire was significant. The following part presents the obtained results of the study in detail.

## 4. Results

Based on the two questions posed in this study, two sets of data were collected and analyzed statistically using the *t* test, the results of which are summarized in Table 1:

Table 1. *Descriptive Results of Pre/Posttest of Prepositions*

		Control	Experimental
Pretest	Mean	29.13	28.73
	<i>SD</i>	4.40	4.37
Posttest	Mean	28.86	35.36
	<i>SD</i>	5.23	2.35

As shown in Table 1, the mean scores obtained from the pretest of prepositions were almost at the same level (29.13 and 28.73, respectively) for both groups. But the posttest results show that there was a difference between the two mean scores of both groups (28.86 and 35.36, respectively).

Table 2. *t-Test Results of Pre/Posttest of Prepositions*

	<i>t</i>	<i>Sig.</i> (2-tailed)
Pretest	.353	$p > .7$
Posttest	-9.77	$p < 0.05$

Table 2 shows that no significant differences were observed between the performances of the two groups before the treatment ( $p > 0.7$ ). However, the obtained scores from the posttest indicates a significantly different performance of the participants in the experimental group after the treatment ( $p < 0.05$ ).

Table 3 represents the effect of the DST/CL-based instruction on the participants' perception of autonomy:

Table 3. *Descriptive Results for Performance on Pre/Posttest of Learner Autonomy Questionnaire*

		Control	Experimental
Pretest	Mean	131.76	128.86
	SD	25.02	23.97
Posttest	Mean	130.23	125.76
	SD	24.28	27.22

The results in Table 3 represent that the mean score of the control group participants was higher than that of the experimental group participants before the treatment (131.76 and 128.86, respectively). The posttest measures were also reflective of a higher mean score for the control group (130.23).

Table 4 states that there was no significant difference between the experimental and control groups with regard to the participants' perception of autonomy ( $p > .6$ ) before the treatment. It is noteworthy that no significant difference between the two groups was observed after the instructional procedure was applied ( $p > .5$ ):

Table 4. *t-Test Results of Pre/Posttest of Learner Autonomy*

	<i>t</i>	<i>Sig.</i> (2-tailed)
Pretest	.458	$p > .6$
Posttest	.671	$p > .5$

In general, the results indicate that the DST/CL-based instruction significantly affected the performance of the experimental group participants on the preposition test, but it had no positive impact on the experimental group participants' level of perception of autonomy.

## 5. Discussion

This study set out with the aim of tackling this issue that application of DST/CL insights through using image-schemas would round the corners towards a more comprehensive approach to teaching grammar. As such, it was conjectured that an increase in L2 learners' learning-gains of prepositions and perception of autonomy is the outcome. As the results indicated, the experimental group outperformed the control group on the preposition test after the treatment which

indicates that the training program had positive effects on the performance of experimental group.

The findings, therefore, support the DST/CL assumptions that individuals' knowledge is not static, and that language refers to what is represented in the human conceptual system (Gebhard & Gunawan, 2014); this dynamic system is influenced by body actions and experiences (Ellis, 2008; Johnson, 1987; Lakoff, 1987; Talmy, 1988). The results, in this regard, are in line with the findings of other studies in the DST domain (Plumert & Spencer, 2007; van Geert & Steenbeek, 2005) and on CL (e.g., Brugman, 1981; Dewell, 1994; Kreitzer, 1997; Lakoff, 1987; Tyler & Evans, 2001, 2003, 2004).

Regarding the application of this approach to teaching of prepositions, Tyler and Evans (2001, 2003) state that "an English preposition encodes an abstract mental idealization of a spatial relation, derived from more specific spatial scenes" (p. 70). In other words, a preposition represents the relation between two elements. One of these elements acts as "a located element in focus, termed the Trajector (TR)," and the other acts as "a locating element in the background, termed the Landmark (LM)." The network of relations that emerges in this way, thus, breeds "abstract representations termed image-schemas" (Evans & Tyler, 2005, p. 16). Each preposition, then, has a central meaning that can be presented through a visual schema, and that the different peripheral meanings of the prepositions branch out from this central meaning (Tyler & Evans, 2003). These image-schemas provide the ground for L2 learners to conceptually digest the relationships between the different, but related, uses of a preposition. Tyler and Evans (2003) have also argued that polysemy or the multiple meanings associated to a preposition such as *over* are related in systematic ways. For instance, English has the compounds *overseer* but not *\*aboveveer*, and *underdog* but not *\*belowdog*. These examples well show that these relations are not by chance, and a systematic organization is at work. However, this systematic network cannot be internalized through repetitions, chain drills, and other forms of rote learning procedures. This amounts to the claim that a meaningful approach which engages L2 learners into an ongoing process of meaning-making is at question in order to help them experience the underlying networks of relations (Larsen-freeman & Cameron, 2008).

The findings also verifies Lakoff's (1987) prototype theory (1987), which claims that prepositions have multiple meanings but one meaning is thought to be the most dominant or prototypical. For example, the preposition *on* has multiple meanings, but the prototypical definition is "contact of an object with a line of surface" (Lindstormberg, 1996, p. 229). As a result and according to Evans and Tyler (2005), each protoscene or prototypical definition is the central meaning of a specific preposition, and other meanings can systematically be shaped from it. This

clarifies how the prototypical definition and the image-schema procedure which were used for the instruction of the experimental group effectively attracted the participants' attention and engaged them in a process of experiencing the existence of a network of relations among the different meanings of the prepositions. This extended engagement and focal awareness help L2 learners acquire and internalize the prepositions within a meaningful context (Evans & Tyler, 2005). The findings of support the influential effects of applying the DST/CL-based approach.

Furthermore, this study examined the role of applying the DST/CL approach in the participants' perception of learner autonomy through a questionnaire of learner autonomy given to the participants of the two groups at the beginning and end of the course. However, the results showed that the difference between the two groups was not statistically significant on the posttest. According to Little (2002) as well as Zarei and Alibabae (2013), autonomy can make discerning L2 learners who have the ability to decide, plan, and set goals and provide the opportunities for their own successful learning (Luftenegger et al., 2012). But how to become autonomous and how the environmental factors, instructional approaches, and classroom decisions affect L2 learners' autonomy is a contentious issue. According to Artelt et al., (2003) the will to learn and the skills to learn are of essential prerequisites for promoting learner autonomy. More to this and based on the social constructivism, L2 learners socially construct knowledge through interactions and can, in the long run, develop a capacity to plan, analyze, reflect upon, and synthesize information independently (Benson, 2001; Dam, 1995; Little, 1994). This capacity is partially dependent on the ability of L2 learners to control their cognitive processes (Benson, 2001). Cognitive implications based on DST/CL provides this positive attitude towards the development of the capacity to reflect upon the content and process of learning under conscious control (Benson, 2001). Moreover, there is a direct relationship between an individual's cognitive system and his or her interaction in social groups which leads to autonomy (Vygotsky, 1978).

Based on these assumptions, it was expected that applying the L approach would increase learner autonomy, as well. The discrepancy between our expectations and the results could be attributed to the fact that learner autonomy is a process that could be achieved through more focused practice and over a longer period of time (Alibabae, Mehranfar, & Zarei, 2013).

On the whole, the findings verify that teaching/learning can be conducted in a more effective way with a shift of focus from traditional ways toward DST/CL-based approaches which provide the grounds for meaningful instruction. Accordingly, by applying the DST/CL approach, English language teachers can activate their learners' cognitive processes for learning idiomatic prepositions in real

classroom settings. This study can serve as an example to show the effectiveness of DST/CL-inspired approach in teaching/learning prepositions.

## 6. Conclusion

This study aimed at examining the effects of the DST/CL-based instruction on acquiring figurative English prepositions and increasing perception of learner autonomy. We tried to address the difficulties of EFL learners in learning English prepositions through nonlinear systematic and meaningful teaching/learning procedures. The findings support the advantage of the DST/CL-based instruction as a way of teaching grammar over the traditional approach and rote learning. The findings reveal that the experimental group participants who received instruction through focusing on networks of relations and their experience of the world outperformed the control group.

Throughout this research, prepositional polysemy was viewed and emphasized in terms of basic conceptual structures such as image schemas, prototypes, and radical networks in a step-by-step dynamical approach (Tyler & Evans, 2004) which provided the theoretical framework for the application of DST/CL to the teaching of English prepositions. The superior performance of the experimental group participants with regard to the selected prepositions supports the idea that meaningful motivation of explicit and underlying levels of interactions help the better retention and learning of prepositions.

The shared insights from the theories of dynamicity of language system and CL are believed to set the grounds suitable for L2 teachers to focus on different aspects of the L2 in a meaningful and influential way, link the human perceptual and cognitive experiences, contribute to the grasp of polysemous words such as prepositions, and occasion an increase in L2 learners' perception of autonomy (Andreou & Galantomos, 2009; Boers, 2011; Gao, 2011; Makni, 2013; Pavlovic, 2010). The findings can also pave the way for L2 teachers to overcome the difficulty of teaching prepositions and the different meanings that they contain. Furthermore, L2 learners would find the learning process more meaningful and benefit from the time they spend on the development of their skills, in general. The DST/CL approach to teaching prepositions is also specifically helpful for L2 learners in showing them the right ways to understanding the different meanings of each preposition and their accurate use in their productions.

However, it should be considered that this study does not represent a fully-fledged account of DST/CL. In other words, the scope of this study does not go beyond the application of the DST/CL insights for L2 teaching/learning. One can trace the genesis of DST in mathematics, connectionism, and emergentism in neurobiological and psychological sciences, social sciences, L1 acquisition, and so

on (Ellis, 2008; Hohenberger, 2002). Moreover, due to the short-period process of the instructional treatment, the results obtained from observation of learner autonomy is vulnerable to error. To this extent, future research can replicate this study in a longer time period, with a larger sample size, from a different level of proficiency. Furthermore, such factors as gender and group work, which were taken for granted in this study, are suggested to be considered as variables for further studies. Finally, due to the congruence between the DST wisdom and the underlying assumptions of Vygotskian dynamic assessment (Poehner, 2006), the application of a dynamic approach, rather than a CL-based approach towards L2 teaching/learning, is appealing.

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