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Address:

Editura EduSoft
ROMANIA
600065 Bacău
9 Mai 82 C 13
Tel. 0040 741 63 81 82
Fax: 0040 234 20 60 90
Web: brain.edusoft.ro
E-mail: brain@edusoft.ro

On Major Perspectives on Language Acquisition: Nativism, Connectionism, and Emergentism

Mohammad Khatib
English language and literature department
Allameh Tabataba'i University
South Allameh Street, Tehran, Iran
mkhatib27@yahoo.com

Somayyeh Sabah
College of Literature and Humanities
Khorramabad Branch
Islamic Azad University
Khorramabad, Iran
somayyehsabah@yahoo.com

Abstract

The phenomenon of language acquisition is a controversial issue within the field of language-related studies. Different approaches have been proposed to take account of this complicated matter. The present paper attempts at reviewing the current cognitive perspectives on language acquisition, i.e., Connectionism and Emergentism and exploring to what extent they are different from Nativism.

Keywords: Nativism, Connectionism, Emergentism, and language acquisition

1. Nativism

According to Ellis (1999), linguistics paves the way for the detailed descriptions of the patterns and relations in language. When language is analyzed out of context, intricate and intriguing structural systematicities emerge, and Generative Linguistics is scrupulous in its attempt to establish the set of rules that identifies the infinite number of sentences of a language. Putting it this way, Ellis argues that these careful descriptions are essential for a complete theory of language acquisition; nevertheless, they are not sufficient. Indeed, numerous cognitive scientists accept as true that linguistic descriptions differ from mental representations.

As said by Ellis, Generative Approaches, following Chomsky (1965, 1981, 1986, cited in, Ellis, 1999), have been directed by certain assumptions, which are as follows:

- Modularity: language is considered as a separate faculty of the mind;
- Grammar as a system of symbol-manipulating rules: knowledge about language represents a grammar, i.e., a complex set of rules and constraints that permits human beings to discriminate grammatical from ungrammatical sentences;
- Competence: the agenda of research ought to examine grammatical competence as an idealized hygienic abstraction rather than language use, which is despoiled by factors relating to performance;
- Poverty of the stimulus: given that learners approach the same grammar in more or less similar patterns of acquisition albeit the language input is degenerate, variable, and deficient in terms of reliable negative evidence, learnability arguments propose that there must exist strong constraints on the possible forms of grammars, the determination of which is the undertaking of Universal Grammar (UG);
- Language instinct: the necessary constraints of UG are innately represented in the brain, language is regarded as an instinct, linguistic universals are innate, and the faculty of language is modular by design;
- Acquisition as parameter setting: the acquisition of language is, thus, equivalent to the acquisition of the lexical items of a particular language along with the proper setting of parameters for that language. These assumptions guide the Generative Approach to the

Second Language Acquisition (SLA) to concentrate on questions pertaining to whether the inborn endowment of UG is accessible to the second language learner, and how parameters might be reset (Eubank, 1995, cited in, Ellis, 1999).

As Ellis (1999) puts it, numerous cognitive scientists are suspicious of these assumptions, particularly modularity and language instinct together with the resultant analysis of the species-specific language faculty of human beings only, which is separated from semantics; the language functions; and the other social, biological, experiential, and cognitive aspects of humankind. As an alternative, the cognitive science proffers a different and more wide-ranging set of answers to the problem of mental representation than Generative Approaches.

In discussing the philosophical foundations of the mentalist paradigm, Bernat (2008) maintains that the Cartesian view places emphasis on the mentalist versus the behaviorist dimension of metacognitive knowledge, and the rationalist perspective that stands in opposition to the empiricist view accentuates the innate aspect of the mind in its accounts of learning. At this juncture, the emphasis is put on the individuality of mental knowledge as representations or schemata stored in the mind, and contextual influences are viewed as secondary. Thus, in this view, the properties of the mind are not necessarily dependent on the outside influences and, once established, are comparatively static.

Gregg (2003) argues that one of the merits of so-called nativist theories of language acquisition (first and second) lies in their capacity of provoking opposition. To Gregg, the very idea of an innate UG has from the outset been objectionable to numerous serious scholars, who have strived to demonstrate that language acquisition can be explicated without "appeal to an innate system of grammatical categories and principles" (p. 65) (e.g., Lieberman, 1984, 1991; O'Grady, 1987; Deane, 1992; Deacon, 1997; Sampson, 1997, 2001, cited in, Gregg, 2003).

2. Connectionism

As Gasser (1990) acknowledges, the recent connectionist models, also referred to as neural networks and Parallel Distributed Processing (PDP) models, are associated with the pioneering work by Neuroscientists and computer scientists in the 1940s and 1950s (McCulloch & Pitts, 1943; Rosenblatt, 1962, cited in, Gasser, 1990), who are said to be concerned with the computational power of networks consisting of simple neuron-like processing units. The current interest in these models has been prompted by the discovery of new-fangled learning algorithms as well as by the dissatisfaction with the achievements of classical symbolic models of cognition. To be precise, Gasser argues that the majority of connectionist models adhere to the subsequent fundamental characteristics:

- The system's memory is composed of a network of simple processing units, which are attached by means of weighted connections. Each weight is a quantity that determines the extent to which the unit at the source end of the connection either activates or inhibits the unit at the destination end of the connection.
- The behavior of units is rooted loosely in that of neurons. They gauge the inputs they get on connections and work out an activation, which is considered as a function of the entire input, and an output, which is regarded as an activation function. The output of a unit is passed along its output connections on the way to other units. The existing pattern of activation on the units in the system is equivalent to short-term memory in further traditional models, and inputs and outputs to the system take the form of patterns of activation over groups of input and output units.
- The analogue of long-term memory in other models is the set of weights on the network connections. In learning models, these weights are attuned as a result of processing.
- Processing is parallel. In a good number of traditional models, as well as in conventional computers, decisions and actions are made one at a time. Similar to the brain, there is activity in several places concurrently.

- Control is distributed. In contrast to the traditional cognitive models, connectionist systems possess no central executive whose job is to decide which rule or rules are presently applicable and to perform them. In effect, there exist no rules to be implemented.

According to Smith (1999), the last twenty years has witnessed the emergence or re-emergence of a drastically different approach to the study of mind. This approach that is identified as connectionism, neural networks, or PDP by any means rejects the need for symbolic representations. The entire complexities concerning the human thought and language can emerge from interactions amid a set of processing units, which are capable of undertaking divergent activation values. A connectionist network consists of a set of nodes that are responsible for collecting inputs from a range of sources that are both inside and outside the system, transmitting inputs to other nodes, and, thus, activating them alternatively. The connections may be unidirectional or bidirectional and are divergently weighted so that the next node along may be either restrained or stimulated. Putting it this way, learning is said to stem from training a network by continually exposing it to enormous numbers of examples and instances of the patterns to be acquired. What is more, it is not necessary to assume any kind of initial domain-specific structure to the network. That is to say, the linguists' and psychologists' appeal to modularity, particularly any form of genetically determined modularity, appears to be unessential. The complex structure of the modular mind is conceived of as an emergent property dependent solely on the input, especially the number of times a particular stimulus appears in that input. In other words, the statistical frequency of the input tokens is deemed to be vital to a network's learning success, a property which enables it to capture the sensitivity to such things as word frequency effects.

In explicating the characteristics of neural networks, Poersch (2005) discusses that the work on neural networks has been based on the point that the brain computes in a way that wholly differs from the conventional digital computer, wherein the symbols are combined serially. The brain has a great number of neurons, which are enormously interconnected between each other. As a consequent of this, the brain comprises a tremendously well-organized structure. As Poersch puts it, "the brain is a highly complex, non-linear, and parallel computer" (p. 170). It has the ability of organizing neurons so as to execute certain computations many times more rapidly than the fastest digital computers. It encompasses a specific structure and possesses the capacity of constructing its own rules through experience, which is built over the years. The most remarkable development of the human brain is said to take place during the first years, generating millions of synapses per second.

As said by Haykin (1994, p. 2, cited in, Poersch, 2005, p. 171), "synapses are elementary structural and functional units that mediate the interaction between neurons," and "a neural network is a massively parallel distributed processor that has a natural propensity for storing experiential knowledge and making it available for use." Poersch (2005) states that "a presynaptic process liberates a transmitter substance that diffuses across the synaptic junction between neurons and then acts on a postsynaptic process" (p. 171). Thus, a synapse turns a presynaptical electric signal into a chemical signal and then converts it back to a postsynaptic electrical signal. It is presumed that synapses are simple connections that have the capacity of enforcing mutual activations between neurons. A significant characteristic of the brain is the plasticity provided by synapses, which allows the developing neuron system to adjust to the environment surrounding it. Synapses are acted upon via two cell filaments, i.e., the axon and the dendrite. The procedure utilized to carry out the processes of learning is called a "learning algorithm" whose function is "to modify the synaptic weights of the network in order to attain a desired design objective" (p. 171).

2.1. Major characteristics of connectionist models

According to Elman (2001), there are more than a few fundamental characteristics that are central to the way these networks operate. First, the response or the activation function of the units is frequently non-linear. This implies that the units may be particularly sensitive under certain conditions but remain rather insensitive under other circumstances. This non-linearity entails remarkably significant consequences for processing, chief amongst which is that networks can

occasionally function in a discrete, binary-like manner, and, thus, capitulate the crisp categorical behavior. In other circumstances, the system is able to yield graded, incessant responses. Second, what the system makes out is, to a great extent, accomplished by means of the pattern of connections, and the weights that are assigned to every connection, with the weights functioning as multipliers. Third, rather than making use of symbolic representations, the vocabulary of connectionist systems encompasses patterns of activations across various units.

Elman (2001) presents the debate that because of the significance of the weighted connections in these models, a basic question that is posed is associated with the factors that determine the values of these weights and program the networks. The connectivity in the early models has been set by hand, and this is still the case for "structured" connectionist models. Nevertheless, one of the stimulating advancements that has made connectionism enormously interesting to many is the development of algorithms by means of which the weights on the connections yield themselves to learning. To put it in plain words, the networks are capable of learning the values determined for the weights on their own; that is, they can be self-programming. What is more, the learning style is inductive; that is to say, examples of a target behavior are presented to the networks. As an example, the network gets exposed to the proper responses that are presented to a set of diverse stimuli. The network modifies the weights in small incremental steps through learning in such a way that eventually the accuracy of the network's responses gets improvement. The network is also said to possess the capacity of generalizing its performance to the new stimuli and, thus, signifying that it has learned the essential generalization that connects outputs to inputs instead of only memorizing the training examples. This type of learning is known as the so-called "supervised learning," which is merely one of many miscellaneous types of learning possible in connectionist networks. Other learning procedures are not concerned with any prior notion of "correct behavior" at all. Instead, the network might learn, for example, the correlational structure that lies behind a set of patterns.

2.2 Connectionism and item-based learning

As said by Hulstijn (2003), the acquisition of a lot of forms of cognition, say, language, happens in more than a few phases, namely, the accumulation of several information units, which are frequently referred to as "items, instances, or exemplars;" the construction of a network of these units with different "association strengths" between them; revealing "frequency" and "regularity" effects of the input; and, ultimately, the building of the "abstract categories" and "combinational rules." For example, at a certain stage, the language learners may be concurrently developing the accretion of the phonological, morphological, lexical, and syntactic knowledge, "such that, in each domain, (1) some knowledge has the form of an associated network, (2) in which some common patterns are emerging, (3) some of which are said to result in the construction of the rules" (p. 418).

In this respect, Ellis (2002, cited in, Hulstijn, 2003) contends that the acquisition of the common patterns and the category construction are frequency-driven. According to Hulstijn (2003), it is through getting exposed to a great deal of input that the learners implicitly learn that certain patterns are very much common whereas others are not. For instance, the phoneme combination *sm* is considered to be common while **ms* is not, and it is through exposure to large amounts of language that native English speakers learn that verbs such as *give* and *offer* are different from verbs like *denote* and *present* for the reason that the former category permits dative alternation while the latter does not. That is to say, the sentence *He gave a present to his sister* and the sentence *He gave his sister a present* are both correct whereas only the sentence *She donated some money to the university* is regarded to be correct, and the sentence **She donated the university some money* [italics in the original] is not correct (p. 41).

As Saville-Troike (2005) also puts it, connectionism is another cognitive framework for concentrating on learning processes. It differs from other current frameworks for the study of SLA in not considering language learning to engross either innate knowledge or the abstraction of rules

and principles. Rather, it takes account of the language learning as a process that emanates from escalating the strength of associations or connections between the stimuli and responses.

2.3 Criticisms against connectionist models

As Carroll and Meisel (1990, cited in, Gregg, 1996) point out, the connectionist accounts fail to explicate that human beings possess knowledge that goes beyond the input, a point that is the very heart of the logical problem. The spreading activation can possibly be exploited in the establishment of certain connections between, say, irregular verbs and their past-tense endings; however, one cannot fall back on a lack of activation for her or his knowledge that one sentence (e.g., *She may have been being misled*) is a possible sentence of English whereas another sentence (e.g., *She may been have being misled*) [italics in the original] is not possible. Likewise, as Fodor and Pylyshyn (1988, cited in, Gregg, 1996) put it, it appears to be difficult to understand how connectionism can tackle such inferential capacities that are capable of engendering an indefinitely large number of negative beliefs, e.g., earthworms cannot tapdance.

3. Emergentism

According to Ellis (1999), emergentists draw on the debate that the complexity of language emerges from rather simple developmental processes through exposure to an enormous and enormously complex environment. To O'Grady (2008), emergentism has its roots in the work of John Stuart Mill (1930 [1843], cited in, O'Grady, 2008), who suggests that a whole system can have properties that bring about results more than the sum of its individual parts. For O'Grady, Mill's insight is also conducive to the scrutiny of the "so-called 'Complex Systems' – ranging from atoms to flocks of birds in flight to the weather – whose dynamic, non-linear behavior involves many interacting and interconnected parts" (p. 448). Putting it this way, O'Grady (2008) argues that the proponents of emergentism within linguistics are generally committed to the thesis, which is as follows:

> The phenomena of language are best explained by reference to more basic non-linguistic (i.e., 'non-grammatical') factors and their interaction—physiology, perception, processing, working memory, pragmatics, social interaction, properties of the input, the learning mechanisms, and so on. (p. 448)

As said by O'Grady (2008), a great deal of emergentist studies within linguistics make use of the techniques of connectionism, which represents a perspective on the study of mind that attempts at modeling the learning process and cognition in terms of networks of neuron-like units whose relationship with respect to each other is characteristically graded and probabilistic (e.g., Elman, 1999; Christiansen & Chater, 2001; Palmer-Brown, Tepper, & Powell, 2002, cited in, O'Grady, 2008). A number of the varieties of connectionism rebuff the subsistence of the kinds of symbolic representations, say, the syntactic structure, which have played an indispensable role in the explanatory work resting on the human language. Regardless of one's views on the Symbolist/Eliminativist disagreement, one point seems to be apparent; that is, the connectionist modeling paves the way for trying out a range of predictions on the subject matter of language acquisition, processing, change, and evolution.

In this sense, Gass and Selinker (2008) present the debate that in the field of language acquisition, emergentists maintain that certain simple mechanisms of learning, which are of the kind demonstrated elsewhere in cognition, are enough to amount to the emergence of complex language representations. With regard to SLA, it is debated that emergentism presumes that the process of learning a second language takes place on the basis of the extraction of regularities from the input.

3.1 Types of emergentism

In principle, Gregg (2003) refers to emergentists as "a fairly heterogeneous group" (p. 95), although they have much in common in rejecting the "nativist accounts of language that appeal to something like UG" (p. 96). Nevertheless, Gregg makes a distinction between two subsets of emergentism, i.e., "O'Gradian nativist emergentism" and "empiricist emergentists," a term that, to

draw on Gregg's terminology, accurately consists of each and every one of other "self-proclaimed emergentists" (p. 96).

O'Grady, Lee, and Kwak (2009) debate that despite the enormously substantial miscellany of the emergentist thought, there appears to be at least one essential thesis to which every one of its diverse proponents adhere; that is, the complexity of language needs to be identified with respect to the interaction of simpler and more fundamental non-linguistic factors. Nevertheless, O'Grady et al., state that there exist two types of emergentist approaches to language acquisition in terms of the dominant strategy, which is adopted. On the one hand, there is a particularly leading and inspiring body of research that concentrates on the significance of the input (or usage) for making sense of how language acquisition works. Ellis (2002, 2006, cited in, O'Grady et al., 2009) is said to present an extensive debate regarding this approach. On the other hand, a smaller body of research investigates the role of the processor-working memory interface at work in language acquisition and deals with the issues of learnability and development that have typically been the exclusive domain of the UG-based work.

As said by O'Grady et al., (2009), one of the first examples of a systematic input-based approach to language learning is the Competition Model (MacWhinney, 1987; Bates & MacWhinney, 1987, cited in, O'Grady et al., 2009). This approach, which continues to be very impressive, proffers a theory of how language learners recognize and give priority to a variety of competing cues (word order, animacy, case, agreement, etc) that are pertinent to the comprehension of the sentence. The basic variables, as MacWhinney puts it, are to be identified in the input; that is to say, how often the cue exists while a specific pattern is being interpreted (cue availability), and how often it informs on a specific interpretation (cue reliability). In exploring the role of the input frequency in language acquisition (first or second), it is necessary to keep in mind a principal problem based on which what counts does not refer to not how many times learners come to hear a particular form; rather, the important issue is that how many times they come across mappings between a form and its meaning.

O'Grady et al., (2009) present the argument that the foundation of processor-based emergentism is the standpoint offered by Hawkins (2004, cited in, O'Grady et al., 2009) and O'Grady (2005, cited in, O'Grady et al., 2009), which entails that the basic properties of the syntactic phenomena that have been utilized to support the UG-based approaches to language for a long time are better elucidated with respect to the processing factors. Hawkins develops this proposal for numerous phenomena, which are essential to typology while O'Grady's work concentrates more straightforwardly on the problem of language acquisition whose essential argument entails that a simple processor that is determined to the task of decreasing the burden and load on working memory lies at the core of the human language faculty. Even though such a processor does not use grammatical principles, its operation is central to explicating the properties of numerous core syntactic phenomena, i.e., binding, control, agreement, island constraints, scope, etc. What is more, it plays a significant role in taking account of the way those properties can be acquired in response to the limited kinds of experience accessible in the early years of life.

3.2 On emergentism and nativism

To put in plain words, O'Grady (2008) puts forward the debate that emergentism does not stand in opposition to nativism in its own right given the point that the brain is innately structured in a variety of ways. Nevertheless, emergentists reject the idea that there exist innate linguistic constraints on the computational system for language, a point that serves as a fundamental tenet of the grammatical nativism, i.e., UG.

In line with the foregoing argument, Misyak and Christiansen (2011) debate that the dialogue in the sciences concerning the issue of language has by tradition foregrounded oppositions between linguistic-nativist or modularist perspectives, on the one hand, and the views of emergentist, connectionist, or neo/neuro-constructivist positions on the other. According to the former stance, the syntactic ability is regarded to be made available by a specialized neural substrate

that universally develops across individuals when appropriate and rather minimal environmental inputs are provided. This kind of inborn or genetic endowment is embodied in Chomsky's (1965, 1981, cited in, Misyak & Christiansen, 2011) proposal of a UG, which represents the formalization of a set of universal language-specific constraints. On the contrary, the emergentist, connectionist, neo/neuro-constructivist, and similar views (e.g., Elman, Bates, Johnson, Karmiloff-Smith, Parisi, & Plunkett, 1996; Mareschal, Johnson, Sirois, Spratling, Thomas, & Westermann, 2007; Tomasello, 2003, cited in, Misyak & Christiansen, 2011) highlight the experiential processes that, according to Christiansen and Chater (2008, cited in, Misyak & Christiansen, 2011), act together with the individual's general learning mechanisms over the developmental time as well as over the evolutionary time. Putting it this way, Misyak and Christiansen present the argument that the complex, species-typical patterns of behavior identified as language can come to pass without involving certain language-specific constraints or predetermined, domain-specific, and neurobiological circuits. Although such positions are intermittently misunderstood as the tabula rasa empiricism, there exists no theoretical necessity for giving up certain genetic biases. Such theories are capable of allocating a convincing role to small initial biases of the learning system in the midst of an interactive, developmental, and ecological milieu. In essence, the linguistic-nativist theories fundamentally advocate a strong structurally and/or functionally specific biological foundation for language whereas the emergentist position proposes small, germinal biases or broad intrinsic constraints impinging upon further general, low-level biological systems, which are of relevance to language. These are, therefore, varied suggestions given for the ways wherein language may have genetic bases and effects.

3.3 Criticisms against emergentism

Eubank and Gregg (2002, p. 238, cited in, Jordan, 2004, p. 249) challenge emergentism and pose the question regarding the way "children know which form-function pairings are possible in human-language grammars and which are not, regardless of exposure." What is more, Eubank and Gregg (2002, p. 238, cited in, Jordan, 2004, p. 249) argue that how emergentists can explicate cases of instantaneous learning or "knowledge that comes about in the absence of exposure (i.e., a frequency of zero) including knowledge of what is not possible."

Accordingly, Jordan (2004) acknowledges that the poverty of the stimulus argument lies at the heart of the problem of any empiricist approach. Emergentists, by adhering to an associative learning model along with an empiricist epistemology, wherein the existence of some kind of innate architecture is permitted while innate knowledge and, indeed, innate linguistic representations are not taken into account, must deal with the extremely difficult task of explicating how children come to possess their linguistic knowledge. To put it in plain words, they need to explain how "general conceptual representations" that operate on the environmental stimuli clarify the "representational system of language" that children reveal (p. 249).

4. Conclusion

In due course, the present paper has attempted at presenting a brief overview regarding the major cognitive perspectives on language acquisition and reviewing some of the differences between nativist and emergentist approaches. However, as Sinha (1999) puts it, further cognitive-linguistic inspired investigations of language acquisition are required. Besides, one needs to include the developmental perspective in the heart of making sense of the human language faculty not in terms of an innate module or a subset of modules amongst others, but as one dimension of an integrated yet complexity differentiated embodied neuro-cognitive system, which is functionally coupled and co-evolve with its socio-cultural surrounding. What is more, Jordan's (2004) conclusion is worth considering on the basis of which one is required to "avoid pushing epistemological positions to extremes" (p. 250). The innatist-emergentist debate does not need to be a confrontational conflict, and it is merely by adopting an extreme stance in either camp that one comes to incompatible discrepancies and, undoubtedly, indefensible positions.

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The Influence of Neurolinguistic Applications on Second Language Research: Reviewing the Issues and Refocusing the Debate

Masoud Mahmoodzadeh
Sheikhbahaee University, Isfahan, Iran,
Tel: 0098-09151019732
masoudmahmoodzadeh@yahoo.com

Abstract

The influence of neurolinguistic applications on second language pedagogy has often been a controversial subject of dispute. As such, researchers in this field have faced with some blurred and conflicting views in terms of the pedagogical applicability of neurological discoveries for second language instruction. In light of this research-based concern, the current short paper attempts to review the related issues and refocus the current direction of the neurolinguistic-second language pedagogy debate. The paper also concludes with some suggestions made in favor of an alternative neurolinguistic outlook for L2 researchers.

Keywords: Neurolinguistic research, neurolinguistic applications, Second Language Acquisition (SLA), Second Language Teaching (SLT)

1. Introduction

Neurolinguistics is a branch of neuroscience which delves into the diverse dimensions of the relation between the human brain and language. It is mainly concerned with the study of language production and comprehension in relation to the brain structures and functions. As Nergis (2011) generally argues, although neuroscience is relatively a young area of research, it has not have a short life span in applied linguistics because there have been always some attempts to negotiate neurological findings with social sciences, psychology and also pedagogy in order to extract suggestions for educational practices (see for example, Sebastian et al., 2010; Blakemore, 2010; Burnett et al. 2010).

In many ways, the field of neurolinguistics has fared well to this day and offered a lot of significant research studies on how the human language is represented in the brain and how language learning neurologically takes place in L1 and L2 systems. In terms of the nature and scope of neurolinguistic research, it should be noted that neurolinguistics mainly investigates "linguistic development of normally developing subjects, language loss in patients with brain damage, and language use by people with specific language impairment" (Nergis, 2011, p. 143).

So far, some prominent brain studies have been conducted in the area of language acquisition exploring the brain functions (see Abutalebi, 2008 and also Jacobs & Schumann, 1992 for synopses) and its complex structures to propose some neurolinguistic theories, namely the *Cerebral Dominance/Lateralization* and *Critical Period Hypothesis* (for extensive reviews, see Bialystok, 1997; Bickerton, 1981; Birdsong, 2006; Lenneberg, 1967; Scovel, 1969, 1988, Singleton, 2005), *Connectionism Theory* and *Parallel Distributed Processing (PDP) Approach* (see Bowers, 2002; McClelland, Rumelhart, & PDP Research Group, 1986; Ney & Pearson, 1990; Sokolik, 1990) and the *Bimodality Theory* (Danesi, 1986, 2003). Thus, it is clear that the ever-growing knowledge of brain has been fast becoming a part of the issues that researchers and practitioners deal with in SLA and ELT professionally.

In spite of the fact that it is suggested that second language researchers look into the brain sciences such as neurolinguistics in search of more effective instruction (Danesi, 1986; Spolsky, 1989; Nergis, 2011), only a limited number of attempts such as Danesi's (2003) bimodality theory, however, have been made to particularly crystallize neurolinguistic findings into second language methodology during the last few decades (Mahmoodzadeh, 2011, 2012).

In this respect, Kim-Rivera (1998) similarly that few studies have approached language teaching from the perspective of neurolinguistics attempting "to apply neurolinguistic discoveries to the development of concrete prepositions that could guide second language teachers"(p. 91). In this

sense, Danesi (2003) likewise argues that over the last decades the inquiry into the neurosciences has clearly come to fruition for language teaching practices culminating in the design of three groundbreaking *"Neurolinguitic Methods"*, namely Lozanov's (1979) *Suggestopedia*, Asher's (1977, 1981) *Total Physical Response,* and Krashen and Terrell's (1983) *Natural Approach*.

In addition, more recently in terms of the pedagogical applications of neurolinguistic research vis-à-vis SLA and second language teaching (SLT), the Danesi's (1986) *bimodality theory* has offered L2 researchers some interesting insights and implications. This theory is indicative of a neurolinguisic foundation for language instruction in the classroom. Its underlying nuts and bolts indicate that there is a natural flow of information from the right to the left hemisphere of the brain during language learning (Mahmoodzadeh, 2012). There are four principles which formed the blueprint and basis of this theory: *(1) the modal flow principle; (2) the modal focusing principle; (3) the contextualization; (4) the conceptualization principle*. The consolidation of these principles would effectively enhance the learning of the language, as they integrate both structure and communication, and thus educate both hemispheres at the same time (Danesi, 2003)

Seemingly the advent of bimodality theory has produced a neurolinguistically-based explanation for success and/or failure of second language teaching methods. In effect, it can be argued that this theory being later amended and expanded by Danesi (2003) to a set of pedagogical maxims, has paved the way for the development of a *"Bimodal" pedagogy* (a term associated with bimodality theory) which might be considered as a preliminary step to initiate a neurolinguisticly-oriented methodological undertaking to approach the circle of second language methodology (see Mahmoodzadeh, 2011 for a full coverage of the issues). However, from the other side of the argument, the field of neurolinguistics has witnessed some cautions concerning its feasible jurisdiction in the area of second language pedagogy on a number of grounds (Mahmoodzadeh, in press). For example, in the early 1980s, Scovel (1982) claims that any direct application of neurolinguistic research to foreign language teaching, in all likelihood, should be seriously turned down in vain attempts to justify good pedagogy or to condemn inadequate classroom practices; rather, the contribution of neuropsychology, like that of linguistics, should be indirect and insightful. In attempting to justify his claim, Scovel (1982) argues that

> …1) neuropsychologists have studied competent bilingual, not language learners—the group we are concerned with, 2) experimental tasks are often more complex than envisioned, 3) the studies have dealt only with hemispheric lateralization and not with other dimensions of the brain, and 4) even if it were possible to teach primarily to one or more portions of the brain, quantity does not imply qualitative success at language learning (cited in Cohen, 1982, p. 306).

Moreover, quite recently Marinova (2012) likewise has stated that contacts between neurolinguistics and SLA, if present at all, may be at best described as tentative and full of mutual distrust. In another line of inquiry, Mahmoodzadeh (in press) also maintains that some researchers have expressed their disapproval for adopting an integrative approach concerning the pedagogical utility of neurolinguistic findings for second language research over the recent decades (e.g. Coch & Ansari, 2009; Goswami, 2006). In a similar fashion, Christodoulou and Gaab (2009) and Willingham (2009) discuss that it will never be possible to offer new cogent L2 teaching methods that are rightfully based on neurological findings, as neuroscience is perceived to possess a descriptive rather than a prescriptive approach to informing educators.

2. Reconsidering the research-based depth of neurolinguistic applications to second language research

From a full-scale neurological inquiry, Mårtensson, Eriksson, Christian Bodammer, Lindgren, Johansson, Nyberg, and Lövdén (2012) have claimed that the influence of adult foreign-language acquisition on human brain organization is poorly understood. Their findings confirm structural changes in brain regions known to serve language functions during foreign-language acquisition. Thus, they conclude that foreign language acquisition can even lead to brain structure

changes in young adults. The above finding interestingly endorses the utmost importance of neurological studies for the field of SLA. Arguably, whereas neurolinguistic findings, however, have been informative and insightful for second language researcher, seemingly the application of neurolinguistics, in its entirety, has not been a rich repertoire for second language practitioners during the last two decades. One possible explanation in this regard is that the fallaciously overemphasized arguments asserted against the applicability of neurolinguistic corollaries in second language teaching have made practitionners unwilling to approach language pedagogy from neurolinguistic domain.

In relation to this matter, some scholars have attempted to utterly criticize the biased stance in question. For instance, Nergis (2011), in general, asserts that "researchers working on neuroscience and education should come up with a new approach or framework to negotiate these two fields of research to form sound suggestions" (p.143). In a similar way, among SLA researchers, Jacob and Schuman (1992) suggest that language acquisition researchers not neglect the role of neurological contributions and consider SLA and the interdisciplinary field of neurolinguistics as two distant and discrete research realms. Instead, they call for adopting a more integrative perspective towards the two fields and thus suggest that SLA researchers begin to incorporate "a degree of neurobiological reality into their perception of the language acquisition process. Such a neurally inspired view helps to provide a common ground for evaluating and integrating various language acquisition perspectives" (p. 282). Even from solely linguistic viewpoint, some scholars (see for example Grimaldi, 2012; Grimaldi & Craighero, 2012) have recently cast doubt on the fertile integration of linguistics and cognitive neuroscience and have redrawn our attention to the necessity and usefulness of this legitimately interdisciplinary interface instead.

Two decades ago, although Kim-Rivera (1998) rightly argues that only when a consistent pattern of salient results is achieved can neurolinguisticall-based theories such as bimodality be considered worthy as a theoretical basis for instructional practice, this issue is perhaps still open to debate due to the creation of a kind of boomerange effect. Based on this boomerange effect, the voiced objections to the applications of the neurolinguistic research has almost disinclined L2 researchers to get involved and thus L2 researchers are perhaps too mindful of enquiring and investigating the practical aspects of such theories. In fact, to the best of author's knowledge, the hot perennial controversy over the practical plausibility of neurolinguistic findings for second language research and the pessimisim which has formed in this respect can virtually resulted in some decision-making problems that L2 researchers and especially practitioners have to get to grips with while investigating and conducting research studies.

According to Mahmoodzadeh (in press), it can be metaphorically implied that paradoxically this field is theoretically assumed to be sufficiently fruitful, but practically of kind of 'forbidden fruit'. In a nutshell, considering the undue skepticism and caution against overgeneralizing the neurolinguistic results, it is argued that as it is important to withhold the spread of irrational generalization, it is equally important not to do so at the expense of suppressing the future opportunities. One tentative expalnation for this perhaps relates to the elusive nature of truth in science. To understand this feature of the truth, Elbow (2008) has generally suggested that researchers ought to get engaged in both playing and balancing some kind of scientific or academic games: the *believing game* and the *doubting game* (see also Elbow, 1973 for further details). "The doubting game can not prove that a position is wrong-nor the believing game that it is right. The doubting game and believing game are just tools or methods and cannot make decisions for us. So, our judgments will be better if we get to use both sets of tools" (p. 10). However, it seems that in terms of the applications of neurolinguistics to second language research, practically researchers have almost tended to play the doubting game, devoid of sufficient endeavours for playing the believing game.

3. Conclusion

In sum, it seems that reopening the agenda of neurolinguistic applications to second language teaching is perhaps within the prospective changes. For the time being, Mahmoodzadeh (in press) calls for a balanced alternative neurolinguistic perspective in which the fields of neurolinguistics and second language pedagogy are not only considered mutually exclusive but also are considered mutually complementary. In this regard, the author now strongly believes that the taken stance is perhaps more sensible and inclusive and might yield a more conspicuous picture of the totality of the issue as well. Hence, the field of neurolinguistics has not overstepped its jurisdiction in second language research because its practical and theoretical aspects can be almost considered as two sides of the same coin. In this sense, we might hopefully have the warranty to rediscover the potential of neurolinguistic contribution to second language research and ideally witness a major shift of focus regarding the validity criterion of its prospective patterns of research. In conclusion, by putting further trust in applicability of the neurological achievements catered for second language research, the stoplight put against neurolinguistic applications to second language learning and pedagogy might also turn yellow soon awaiting the accompanying green light. However, such alternative view is still speculative and open-ended and it certainly needs support of the future research studies.

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(Appendix Essay: " The doubting game and the believing game: An analysis of the entellectual enterprise").
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The Effects of CALL on Vocabulary Learning: A Case of Iranian Intermediate EFL Learners

Parviz Maftoon
Department of English, Science and Research Branch,
Islamic Azad University, Tehran, Iran
pmaftoon@srbiau.ac.ir

Hadi Hamidi
Department of English, Science and Research Branch
Islamic Azad University, Mazandaran, Iran
hamidi_tefl@yahoo.com

Saeid Najafi Sarem
Department of English, Hamadan Branch,
Islamic Azad University, Hamedan, Iran
s_najafisarem@yahoo.com

Abstract

In the past, vocabulary teaching and learning were often given little priority in second language programs but recently there has been a renewed interest in the nature of vocabulary and its role in learning and teaching. Although most teachers might be aware of the importance of technology, say, computer, rarely teachers use it for teaching vocabulary. Thus, the current study aims at exploring the effects of CALL on vocabulary learning of Iranian EFL Learners. In this study, 40 intermediate EFL learners, both male and female aged from 16 to 18 studying New Interchange, book III, were chosen randomly from a language institute in Tehran. They were divided into two twenty-member groups. The experimental group was given the VTS.S (a computer program for teaching vocabularies), a computerized dictionary and provided with teacher e-feedback. The control group received no special software and vocabularies were taught using the conventional ways with the help of a paper dictionary. A vocabulary pre-test based on the tests available in their teacher's guide was given to both groups. The aim of this test was to make sure that the students were not familiar with the words in advance. By *pre-test/post-test* comparison researchers found learners exposed to VTS.S teacher e-feedback plus the computerized dictionary scored higher than the control group. Both high-stake and low-stake holders can avail from the findings of the study.

Keywords: CALL, computerized dictionary, VTS.S, educational software, e-feedback

1. Introduction

Effective learning of new lexical items in any language seems to be one of the main goals to be achieved by very language learners. It might not be possible to conduct a message or communicate in a language by those who may know some grammar, but their vocabulary knowledge is not still rich enough. Most ESL/EFL learners must have experienced that the majority of their time spent over the foreign language has been devoted to practicing and remembering vocabulary. Not long ago, vocabulary teaching and learning were often given little priority in second language programs but recently there has been a renewed interest in the nature of vocabulary and its role in learning and teaching (Richards & Renandya, 2002).

The role that knowledge of vocabulary plays in second and foreign language acquisition/learning has long been neglected. However, vocabulary is seemingly receiving much attention in the language teaching curriculum. This is partly due to several reasons, such as the influence of comprehension-based approaches to language development, the research efforts of applied linguists, and the exciting possibilities opened up by the development of computer-based language corpora (Nunan, 1999, p. 103).In recent years, with the development of computer-assisted

language learning (CALL), the need and opportunity to investigate the effects of multimedia or computer technology on vocabulary acquisition has been felt and created. In line with that, numerous studies such as (Aust, Kelley, & Roby, 1993; Brett, 1998; Davis & Lyman-Hager, 1997; Plass, Chun, Mayer, & Leutner, 1998) have shown that computerized technologies and multimedia environments can be helpful for learning foreign language vocabulary.

2. Review of the Related Literature

2.1. A Brief History of CALL

The world of ELT is amazing. It undergoes many changes and experiences with new methods and approaches coming into existence every day. Technology has had its share and effect on language teaching/learning too. Within the world of technology, computer and its software opened a new horizon to language teaching/learning. According to Warschauer (1996), Warschauer and Healey (1998), computers have been used for language teaching since the 1960s. This 50 years history can be roughly divided into three main stages: behaviorist CALL, communicative CALL, and integrative CALL. Each of these stages corresponds to a certain level of technology as well as a certain pedagogical approach.

2.2. Definitions and Some Goals of CALL

Under the umbrella term of Technology-enhanced Language Learning (TELL), Computer-assisted language learning (CALL) can be regarded as an approach which aims at using computer technology in learning or teaching foreign languages. "such a technology, which has become a fixture in many homes nowadays, has significant impact on education and has been more and more integrated into classrooms (Davis, 2006). According to Warschauer and Healey (1998), it is the rise of computer-mediated communication and the Internet, more than anything else, which has reshaped the uses of computers for language learning at the end of the 20th century. It seems that computers both in society and in the classrooms have been transformed from a tool for information processing and display to a tool for communication with the help of the Internet.

Computer-assisted language learning laboratories and multimedia lessons can provide drills on oral and visual aspects of language communication in general and vocabulary learning in particular (Salaberry, 2001). CAI (Computer Assisted Instructions) as Salaberry claims can provide monitoring, recording, assessment, and analysis of student language performance. Electronic or computerized dictionaries could also provide a full range of synonyms, antonyms, grammatical and stylistic information productively. The capabilities of speech generating of computer makes electronic language teaching and tutoring possible(Salaberry, 2001).

CALL can help language learners be more autonomous in terms of language learning. Some stakeholders (Salaberry, 1999; Rost, 2002) indicate that the current computer technology can have many advantages for foreign/second language learning. Computer technologies, software and its language learning programs could provide second language learners more
independence from classrooms thereby allowing learners have the option to work on their learning material at any time and any place.

However, CALL is not without its criticisms. According to Davis (2006), one of the important issues with using technology in language teaching environments is that language education is in danger of being taken over by computer programmers, software developers, hardware vendors or technicians. High cost of software, computer programs, lack of technical support by practitioners and also negative attitudes by both teachers and learners may add fuel to the fire too.

2.3. Previous Studies

A number of studies have been done to see if there is any relationship between computer assisted language learning or any type of computer technology and vocabulary acquisition of EFL/ESL learners. We turn to some of the studies conducted using computer, multimedia and email

(or any kind of e-feedback) to determine vocabulary learning. Gholinia (2010), having thirty first-year university students majoring in English as her participants, conducted a research to see if computer assisted language learning has any effect on the vocabulary learning of these university students. She also investigated the language learners' attitude toward the use of computers in language learning. The results of her study showed the usefulness of the applied software in facilitating vocabulary learning, in remembering and also in enhancing the students' motivations to learn the English language. Her study also confirmed that the use of multimedia CALL software led to a higher-level ability of the learners in the long-term recall of the English vocabularies.

In another study conducted by Xin and Reith (2001), it was found that video technology can be used as a tool for facilitating vocabulary acquisition. In this comparative study of 4th, 5th and 6th grade students with learning disabilities, students were randomly assigned to a video instruction group and to a non-video instruction group for reading vocabulary and comprehension lessons. Analysis of pre, post and follow-up tests two weeks after the completion of the lessons indicated that students in the video instruction had statistically higher vocabulary acquisition scores than those in the non-video group.

Investigating the effect of multimedia annotation modes on L2 vocabulary acquisition, Al-Seghayer (2001), conducted a comparative study to find out which of the image modalities -- dynamic video or still picture -- is more effective in aiding vocabulary acquisition. He administered two types of tests to 30 ESL students: recognition and production. In addition, a face-to-face interview was conducted, and questionnaires were distributed. Results of the both tests were analyzed using analysis of variance procedures. His investigations yielded the conclusion that a video clip was more effective in teaching unknown vocabulary words than a still picture. He further found that video better builds a mental image, better creates curiosity leading to increased concentration, and embodies an advantageous combination of modalities (vivid or dynamic image, sound, and printed text). Some other studies such as Tozcu and Coady (2004),Somogyi (1996), Duquette, Renie, & Laurier (1998). Kang and Dennis (1995), Iheanacho (1997) all support that computer technologies increase the probability of vocabulary acquisition.

In most institutional classes in Iran, learners feel bored and are tired of the traditional language teaching methods they are exposed to and this has created discomfort for them while using traditional strategies in learning the four skills. On the one hand different teachers use different strategies for teaching the skills, on the other hand different students use various strategies to learn them. Vocabulary teaching/learning has always been one of the mind-boggling issues among language teaching experts/students. The role that knowledge of vocabulary plays in second and foreign language acquisition/learning has long been neglected. However, with the aid of technology enhanced language learning programs it is hoped that vocabulary learning enters a new era.

Effective learning of new English vocabularies seems to be one of the important aims to be obtained by beginners of EFL learners. This research study is thus significant in several respects. First, although most teachers might be aware of the importance of technology and in this particular aspect computer, a few try to use it within their classrooms. Second, most studies of CALL-based language teaching/learning have taken place in foreign countries in an ESL situation. This study is targeted at Iranian EFL learners. Third, this study would be of special importance for those students who want to self-study the materials and be autonomous as much as possible. Therefore, it is hoped that the findings of this study help both EFL teachers and learners move toward a better understanding of using technology and gain new language learning techniques. The results of this study could also potentially provide a solution for materials developers how to best provide the receivers with optimal technology enhanced materials.

2.4. Research Questions

There are few, if any, empirical studies to date to show that using online vocabulary teaching software enhances students' vocabulary learning at Iranian language institutes. Therefore,

the present study is an attempt to investigate the role of CALL on the vocabulary learning of Iranian intermediate EFL learners and tries to answer the following research questions:

1. Is there any significant difference between CALL-based vocabulary learning and the traditional one?
2. Does the use of related-vocabulary passage writing for computer users with teacher e-feedback enhance vocabulary learning?

2.5. Research Null Hypotheses

In order to be on the safe side, and also reach to logical answers to the aforementioned research questions, the following null hypotheses are formulated:

1. There is no significant difference between CALL-based vocabulary learning and the traditional one.
2. The use of related-vocabulary passage writing for computer users with teacher e-feedback does not enhance vocabulary learning.

3. Methodology

3.1. Participants

In order to conduct the research the researcher invited 68 students to participate in this experiment. The students are at intermediate level (studying New Interchange, IL.1, IL.2, and IL3) from Simin Language Institute, in which the researcher has been teaching for two years. The students have learnt English for about five years, and reached the intermediate level. The participants are aged from sixteen to eighteen. Regardless of the number of the participants that the researcher tried to get them involved in his general proficiency test, there was one problem here that evidently influenced the reliability of the test and ultimately the whole research project, and that was most of the participants in the researcher's project were female.

A general proficiency test was administered to the students on two different days, since it was not possible for the whole students to come on one day and the institute could not accommodate around 70 students at once. To obtain the population required for the experiment, 58 students from three different classes studying New Interchange book.3 were chosen and a Nelson test was administered. From among those who took the test, two groups (experimental and control) were selected. As it is conventional the scores of the students were ranked and measured. After that, the mean of the students was obtained and then the standard deviations of the scores were calculated. Those students located one standard deviation below and one standard deviation above the mean were selected and others were discarded. The researcher was the teacher of the classes, so there was no limitation on conducting the research in his own classes held two times a week for ninety minutes.

3.2. Instrumentation

The materails used in this research and the tasks that learners engaged in included:

- **Computerized dictionary**: The Longman Exam's Coach English Dictionary (2010) was provided for the students of the experimental group. This dictionary had both British and American pronunciation. Pronunciation of the words could be played for the students by typing or simply clicking on the words.
- **Nelson test:** in order to measure and determine the participants' level of general English language proficiency and ensure their homogeneity, they were required to do the standard Nelson's intermediate level test. Thus, Nelson test battery was used as the language proficiency test in this study. This test battery is consisted of 50 items in the form of multiple choice questions and students are supposed to choose the correct answer from among the alternatives.
- **Paper dictionary**: All the students of the control group had permanent access to different paper dictionaries such as Oxford Advanced and Cambridge both at home and in the institute.

- **Pre-test**: a standardized pretest consisted of 25 items; all taken from the teacher's book was given to the students at the beginning of the course in order to make sure that they are not familiar with the words.
- **Post-test**: a posttest consisted of 25 items; all taken from the teacher's book was given to the students at the end of the course in order to investigate and analyze possible differences between the control and the experimental group.
- **VTS.S**: which is a simple computer program designed for language teaching enhancement. It contains the new words, their synonym, antonym, definition and one example. It contains two main parts: one for keeping the new words and another section for related-vocabulary passage writing. This software can be used both online and with computer. Time recording can be added to the software if needed.

3.3. Procedure

As it has already been mentioned, in order to make an experimental and a control group, sixty-eight students were chosen from the intermediate level. The first thing to consider is that these participants should be homogenized and then those whose marks are closer to the mean should be chosen for the two experimental and control groups. This is done by calculating the descriptive statistics of the data. It means that the mean, mode, median, and standard deviation of the Nelson test scores were computed and then the subtraction of the mean from standard deviation and once again the addition of these two were calculated (mean+/-standard deviation). Scores which are below and also above it are discarded and those scores which are between them are chosen. The chosen scores which belong to somehow homogeneous students are randomly divided into two groups, one as a control group and one as an experimental group. In this research the whole number of students chosen were forty-four, so two groups of twenty-two participants were ready.

In both groups new vocabularies were taught. In the control group the conventional method that teachers use in their classes was used. In the experimental group, the introduced technique in the research was used. The procedure is as follows: first of all, the twenty-two students of the experimental group were given a CD containing Longman computerized dictionary (Longman Exam's Coach Version 2010) and Babylon English to Persian and Persian to English dictionary. All the participants were instructed how to work with these two dictionaries in one session. Next step was to teach participants how to work with the vocabulary teaching software (VTS.S). To this end, the application was brought in to the class and was explained to the participants via laptop. They were then given instruction how to use it online. But there existed a problem here and that was the researcher was not sure whether all the students could in fact use internet, e.g. they were internet literate or not. Having or not having access to the internet at home was not a major problem, since participants could go to the coffee net and work with the application. However, to make sure that all the students could use the internet or not the researcher first asked them to send him emails from their own email addresses. He then asked students to make a passage with the words which were sent to their email addresses by their teacher. After making sure that all the participants were internet literate, the experiment started.

Right after the training was over, a standardized vocabulary test taken out of their teacher's guide book by Jack C. Richards was given to them as a pre-test and a post-test (both experimental and control groups). The experimental group students had to work on the list of new words prepared by the researcher taken from each unit of their book. They had to go through the two computerized dictionary and find definition, example, opposite, synonym, and make one sample sentence from their own. They also had to take the prepared exercises and work on them available in the VTS.s application. The next step, these computer users had to prepare a word file in docx format to email their finished work to the researcher after each unit. Among the experimental group participants, 11 were randomly chosen to work on related-vocabulary passage writing in order to test the second research questions. These participants had to choose ten words from each unit, make a passage out of them, and email them to the researcher separately. The researcher would then correct, modify and

email them back to the participants as a feedback. After covering the twenty sessions, a standardized vocabulary post-test was administered to investigate the possible effect.

4. Results and Discussions

4.1. Descriptive Statistics

As it is shown in Table 1, the number of the participants (68) is illustrated. Based on the numerical values that you can see on the frequency table these 68 students' mean, median as well as standard deviation are measured. As it was stated in previous chapter each students' score has been considered and then (SD+/- Mean=x) for each of the score was measured. As you can see the mean = 28.3971 and the SD = 6.5429. So, it can be concluded that scores which are placed between these marks can be selected and those higher or lower than them should be discarded. So, from among 68 participants, 44 students were assigned to be located in two (experimental and control) groups.

Table 1. Descriptive analysis of Nelson test for 68 students

	N	Minimum	Maximum	Mean	Std. Deviation
Nelson	68	16.00	43.00	28.3971	6.54295
Valid N (listwise)	68				

The table above and appendix A show the distribution of data. You can also see the percentage of the Nelson test distinctively in different columns. As an example you can take the fifth row. You can see that 3 students received score 20, or 6 students got score 34 on the nineteenth row (see appendix A) .

Once the participants were assigned, they were divided in to two groups, 22 for control group and 22 for experimental. Also in the graph below you can easily observe those students whose marks located closer to the mean and those, whose marks located further to the mean on the axis. That indicates that the groups are somehow normally divided.

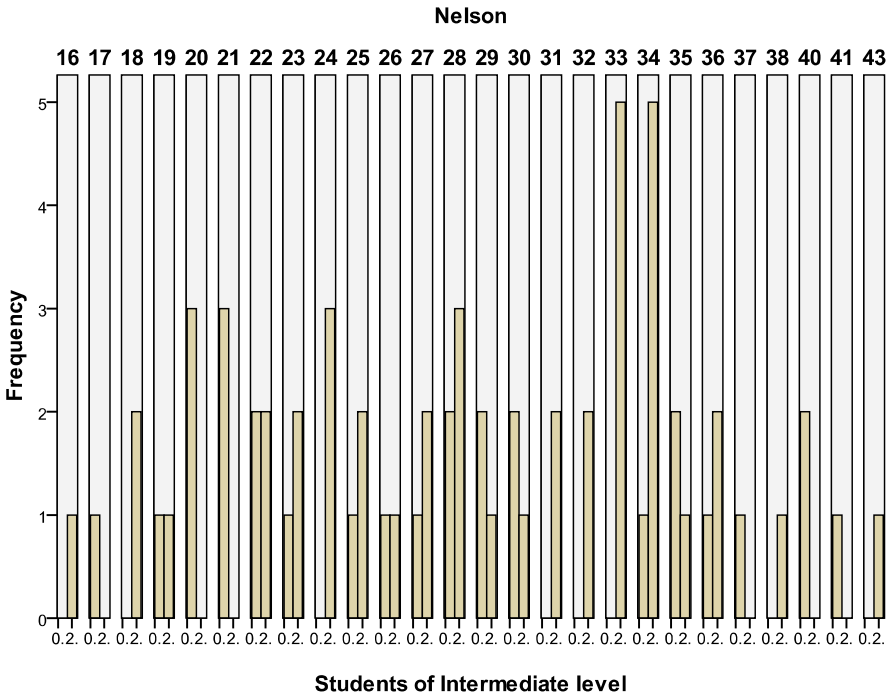

Figure 4.1. Distribution of scores for the Nelson test

The graph below also shows the ratio of male to female participants.

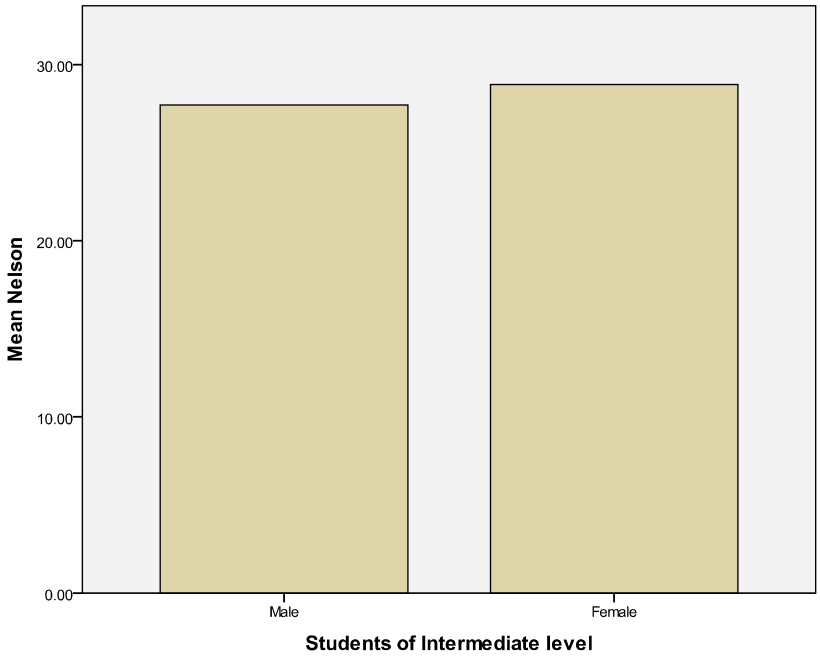

Figure 4.2. Ratio of male to female participants

After the two groups (C & E) are assigned, now it is time to go to another phase of our research. As you know our research was on the effect of CALL on vocabulary learning of the students, so we needed a vocabulary test as a pre-test and post-test. For this reason a standardized vocabulary test was necessary to be prepared. A vocabulary test from New Interchange' teacher's guide, book.3 by Jack C. Richards was chosen and was piloted in a class of 18 students and after administering the test standardization process was applied and finally out of 50 vocabulary questions 25 tests were chosen as standard questions to be used in both control and experimental groups as a pre and post tests.

Then as it was mentioned earlier a pre-test was administered to both control and experimental groups. Then the control group used the conventional the conventional method of learning vocabularies with the help of a paper dictionary which is quite common in language institutes. On the other hand, the experimental group was given two computerized dictionaries and had access to the VTS.S online application. After the treatment a post- test was administered and the obtained results were statistically computed. The following charts show the results gained after the data were statistically computed. The computation is analyzed as follows:

A paired sample *t*-Test was used to compute and analyze the data. For this method a brief illustration along with its related charts will be presented here.

Below you can see a chart in which both C and E groups' descriptive statistics have been presented. In this chart the mean scores and the standard deviations of both groups (C & E) in pre-test and post-test are given. As you see the mean of pre-test in control and experimental group is 5.18 and 5.36 and the standard deviation in control group and experimental group is 1.25 and 1.67 respectively which doesn't show any significant difference between the two groups at first.

Table 4.2. Descriptive statistics for the vocabulary test (single)

	N	Minimum	Maximum	Mean	Std. Deviation
vocabularypretestCON	22	3.00	7.00	5.1818	1.25874
vocabularypretestEXP	22	3.00	8.00	5.3636	1.67745
vocabularypostestCON	22	13.00	23.00	17.8636	2.69560
vocabularypostestEXP	22	17.00	25.00	21.9091	2.30753
Valid N (listwise)	22				

Table 4.3. Descriptive statistics for the vocabulary test (paired)

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	vocabularypretestCON	5.1818	22	1.25874	.26836
	vocabularypretestEXP	5.3636	22	1.67745	.35763
Pair 2	vocabularypostestCON	17.8636	22	2.69560	.57470
	vocabularypostestEXP	21.9091	22	2.30753	.49197
Pair 3	vocabularypostestEXPG1	21.2727	11	2.45320	.73967
	vocabularypostestEXPG2	22.5455	11	2.06706	.62324
Pair 4	vocabularypretestCON	5.1818	22	1.25874	.26836
	vocabularypostestCON	17.8636	22	2.69560	.57470
Pair 5	vocabularypretestEXP	5.3636	22	1.67745	.35763
	vocabularypostestEXP	21.9091	22	2.30753	.49197

But on the other hand when the mean scores of the post-tests of the control and experimental groups are compared, it can be easily understood that the experimental group scored higher than the control one. The mean of the control and experimental group was 17. 86 and 21.90 and the standard deviation was 2.69 and 2.30 respectively. Therefore, it shows that the treatment has worked.

Table 4.4. Paired sample correlation for the vocabulary test

		N	Correlation	Sig.
Pair 1	vocabularypretestCON & vocabularypretestEXP	22	.960	.000
Pair 2	vocabularypostestCON & vocabularypostestEXP	22	.335	.128
Pair 3	vocabularypostestEXPG1 & vocabularypostestEXPG2	11	.421	.197
Pair 4	vocabularypretestCON & vocabularypostestCON	22	.611	.003
Pair 5	vocabularypretestEXP & vocabularypostestEXP	22	.673	.001

As it was stated earlier, the 22 experimental participants were divided in to two eleven-member groups in order to investigate further whether related-vocabulary passage writing of the students with teacher e-feedback had any effect on their vocabulary learning or not. As you can see in the descriptive chart below the mean of the group one and group two is 21.27 and 22.54 and standard deviation of 2.54 and 2.06 respectively which shows a slight difference.

For the first research question a null hypothesis is made**:** There is no significant difference between CALL-based vocabulary learning and the conventional one. In order to test this hypothesis, a paired sample *t*-test was conducted. As you can see in the chart below the *t* value of the control and experimental group post-test is 6.53 with standard deviation of 2.90. The mean of the post-test for the control group and the experimental group is 17.86 and 21.90 which shows that the treatment has worked. As shown in table 4.5., the *P value = .000 < .05.* Based on the results, it could be concluded that there was a significant difference between the mean scores of the two groups on the posttest. The experimental group scored higher marks than the control group. According to the statistics the mean difference was significant, therefore, it can be concluded that our null hypothesis is rejected.

Table 4.5. The conducted *t*-Test for the two groups

Paired Samples Test								
					95% Confidence Interval of the Difference			
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
Pair 1	vocabularypretestCON - vocabularypretestEXP	-.18182	.58849	.12547	-.44274	.07910	-1.449	21	.162
Pair 2	vocabularypostestCON - vocabularypostestEXP	-4.04545	2.90283	.61888	-5.33250	-2.75841	-6.537	21	.000
Pair 3	vocabularypostestEXPG1 - vocabularypostestEXPG2	-1.27273	2.45320	.73967	-2.92081	.37535	-1.721	10	.116
Pair 4	vocabularypretestCON - vocabularypostestCON	-12.68182	2.16875	.46238	-13.64339	-11.72025	-27.427	21	.000
Pair 5	vocabularypretestEXP - vocabularypostestEXP	-16.54545	1.71067	.36472	-17.30393	-15.78698	-45.365	21	.000

For the second research question a null hypothesis is made: The use of related-vocabulary passage writing for computer users with teacher e-feedback does not enhance vocabulary learning. In order to test this hypothesis, another sample *t*-test was conducted. As you can see in the table above, the *t* value for the experimental group 1 and 2 is 1.72, the mean score as shown in table 4.6. below is 21.27 and 22.54 with standard deviation of 2.45 and 2.06 respectively. As shown in table 4.5., the *P value = .116> .05* which does not show any significant difference between two groups. Therefore, we fail to reject the second null hypothesis which means that the use of related-vocabulary passage writing for computer users with teacher e-feedback does not enhance vocabulary learning although there seems to be a slight difference.

Table 4.6. Descriptive statistics for the two experimental groups

	N	Minimum	Maximum	Mean	Std. Deviation
vocabularypostestEXPG1	11	17.00	24.00	21.2727	2.45320
vocabularypostestEXPG2	11	18.00	25.00	22.5455	2.06706
Valid N (listwise)	11				

5. Conclusions and Implications

Although there are many computer software designed so far whose purpose are to manage and organize foreign language learning and teaching, the author of the research aimed at confirming whether using his vocabulary teaching software in remembering and studying new vocabularies may bring necessary efficiency, whereby putting the application (VTS.S) among other website programs as an optional useful tool for foreign language learning or teaching. Therefore, by presenting the gained results (discussed in data analysis part), the possible effects on language studying and in this particular case vocabulary learning have been discussed and focused on.

The research results proved the stated first research hypothesis that there actually is a significant difference between CALL-based vocabulary learning and the conventional one and unprecedentedly exceeded the researcher' expectations. But surprisingly the author found that that the use of related-vocabulary passage writing for computer users with teacher e-feedback does not enhance vocabulary learning.

After having answered all the questions in the post-tests, the experimental group obtained better results than the control group did. However, in selected in person interviews, some students from both groups were found to be psychologically sensitive to computer and to using its related educational software. Although not each foreign language learner may prefer learning English with the help of technology or computer, the difference between pre- and post-tests within the two groups may suggest that using applications similar to VTS.S enhances the learning process and improves the quality of studying the language. Furthermore, by having a detailed look on the research results regarding learning the vocabulary, it seems to the author that having access to the

VTS.S application brought much motivation within the experimental group students. The researcher was also wondering whether students would be interested in getting to know other website tools or not. In contrast to feelings present at the beginning of the research that the participants would not use the application too often, or that they easily might get bored with the application and tools, within only two-week access given to them, students showed quite eagerness to use the application and they even introduced it to other students of lower classes too. Another issue which also proved the interest and motivation to learning English in this way was that the author was asked also by the control group members to give them the access to the program after the research was over. Thus they were given the application in order to use with computer at home.

Another researcher's purpose for conducting this research was to motivate himself to use other versions of the application for further researches. On the one hand, being aware of many hours spent on designing the tools and the need to improve, add or modify some missing options for the tools may demotivate the author from further work in this area. On the other hand, the surprising results of the research within the experimental group, as well as many positive remarks given by them (participants), do encourage the author to further develop and modify the application.

First of all, the researchers want to stress on the fact that the research conducted was devoted only to the vocabularies taken from students' study book over a ten-week period. Although no questionnaire was used and it was not the focus of the researchers, the authors realized that students in the experimental group were getting more autonomous in terms of looking up the words, finding their definitions, opposites, synonyms, and examples. They could be differentiated from the other students who did not use the computerized dictionary regarding their speaking fluency and specially pronunciation accuracy using the computerized dictionary. After the research was over, the author felt that within the set of vocabularies taught to the students, some of the them were indeed interesting, more practical and useful to the learners (for example such items moody, egotistical, selfish), while others did not seem to pay much role at the current level of the students' English and might have been substituted for different ones (for instance such words as coincidence, lucky break, and predicament). Of course it is quite obvious that students use the new words in their daily conversation which are of higher frequency. Similar remarks were also expressed by the students themselves after they finished the ten-week period.

Furthermore, those students who had to work on related-vocabulary passage writing recalled the words much better that those who did not. This implies that even if students are not supposed to use computer application to do this exercise, they can do it on a piece of paper and hand them in to the teacher for correction and feedback. It was possible for the author to correct the passages and score them, but since the concentration was on the multiple choice tests and there was no exact method of correction, this suggestion was rejected.

The authors also consider adding pictures and cartoons to the words listed in the glossary of each section. Because pictures and visualization play an important role in any learning process, it seems that such an option added in further versions of the program would improve the effectiveness of absorbing new words and thus affect the research results. Apart from that, the researchers wonder about the results of conducting the same research both in rural and urban environments and in different institutes. Children from villages may not have such easy access to the internet as children from cities have. Of course, this does not mean that village students have no motivation or desire to use technology in studying English. Some children from cities may be less ambitious and less diligent . The difference between possible research results in rural and urban environments could be indeed interesting, especially when we distinguish male participants' results from that of females'. Finally, it is worth mentioning that this application has been designed especially for EFL teachers and learners and those who study English at language institutes. That is why such a research should be conducted among EFL students at English language institutes.

This study aimed at empirically examining the efficacy of computer assisted language learning on L2 vocabulary acquisition by providing the students with a vocabulary teaching software and a computerized dictionary. More research is needed related to this study for a thorough

understanding of this issue and for confirmation of the findings stated in this research. This is particularly true when considering that there might be additional variables that would add different intrapersonal effects based on learning style preferences which were not included in this study. Interpretations of the findings of this research also led to several suggestions for further research.

1. It is recommended that this study be replicated with a larger sample or number of participants from the same background.
2. The present study may be replicated having native speakers as the participants.
3. It is recommended that a mobile assisted language learning (MALL) study be conducted on the effect of vocabulary learning of Iranian EFL learners.
4. It would be interesting to compare the results across levels of language proficiency.
5. It is recommended that the time-show item be included in the software to see whether spending more time working with computer would improve students' vocabulary acquisition.

These suggested chains of research might shed more light on L2 vocabulary acquisition involving the computer or any kind of technology. They should be able inform us as to which combinations of computer software will enhance second/foreign language vocabulary learning the most. Lastly, it is hoped that the outcome of this study be of some help to future research studies.

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Appendix A

Detailed descriptive analysis of Nelson test for 68 students

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	16.00	1	1.5	1.5	1.5
	17.00	1	1.5	1.5	2.9
	18.00	2	2.9	2.9	5.9
	19.00	2	2.9	2.9	8.8
	20.00	3	4.4	4.4	13.2
	21.00	3	4.4	4.4	17.6
	22.00	4	5.9	5.9	23.5
	23.00	3	4.4	4.4	27.9
	24.00	3	4.4	4.4	32.4
	25.00	3	4.4	4.4	36.8
	26.00	2	2.9	2.9	39.7
	27.00	3	4.4	4.4	44.1
	28.00	5	7.4	7.4	51.5
	29.00	3	4.4	4.4	55.9
	30.00	3	4.4	4.4	60.3
	31.00	2	2.9	2.9	63.2
	32.00	2	2.9	2.9	66.2
	33.00	5	7.4	7.4	73.5
	34.00	6	8.8	8.8	82.4
	35.00	3	4.4	4.4	86.8
	36.00	3	4.4	4.4	91.2
	37.00	1	1.5	1.5	92.6
	38.00	1	1.5	1.5	94.1
	40.00	2	2.9	2.9	97.1
	41.00	1	1.5	1.5	98.5
	43.00	1	1.5	1.5	100.0
	Total	68	100.0	100.0	

A Critical Look at the Presentation, Practice, Production (PPP) Approach: Challenges and Promises for ELT

Parviz Maftoon
Department of English, Science and Research Branch,
Islamic Azad University, Hesarak, Tehran, Iran
Postal Code: 1477893855, P.O.Box 14515 – 755, Tel. +98 311-6692696
pmaftoon@srbiau.ac.ir

Saeid Najafi Sarem
Department of English, Science and Research Branch,
Islamic Azad University, Hesarak, Tehran, Iran
Postal Code: 1477893855, P.O.Box 14515 – 755, Tel. +98 311-6692696
s_najafisarem@yahoo.com

Abstract

English language teaching has left behind many ups and downs until the introduction of CLT and TBLT methodologies in recent years. Much attempt has been made both by researchers and language instructors to make use of the most efficient teaching practices aimed at enhancing language production and affecting learning outcomes in a positive way. In the same direction, during 1950s an approach emerged in the United Kingdom based on behaviorist teaching practices known as PPP, which soon popularized the field of language teaching and employed by many professional schools throughout the world. However, due to ignoring the communication as a main goal of language learning, this approach came under serious attacks and criticisms by various scholars from 1990s onwards. The present paper is an attempt to critically look at this issue from several perspectives: First, in order to know the three Ps approach, this article will present its main characteristics and principles. Second, it will elaborate on the main challenges and criticisms posed against this approach by various scholars. Finally, the advantages of applying the three Ps will be discussed as a useful teaching technique rather than an approach or method. Also, the implications will be pointed out both for language teachers and learners.

Keywords: The PPP, Criticisms and Problems, Advantages and Implications

1. Introduction

Before 1990s, the "Three Ps" approach to language teaching was referred to by some scholars as the most common modern methodology employed by professional schools around the world. It is a strong feature of the renowned CELTA certification and other TEFL qualifications offered especially in the United Kingdom (Ludescher). According to Harmer (2001, p. 86) “a variation on Audiolingualism in British-based teaching and elsewhere is the procedure most often referred to as PPP which stands for presentation, practice, production,”. It follows the premise that knowledge becomes skill through successive practice and that language is learned in small chunks leading to the whole. This approach views accuracy as a precursor to fluency. As Harmer (2001) maintains PPP has been recommended to trainee teachers as a useful teaching procedure from the 1960s onwards.

PPP is a three-part teaching paradigm: Presentation, Practice and Production; based on behaviorist theory which states that learning a language is just like learning any other skill. The high degree of teacher control which characterizes the first and second stages of this approach lessens as the class proceeds, allowing the learner to gradually move away from the teacher’s support towards more automatic production and understanding. (Ur, 1996, p. 19)

PPP uses a classic deductive approach with grammar being explicitly introduced in the Presentation stage, the first part of the class, by the teacher. The Target Language (TL) for the day is chosen by the teacher from a syllabus of discrete language segments. Material presented to the students is manipulated, or finely-tuned, to emphasize the TL and remove reference to other

language items which have yet to be presented. This is to allow students to concentrate on the TL without further distractions. (Read 1985, p. 17, cited in Carless, 2009, p. 51)

According to Richards and Renandya (2002), many traditional approaches to language teaching are based on a focus on grammatical form and a cycle of activities that involves presentation of new language item, practice of the item under controlled conditions, and a production phase in which the learners try out the form in a more communicative context. This has been referred to as the P.P.P. approach and it forms the basis of such traditional methods of teaching as Audiolingualism and the Structural-Situational approach.

As Willis and Willis (1996, cited in Richards & Rodgers, 2001) state a lesson plan based on PPP should have three phases as follows:

- ✓ *Presentation stage:* The teacher begins the lesson by setting up a situation, either eliciting or modeling some language that the situation calls for. Presentation may consist of model sentences, short dialogues illustrating target items, either read from the textbook, heard on the tape or acted out by the teacher.
- ✓ *Practice stage:* Students practice the new language in a controlled way. They drill sentences or dialogues by repeating after the teacher or the tape, in chorus and individually, until they can say them correctly. Other practice activities are matching parts of sentences, completing sentences or dialogues and asking and answering questions using the target language.
- ✓ *Production stage:* Students are encouraged to use the new language in a freer way, either for their own purposes and meanings or in a similar context introduced by the teacher. It can be a role play, a simulation activity or a communication task.

Byrne (1986) also notes that the sequence does not have to be followed rigidly, and that depending on the level of the students, their needs and the teaching materials being used, it would also be possible to move from production to presentation to practice.

PPP, in Thornbury's (1999) view, has a logic that is appealing to teachers and learners in that it reflects a notion of practice makes perfect, common in many skills; it allows the teacher to control the content and pace of the lesson; and as Skehan (2003) remarks, it provides a clear teacher role, in accordance with power relations often found in classrooms.

Being familiar with the main features and principles of this approach, in the following section, we will review a number of criticisms which have been mentioned in the literature by various scholars. Finally, in the last part of this paper the researcher tries to focus on the advantages associated with PPP and introduce it as a good teaching technique to be utilized by language instructors in many situations.

2. Problems with PPP

Knowing the features and principles of PPP, it should be mentioned that in spite of its popularity for some time in the field of language teaching, from the 1990s onwards, this approach came under sustained attack from academics. Some of the major problems associated with it are mentioned here.

Based on Ellis (2003), PPP views language as a series of products that can be acquired sequentially as accumulated entities. However, SLA research has shown that learners do not acquire a language in this way. Rather they construct a series of systems, known as interlanguages, which are gradually grammaticized and restructured as learners incorporate new features. Furthermore, research on developmental sequences has shown that learners pass through a series of transitional stages in acquiring a specific grammatical feature such as negatives, often taking months or even years before they arrive at the target form of the rule. In other words, L2 acquisition is a process that is incompatible with teaching seen as the presentation and practice of a series of products.

PPP is seen as lacking a firm basis in second language acquisition (SLA) theory; being too linear and behaviorist in nature, so failing to account for learners' stages of developmental readiness (Ellis, 2003); and is thus unlikely to lead to the successful acquisition of taught forms (Skehan, 1996).

Richards and Rodgers (2001, p. 246) mention that there are practical problems with PPP as well. Clearly, the production stage calls for grammar tasks, that is, tasks that will elicit the feature that is the target of the lesson. However, it is not easy to design tasks that require learners to use a targeted structure, as learners can always fall back on their strategic competence to by-pass it.

The Practice stage of the PPP paradigm in particular has attracted a lot of criticism. To summarize the vast amount that has been written, it is seen to be time-consuming (Ellis 1988), under tight control from the teacher and therefore rigid (Willis, 1990, p. 151), inflexible and lacking the ability to adapt to the ever-changing classroom situation (Scrivener, 1996, p.80), and of no use to students' learning processes (Lewis, 1993, p.151). Willis stresses that it is conformity, not communication, being practiced. Also he explains that teaching grammar as discrete items, with fixed rules will serve only to confuse students once they encounter more complex grammar which will not fit the prototype they have been shown (Willis, 1990, p. 4).

Skehan (1996) points out that such a sequence does not reflect principles of second language acquisition:

> The underlying theory for a PPP approach has now been discredited. The belief that a precise focus on a particular form leads to learning and automatization (that learners will learn what is taught in the order in which it is taught) no longer carries much credibility in linguistics or psychology. (Skehan, 1996, p. 18).

In other words, as Skehan (1996) contends, language learning does not occur in a linear fashion influenced directly by the instruction that takes place. Instead, it is a multifaceted complex process in which many factors including learners' cognitive and affective characteristics are influentional.

It also seems to assume that, in this teaching method, students learn "in straight lines" that is starting from no knowledge, through highly restricted sentence-based utterances and onto immediate production. Yet human learning probably is not like that; it is more random, more complicated, and full of interlocking variables and systems. (Woodward, 1993, p. 3, cited in Harmer, 2001, p. 82).

Lewis (1993) suggested that PPP was inadequate because it reflected neither the nature of language nor the nature of learning. This criticism seems to be quite logical in that the learners are required to merely mimic a model in a fixed linear order without paying attention to the inherent complexities of the language itself as well the teaching/learning process. Scrivener (1996) even wrote that it is fundamentally disabling, not enabling. Later, however, Scrivener advanced what is perhaps the most worrying aspect of PPP, the fact that it:

> Only describes one kind of lesson; it is inadequate as a general proposal concerning approaches to language in the classroom. It entirely fails to describe the many ways in which teachers can work when, for example, using course books, or when adopting a task-based approach. (p. 79)

As was noted, practice comprises one of the basic principles of this approach which follows presentation. However, based on Lightbown (1985), SLA research demonstrates that practice does not necessarily lead to perfection. This criticism seems to be quite reasonable in that by having students merely practice a language structure, one cannot expect them to learn and internalize that language structure. Rather, students need to be provided with feedback by their teachers in order to diagnose the problematic areas to work more and to identify their strength in order to build up their later practices on its basis.

Another problem associated with this approach, according to Wong and Van Patten (2003) is that it relies heavily on the use of decontextualized and meaningless drills. A set of structural patterns in forms of language chunks are presented to the learners as models and learners have to produce them through pattern practice and repetition.

Finally, according to Harmer (2001) it is teacher-centered and fits uneasily with more humanistic learner-centered frameworks. According to O'Hara (2003, cited Zhang & Atkin, 2010)

in humanistic education the goal of education is the facilitation of change and learning. Learning how to learn is more important than being taught something from the "superior" vantage point of a teacher who unilaterally decides what shall be taught. Brown (2007) remarks that, in humanistic learner-centered methodologies, teachers as facilitators must provide the nurturing context for learners to construct their meanings in interaction with others. These principles are clearly in contrast with the main premises of the PPP approach in which teachers are the authority and the model while the learners are considered as merely the passive recipients and practitioners of ready-made plans.

Due to these criticisms and problems mentioned above, as Richards and Renandya (2002) maintain, this approach was gradually replaced in the 1980s by teaching methods which focused on communication (rather than grammar) as the key dimension of learning and teaching. Early models of Communicative Language Teaching used functional units of organization and practice to replace grammatical ones; more recently, however, the unit of task has been proposed as an alternative to other units of presentation or practice.

These shifts of focus also had a significant influence on language syllabi. After the 1970s, grammatical syllabuses were superseded by communicative ones based on functions or tasks; grammar-based methodologies such as presentation-practice-production (PPP) lesson format underlying the Situational Approach gave way to function-and skill-based teaching syllabi; and accuracy activities such as drills and grammar practice were replaced by fluency activities based on interactive-small group work. (Richards & Renandya, 2002).

3. Concluding Remarks

As was discussed through this paper the PPP popularized as an approach or teaching model during 1950s and1960s underlying such teaching methodologies as grammar-translation, audiolingual and situational teaching method. The main purpose behind this method was to raise language learners capable of producing grammatical language chunks through excessive pattern practice and repetition drills. With communication coming to be noticed as the major goal of language learning, a great number of criticisms were posed against this approach.

However, like any other teaching methodology, certain advantages can be sought within this method which may recommend the three Ps approach as a good choice to be utilized in certain circumstances. This approach, based on Richards and Rodgers (2001) solve many of the problems beginning teachers have to struggle with, because many of the basic decisions about what to teach and how to teach it have already been made for them. The PPP prescriptions of present, practice, and produce "offers to the novice teacher the reassurance of a detailed set of sequential steps to follow in the classroom" (Richards & Rodgers, 2001, p. 246).

Harmer (1998) in his article, *Default settings: What models do for trainees*, mentions that novice teachers and trainees, need clear models, just as computer users rely, initially, on default settings. He believes that default settings are a good metaphor for the role of the trainer in pre-service training where trainees are offered a clear model or models to hang onto and from which they can develop and grow. The default setting that has most commonly been applied to pre-service training is, of course, PPP (Harmer, 1998).

Based on Carless (2009) low achieving students probably learn better through traditional methods, such as P-P-P. The PPP, based on the used terminology throughout the whole article, has been referred to in the literature mostly as an approach or teaching method; however, what seems to be the reality is that it can be utilized as a useful technique with a variety of teaching methodologies from the audiolingual to the most common types of communicative approaches. For instance, regardless of the method used it can be utilized as a helpful technique with beginning learners and in teaching pronunciation. In terms of explaining grammar, this technique is clear-cut and condensed, through which the main points can be taught easily. Students are normally weak in grammar so we need to use P-P-P to help them improve their grammatical accuracy.

According to Lindsay and Knight (2006) even many CLT classrooms used a PPP model of teaching, but the original model has been developed and modified since it was first introduced and no longer represents CLT as the only teaching model. Evans (2008) agreed that "PPP has evolved over the years, cherry picking the more attractive elements of other approaches, and incorporating them into its basic format" (p. 22). Swan (2005) defends P-P-P as a useful routine for presenting and practicing structural features under semi-controlled conditions.

In spite of the emphasis on meaning and on real world communication rather than grammar and hence the emergence of communicative approaches and most recently the task-based language teaching, to our surprise, some scholars move back to old PPP practices and see it as advantageous and superior. Eric, an authoritative writer on TBLT, remarks:

> Task-based teaching is complex for teachers to get their heads round and also complex to implement. Even if you are an informed and committed devotee it would still be difficult to implement. It is easy to get your head around P-P-P because the psycholinguistic theory (if there is such a thing) is simple: practice makes perfect. And you have the immense advantage that you can teach a P-P-P approach simply by following the textbook. A big advantage of a P-P-P approach is that it denies differences between learners; it licenses you to downplay those differences. In contrast, for TBLT you have to get your head round a theory that has not yet been fully articulated. A further challenge for a task-based approach is that it forces you to confront the way learners are at different levels and you need to have a methodology that allows you to respond to diversity in your classroom. So a task-based approach forces a teacher to confront difficult problems that are currently not solvable. (Cited in Carless, 2009, p. 59)

Moreover Gladys (Cited in Carless, 2009, p. 61) commented as follows:

> Teachers dare not take the risk of bringing new things into the classroom, the risk of getting worse results. They stick to the methods that have been used in the past, whatever results have been achieved they dare not take the risk unless you can show them that TBLT works.

To conclude this paper, most of the articles available in the literature have dealt with the problems and deficiencies of PPP as an old approach leading to the old methods of GTM and Audiolingualism. However, what is true is that PPP can be regarded as a useful technique utilized even in communicative approaches and bearing many advantages as were discussed in the aforementioned sentences.

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Bilingual Lexical Activation in Sentence and Non-sentence Context: A Study of Cross-language Lexical Processing

Mehraban Hamavandy
Tarbiat Modares University, Tehran, Iran
Mehraban2544@gmail.com

Mohammad Golshan
Azad University of Meibod, Yazd, Iran
mohammadd_golshann@yahoo.com

Abstract

Research on word recognition across languages has gained popularity in recent years, due to its overall bearing on the psycholinguistic account of language acquisition. To this end, this study was an attempt to demonstrate the differential influences of L2 proficiency, and type of context on the lexical recognition and retrieval of bilinguals. For this purpose, ten participants who were native speakers of Persian and were learning English at the two distinct levels of elementary and advanced were requested to recite two texts, one in Persian and one in English, which were specifically modified for the current research purpose. The results revealed that while advanced learners were better performers on L2 lexis retrieval, their bare word recognition in L1 lagged behind in latency from elementary learners.

Keywords: lexical access, bilingualism, cross-language differences, sentence processing

1. Introduction

The expanding awareness on the importance of becoming a bilingual[1] in modern world has stimulated a plethora of research on the different processes of turning into a bilingual, including studies on how bilinguals recognize words in their first or second language. A core concern, especially in the psycholinguistic account of bilingualism (and SLA as well) has been the nature with which bilinguals activate lexical representations from both of their languages when reading a language.

A central issue with regard to this area (Macnamara & Kushnir, 1971) was related to the debate of whether the process of word recognition for a bilingual undergoes the initial activation of word representations from a target language only (language-selective lexical access) or whether all words known to an individual, including those from a non-target language, are considered as potential candidates for recognition (nonselective access). Many studies have endeavored to disambiguate the phenomenon, among which most have revealed that the two languages do interrelate and interact during the process of word recognition. As an example, it has been shown that when bilinguals recognize words in one of their languages, they process identical words in another language (e.g. the words None in English as compared with Naan [meaning bread] in Persian).

Assuming the dominance of non-selective lexical activation for bilinguals, what remains is to understand the nature of the lexical items that become activated (e.g., orthographic, phonological, and/or semantic) and the way context and linguistic task can probably influence the process of activation. For example, in the monolingual domain, much research has been devoted to determine the extent to which phonological codes within a language are automatically activated during visual word identification. These studies gave proof that phonological codes become activated and affect the visual identification of words (Glushko, 1979; Perfetti & Bell, 1991; Van Orden, 1987). Further it has been specified that visual word identification is influenced by the consistency of mappings between orthographic and phonological codes. When an orthographic code (e.g., lead) maps on to multiple phonological codes (e.g., [lid] and [lod]), feed-forward activation from those competing

[1] Bilingual in this article refers to both professional speakers of two languages as well as second language learners

codes inhibits performance (Hino, et. al., 2002; Stone, et. al., 1997). These studies were significant in revealing that, even in orthographically based tasks, phonological codes are activated and influence performance. Similarly, when a phonological code (e.g., [meid]) maps onto multiple orthographic codes (e.g., maid,made), feed-backward activation from those competing codes inhibits performance (Pexman, et. al., 2001; Pexman, et. al., 2002). In the present study one of the questions raised was whether similar 'phonological dynamics' (as stated by Schwarts et. al., 2005) across the two languages of English and Persian take place.

Among other factors (variables) that have been identified in previous studies which might contribute to the understanding of how certain lexical items in the repertoire of the language speaker (learner) are demonstrated during L1/L2 word recognition one can refer to the following.

Word Frequency

The word frequency influence (more frequent words are recognized faster than words with a lower frequency) is one of the most robust findings in the visual word recognition literature (Howes & Solomon, 1951; Schilling, et. al., 1998; Whaley, 1978).This factor has been treated as a predominant variable in almost every model of word recognition. For instance, interactive activation models of lexical access assume that frequency affects the resting activation levels of word representations (McClelland & Rumelhart, 1981). Although the degree of the effect is to a large extent reported to be task dependent, it has been assumed for all standard tasks of word recognition. For the bilingual domain, some evidence suggests that the frequency effect might even be larger in the second as compared with the first language (van Wijnendaele & Brysbaert, 2002). Akamatsu (2002) showed that bilingual speakers with Chinese, Japanese, or Persian as L1 and English as L2 displayed differential effects of word frequency but comparable effects of phonological regularity in English word naming. Finally, Baayen et al. (2006) demonstrated that the relative frequency in written compared with spoken English (quantified as the ratio between the two) played an important role in both English monolingual lexical decision and word naming: The more frequent a word was in spoken relative to written English, the faster it was recognized.

Language Orthographic Neighborhood

Effects of orthographic neighborhood (i.e., words that are different from their neighboring word in one letter only) are deemed to influence word selection through activation of multiple words during word recognition. The relative importance of various neighborhood measures for the different standard word recognition tasks has been discussed extensively in the literature on word recognition (e.g. Andrews, 1997; Perea & Rosa, 2000; Carreiras et al., 1997; Grainger & Jacobs, 1996). The number of higher frequency neighbors has repeatedly been found to slow down recognition latencies for the target word, whereas the total number of neighbors had no or only little effect on recognition performance. Grainger & Jacobs(1996) found that higher frequency neighbors delay the pass of the recognition threshold for a target word through lateral inhibition.

Morphological Family Size

Findings of many studies have revealed that the amount of derivations and compounds, from which a word occurs, named as the morphological size, facilitates response latencies in monolingual and bilingual lexical decision (de Jong, et. al., 2000; Dijkstra, et. al. 2005; Schreuder & Baayen, 1997). It is contended that the number of morphological family members have effect on recognition latencies, and not only their frequency. This argument is against a purely frequency-based account of the morphological family size effect.

Word Length

Results of most word recognition tasks have indicated that for words that are longer, more time is demanded to recognize them. Consequently, as McGinnies, et. al. (1952) have stated, owing to the possible transfer of reading strategies from L1 to L2, word length effects may also differ for

bilingual readers varying in their L1 when reading words in their L2. Ziegler et al. (2001) have also shown that word length effects were larger in German as opposed to English, due mainly to the more shallow orthography of German language than English.

Number of Meanings

Lexical items which have several meanings have been subject to many studies whose main aim has been to perceive the relationship between the form and semantic level of word representation. Yet, there has been no hard-and-fast compliance on whether, why, and how this factor can be influential on word recognition (e.g., Borowsky & Masson, 1996; Duffy, et. al. , 1988; Hino, et. al., 2006), and whether related word senses have to be discriminated from unrelated word meanings (Klein & Murphy, 2001; Rodd, et. al., 2002). It has been hypothesized that native/nonnative speakers of a certain language are heavily influenced by the number of word meanings during a word recognition task that probably entails relatively little semantic processing. Considering that representations of L2 words have been regarded as less "richly populated" (i.e., possessing fewer senses) than L1 words it is possible that the number of meanings affects word recognition in the first but not in the second language (Finkbeiner, et. al., 2004).

Familiarity

The respondents' familiarity with the word has been assumed to be a highly determinant factor during word recognition process (especially in the setting of the native language speakers (Kreuz, 1987; Williams & Morris, 2004). Gernsbacher (1984) for instance reported that effects of other variables (word frequency, word length, and number of meanings) on lexical decision latencies disappeared when familiarity was controlled for.

In addition to the mentioned studies which mainly investigated the variables which influence word recognition, a number of other relevant researches tried to shed light on the process of the activation of the pronunciation of the words, usually taking place cross-linguistically. As an instance, Jared and Szucs (2002) in their study asked French-English and English-French bilinguals name words in three blocks of trials; two in English only and a third in French separating the two English blocks. The English words included heterophonic homographs of French words [e.g., pain (meaning ''bread'')] and unambiguous controls (e.g., camera). Their initial hypothesis was that if phonological representations from the non-target language are active, then competition between alternative pronunciations of the same word should delay naming for the heterophonic homographs. Therefore, the French naming block was included to test the hypothesis that the requirement to produce in the non-target language would further increase this 'cost'. When bilinguals named words in their weaker L2, there were increased latencies for the interlingual homographs, both before and after the French naming block. When bilinguals named words in their L1(as their more dominant language), in this case English, there was once again a cost for naming the homographs, yet the influence was found only after the L2 was activated by a block of French word naming. The finding being in line with non-selective theory of language activation, since bilinguals seemed to activate phonological codes from both of their languages, even when reading in their L1. Though, how influential L1 is, depends upon the time when L2 had been activated.

In a very similar approach, Jared and Kroll (2001) investigated whether and to what extent sub-lexical phonology was influenced by similar cross-language effects. Participants of their study who were English-French bilinguals named English words that either had word body 'enemies' in French (e.g., pain), English (e.g., steak) or no enemies in either French or English (e.g., stump). The final finding revealed a very analogous pattern with that of Jared and Szucs (2002), mentioned earlier. Participants who were bilinguals of English & French, named words in English (that had word body enemies in French), in a longer duration of time, yet this 'cost' was found to take place only after naming the French word block.

Taken together, these studies mainly imply that effects of cross-language activation are constrained when production is in the L1 and lexical selection is required by the task

Another related question sought for in the literature is, how the cognitive nature of L2 reading is distinct from reading in the native language (L1) and how might this difference account for the probable decreased reading rate?

There are at least two fundamental characteristics mentioned in SLA literature that distinguish L2 reading. First, basic word recognition processes may be slowed in L2 due to decreased familiarity and frequency of use of the language (as mentioned earlier). Second, there is now abundant evidence from psycholinguistic research suggesting that bilinguals are not able to selectively turn o? one of their languages during comprehension (Dijkstra, et. al. 2001; Dijkstra, et. al., 2000; Dijkstra, et. al., 1999; Dijkstra, et. al., 1998). It is believed that information embedded in the context at the sentence level can also guide lexical access in L1(and at times L2) of bilinguals

Lexical access out of context: Monolingual and bilingual studies

If lexis is presented to the readers in an out-of-context fashion, it can be expected that they will face ambiguity with regards to lexical selection. This ambiguity has been shown to take place at multiple lexical levels including semantic (e.g., bugs) and phonological (e.g., lead). What has aroused many studies in this field has been the dexterity of many skilled readers, who irrespective of the extent pf lexical ambiguity, can quickly prompt to process words such as homonyms and homo graphs and integrate them into the text being read. This issue has been a source of interest for many researchers to see how multiple meanings of words are represented, activated, and ultimately selected. Other studies have also investigated the processing of ambiguous words out of context, for instance, in a lexical decision task. The obtained results showed that recognition performance for homonyms are facilitated relative to unambiguous words (Pexman & Lupker, 1999; Rodd, et. al. , 2002). Rod et. al., for instance, suggest that the multiple representations of homonyms are activated in parallel. They maintain that lexical access, at least in isolated word recognition tasks, involves the initial activation of numerous lexical competitors within the lexicon.

Lexical access in sentence context: Monolingual and bilingual studies

In every day communication, words are most often encountered in a meaningful context and not in isolation. The question can therefore be whether the presence of a meaningful context constrains cross-language activation? Putting it another way, can information activated top-down from semantics in?uence the bottom-up processes of lexical access? In the monolingual domain, it has been contended that context aids in the interpretation of ambiguous words.

However, what is still debated is the point at which selection of the appropriate meaning takes place and how early in the process of lexical access context can exert its effect. According to context-dependent accounts, the conceptual representations of sentences that readers build have an early influence on lexical access. Thus, language processing is seen as being highly interactive, such that lexical knowledge, world knowledge, and the semantic and syntactic information provided by a sentence interact with the bottom-up processes that drive lexical access. This account is based on the ending that words are processed faster when they are embedded in a congruent sentence context than a neutral or incongruent context (e.g., Simpson et al., 1989; Stanovich & West, 1979).

This study was directed toward finding answer to two questions. First, to investigate the lexical access and the amount of word recognition with regard to the proficiency level of the subjects, and second, to probe the role of context in accessing lexical items with consideration of the differences between the two languages (L1 and L2).

2. Method

Participants

Participants of this study were ten learners of English (as their L2) whose L1 was Persian. The gender variable was controlled for in the study (all subjects were male), and the subjects' ages ranged 17-29. They were at different levels of proficiency in English (five were Elementary and five at the advanced level), who were under education for their foreign language (English) by the

time the experiment was conducted. The participants were rewarded for participation in the experiment by giving 3 extra hours of instruction on their listening comprehension.

Materials

Two similar texts, one in the L1 of the participants (Farsi) and one in their L2 (English) was used in the study. The texts were similar in meaning and its lexical items met the following criteria: They were between five to eight letters long each; the first and last letter was left in its place and the in-between letters were randomized. Only content words were used (i.e., nouns, verbs, adjectives, and adverbs); they were monosyllabic; and each word had only one possible spelling and one pronunciation.

To make sure all the lexical items would be known by the participants, the unjumbled text was given to two other students in each level to indicate the unfamiliar words. Words that were indicated as unknown were excluded from the text, and were replaced with their synonyms. Also, two lists of lexical items (which met the above-mentioned criteria) one in Persian and one in English each consisting of ten words were given to the participants for recitation. (See Appendix)

Design and Procedure

Participants were presented with the two texts and the words (in the L1 and L2 of subjects) and were asked to read them aloud, while their responses were recorded. Participants were instructed to respond quickly and accurately and to guess if they did not know a word's pronunciation. Reaction time (RT) was recorded in seconds from the onset of stimulus presentation to the end of articulation. Participants were given 3-5 practice trials prior to the experiment.

4. Results of the Experiment

Analyses of variance were performed on naming latencies and mean percent error scores. Mean naming latencies (in seconds) and percent error rates for naming the lexical items in English (L1) and Persian (L2) were also calculated.

Latency data

A two-way ANOVA was performed to determine whether and to what degree overall effect of language and proficiency level could be detected on lexical recognition time duration. There was significant effect of language, F1 (1, 8) = 17.63, $p < 0.05$, MSE=12597.28; F2 (l, 8) =328.01, $p < 0.05$, MSE=0.401.29, reflecting longer naming latencies in L2 than L1. This main effect was qualified by an interaction with level of proficiency in the subject analysis, F3 (1, 8) = 485.32, $p < 0.05$, MSE=0.386.6. Paired t-tests performed with a Bonferroni correction showed that elementary learners named slower than advanced peers in L2, t (l, 1) = - 6.10, $p < 0.05$, while this difference in latency was not observed in L1, t (1, 1) = 0.17, $p < 0.05$.

Also, a three-way (language type [L1 or L2], proficiency level, phonological similarity) ANOVA was performed on the mean naming latencies and percent error rates.

In the analysis of naming latencies, the main effect of the proficiency level of the subjects turned out as the most significant factor, F1(2, 17) = 16.35, $p < 0.05$, MSE = 22399.95; F2(2, 43) = 43.71, $p < 0.05$, MSE = 3370.15 indicating longer latencies for the advanced participants who were reciting in L1 (Persian) relative to that of elementary learners. Another central research question addressed in the present study was the significant interaction between the proficiency level of the subjects and phonological similarity of the lexical items. The ANOVA results indicated that, as mentioned earlier, advanced learners were slower in their L1. Probably naming latencies were delayed when a highly similar phonological representation in the L1 mapped on to two, or more distinct phonological representations in L2, lengthening the lexical activation. Other studies with a similar finding have considered it as an evidence for feed-forward activation from orthography to phonology across the subjects' two languages.

Error data

A two-way ANOVA (language, proficiency) revealed a main effect of language, reflecting increased error rates in L2 relative to L1. F1 (l, 8) = 10.55, $p < 0.05$, MSE = 4.6. There was no significant effect of proficiency observed on error rates for the subjects' L1. F2 (1, 12) = 3.10, $p < 0.05$, MSE = 55.5

5. Discussion and conclusion

Results of the present study imply that the degree to which lexical items become activated across languages highly depends on the proficiency level as well as the phonological distance (feed-forward or –backward ness) of lexical items. This differential effect of phonological distance on word recognition has also been reported in previous studies, which demonstrated that under some circumstances language-specific phonologic (orthographic) distance cues can be indicative of word recognition timing (Vaid, et. al., 2002, Thomas & Allport, 2000).

As in the present study, Gottlob et al. (1999) found that words that mapped on to two phonological representations for the readers' L2 (e.g., lead) were delayed in a naming task. They explained this effect of phonological ambiguity within a 'resonance approach' to lexical access. According to this view, word recognition occurs through resonance, which is achieved when feed forward and -backward activation between orthographic, phonological, and semantics codes is mutually reinforcing. Thus, lexical processing will be delayed whenever there is a mismatch between the codes.

In a similar vein Kroll et. al. (2002) and Schwarts et. al. (2005) found close results with the present study. In those studies the researchers also observed difference in lexical representations across the languages of their subjects with regard to their L2 proficiency level. Kroll et. al., for instance, conclude that lexical representations in the L2, even for relatively proficient bilinguals, are weaker than those in the LI, lengthening the time in which information becomes activated and increasing the likelihood that competitive dynamics will influence processing

Another objective of the present study was to examine the nature of bilingual lexical activation in sentence context. More speci?cally, it was hoped to determine whether the presence of a sentence context would modify cross-language, non-selective activation. Overall the ?ndings demonstrated that the mere presence of a sentence context, and the language cues it might provide, were not su?cient to constrain non-selectivity since e?ects of cross-language activation persisted in low-constraint sentences. Instead, e?ects of non-selectivity were decreased only when the sentences provided rich semantic information. This can be an indication that the top-down processes of sentence comprehension can interact directly with the bottom-up processes of lexical access and reduce the number of lexical entries that compete for selection.

Although findings of the present study are indicative of interactions between the top-down processes of sentence comprehension and the bottom-up processes of lexical access, it could not definitively be concluded that actual selective access had taken place.

During L1 lexical recognition for advanced learners an interfering context effect was obtained. This effect was absent in bare noun naming. The question therefore can be what caused the interference effect in word naming within a textual constraint? One claim can be that in bare noun naming, phonological codes can be directly accessed from the orthographic input codes, as the task does not require lexical-semantic retrieval of other words. In the framework proposed by Levelt et al. (1999), an accessed lemma (i.e. abstract lexical representations) spreads activation to the corresponding lexical concept, which co-activates related concepts and their lemmas. This, in turn, will lead to competition among semantically related lemmas, which can be a cause of the observed interference effect in this study.

The semantic interference effect observed in this study is also compatible with findings reported by Vitkovitch and Humphreys (1991) that demonstrated increased error rates in picture naming when targets were preceded by items from the same semantic category. The authors claim that most probably lexical competition has been at the root of that effect there, too.

In future research it will be critical to understand whether and how these interactions are constrained by contextual support in situations that may better reflect the real-life language experience of bilinguals.

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Appendix: Materials of the study

English Text

Aoccdrnig to rscheearch at Cmabrigde Uinervtisy, it deosn't mttaer in waht oredr the ltteers in a wrod are, the olny iprmoetnat tihng is taht the frist and lsat ltteer be at the rghit pclae. The rset can be a total mses and you can sitll raed it wouthit porbelm. Tihs is bcuseae the huamn mind deos not raed ervey lteter by istlef, but the wrod as a wlohe. Amzanig huh?

متن فارسی

برپایه تقحیقات داشنگاه کمیربج ، مهم نسیت حروف واژگان به چه تربیتی چنیش شده اند ، بلکه تهنا درست بودن حرف اول و آخر اهیمت دارد. بقیه متیواند کاملا در هم رتخیه باشد ولی شما قادر به خواندن باشید بی هیچ ملشکی. این به این دلیل است که مغز انسان هر حرف را به تهنایی نمی خاوند بکله هر واژه را به صورت کلی درک مکنید. جالب بود، مگر نه؟

English Words	**لغات فارسی**
Agnry	آماشیدنی
Dreive	ترلیی
Cenvoy	التکریسته
Nitoce	مبانع
Batceria	باتکری
Stertch	کتنور
Frezeer	وادلین
Radaiotr	مباسقه
Borad	موجدوات
Chnace	اتنخاب

Neobehaviorism and Second Language Acquisition

Laleh Fakhraee Faruji
Department of Humanities, Shahr-e-Qods Branch, Islamic Azad University, Tehran, Iran
fakhraeelaleh@yahoo.com

Abstract

Behaviorism dominated the field of SLA until the end of the 1960s and found its most visible application in contrastive analysis and the audiolingual method (Johnson, 2004, p. 10). In this tradition, the focus was on the learner's external environment. By now it is consensus that a mature psychology will contain a level of intermediate theory which bridges the divide between physiology and behavior, but there is disagreement over the best way to do that (Reisman, 2003). Now behaviorism is like a cube of sugar dissolved in tea; it has no major, distinct existence but it is everywhere (Harzem, 2004).

Keywords: Bloom's taxonomy, Behaviorism, Neo-behaviorism, Competition model

1. Behaviorism

Three general principles of language learning have been identified in this framework (Dakin, 1973, as cited in Ellis, 1994, p. 299). The law of exercise which indicates that language learning is promoted if the learner repeats the responses to the stimuli. Here, practice plays a fundamental role. The law of effect which places importance on reinforcing the correct or native like response and on correcting the non-native like responses. Here reinforcement, such as approval of correct responses strengthen the association and is necessary to learning. These two principles had been proposed by Thorndike, as cited in Ellis, 1994, p. 299). And, the principle of shaping which mentions that learning will be rapid and smooth if the complex behaviors are broken into smaller units and are learnt bit by bit.

Jordan, Carlile, & Stack (2008, p. 32) explained some criticisms of behaviorism. They believed that it can be considered anti-humanistic in its refusal to acknowledge human freedom and choice. Behaviorism gives insufficient weight to contextual factors such as the social, economic and political conditions and forces that promote or constrain action. It also fails to consider other determinants in learning, such as inherited intelligence and personality.

In higher level learning, behaviorist techniques may not be effective in promoting deep learning, which is related to personal understanding and meaning-making. In adult, further, and higher education, it is also difficult to apply behaviorist principles, because they often fail to take account of creative processes and of incidental, unexpected and self-initiated learning. In general, behaviorism is often seen as anti-intellectual (Jordan, Carlile, & Stack, 2008, p. 33).

They concluded that behaviorism is not totally antagonistic to other theories of learning; rather, it can co-exist with later learning theories that focus on cognition or the social acquisition of meaning. It may serve as a foundational element on the basis of which more complex cognitive processes are developed.

2. New behaviorism

By the mid-twentieth century, there was a growing recognition that conditioning involves a cognitive element. **Neo-behaviorists** acknowledge that operant and classical conditioning together do not completely determine behaviors. For example, the American psychologist Tolman (1948) demonstrated that rats could go beyond simple stimulus–response behavior and could learn, remember and use facts about a maze. The new-behaviorist, Clark Hull (1943, 1951, 1952, as cited in Ormord, 2008), was the first behaviorist who recognized the importance of learner's internal characteristics such as motivation.

Hull's plan for an S –R behaviorism was very ambitious. It aspired to conceptualize the bases for adaptive behavior in a broad sense, including certain cognitive processes and the

performance differences between species and individuals (Rashotte & Amse, 1999, p. 126). He believed that learning was insufficient for behavior and therefore we need to have motivation.
Hull proposed that a number of other factors (intervening variables) unique to each organism and each occasion must be considered in order to predict the likelihood and strength of a response's occurrence (as cited in Ormord, 2008). Thus, Hull's ideas comprised an S-O-R theory, rather than an S-R theory, of learning. According to Ormord (2008), Hull described the following intervening variables which are critical for a response to occur.

Habit strength: The degree to which a particular stimulus and a particular response are associated. The more often a response has previously been rewarded in the presence of the stimulus, the greater is the habit strength and the more likely the response is to occur.

- Organism's drive: An internal state of arousal that motivates its behavior. To illustrate, one might become "driven" by a need for approval if approval has previously been associated with a candy bar.
- Stimulus intensity: An intense stimulus bringing about a stronger response than a weak stimulus.
- Incentive: The amount and immediacy of reward

All of the above factors work together to increase the likelihood and relative strength of a particular response. At the same time, inhibitory factors (e.g., fatigue) decrease the likelihood and strength of the response.

Recent models of language learning, like connectionism and competition models with reinforcement learning algorithms, inspired by one of the fundamental law of behaviorism; association between input and response are now having their advocates (Keramati, 2008).

3. Connectionism and new behaviorism

Connectionism is a cognitive framework for explaining learning processes, which began in the 1980s and became increasingly influential. It assumes that SLA results from increasing strength of associations between stimuli and responses (Savile Torike, 2006, p. 186).

"As learners are exposed to repeated patters of units in input, they extract regularities in the pattern; probabilistic associations are formed and strengthened" (Savile Torike, 2006, p. 80). So, for them the notion of innateness is not seen as an innate capacity to learn the abstract rules of language. In connectionism, knowledge is assumed to be distributed between neural connections and learning consists of reinforcing certain types of connection. Mental patterns can be represented by neural assemblies (that is, groups of neurons that are close together or particularly well connected) (Mistri, 2002).

The claim that learning is not innate nor rule based is supported by computer simulations. In learning irregular verbs, it is known that children go through three phases: first they produce the correct form of irregular verb, i.e. went. In the second phase, they over-generalize the regular past tense ending to irregular verbs, i.e., goed, known as U-shape curve of learning for irregular verbs, and in the third phase, they produce irregular form correctly (Keramati, 2008). Pinker (1991) argued that irregular verbs are retrieved from an associative memory, like what connectionists have described, but regular verbs are produced by learners as a result of suffixation rule.

Kaplan et al. (1990) explaining the criticisms of the connectionist models argued that: first, connectionist models are fundamentally behaviorist in nature (and, therefore, non-cognitive), and second that connectionist models are fundamentally associationist in nature (and, therefore, cognitively weak). The critical difference between the two, however, lies in the respective building blocks of association. The only associations that behaviorists considered were those between observable entities, that is between stimuli and responses. The associationists, on the other hand, were concerned with the association of "ideas". In spite of the fact that "idea" was a rather nebulous construct by modern standards, it clearly referred to an internal, mental entity. So, while behaviorism denied the existence (or at least the usefulness) of cognitive processes, associationism was a cognitive theory.

According to Kaplan et al. (1990) modern connectionists are proposing an alternate way of modelling cognition; they certainly do not deny the existence of cognition or the validity of studying it. However, the possibility remains that the connectionist models themselves have unavoidable behaviorist implications which their proponents did not intend.

4. Competition model and new behaviorism

Competition model (Bates and MacWhinney 1981; MacWhinny 2001, as cited in Savile Torike, 2006, p. 87) of language learning offers a theory of performance in contrast with Chomsky's theory of competence. This approach considers that learning the system of form–function mapping is basic for L1 acquisition. SLA involves adjusting the internalized system of mapping that exists in the learner's L1 to one that is appropriate for the target language.

Besides, they claim that language learning is nonmodular and is not domain specific (Jordan, 2004). Relevant to the discussion in this paper is two of the theoretical commitments (Keramati, 2008). The first one is the connectionist model which competition model uses to model the interaction between lexical mappings. There, they reject nativist view and argue that brain relies on a type of computation that emphasizes patterns of connectivity and activation. The second one is that of input- driven learning. According to this commitment, learning is explained in terms of input rather than innate principles and parameter. Cue validity is the key construct in this explanation.

The basic claims of competition model is that cues such as stress, intonation, rhythm, morphological marking, and word order are available in input and language processing involves competition among these cues. Different types of cues interact dynamically every time children or adults hear a sentence. Word order or first position of nouns is very strong cue for English speakers (Savile Torike, 2006, p. 87). However, strong cue in one language might be weak cue in another. Transfer of L1 cues strengthen to L2 is something which is likely at early stages of SLA when the systems differ.

5. Educational implications of new behaviorism

Neo-behaviorists recognized the importance of learners' internal characteristics, such as personality, motivation and habit. Whereas classical behaviorism focused only on the external manipulation of the organism, the development of cognitive science led to a stronger awareness of the importance of internal as well as external behaviors (Jordan, Carlile, & Stack, 2008, p. 25).

Skinner (1953, as cited in Jordan, Carlile, & Stack, 2008, p. 26) talks about students developing self-control and self-monitoring programmes, where they identify their own reinforcers and apply behaviorist principles to themselves. For example, a student might identify tendencies towards lateness, monitor performance, decide which stimuli are effective, set goals, and consider reinforcers.

In the 1950s, the neo-behaviorist Benjamin Bloom attempted to develop a model that linked external and internal behaviors (Bloom and Krathwohl 1956, as cited in Jordan et al., 2008, p. 26). In his influential taxonomy of learning, he proposed three domains or spheres of learning; the cognitive, affective and psychomotor, which translate learning into overt observable behaviors. Each domain presents a set of behaviors, which are hierarchical according to complexity and sophistication.

The cognitive domain is the best-known and most educationally applicable of Bloom's domains and deals with the ways that internal knowledge may be revealed by external behavior. Behaviors progress from those demonstrating basic subject knowledge up to an ability to evaluate or judge the worth of knowledge. For example, learning a language moves from knowing simple vocabulary at the lowest level to the ability to evaluate literary texts at the highest level.

Bloom's taxonomies, particularly in the cognitive domain, have been used to guide curriculum planning; his concept of 'mastery learning' (1968 as cited in Jordan et al., 2008, p. 26) has been particularly influential. 'Mastery learning' involves the statement of educational objectives

and their translation into learner behaviors so as to generate criteria for assessment grades at various levels in the domain.

6. New behaviorism and language assessment

One of the applications of new behaviorism is in concerning the assessment. It is commonly held that effective assessment tasks should test the performance of behaviors stated in learning outcomes under the same conditions as those under which they were learnt (Jordan et al., 2008, p. 30). For example, if the learning outcome states that apprentice carpenters will be able to hang a door, the assessment should require them to hang a door rather than describe the technique in a written examination, which is what often happens.

Behaviorist principles may also be seen in the move towards criterion referenced assessment. The extent to which a learner has achieved stated learning outcomes is judged according to behavioral criteria specified in those outcomes. This replaces older concepts of norm-referenced assessment, which are based on rating learner performance in relation to average or 'normal' group performance. In norm-referenced assessment, the pattern of distribution around the norm means a certain portion of learners must be rated as performing at a below-average level (Jordan et al., 2008; Keramati, 2008, p. 31).

Behaviorist principles are useful as part of formative assessment, which is a kind of assessment designed to provide feedback for the learner and teacher, rather than to record or certify achievement. Formative assessment may be seen as a form of reinforcement, designed to motivate and encourage learners. To be effective, the reinforcement of desired behavior must be provided consistently and in a timely manner so that the correct response is reinforced. When it comes to assessment, therefore, learners should receive feedback as quickly as possible after the assessment task (Jordan et al., 2008; Keramati, 2008, p. 31).

7. Conclusions

The explicit linking of cognitive developments and behaviors helps teachers both to devise learning activities that allow learners to practice the behaviors, and to look for these behaviors when assessing learners' performance (Jordan et al., 2008, p. 27). Despite the fact that connectionists reject innateness in the sense that Chomsky uses, they differ from behaviorists in fundamental ways: they consider causal explanation and try to overcome all theoretical bias (Keramati, 2008). Behaviorism is no more considered merely as stimulus-response-reinforcement chains; rather it contains an element of cognition without which it will lose its real effectiveness in different areas of learning and assessment.

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Learners Test Performance and Gardner`s Multiple Inteligence Theory: Intercorrelation in a Bilingual Context

Bagher Azarmi
Sharif University of Technology, Iran
bager.azarmi@gmail.com

Ali Jahangard
Sharif University of Technology, Iran
jahangard@sharif.ir

Hossein Movassagh
Sharif University of Technology, Iran
hussein_movassagh@yahoo.com

Abstract

Although decisions and inferences made based on test scores depend both on the characteristics of test takers and testing environment, the former seems to have the most overriding importance. The present study which was conducted in a bilingual environment is in line with this assumption and is aimed at investigating intelligence as one of the test taker characteristics. First, it aimed at finding the possible correlation between any of the eight types of intelligences in Gardner`s MI theory and EAP test performance. Second, it intended to survey the intercorrelation among the eight types of intelligences themselves. To that end, 122 male bilingual EFL learners who were all sophomore university students were chosen as the participants of the study. They sat for the final EAP exam and filled the questionnaire on multiple intelligence. The test takers' scores on EAP exam were correlated with their multiple intelligences. The result did not demonstrate any statistically significant go-togetherness between EAP test performance and any types of intelligence; however, a significantly positive correlation was observed among the eight types of intelligences themselves showing that all types of intelligences are equally important and ought to be equally dealt with in EFL context.

Keywords: multiple intelligence; correlation; intercorrelation.

1. Introduction

Technically speaking, intelligence should not be considered as a unitary construct, since, according to the theories proposed, it is made up of different components with hierarchical organization. Intelligence is described as the combination of a general factor and several specific factors. All people can access the general factor to the same extent for all kinds of cognitive acts, while the strength of specific factors fluctuates from one act to another (DÖrnyei, 2005). In 1930s Thurstone made a distinction between seven chief cognitive abilities and listed them as verbal comprehension, word fluency, number facility, spatial visualization, associative memory, perceptual speed, and reasoning. After a while, Thurstone proposed seven primary cognitive abilities as: verbal comprehension, word fluency, number facility, spatial visualization, associative memory, perceptual speed, and reasoning (cited in DÖrnyei, 2005). Next, after different theories and models proposed for intelligence, Gardner (1983) introduced his prominent theory of multiple intelligences consisting of eight distinct intelligences.

1.1. Multiple intelligence

Gardner`s Multiple Intelligences was first developed as a reaction to the traditional conceptualizations of intelligence and later became a major contributor to educational practices and reforms. Gardner questioned the validity of traditional IQ tests in that he thought they would only tap the logic and language, however, the human brain has other equally important competencies. Therefore he defined intelligence as "a biopsychological potential to process information that can be

activated in a cultural setting to solve problems or create products that are of value in a culture" (1999: 34). Initially the theory consisted of seven distinct intelligences proposed as Linguistic, Mathematical-Logical, Visual-Spatial, Bodily-Kinesthetic, Musical, Interpersonal, and Intrapersonal (Gardner, 1999). Naturalistic intelligence was subsequently introduced by Gardner and was added to the previous seven intelligences, therefore made the total of eight distinct intelligences. In stating the rationale of his theory, Gardner (1991) posited that:

All human beings are capable of at least seven different ways of knowing the world -- ways that I have elsewhere labeled the seven human intelligences. According to this analysis, we are all able to know the world through language, logical-mathematical analysis, spatial representation, musical thinking, the use of the body to solve problems or to make things, an understanding of other individuals, and an understanding of ourselves. Where individuals differ is in the strength of these intelligences -- the so-called profile of intelligences -- and in the ways in which such intelligences are invoked and combined to carry out different tasks, solve diverse problems, and progress in various domains (p12).

The linguistic intelligence enables us to use the words effectively both in the oral and written form. In other words, this intelligence enables people to manipulate the structure, phonology, and the semantics of language to reach pragmatic results. Logical-mathematical intelligence is the capacity to use numbers efficiently. It arouses the sensitivity to logical patterns and relationships, statements and propositions, functions and other related abstractions, and thus demystifies the use of possesses such as categorization, inference, generalization, calculation and hypothesis testing. Spatial intelligence is the competence for recognizing the visual-spatial world accurately and applying transformation on that perception. This kind of intelligence is useful in appreciation of color, line, shape, form, space, and the relationship existing among them. Bodily-Kinesthetic Intelligence accounts for the use of the whole body to express ideas and meanings and also the use of hands to produce and transform things. Musical intelligence involves one's sensitivity to rhythm, pith and melody, duration etc. of a musical piece. It enables people to perceive, transform, discriminate and express musical forms. By musical intelligence, one can recognize the moods, interests, motivations and personalities of other people. Intrapersonal intelligence, on the other hand, accounts for recognizing one's own mood, behavior, motivation and interest; or simply put, having a precise picture oneself. Naturalistic intelligence, which was added later on by Gardner, enables us to recognize and categorize a variety of different kinds of environments. It involves the sensitivity to natural phenomena.

Armstrong (2009) proposed some key points regarding the MI theory. Armstrong claimed that all human beings have access to all types of intelligences. Given the appropriate incentive, reinforcement, support, and instruction, most people are capable of enhancing each of the intelligences to a satisfactory level of competency. All intelligences most often work together in an intricate way, that is, no intelligence exists alone and all intelligences interact with one another. Finally, Armstrong stated that "There are many ways to be intelligent within each category - there is no standard set of attributes that one must have to be considered intelligent in a specific area. Consequently, a person may not be able to read, yet be highly linguistic because he can tell a terrific story or has a large, oral vocabulary. Similarly, a person may be quite awkward on the playing field, yet possess superior bodily-kinesthetic intelligence when she weaves a carpet or creates an inlaid chess table. MI theory emphasizes the rich diversity of ways in which people show their gifts within intelligences as well as between intelligences" (p. 16). Gardner (1987) also draws attention to the overriding importance of recognizing and nurturing all of the human intelligences and the combination of those intelligences since it is held that they interact in an abstruse way.

1.2. English for academic purposes (EAP)

Language for specific purposes (LSP) is a movement toward serving the language needs of those who need to learn language so as to carry out particular tasks and roles with it. Therefore, the main purpose is acquiring content and real-world skills by means of a second language rather than

acquiring the language for its own sake. English for academic purposes (EAP) is a sub category of LSP that was coined by Tim Johns and appeared in the collection of papers edited by Cowie and Heaton for the first time (Jordan, 2002). EAP, currently, refers to any English language teaching course that has a study purpose. Hyland (2006) asserts that EAP is a very broad term that covers all areas of academic communicative practice from pre-tertiary, undergraduate, and postgraduate teaching and classroom interactions to research genres and administrative practice (such as course documents and doctoral oral defenses).

To investigate the relationship between multiple intelligences and EAP test performance, three research questions were posed:

1. Is there any significant correlation between any type of intelligences and EAP test performance?
2. Which one of the intelligence types in MI theory is most highly correlated with EAP test performance?
3. Is there any correlation among the eight types of intelligence in MI Theory?

Three null hypotheses were offered accordingly as follows:

1. There is no correlation between any type of intelligences and EAP test performance.
2. None of the intelligence types in MI theory is highly correlated with EAP test performance.
3. There is no relationship among the eight types of intelligences in MI theory.

2. Methodology

2.1. Participants

The current study involved 122 Iranian second-year university male students, majoring in Computer Sciences. They speak Turkish as their first language, Persian as their second language, and they were learning English as a foreign language. The classes were held once a week for 90 minutes and were compulsory for all students. The main activity in the classes was reading technical texts. The amount of participants' past exposure to English, both inside and outside the classroom was estimated by asking them about their backgrounds. They were asked about the past experiences of travelling to or studying in an English-speaking country, and the English classes they had taken so far. Results showed that none of the students had been abroad, and that they had studied English for about 6 years, mainly through reading-based formal education in the Iranian secondary and high schools.

2.2. Instruments

Two main instruments were applied in this study: An EAP test and the Multiple Intelligence Developmental Assessment Scale (MIDAS). In the final term exam, a test was given to the subjects in four sections: A, B, C, and D. In section 'A' they were asked to complete 6 sentences with the given words. In part 'B', which included 8 multiple choice items, they were required to select the correct option. In part C that involved 4 items, the correct forms of the words given in parentheses must be used for completing the sentences. In part D, they were asked to translate 2 short paragraphs into Persian.

MIDAS is a questionnaire recommended by Gardner and developed by Shearer (1996) for measuring multiple intelligences. The instrument takes 35 minutes to be completed and includes 119 likert-scale (from A to F, with E being the highest and F being `I do not know`) questions that cover eight areas of abilities, skills, interest, and activities. In this study, eight types of intelligence were surveyed and recently proposed 9th intelligence (Gardner, 1999), existential intelligence, was not included.

2.3. Procedure

At first EAP final test was given to the participants. After finishing the test, they were asked to read the questionnaire on multiple intelligences carefully and mark their desired options in a separate answer sheet. Also they were given some extra clarifications for a couple of the items to alleviate any ambiguity. The participants' results on the two tests were collected and analyzed

respectively.

3. Data analysis

Pearson product-moment correlation coefficient was calculated to investigate the relationship between EAP test performance and the multiple intelligences. A multiple correlation was run in order to explore the correlation between each of the multiple intelligences and EAP test performance on the one hand and the intercorrelation among the different types of intelligences.

4. Results and Discussion

The result of correlational analysis is shown in table 1:

Table 1. Intercorrelation among different types of intelligences and EAP test performance

	Intrapersonal	Interpersonal	Musical	Kinesthetic	Naturalistic	Linguistics	Math/Logic	Spatial
EAP test performance	.090	.098	.274	.172	-.003	.113	.065	-.079
Intrapersonal		**.460**	.310	.111	**.525***	**.514***	**.735****	.400
Interpersonal			**.634****	**.531***	**.565****	**.493***	.427	**.671****
Musical				**.665****	**.605****	.276	.290	.367
Kinesthetic					.332	.002	.080	.332
Naturalistic						.388	**.521***	**.621****
Linguist							**.615****	**.667****
Math/Logic								**.546***

The correlation coefficient for intrapersonal intelligence and EAP test performance was .090 which did not indicate any relationship between the two variables ($r(122) = 0.090$, $p<0.05$). Pearson's correlation coefficient also yielded a very trivial positive correlation between interpersonal intelligence and EAP test performance which was not statistically significant ($r(122) = 0.113$, $p<0.05$). There is a proportionately higher correlation between musical intelligence and EAP test performance, however, the result is not significant yet again ($r(122) = 24$, $p< .05$). A negative correlation was observed between EAP test performance and naturalistic and spatial intelligences. The correlation coefficients for EAP test performance and naturalistic and spatial intelligences are respectively -.003 and -.079. Mathematical-logical intelligence showed a negligible correlation with EAP test performance ($r(122) = .065$, $p< .05$). The kinesthetic and linguistic intelligence were roughly correlated to the same degree with EAP test performance. The Correlation coefficient was .172 for kinesthetic intelligence and .113 for linguistic intelligence.

The result of the correlation analysis between EAP test performance and multiple intelligences did not demonstrate any significant value for the correlation coefficient; therefore, the first null hypothesis stated as "There is no correlation between any type of intelligences and EAP test performance" is confirmed. None of the eight intelligences in the MI theory appeared to have a high significant correlation with EAP test performance. However, among the eight intelligences, musical intelligence relatively had the highest correlation with EAP test performance.

Although there was a very low and negligible correlation between EAP and the eight types of intelligences, a high significant intercorrelation was observed among the multiple intelligencers themselves; therefore, the third null hypothesis stated as "There is no relationship among the eight types of intelligences in MI theory" is rejected and the relationship among them is confirmed, which is in line with the findings by Visser, Ashton, and Vernon (2006) who also found a high intercorrelation among the eight intelligences.

5. Conclusion

Gardner (1987) held that through recognizing one's multiple intelligences, we will have a better opportunity for coping more appropriately with the many problems that are confronted in the world. Currie (2003) also maintains that in bringing the MI theory into effect in classrooms, it is

crucially important that teachers take into account the students' strength in order to make the process of learning more attainable. The present study was aimed at uncovering the relationship between EAP, which is an essential aspect of competence for postgraduate and university students and the eight types of intelligences as a highly critical theory in psychology and education proposed by Gardner. The results showed a lack of go-togetherness between the EAP test performance and the eight types of intelligences. This lack of correlation might be due to the small number of participants or that particular context in which the study was carried out. Another finding of the study was the existence of a significant positive correlation among the eight types of intelligences that support the idea that all different types of intelligences interact with one another in an intricate way, and that all human are equipped with all of these intelligences to some extent. However, this study was performed in a bilingual situation with a limited number of participants; other studies need to be conducted in different contexts with larger number of participants.

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A Review of the Language-Thought Debate: Multivariant Perspectives

Parviz Birjandi
Islamic Azad University (Science and Research Branch)
Faculty of Foreign Languages and Literature,
Hesarak, Tehran, Iran, Postal Code: 1477893855
P.O.Box 14515 – 755, Tel. +98 311-6692696
pbirjand@yahoo.com

Somayyeh Sabah
Islamic Azad University (Science and Research Branch)
Faculty of Foreign Languages and Literature,
Hesarak, Tehran, Iran, Postal Code: 1477893855
P.O.Box 14515 – 755, Tel. +98 311-6692696
somayyehsabah@yahoo.com

Abstract

In recent times, there has been a growing interest in analyzing the relationship between language and thought from a variety of points of view to explore whether language comes before thought or thought precedes language. Accordingly, the present paper attempts at mulling over the current debates on this issue, including Chomsky's (1975, 1983) Independent Theory, the Sapir-Whorf hypothesis (1956), Piaget's Cognitive Determinism (1952, as cited in, Chaput, 2001), Vygotsky's (1978, 1986) Theory of Interchanging Roles, O'brien and Opie's (2002) Radical Connectionism, and Slobin's (1987, 1991, 2003) Thinking for Speaking Hypothesis, which recently have received a great amount of attention, among other positions. Then the pedagogical implications of the Thinking for Speaking Hypothesis for Second Language Acquisition (SLA) are presented.

Keywords: Language and Thought, Mould and Cloak Theories, Independent Theory, Sapir-Whorf Hypothesis, Cognitive Determinism, Theory of Interchanging Roles, Connectionism, Radical Connectionism, and Thinking for Speaking Hypothesis.

1. Introduction

To be precise, Dewey (1910) holds that no words are more often on lips than ***thinking*** and ***thought.*** However, human beings' use of these words is so abundant and diverse that it is not unproblematic to define just what one means by them. As Gleitman and Papafragou (2005) put it, possessing a language is one of the fundamental characteristics, which is said to differentiate humans from other species. A lot of people share the intuition that they think in language; as a result, the lack of language would, in its own right, be the nonexistence of thought. The subsequent lines of debate are meant to provide an overview regarding different perspectives offered for the language-thought debate.

2. Review of literature

To put it in plain words, Chandler (1994) proffers the debate that of enormous significance is the exact nature of the bond between language and thought. In the realm of linguistic theory, the majority of theories can be categorized amid two general and binary contrasting types at the opposite ends of the continuum. Bruner, Goodnow, and Austin (1956, as cited in, Chandler, 1994) muse that they are in the main classified as mould theories and cloak theories. Mould theories, such as the Sapir-Whorf theory, take for granted that language is a mould in terms of which categories of thought are cast whereas cloak theories adopted by the extreme universalism presume that language is a cloak or the dress of thought meeting the requirements of the customary thought categories of its speakers, namely the same thought can be expressed in various ways. Universalists discuss that one can say whatever one desires to say in any languages, and that whatever one articulates in one language can always be translated into another. Chandler (1994) also argues that, additionally, there

exists a related view held by, say, Behaviorists, to mention among others, on the basis of which language and thought are deemed as identical. In line with this stance, thinking is regarded to be wholly and entirely linguistic; that is to say, there is no non-verbal thought, and no translation from thought to language takes place. Putting it this way, thought is viewed as absolutely determined by language. What follows is meant to explicate these binary categories together with other theories that fall in between them.

2.1. Sapir-Whorf hypothesis

According to Whorf (1956), the starting point of all research concerning language and social representations is Saussure's idea that the language system segments the reality into conceptual chunks, thereby imposing categories by which people perceive and understand the world. In this view, two different languages are regarded to structure reality in different ways. These segments have been taken a step forward by Whorf through his studies of Amerindian languages, which demonstrate how worldviews emerge as the aggregation of conceptualizations tied to specific linguistic forms. The basic principles of the Sapir-Whorf hypothesis can be summarized in the following quotation by Whorf (1956, p. 214):

> … No individual is free to describe nature with absolute impartiality but is constrained to certain modes of interpretation even while he thinks himself most free. The person most nearly free in such respects would be a linguist familiar with very many widely different linguistic systems. As yet no linguist is in any such position. We are thus introduced to a new principle of relativity, which holds that all observers are not led by the same physical evidence to the same picture of the universe, unless their linguistic backgrounds are similar, or can in some way be calibrated.

As Carroll (1994) puts it, the view that language shapes thought has been first put forward by the American linguist Sapir and then taken by Whorf over one hundred years ago. However, it is most often associated with Whorf. He debates that the Whorfian hypothesis consists of two parts, i.e., the linguistic determinism and the linguistic relativity. He further remarks that the linguistic determinism refers to the notion that each language determines certain non-linguistic, cognitive processes. In other words, learning a language changes the way a person thinks. The linguistic relativity refers to the claim that the cognitive processes that are determined are different for different languages. Thus, speakers of different languages are said to think in different ways. From Carroll's perspective, there are several notions posed in this area of debate. One is that languages carve up reality in different ways. Another is that these language differences are covert or unconscious. To be more precise, it is asserted that people are not consciously aware of the way in which they classify objects. Third, these language differences influence their worldviews. Although Whorf provides many lexical and grammatical examples of how language may influence cognition, he does not present convincing evidence for his hypothesis. These are profound ideas which are not easily amendable to the experimental test. The status of the Whorfian hypothesis depends on how everyone takes it to mean. For instance, if the claim is that the presence of a language feature determines a specific mode of thought that cannot be attained in any other languages, then the hypothesis needs to be revised.

In the late 1960s and early 1970s, new scholarship on language universals and linguistic typology are said to undercut Whorfian hypothesis. Whorf's own best-known descriptive claims on language and thought are challenged by other field workers. By the early 1990s, scholars like Pinker (1994) can confidently claim that Whorfianism is "wrong, all wrong" (p. 57), "outlandish" (p. 63), and "bunk" (p. 65). However, at the very moment when Pinker must have been word-processing his entertaining caricature of the linguistic relativity, a neo-Whorfian revival is already under way. Stimulated partly by the careful rereadings of Whorf (Silverstein, 1979; Slobin, 1987, 1991, 2003; Lucy, 1992) and partly by the increased methodological precision made possible by new findings in universals and typology, scholars begin anew to undertake certain works that pose Whorfian questions or to advance Whorfian interpretations of their findings (Kay & Kempton,

1994). Neo-Whorfian scholarship seems to be more nuanced, probably more rigorous linguistically, and certainly less romantic and sweeping than the original.

Following this line of argument, Chandler (1994) holds that even as few linguists admit the Sapir-Whorf hypothesis in its strong, radical, extreme, or deterministic form, many currently agree to a weak, further modest, or limited Whorfianism, namely that the ways in which one observes the world may be influenced by the kind of language she or he makes use of. Moderate Whorfianism differs from extreme Whorfianism in these ways:

- The emphasis is placed on the potential for thinking to be affected rather than inevitably determined by language.
- It is regarded as a two-way process; therefore, the kind of language one brings into play is also impinged upon by the way she or he observes the world.
- Any impact is attributed not to language as such or to one language in relation to another; rather, it is assigned to the use within a language of one variety rather than another, say, typically the sociolects or the language used primarily by members of a particular social group.
- The emphasis is given to the social context of language use more willingly than to purely linguistic accounts, such as the social pressure in specific situations to utilize language in one way rather than another.

To Chandler (1994), a number of polemicists still prefer to make use of the notion of language as a strait-jacket or prison; however, there is a wide-ranging academic consensus having a preference for the moderate Whorfianism. Any linguistic influence is currently thought to be associated not primarily with the formal systemic structures of a language, or to draw on Saussurean (1974) terminology, langue, but to the cultural conventions and individual styles of use, i.e., or parole. In other words, meaning does not inhabit in a text; rather, it comes to pass in its interpretation, and interpretation is wrought by the sociocultural contexts.

Gleitman and Papafragou (2005) present the debate that Chomsky's Universalist position is quite a different position based on which language, while being the fundamental human conduit for thought in communication, memory, and planning, neither generates nor substantially disfigures the conceptual life; that is, thought is first, and language serves as its expression. This different view of causality leaves the connection between language and mind as strong as ever and just as relevant for making sense of the mental life. From Chomsky's standpoint, for example, the forms and contents of all natural languages originate, for the most part, from an antecedently predetermined cognitive substance and architecture, and, therefore, provide a rich diagnostic account of human conceptual commonalities. Accordingly, the linguistic relativity, in the sense of Whorf and numerous current commentators, is rather new and, in its strongest interpretations, revolutionary that stands in opposition to the independent theory. It is a proposal for how new thoughts can happen in the mind due to experience with language rather than in consequence of experience with the world of objects and events.

2.2 Chomsky's independent theory

Chomsky (1983) considers language as one aspect of cognition and takes account of its development as one aspect of the development of cognition. Chomsky holds that there exist a number of cognitive systems, which appear to possess distinct and specific properties. These systems lay the groundwork for certain cognitive capacities, and the language faculty is one of these cognitive systems. Chomsky, for example, makes reference to the capacity to organize the visual space, to deal with the abstract properties of the number system, to comprehend and appreciate certain kinds of musical creation, the ability to make sense of the social structures in which one plays a role, which definitely is a sign of the conceptual structures that have developed in the mind together with any number of other mental capacities. Chomsky's (1975, p. 4) viewpoint on thought and language is reflected in the following quotation:

> Language is a mirror of mind in a deep and significant sense. It is a product of human intelligence ... By studying the properties of natural languages, their structure, organization, and use, we may hope to learn something about human nature; something significant, if it is true that human cognitive capacity is the truly distinctive and most remarkable characteristic of the species.

Elaborating on the Chomskian Mentalist paradigm, Smith (1999) presents the debate that thinking is concerned with the utilization of either of language or of a system with enormous resemblance to language. In this respect, language is considered as the mirror of the mind. What is more, the pieces of evidence for the compartmentalization of the mind are said to be devastatingly linguistic. The knowledge of numerous dimensions of the mental structure, from the theory of mind to the moral judgment, from the recognition of visual illusions to the identification of faces, is picked up from the verbal output. It is not the case, however, that the language faculty is a model for the other compartments of mind. The vocabulary and principles of visual perception or of smell have nothing necessarily in common with those of language. That is to say, language is the mirror of the mind; it is not a model of the mind.

2.3 Piaget's cognitive determinism

The most influential cognitive Constructivist theory has been developed by Piaget (1952, as cited in, Chaput, 2001) that puts forward a mechanism by which infants integrate experience into progressively higher-level representations, which he calls Constructivism. According to Chaput (2001), Constructivism entails that infants progress from simple to sophisticated models of the world by means of a change mechanism that allocates the infant to build higher-level representations from lower-level ones.

Technically, Piaget's (1970, as cited in, Gabillon, 2007) theory holds that individuals construct their cognitive abilities and create their own sense of the world. This view opposes Nativist theories, which regard cognition as the innate knowledge and abilities, e.g., Chomsky and Krashen. The major theme in the theoretical framework of Piaget is that the individual acts accordingly to conceptual categories, namely schemata that are developed in the interaction with the environment.

Piaget (1970, as cited in, Gabillon, 2007) proposes that the individual's cognitive development comprises certain continuous efforts to adapt to the environment, and that the individual's schemata consisting of cognitive structures, cognitive rules, or scripts are constructed through the processes of adaptation. For Piaget, this process of adaptation encompasses assimilation, namely the interpretation of events in terms of existing cognitive structures and accommodation, i.e., changing the cognitive structure to understand the environment.

Ji-xian (2001) presents the debate that cognitive determinism is primarily represented in Piaget's ideas. In this sense, cognition is conceived as a kind of biological endowment. Biology and cognition intrinsically interact as the individual organism changes its behavior in response to its changing experiences and maturation. Thus, a person's language development is primarily determined by the development of her or his cognition. In other words, language is considered to be secondary to thought and thereby serves to express thought.

As Kozulin and Presseisen (1995) put it, despite its revolutionary innovations, the Piagetian Constructivism has left numerous questions unanswered in ways that are not entirely adequate. One may make a distinction between two major problems with the Piagetian cognitive approach. In the first place, the sociocultural remains largely beyond the scope of his theory. Second, the learning process proposed by Piaget appears as the direct interaction of the child with the environment. According to this perspective, the human mediators are practically excluded from the exchange.

2.4. Vygotsky's theory of interchanging roles

Analyzing the Vygotskian legacy regarding the cognitive development, Liu and Matthews (2005) muse that to Vygotsky, the relationship between the social and the individual in the

historical processes of the social and individual development is one of dialectical interaction and functional unification. In the first place, Vygotsky's perspective towards individuals in society entails that the mind is not seen as autonomous from the social and cultural group. The process of individual development may probably be summarized as the social, i.e., the internalization all the way through the sign mediation, restructuring the conceptual system, and the new understanding/consciousness. In this sense, individual's mastery and development must be anchored in both history and culture. What is more, the individual should be enabled to stand above the social collective because of the ability of the mind to generate personal understandings. Vygotsky's account of thought and language relationship, which is explicated below, seems to explicate his Social Constructivism.

From Vygotsky's (1978, 1986) perspective, before two years of age, both thought and speech develop differently and have separate functions. Vygotsky comes to the conclusion that both thought and speech have different genetic roots. Thought and word are not linked by a primary bond; rather, they develop autonomously, and there is no constant connection between them. However, in human beings there is a close union between them. Since the relationship between thought and speech is ever-changing, their progress does not run parallel. A pre-linguistic phase in the development of thought and a pre-intellectual phase in the development of speech can be observed. Then they melt and join at the age of two to initiate a new form. Thought turns out to be verbal, and speech happens to rational. Speech serves the intellect as thoughts are spoken. The social environment is significant to children's development as it can accelerate or decelerate development.

Vygotsky (1978) presents the argument that there are two separate roots to what he calls the intellectual speech by which he may be taken to mean speech that is recognizably based on the adult language. Both a phylogenetic analysis (development in the evolution of human species) of the behavior of anthropoids and an ontogenetic analysis (development over the life of an individual) of the behavior of human infants lead Vygotsky (1978, p. 112) to draw the subsequent conclusions:

- As we found in our analysis of the phylogenetic development of thinking and speech, we find that these two processes have different roots in ontogenesis.
- Just as we can identify a pre-speech stage in the development of the child's thinking, we can identify a pre-intellectual stage in the development of the child's speech.
- Up to a certain point, speech and thinking develop along different lines and independently of one another.
- At a certain point, the two lines cross, i.e., thinking becomes verbal and speech becomes intellectual.

Vygotsky (1986) formulates the stages of cognitive development in terms of the transitions from three phases, namely social speech addressed to another person; egocentric speech, private speech, or self-directed speech; and inner speech. To him, private speech is the crucial bridge between the social (inter-psychological) world and the intrapsychological plane. Gradually, the child turns the social speech toward the self. Private speech is seen as a transition between the child's learning language in a social communicative context and attempting to internalize it the later inner speech, i.e., thoughts or silent, conscious dialogues that one carries on with oneself while thinking or acting. There is a quote by Vygotsky (1986, p. 249) that says:

> Inner speech is not the interior aspect of external speech—it is a function in itself. It still remains speech, i.e. thought connected with words. But while in external speech thought is embodied in words, in inner speech words die as they bring forth thought. Inner speech is to a large extent thinking in pure meanings.

What is attention-grabbing in Vygotsky's (1978) account of cognitive development is that he considers affective tools as psychological tools that are seen to be of social rather than organic or individual origin. Vygotsky argues that since the auxiliary stimulus possesses the precise function of the reverse action, it transports the psychological operation to the higher-level mental and

qualitatively novel forms and authorizes the human beings to regulate and control their behavior from the outside by means of the extrinsic stimuli. Vygotsky's dialogic notion that learning is first and foremost a situated, inter-psychological phenomenon suggests that one needs to go beyond a predominantly cognitive theory of learning in general. Exploring the dialectical relationship between thought, affect, language, and consciousness, Vygotsky (1987, p. 282) postulates that:

> [Thought] is not born of other thoughts. Thought has its origins in the motivating sphere of consciousness, a sphere that includes our inclinations and needs, our interests and impulses, and our affect and emotions. The affective and volitional tendency stands behind thought. Only here do we find the answer to the final "why" in the analysis of thinking.

2.4.1 Piaget and Vygotsky on egocentric speech: Decontextualization and functional differentiation

According to Hickman (1985), the notion of egocentricity has recurrently been called upon to give an explanation for exceedingly miscellaneous phenomena, not only in child language but also in other non-verbal behaviors observed in children. It has been employed in various ways, often in conjunction with the notion that young children do not take into account others' perspectives, but not always with a precise description of what the phenomenon might be.

Hickman (1985) argues that within the Piagetian paradigm, where the term as it is currently utilized has originated, the child's egocentricity is a common phenomenon, stemming from her or his lack of decentering; and it typifies a good number of her or his behaviors, which are not adapted to specific contexts of situations. With regard to the process of language acquisition particularly, the general progression postulated within this model to take account of the egocentric speech is that children's language, possessing private characteristics, is initially not adapted to social communicative situations. It becomes socialized at a later phase in development as decentering in the child's cognitive organization permits her or him to engage genuinely in social interactions. In his early writings on child language, based on observations of spontaneous conversations, Piaget (1923, as cited in, Hickman, 1985) gives a picture of the private, comparatively asocial nature of the early speech in terms of the child's inclination to talk about what she or he is doing, without any concern for being understood or even heard by others. It is as if she or he cannot stop her/himself from commenting on her or his actions vociferously, and her or his speech does not appear to enclose a real function.

In contrast, as Hickman (1985) says, Vygotsky construes the egocentric speech in terms of a different progression, according to which speech is, first and foremost, and from the very beginning, social quintessentially; however, it is at the outset undifferentiated in line with a functional viewpoint. That is to say, speech in the beginning merely accompanies ongoing actions and perceptions in the context of utterance, also serving as a means of social contact with others. At a later point, when speech has been differentiated, it forms a system which is multifunctional for the adult. Once it is utilized externally, it possesses a distinct communicative and social function. When it is drawn on internally, it mediates higher-level mental functions, say, in problem-solving situations wherein no addressee is present. For Vygotsky, the egocentric speech is a transitional phase between the initial undifferentiated point and the later differentiated one. The child's deployment of speech at this point mirrors her or his discovery of a novel function of speech, namely an organizing function that is at the service of regulating her or his non-verbal activities. These uses of speech do not yet have a distinct social communicative function for the child, i.e., they are not distinctly addressed to others.

From an empirical standpoint, as Hickman (1985) puts it, though little is known concerning the egocentric speech, certain empirical findings pursue predictions that can be inferred from Vygotsky's interpretation. For example, children's use of more egocentric speech in the company of others than alone, and the point that they bring into play more egocentric speech as they are engaged in a somewhat difficult task than when the task is simple may provide pieces of evidence that argue for Vygotsky's analysis. Additionally, empirical studies of adult-child interactions in

problem-solving situations have recommended that there is a remarkable formal resemblance between adults' regulative (verbal and nonverbal) actions that draw children's attention to pertinent dimensions of the problem and certain children's self-regulatory actions during the task. Within a Vygotskian perspective, these formal resemblances supply preliminary evidence for the mechanisms postulated for development, suggesting similarity between adults' speech to children and children's egocentric speech, i.e., children are drawing on the communicative patterns of interaction established in child-adult dyads to focus their own attention to relevant aspects of the situation and to keep up the social contact. Within this system, self-regulatory uses of speech have, at least in part, a social origin which cannot be ignored.

It is particularly interesting to consider this piece of evidence in the light of other results previously mentioned. It is significant that Keenan and Klein's (1975, as cited in, Hickman, 1985) conclusion is on the basis of evidence concerning chiefly the functions of speech in the nonlinguistic context. In this case, referent-introductions are typically deictic, e.g., nouns with or without determiners in predicative constructions and/or in successive repetitions. Such uses indicate that children are indeed concerned with directing the attention of their listener to an object which then becomes mutually shared. However, in situations wherein such deictic forms of introduction are not possible, either for the reason that no relevant objects are present or since their addressee cannot observe them, children must fall back tightly on the linguistic context, making use of the speech to generate the very context for speech, which is seemingly egocentric as primitive deictic uses cannot suffice for adequate referent-introductions. Hickman (1985) states that in these situations egocentricity and decentering can be defined, at least partly, in terms of the child's functional-pragmatic repertoire. When the child discovers new functions of the signs she or he deals with in the course of interacting with others, such a development in his repertoire allows him to rely strictly on a new, distinctly linguistic context.

2.5. Connectionism

According to Gasser (1990), in the past ten years the cognitive science has witnessed the rapid rise of interest in the Connectionist models, namely the theories of the mind based on the interaction of large numbers of simple neuron-like processing units. The Connectionist approach has already reshaped the way many cognitive scientists muse about mental representations and processing.

As Gasser (1990) puts it, Connectionism proffers a challenge to the traditional Symbolic models of cognition. Despite the powerful appeal of symbols, rules, and logic, the traditional view suffers from a very inhuman-like brittleness as the linguistic and conceptual entities are by and large assigned in an all-or-none fashion to categories, rules typically apply in a fixed order, and deviations from the expected patterns are not handled well, if at all. In Connectionist models, the brittleness is avoided because there are no discrete symbols and rules as such; the entities that a Connectionist system uses to characterize the world are fluid patterns of activation across portions of a network.

Technically, Gasser (1990) discusses that Connectionism puts the emphasis back on learning in the cognitive science. In Symbolic models it is often assumed that it is enough to characterize a particular point in the process of acquisition, a claim with which most Connectionists do not agree. On the contrary, they believe that it is how the system progresses from one state to another that is mainly remarkable. Thus, Connectionists have developed a variety of new network learning algorithms to be studied and applied to particular problem domains.

According to Poersch (2005), Chomskian Mentalist paradigm places emphasis on the role of the mind in the cognitive processes. From such a Cartesian perspective, mind and brain are two realities of different substances. Mind is spiritual, and brain one is physical. The higher-order cognitive processes happen in the mind wherein the long-term memory is found. This paradigm assumes the existence of certain innate ideas and rules. Cognition is processed through the representation of the world in the mind through a serial processing of abstract and fixed symbols.

Poersch discusses that Connectionism is a cognitive paradigm rooted in the findings of neuroscience and not on explanatory hypotheses. All cognitive processes take place in the brain; the mind is nothing more than the grouping of these processes. The mind is not an ens in se; it is a phenomenon that actually occurs, it is an ens in altero.

2.5.1.Radical Connectionism

As O'brien and Opie (2002) put it, it is unquestionable that the cognitive dividing wall between human beings and other animals is closely associated with the human beings' capability to comprehend and produce natural languages; however, what this connection exactly comprises of is a controversial issue. It is a matter of debate whether the natural language lays the groundwork for this divide due to the ability to use a natural language that makes possible a form of thought and cognition which is not available to the infra-verbal animals, or it is only its consequence since such an ability is a result of the difference between cognition in human beings and other animals. O'brien and Opie argue that the Classical Computational Theory, which entails that cognition is the disciplined manipulation of symbols in an innate Language of Thought, decides on the second rejoinder. Based on this standpoint, all thought, regardless of where it happens in the animal world, is accomplished in a linguiform representational medium, and, therefore, the evolution of the natural language does not signify the development of a new form of cognition. Alternatively, that evolution is in its own right to be somehow explicated with respect to the amplifications of the core functional architecture of the human brain that account, for the most part, for the augmented cognitive capacities. Hence, from the classical perspective, the natural language is conceived of as a by-product of the representational medium of the human thought rather than being in part constitutive of it.

O'brien and Opie (2002) discuss that the viewpoint put forward by Connectionism, the currently trendy alternative to Classicism in cognitive science, is further intricate. Connectionist networks do not compute by means of manipulating symbols, and, thus, do not install a linguiform representational medium. Consequently, Connectionists can look upon the role of natural language in human cognition in two very different ways. The first way, called Ecumenical Connectionism, puts forwards that the evolution of natural language amounts to a new-fangled form of cognition as it allows connectionist networks to put into operation the classical-style computation. On this account, the cognitive divide between human beings and other animals is definitely a computational one. Even though much of the human cognition particularly perceptual cognition leads to a non-symbolic representational medium, rendering it continuous with cognition in other animals, the brains somehow bootstrap their way to genuine symbol-processing by means of the natural language, and are consequently computationally unique in certain respects. The second way, Radical Connectionism, discards this hybridization. It shares with Classicism the view that all of the human cognition, including the capacity to deploy a natural language, depends on the computational resources much like those that underpin the cognitive achievements of infra-verbal animals. Nonetheless, Radical Connectionism is different from Classicism given that it eliminates any functions for a linguiform representational medium. Not only do not human beings think in their natural language, but also they do not think in language whatsoever.

In view of the foregoing lines of argument, O'brien and Opie (2002) take on board the position entailed by the Radical Connectionism on the basis of which cognition in no way alludes to an internal symbolic system even when the natural language comes to play a role in the human beings' thought processes. Such a stance adheres to an analog formation of the neural computation for which the representation of the abstract thought is considered to be no longer problematic as compared with a symbolic system. Based on the Connectionist position, the natural language is said to function as a kind of catalyst for the abstract cognition. To be precise, it systematizes, regulates, and controls the computational activities of the cognitive modules across a brain. Vygotsky's impressive insight implicates that after children acquire a natural language as a tool at the service of communication and internalize it; that is to say, they appropriate it in terms of a cognitive tool. In this sense, the internalization of the natural language is a process through which a conventionally

ground set of communicative signals is put to work inside a brain. Nevertheless, Vygotsky together with a lot of other theorists including the Ecumenical Connectionists accept as true that this is a process wherein an external communicative scheme turns out to be an internalized representational medium, namely children learn to communicate with the natural language, and they subsequently learn to think in it. In accordance with the Radical Connectionism, it is taken for granted that although language plays a significant role in cognition, the part that the natural language plays internally resembles the role that it plays externally. In other words, one thinks with language not in language.

2.6.Thinking for speaking hypothesis

In research on narrative productions on expression of motion across languages, it has become obvious to Slobin (1979, p. 6, as cited in, Clark, 2009, p. 130) that "language evokes ideas; it does not represent them. Linguistic expression is thus not a straightforward map of consciousness or thought. It is a highly selective and conventionally schematic map." For Slobin (1987, p. 435), "we encounter the contents of the mind in a special way when they are being accessed for use." That is to say, there is a process of thinking for speaking wherein cognition plays a dynamic role within the framework of linguistic expression, a point formulated by Slobin (1987, p. 435) as follows:

The activity of thinking takes on a particular quality when it is employed in the activity of speaking. In the evanescent time frame of constructing utterances in discourse, one fits one's thoughts into available linguistic forms. A particular utterance is never a direct reflection of "objective" or perceived reality or of an inevitable and universal mental representation of a situation. This is evident within any given language, because the same situation can be described in different ways; and it is evident across languages, because each language provides a limited set of options for the grammatical encoding of characteristics of objects and events. "Thinking for speaking" involves picking those characteristics that (a) fit some conceptualization of the event, and (b) are readily encodable in the language.

In Slobin's (1991, p. 12) formulation, "the expression of experience in linguistic terms constitutes "thinking for speaking"-a special form of thought that is mobilized for communication." Slobin (1991) holds that apart from the impacts grammar may or may not have outside of the act of speaking, the kind of the mental activity that continues at the same time as formulating utterances is neither trivial nor obvious and appears to be worth pondering on. For him, one comes across the contents of the mind in a special way once they are being accessed for deployment. That is to say, the activity of thinking engages a specific quality when it is exploited in the course of the activity of speaking. In the transitory time frame of making utterances in discourse one incorporates one's thoughts into the accessible linguistic frames. Thinking for speaking is concerned with selecting those characteristics of objects and events that (a) are commensurate with some conceptualization of the event, and (b) are readily encodable in the language. Putting it this way, he puts forward the idea that that, during the process of the acquisition of a first or native language (L1), the child learns certain particular ways of thinking speaking.

Taking account of certain thought experiments, Slobin (2003) pinpoints that one can put forward the debate that it is slightly evident that a speaker or listener needs to deal with the semantic features that are encoded in the grammatical and lexical elements of a particular language with the purpose of learning and deploying that language. In view of this, Slobin suggests that further scrupulous demonstrations are possible, indicating pervasive "ripple effects" of habitual attention to linguistically-encoded event characteristics. Several criteria are required for the thinking-for-speaking research. Although Slobin makes use of the label thinking for speaking, the framework is meant to take account of every forms of linguistic production (e.g., speaking, writing, signing) and reception (e.g., listening, reading, viewing), as well as a variety of mental processes (e.g., understanding, imaging, remembering, etc.). Accordingly, there exist also instances of

thinking for translating, listening for understanding, reading for imaging, and so on and so forth. The thinking-for-speaking research possesses the subsequent features, including:

- a selection of languages along with a semantic domain that is encoded with some frequency in all of the languages;
- the semantic domain is encoded by particular grammatical constructions or obligatory lexical choices in no less than a number of the languages under comparison;
1. the domain is comparatively more codable in some of the languages to be compared; and
- a selection of discourse contexts of situations wherein the semantic domain is recurrently accessed.

Slobin's (2003) parade case of thinking for speaking is embodied in the encoding of motion events, which, as he puts it, presents a semantic domain that is significant in all languages and exhibits distinctive types of lexicalization patterns crosslinguistically. The essence of a motion event is the change of location, or, to draw on Talmy's terminology for referring to the matter, path. To Slobin (1997, p. 439), the term path is meant to refer to the translational motion, which enjoys its fullest expression in terms of moving from "a *source* to a *goal,* along or through some *medium,* passing one or more *milestones* — for example "He went from station [source], along the avenue [medium], and through the crowds [medium], past the monument [milestone], to his office [goal]." Following Talmy (1991, 2000, as cited in, Slobin, 2003), Slobin (2003) argues that languages are inclined to encode the path of motion in one of two ways, namely either in a verb (e.g., enter, exit, etc.) or in a connected particle or satellite (e.g., in, out, etc). A simple example is provided by English and French:

(1) a. The dog went **in**to the house.
b. Le chien est **entré** dans la maison.
The dog **entered** the house.

For Slobin (2003), English frames path by way of a satellite (in), whereas French frames path via a verb (entrer). English is called a satellite-framed language (S-language); French is known as a verb-framed language (V-language). Path is highly codable in both languages; nevertheless, the languages vary in terms of codability in connection with another aspect of motion events, i.e., the manner of motion:

(2) a. The dog **ran** into the house.
b. Le chien est entré dans la maison **en courant.**
The dog entered the house **by running.**

According to Slobin (2003), manner is greatly codable in English for the reason that it is accomplished by the main verb. Every clause requires a verb, and it is as easy to say go in as run in. English-speakers get manner for free, and make widespread communicative and cognitive use of this dimension. Conversely, in French manner is an adjunct; that is, an optional addition to a clause that is already complete. French-speakers point to manner when it is under debate; however, they otherwise do not refer to it. Consequently, they are less sensitive to this dimension in general.

Commenting on the thinking for speaking perspective towards language and thought, de Villiers and de Villiers (2003) maintain that this view takes for granted that the learning of language is the development of a cultural skill developed within the framework of social discourse and nurtured by others. Language is intricately intermingled with the meanings and concepts transmitted by it, and the emphasis is placed on learning-by-doing. On this account, the thought of a conceptual theory of mind before or without a particular language makes little sense. This position echoes the hot debates posed in the philosophy of science on the subject of the radical incommensurability of the theoretical paradigms (Kuhn, 1963; Scheffler, 1975, as cited in, de Villiers & de Villiers, 2003). That is to say, there is always a language, a series of categories, and a symbolic theory via which one comes to divide and understand the world, and spokespersons of different languages, similar to the owners of various scientific theories, cannot come across a neutral ground for the reason that there exists no such thing.

For Ekiert (2007), Slobin's research demonstrates how speakers of different languages are predisposed to tackle certain dimensions of experience owing to obligatory categories in grammar;

however, the hypothesis does not deal with the problem of the cognitive implications arising from the utilization of particular languages. His intention is the inspection of linguistic cognition, namely the process of thinking for speaking wherein cognition plays a dynamic role within the framework of the linguistic expression. Slobin has established that speakers need to think about language itself in order to speak. This thinking turns out to be systematized to a certain degree in the process of language acquisition and use, and shows a discrepancy crosslinguistically in keeping with specific grammars. Relevant to this line of argument is the debate posed by Stam (2010) that children learn grammatical constructions and lexicon that not only afford them with a framework at the service of the expression of thought, events, and feelings but also direct their expression when they participate in the on-line process of thinking for speaking.

2.6.1.The implications of thinking for speaking hypothesis for SLA

With regard to the implications of the thinking for speaking hypothesis for the process of Second Language Acquisition (SLA), Rivers (1983, as cited in, Ekiert, 2007) holds that the categories of thinking for speaking that have received much attention in research have been identified as interlingual conceptual contrasts, chief amongst which are Anderson's (1983, p. 182, as cited in, Alonso, 2002, p. 234) "transfer to somewhere" based on which the compatibility of L1 elements with the "natural acquisitional principles" and the L2 input to some extent amount to generalization from the L1and Kellerman's (1995, p. 137, as cited in, Alonso, 2002, p. 234) "transfer to nowhere" that states "there can be transfer which is not licensed by similarity to the L2 and where the way the L2 works may very largely go unheeded." In this respect, Alonso (2002) has recourse to Slobin's (1996, as cited in, Alonso, 2002) argument that language works as a filter, and, hence, it does not give form to thoughts. Putting it this way, Alonso argues that the differences between languages in terms of the way the learners express the conceptualization of experience can serve as a source of difficulty in the realm of SLA.

Thus, as Slobin (2003) puts it, the attempt en route for uncovering the thinking for speaking impacts of particular linguistic forms is hence part of a much larger framework of online communication, negotiation, and action. Nevertheless, what each and every one of these processes share is that they are processes; that is to say, they unfold in time and are shaped in use. Ekiert (2007) recommends that Slobin's thinking for speaking should be critically taken into account by the SLA research in order to document the processes that disclose within time and are wrought in terms of use.

3. Conclusion

To make a long story short, the debates over the relationship between thought and language is said to have raised a hot question which resonated, and still resonates, with significant contemporary controversial concerns. The relationship between language and thought is not generally posed in the hope that someone will come up with a definite answer. Reviewing the history of the language-thought debate, Gleitman and Papafragou (2005) argue that it appears to us that much argument concerning the bond between language and thought has been colored by an underlying incongruity and incommensurability regarding the nature of language itself. Many commentators, struck by the observed cross-linguistic diversity in semantic and syntactic categories, have taken account of this diversity in terms of a possible source of more profound cognitive discontinuities among speakers of different languages. However, other commentators observe this crosslinguistic diversity as much more restricted and superficial than the flourishing, bustling perplexity emerging from the tower of Babel.

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The Teacher-Student Communication Pattern: A Need to Follow?

Mohammad Hashamdar
Department of Translation Studies, Karaj Branch, Islamic Azad University- Karaj-Iran
Mohamad.hashamdar@kiau.ac.ir

Abstract

This study is intended to investigate the teacher-student communication patterns in an upper-intermediate English class. There are major questions in this study; (a) what the nature of interaction is in a foreign language classroom, (b) what the characteristics of teacher-student turn taking are, (c) what type of feedback is taken by the teacher, (d) how the teacher's competence and performance are. The participants of the study are female adult students and a female teacher majoring English literature at MA level that has had five years of teaching experience. Five partial sessions of the class are recorded, transcribed, and analyzed. According to the findings, the type of discourse is teacher-initiated one and the question type is both WH-questions and questions with auxiliaries. The way of student's reply is brief and limited to one teacher-student turn-taking. The type of interaction is based on the questions posed by the teacher and long interaction such as discussing, debating, and challenging could rarely be seen in the classroom in question. The type of feedback depending on the skill and tasks dealt with, ranging from recast to direct correction. The teacher's competence and performance are satisfactory with correct pronunciation and near native accent.

Keywords: adjacency pairs, discourse, feedback, interactional talk, transactional talk, turn-taking.

1. Introduction

Discourse analysis is the construing of language use by members of a speech community. It involves looking at both language form and functions and includes the study of both spoken interaction and written texts. It identifies linguistic features that characterize different styles as well as social and cultural factors that aid in our interpretation and understanding of different texts and types of talk. The discourse analysis of written texts may include a study of topic development and cohesion across the sentences, while an analysis of spoken language might focus on these aspects plus turn-taking practices, opening and closing sequences of social encounters, or narrative structure.

The study of discourse has developed in a variety of disciplines— sociolinguistics, anthropology, sociology, and social psychology. Thus discourse analysis takes different theoretical perspectives and analytic approaches: speech act theory, interactional sociolinguistics, ethnography of communication, pragmatics, conversation analysis, and variation analysis (Demo, 2001). Although each approach emphasizes different aspects of language use, they all view language as social interaction. It provides examples of how teachers can improve their teaching practices by investigating actual language use both in and out of the classroom, and how students can learn language through exposure to different types of discourse.

Demo (2001) believed that "even with the most communicative approaches, the second language classroom is limited in its ability to develop learners' communicative competence in the target language" (p. 1). It might be due to different reasons such as the restricted number of contact hours with the language, minimal opportunities or lack of opportunities for interacting with native speakers, and limited exposure to the variety of functions, genres, speech events, and discourse types that occur outside the classroom. Classroom research is one way for teachers to monitor both the quantity and quality of students' output. Nassaji and Wells (2001) believed that in the classroom, the dominant mode of interaction is not 'casual conversation', since most talk between teacher and students has a pedagogical purpose. In teacher-whole-class interaction, in particular, it is almost always teachers who initiate sequences.

Gillies and Boyle (2008) believed that cooperative learning classroom are the best type of class in which interaction an be seen and its success lies in helping students to see the value of the process, learning to develop authentic learning rather than repetition, and achieve quality outcomes.

Erton (2000) asserted that "every single utterance is valid and has a function in language in particular circumstances since it is produced for a purpose if considered in appropriate context. Thus, the importance for focusing on functional interpretation of language in context in a teaching situation is the focus on emphasis." (p. 210) Classroom can be considered the best place where the functional aspect of language is seen in the interaction between teacher and students. The discourse used in this interaction is of great importance too.

Bannink and Van Dam (2006) believed that "in some sense everything that happens between the bells that signal the beginning and the end of a lesson at school is 'the lesson'. Even if not part of a focused learning activity in the narrow sense of the term, whatever happens can at least be reported as having occurred during the lesson." (p. 285) Interruptions and embeddings create structural rather than sequential transition points in an ongoing discourse. Therefore, the discourse analysis is a challenge with its own complexity.

Cots (1996) assumed that "when we approach language as discourse is that communication cannot be explained as the simple transfer of preexisting meanings. Rather, a communicative event must be conceived as the locus where meanings are created through the negotiation of intentions and interpretations." (p. 81) Nunan (1993, cited in Cots, 1996) stated that 'verbal interaction is the result of the cooperative work of the speakers to make sure that their messages are being received in the way they were intended, and of the listeners to ensure that their interpretation coincides with the speakers' intentions.' (p. 82)

On the other hand, Morell (2007) studied the importance of lecture discourse in the classroom. He found out that lectures are more highly regarded if they allow for reciprocal discourse, especially for students of other languages who need help in understanding the content.

Bateson (1972, cited in Creider, 2009) introduced frames and stated that interactive frames are used by participants to understand what kind of interaction they are engaged in at any one time. Goffman (1981) showed, most interactions can be framed in a variety of ways. For instance, depending upon context, a question such as ―Do you have siblings? may be a request for information or a test of student ability in a new language. In either situation, participants understand the purpose of the question by understanding how the interaction itself is framed—in this case, as a conversation between acquaintances or as a student/teacher interchange (cited in Creider, 2009).

Demo (2001) proposed a four-part process of Record-View-Transcribe-Analyze by which second language teachers can use discourse analytic techniques to investigate the interaction patterns in their classrooms and to see how these patterns promote or hinder opportunities for learners to practice the target language. He believed that "this process allows language teachers to study their own teaching behavior—specifically, the frequency, distribution, and types of questions they use and their effect on students' responses." (p. 2)

2. Questioning

Long and Sato (1983, cited in Creider,2009) studied the kinds of questions found in a second language classroom, differentiating between *display* questions, where the teacher already knows the answer; and *referential* questions, which are more open-ended. Nunn (1999) suggested that 'the distinction between referential and display questions is not always appropriate in the classroom, and that in some contexts what would be called display questions can have important purposes, such as that of reconstructing textbook information.' (cited in Creider, 2009, p.94) However, the important notion here is that even questions that should be referential can be treated as display questions when teacher and students are working from an interactional frame that is more focused on language form than on content.

Another way of thinking about questions is in terms of the kinds of interactions they generate. The three-part *Initiation-Response-Feedback* (IRF) structure continues to be explored by

researchers and even by teachers. It was first described by Sinclair and Coulthard (1975) but it slightly changed by Mehan's (1979) discussion of *Initiation-Response-Evaluation* (IRE) sequences. In both cases, the teacher starts the interaction with a question, usually a display question. A student offers a brief response, and the teacher either provides feedback (IR*F*) or evaluates the student response (IR*E*). Some recent studies have explored how these two kinds of teacher-responses (evaluation and feedback) can affect teacher/student roles in the classroom. Thus, recent work on the IRE sequence in the second language classroom has explored the way that teacher discourse can affect teacher and student roles in the classroom.

McCarthy (1991) mentioned some forms and patterns of different types of talk and consider whether there are things that can be taught or practiced to assist language learning:

3. Adjacency pairs

The dependency of the pairs of utterances in talk is not unknown to language experts. There are many examples concerning this property of speech. One of them is that a question predicts an answer, and that an answer presupposes a question. Adjacency pairs are defined as pairs of utterances such as *greeting-greeting* and *apology-acceptance.* McCarthy (1991) stated that adjacency pairs are of different types; identical (*hello- hello),* and different second pair-part (*congratulations-thanks*).

4. Turn-taking

Turn-taking is one of the basic facts of conversation in which speakers and listeners change their roles in order to have a fruitful and normal interaction. The mechanism in turn-taking may vary between cultures and between languages. Kato (2000) stated that in ordinary conversation, it is very rare to see any allocation of turns in advance. Those involved in the interaction naturally take turns. Of course, there should be a set of rules that govern the turn-taking system, which is independent of various social contexts: (a) when the current speaker selects the next speaker, the next speaker has the right and, at the same time, is obliged to take the next turn; (b) if the current speaker does not select the next speaker, any one of the participants has the right to become the next speaker. This could be regarded as self-selection; and (c) if neither the current speaker nor any of the participants select the next speaker, the current speaker may resume his/her turn (cited in Kato, 2000).

5. Interactional and transactional talk

McCarthy (1991) defined transactional talk as " it is for getting business done n the world, i.e. in order to produce some change in the situation that pertains." (p. 136) It can be in the form of telling somebody something that they need to know, to get someone to do something, and many other forms. On the other hand, he elaborated on the functions of interactional talk "its primary functions are the lubrication of the social wheels, establishing roles and relationships with another person prior to transactional talk, confirming and consolidating relationships, and expressing solidarity." (p.136)

Dorr-Bremme (1990) found out that "when contextualization cues are enacted by a person who is recognized as the leader of the activity at hand, such as a classroom teacher, they can function as direct, immediate means of regulating the flow and content of discourse." (p. 398) The cues can serve to indicate who has the floor, what topics of talk are relevant to the official agenda now, and what ways of listening are appropriate at the moment. The cues can function in these ways even when they are unexplained, implicit, and subtle.

6. Feedback

There has been considerable interest in the relationship between types of corrective feedback and their efficacy. Lyster and Ranta (1997) investigated types of corrective feedback and their relationship to learner uptake in a primary French immersion classroom. The researchers classified feedback into six types: explicit correction, recasts, clarification requests, meta-linguistic feedback,

elicitation, and repetition. Lyster and Ranta also categorized learner uptake, a student utterance following the teacher's feedback, into two types: repair and need-repair, or in other words, successful and unsuccessful responses.

The results revealed that the most frequent type of feedback was the recast, the teacher's reformulation of all or part of a student's ill-formed utterance, without the error. The recast accounted for about half the total feedback, and led to the least uptake (31% of the time). In addition, the recast never led to student-generated repair; the learner merely repeated what the teacher had said. In contrast, elicitation and meta-linguistic feedback, providing the correct form explicitly by indicating that what the student said is incorrect and giving grammatical meta-language that refers to the nature of the error, were less frequent (14% and 8% of the time, respectively), and were found to be effective in that they encouraged learners to generate repair (45% and 46% of the time, respectively). Lyster and Ranta (1997) explained that the low rate of uptake following the recast was accounted for by the fact that the teachers also used repetition of well-formed utterances to confirm and develop students' statements. As a result, students had to figure out whether the teacher was concerned about form or meaning, and sometimes failed to recognize the recast as corrective feedback. Lyster and Ranta concluded that corrective feedback can lead to learner uptake when there is "negotiation of form, the provision of corrective feedback that encourages self-repair involving accuracy and precision" and when cues are given to make students aware of the necessity of repair of ill-formed utterances (p. 42).

7. Method

Participants

There were fifteen female language learners in this study. They have already passed intermediate levels and they were studying in an upper-intermediate level. Some have already had the class with this teacher and for others this is the first experience with this teacher. There was no stress or debilitative anxiety in the classroom. Therefore, students could freely utter their opinions and points of view.

Procedure

At the outset of this study, five partial sessions of upper intermediate English classrooms were recorded with an MP4 recorder. Next, the recordings were listened carefully and the desired notions were transcribed for further study. The transcript made it easier to identify the types of questions in the data and to focus on specific questions and student responses. Finally, the transcript was studied and analyzed based on the criteria made for this research.

The criteria were such as the actual classroom interaction, turn taking role in the classroom, teacher's pronunciation, the type of feedback presented by the teacher, and so on.

8. Data collection and analysis

Five sessions of the classroom interactions were taped using a digital MP4 recorder. Because the teacher moved around quite a bit, she was sometimes loud and sometimes quiet. The interactive part of the recorded tape was transcribed and analyzed based on the criteria leveled by the researcher such as turn-taking, feedback, performance and competence of the teacher.

9. Discussion

The researcher found very interesting notions after transcribing the desired sections of the recorded text. In the process of teacher questioning, student answering and what follows up, there seems to be a questioning cycle which usually starts with a question by the teacher and an answer by the student followed by the feedback by the teacher. Hicks (1995) and Wells (1993) proposed this triadic dialog and which is a form of teacher-student communication pattern in talking. In this study the same pattern was governing the atmosphere of the classroom.

Feedback in the classroom in question was seldom seen regarding the students mistakes. The mistakes in conversation or when the student was telling a story or giving her ideas were totally tolerated. The students received an appreciation for their participation in the classroom interaction.

Excerpt 1:

T: ok, have you ever heard any stories about animals helping people?
S: Yes.
T: could you tell us?
S: A snake that secure the person that, I think it was injury? Was injured and …….
T: good, anyone else?

As shown in the interaction between student and teacher, the cycle of a teacher question, a student reply, and teacher follow up is repeated here. The other important issue which can be inferred from this excerpt is that the teacher ignores the mistakes of the student and gives just a thankful utterance at the end of the story. However, this tolerance of mistakes is not seen when students want to learn the meaning of the new words from the book. They are immediately stopped and corrected by the teacher. The correction can be due to the pronunciation mistakes, meaning misinterpretation, and the appropriate function in which the word or expression is used. The following excerpt indicates this type of correction.

Excerpt 2:

T: Anything else?
S: Sheep out.
T: Sheep out or ship out.
S: Ship out.
T: if you say sheep it is an animal.
S: No ship out.

When students were asked to read the passage, the teacher listened to their pronunciation and corrected the mispronunciations of the students on the spot. Some students preferred to pronounce the difficult words or the words they could not enunciate it correctly in a questioning intonation. Then teacher pronounce the word and the student repeated the correct form.

Excerpt 3:

S: (reading a text) In September 1985 an earthquake devastated? (student checks the pronunciation with the teacher in a question)
T: devastated.

There was an issue in the discourse between the teacher and student which was very intriguing and attracted the attention of the researcher and that was motivation which was given by the teacher in every interaction between her and her students. Even if the response by the student was not satisfactory, she tended to thank for the risk the student has taken to answer the question.

Excerpt 4:

T: Any other stories?
S: Teacher, once there was a man that he had a very bad disease that any doctor couldn't help him……
T: Thank you very much.

Concerning the issue of adjacency pairs it could be seen that the teacher-student interaction was as proposed by McCarthy both identical and different pair-part. When teacher asked a question, the reply was direct to that question; therefore, it was identical. However, sometimes students could not provide a right answer for the teacher's question. Then the teacher thanked her and repeated her question for the other learner. In this instance of interaction and discourse different pair-part was followed by the teacher.

Excerpt 5:

T: Leila, What is meant by slang?
S: I think informal language, and.(student could not finish giving the definition of slang)
T: Anything else?

Throughout the recorded sessions of the class, the pronunciation and intonation of the teacher were carefully studied and the researcher could be convinced that it was at a satisfactory level of proficiency. This was very beneficial and useful for the students to consider it as a model of learning. As it is usually expressed by the scholars, the type of exposure to language plays an important role in language classrooms.

10. Conclusion

McCarthy (1991) said that "discourse analysis is *not* a method for teaching languages; it is a way of describing and understanding how language is used." (p.2) The study was intended to find out the extent to which a well-trained teacher considers the type of interaction and feedback needed for the classroom context. Tang (2008) claimed that even from the brief content analysis carried out on the teacher-students' discourse the trainee teachers *are* making connections between their instruction in text analysis and their lives as teachers and readers outside the classroom walls. Even from the brief content analysis that the researcher has carried out on the teacher-students' interaction, useful findings could be detected. The experienced teacher could well understand the importance of interaction in the class discourse and the motivation needed to initiate and continue interaction in that context.

From the extracts presented above, the researcher could see that a critical awareness about language and an interest in everyday texts are being developed in majority of the students. It is suggested that while experts are training the teachers, they should teach them the type and degree of interaction and how they are to tune in their discourse with their students.

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