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CHAPTER ONE

COGNITION AND LANGUAGE LEARNING: AN INTRODUCTION

SADIA BELKHIR

Abstract

The connection between cognition and language is of paramount importance to language learning and teaching. Exploring this link may lead to an understanding of the part played by cognition in the English as a foreign language classroom. This is feasible by shedding light on the way multiple cognitive devices operate in language learning activities. This introductory chapter firstly gives a succinct account for the shift from behavioural to cognitive theories of learning. Secondly, it provides a brief overview of relevant research in the area of cognition and language learning. Finally, it describes the major objectives of the present volume and introduces its nine chapters.

1. Introduction

Research into the relationship between cognition and language is useful in understanding the functioning of the cognitive mechanisms underlying any language learning activities, particularly in educational settings. In the late 1950s, there seemed to be two different views concerning this relationship (Harris 2003). The former relates to Chomsky's ideas emerging out of his mentalist theory of generative linguistics. One of the main tenets of his theory is the existence of a mental innate capacity within all children that permits them to acquire the grammar of a language. This innate capacity which he called Language Acquisition Device (LAD), or Universal Grammar (UG), is believed to be located in the brain (Chomsky 2000). The second view characterising this relationship belongs to scholars in the fields of cognitive science and cognitive linguistics who stood out from Chomskyan language acquisition philosophy. In cognitive-linguistic areas of research which contribute to language learning and teaching, the idea of an existing LAD or UG in the human brain is refuted, and the link between language and cognition places a special emphasis on such aspects as comparison, categorisation, pattern finding, and blending that are believed to "operate across all areas of language and are the same as those involved in other areas of cognition" (Littlemore 2009: 2). The present book looks at this relationship from a purely educational perspective, and aims to explore the interplay between cognition and language learning by looking at the role that cognition has with respect to skills development, language processing, bilinguals' perception of phonemes in a second language, vocabulary memorisation, metaphor identification, vocabulary attrition, motivation, and so on.

The audience for the *Cognition and Language Learning* volume includes students, teachers, educational practitioners, and researchers interested in research into the interaction between cognition and language learning. It is also destined for anyone working in the areas of language studies, language learning and teaching, cognitive linguistics, and applied linguistics. This book is also aimed at university undergraduate students and graduate students conducting research to obtain master's and doctoral degrees in English language learning and teaching, cognitive linguistics, and applied linguistics. *Cognition and Language Learning* represents a reference book for scholars investigating this specific area of language teaching and learning and is believed to be sufficiently pertinent to meet the needs of researchers in this field of investigation. This introductory chapter begins with an account of the shift in orientation from behavioural to cognitive theory that the sphere of language learning and teaching has witnessed. It then moves on to a review of research in the area of cognition and language learning. Finally, it provides the aim of the present volume and describes its constitutive chapters.

2. From behavioural to cognitive language learning approaches

For almost two decades, the behaviourist paradigm had dominated American psychology focusing mainly on observable behaviour, rejecting the contribution of mental processes to learning. Language acquisition was uniquely based on the principle of reinforcement wherein children's correct utterances were rewarded, leading them to form habits (Skinner 1957). This had an undeniable influence on language learning/teaching approaches,

such as the audio-lingual method (Richards & Rodgers 1986). Afterwards, the cognitive revolution redirected attention to human thought processes, thinking abilities and reasoning. It has now become impossible to deny the central role of cognition in language learning.

The term “cognition” refers to “the process by which knowledge and understanding is developed in the mind”.¹ It also means “the use of [conscious mental processes](#)”.² The adjectival form “cognitive” means “[connected](#) with [thinking](#) or [conscious mental processes](#)”.³ Cognitive psychologist, Matlin (2005: 2) defined “cognition” as a mental activity with various cognitive processes. In her view, cognition concerns the acquisition, storage, transformation, and use of knowledge, and includes a wide range of mental processes, namely, perception, memory, imagery, language, problem-solving, reasoning, and decision-making. She further described the cognitive approach as a theoretical stance that focuses mostly on people’s knowledge and their mental processes.

Cognitivism is a linguistic current that appeared in the late 1950s and supplanted the behaviourist approach to learning. By then, learning theory had made a shift away from the use of behavioural procedures in education to an approach that drew on cognitive science. Educational practitioners moved away from classroom practices that considered only observable learners’ behaviour and espoused methods that focused primarily on mental processes including thinking, problem-solving, language, concept formation and information processing. Thus, cognitive theory has gained too much prestige among existing learning theories (Ertmer & Newby 2013).

Cognitive linguistics emerged in the late 1970s and early 1980s as a field of research mainly concerned with exploring and explaining the tight link between language and cognition (Wilson & Keil 1999: 134). As has been argued, this discipline challenged Chomskyan generative linguistics (Littlemore 2009). Prominent figures characterising the cognitive linguistic approach include George Lakoff, Ronald W. Langacker, and Len Talmy. Their major interest was to deal with language as an instrument for organising, processing, and conveying information. Linguistic structures were analysed as manifestations of “conceptual organisations, categorisation principles, processing mechanisms, and experiential and environmental influences” (Geeraerts & Cuyckens 2007: 3). In a book chapter entitled *Cognitive linguistics, language pedagogy, and the English present tense*, Langacker (2001) sketched the pedagogical implications of cognitive linguistic theory. A further outstanding figure, Kövecses (2001: 87), argued that “the theory of cognitive linguistics and the many descriptions of various aspects of language that it has provided so far are potentially useful in foreign language teaching (FLT)”. This is to say, cognitive linguistics has contributed significantly to language learning and teaching. Indeed, its major principles have most importantly been adopted in educational settings (Verspoor 2017; Holme 2012, 2009; Lantolf 2011; Achard & Niemeier 2004, Atkinson 2002; Pütz et al. 2001; Langacker 2001; Kövecses 2001; Herrera & White 2000; Kövecses & Szabó 1996).

3. Research directions into cognition and language learning

The connection between cognition and language learning has intrigued many scholars within the research areas of cognitive linguistics and language teaching and learning (Pütz & Sicola 2010; *Segalowitz 2010*; Littlemore 2009; Robinson & Ellis 2008; Langacker 2001; Kövecses 2001; Herrera & White 2000; Skehan 1998). It is an issue that is increasingly significant and popular among scholars in all spheres of education and applied linguistics.

Skehan (1998), in his publication *A Cognitive Approach to Language Learning*, demonstrated the role of task-based instruction in second language learning. He drew on psycholinguistic and cognitive features characterising the process of language learning, focusing on the mechanisms underlying language processing. Skehan particularly put stress on the significance of individuals’ cognitive disparities. Herrera & White (2000) investigated the contribution of cognitive linguistics to language learning in the economics classroom. They investigated the issue of whether the conceptual metaphor was related to the process of storing and retrieving information. Langacker (2001), with respect to cognitive grammar, considered linguistic structures as conceptual instruments whose meanings depended on the cognitive process of interpreting the situations wherein they occurred. Kövecses (2001) suggested some pedagogical implications of cognitive linguistics with regard to the learning of idioms in the English as a foreign language classroom.

Robinson and Ellis (2008) edited a book entitled *Handbook of Cognitive Linguistics and Second Language Acquisition*. It is a collection of chapters concerned with second language acquisition and also with “how language draws on other, more basic cognitive systems and abilities, such as perception, attention allocation, memory and categorisation”. Ellis and Robinson (2008: 8) defended the view that “systematicities of second language acquisition are all, in essence, issues of second language cognition”. Littlemore (2009), in her published book, *Applying Cognitive Linguistics to Second Language Learning and Teaching* regarded cognitive linguistics as a dominant branch within linguistics, mainly in relation to the domain of second language teaching.

¹ See <https://www.oxfordlearnersdictionaries.com/>

² See <https://dictionary.cambridge.org/>

³ See <https://dictionary.cambridge.org/>

Segalowitz (2010) dealt with fluency within the scope of cognitive science and debated the advantage of a cognitive science approach in exploring fluency. Segalowitz (2010: 5) made the claim that “[o]nly by taking a cognitive science approach, capitalising on the variety and richness of its many component disciplines, can one hope to capture in a coherent perspective all the relevant factors that jointly determine fluency at any given moment”. Pütz & Sicola (2010) edited a volume that dealt with the connection between cognition and second language acquisition. Its objective was to shed light, through research, on the issue of learners’ involvement in second language acquisition contexts.

4. This volume

The present volume grew out of the Cognition and Language Learning Symposium, held in February 2019 at Mouloud Mammeri University, in Tizi-Ouzou. It concerns the interplay between cognition and language learning, and tackles such issues as cognition and skills development, language processing, vocabulary memorisation, metaphor identification, vocabulary attrition, motivation, perception of phonemes, and so on. The contributions to this volume jointly represent current forward-looking research in the interdisciplinary field of cognitive linguistics and education. The array of topics and methodologies that it presents is promising. The volume as a whole is an original investigation into issues that concern the mechanisms of human cognition with the intention of attaining a deeper understanding of how the processes of thinking, interpreting, strategy use, anxiety, attrition, perception, memorisation, and motivation affect learning and lead to effective procedures that enhance learning in educational settings. To date, there seems to be a sharp need for innovative research that examines the interrelationship between cognition and the process of language learning. The present volume aims to respond to this need. It offers a multidisciplinary perspective that examines the interplay between cognition and language learning. It brings together researchers interested in this research area to discuss their contributions, and to open debates about the part played by cognition in language learning.

In the second chapter of the volume, Kamila Ammour sets out to investigate some EFL students’ metacognitive awareness of reading strategies when reading narrative texts. She conducts her study at Mouloud Mammeri University of Tizi-Ouzou and deals with two major issues. Firstly, how third-year students in the Department of English read narrative texts, and secondly, whether they are fully aware of their reading strategies when reading narrative texts. Relying on a quantitative research design, and using a questionnaire, she shows that word-attack strategies are the most frequently used strategies by the participants when reading narrative texts. In addition, overfocussing on bottom strategies likely prevents readers from reaching higher levels of comprehension, most notably interpretation and critical analysis. Another significant conclusion that Ammour reaches is the correlation between text genre and strategy-use. It seems that the text genre is not of paramount importance for students who do not make a distinction between literary texts and other types of texts since they keep using the same strategies for all reading texts. As for metacognitive awareness, she demonstrates that participants are not fully aware of their reading strategies when they are engaged in reading narrative texts. It seems that they believe the information presented in texts, and do no further analysis. They do not make use of metacognitive strategies in order to arrange and evaluate the success of their reading process. A final conclusion that Ammour draws is that EFL students are neither well-equipped nor well-prepared to engage in deep reading tasks that require a judicious use and selection of reading strategies as well as a high level of metacognitive awareness. Accordingly, the challenge for EFL teachers is to guide and raise their students’ metacognitive awareness.

The third chapter deals with language attrition which is the decay in language skills. This phenomenon is classified into L1, L2 and Foreign Language Attrition (FLA). The latter is the language knowledge that is forgotten later in life due to certain factors. In order to save these languages from attrition, scholars started working on language retention and relearning theories. Hence, they suggested the saving paradigm as a method which assumes that once a word is learned there are residues of knowledge that can be used to reactivate it. In this chapter, Fatima Zohra Chalal discusses the issue of language attrition in relation to instructed foreign languages. She offers a case study with the intention of examining a population of adult Kabyle multilinguals having English as their L4, and who are no longer using the language. She conducts an experiment with regard to one aspect of language attrition; i.e., vocabulary attrition. Using two English word lists displayed on small cards for the participants, in order to test the relearning and the acquisition stages, Chalal shows that the participants recalled the English vocabulary already learned easier and faster than when learning and retaining new English vocabulary. She thus concludes that the saving method explains and justifies the retention of the forgotten English vocabulary and prevents it from attrition. Chalal finally makes some practical suggestions for further research in the field.

In the fourth chapter, Sadia Belkhir aims to assess the Metaphor Identification Procedure (MIP) elaborated by a group of eminent cognitive linguists called the Pragglejaz Group (2007). She reports on some small-scale experimental studies conducted with a group of EFL students in a higher education context (the Department of English at Mouloud Mammeri University). This is in order to show the potential effect of MIP upon their cognitive ability to identify metaphors within written discourse. The participants in the experiments are requested to identify metaphors within some passages extracted from a master’s dissertation. Belkhir demonstrates that MIP is a tool

that partially helps the students in the process of metaphor identification. Consequently, she suggests that it be complemented with additional data about conceptual metaphor and its linguistic manifestation in academic discourse in order to increase learners' proficiency in metaphor identification within written texts. She furthermore shows that most of the subjects partially memorise information about metaphors. Therefore, she proposes some remediation through regular practice in metaphor identification in discourse. With these findings, Belkhir makes a humble contribution to the field of education by offering useful data to educational practitioners and researchers.

As there is much evidence in the literature that the perception of second language (L2) phones is affected by the learners' first language (L1) phonological system, in the fifth chapter, Georgios Georgiou purposely seeks to explain how the already formed phonetic units of the learners' L1 affect the perception of L2 vowels. A total of 15 adult native speakers of Egyptian Arabic (all females) who have lived permanently for 4-5 years in Cyprus and learn Greek as an L2, complete a Greek vowel assimilation and an AXB discrimination test in order to investigate how they assimilate L2 vowels into L1 phonological categories, and to examine their ability in discriminating challenging L2 vowel contrasts. Georgiou demonstrates that the L2 learners assimilate the Greek stressed vowels /i e/ and the unstressed /i/ to the Egyptian Arabic phonological category /i/ while the Greek stressed and unstressed vowels /o u/ are assimilated to the Egyptian Arabic category /u/. Furthermore, there is a fair discrimination of the Greek stressed /i/-e/ and stressed-unstressed /o/-u/ vowel contrasts while the Greek unstressed /i/-e/ is discriminated excellently. A strong influence of the learners' L1 on the perception of L2 vowels is observed since the acoustical differences of the vowels [e]-[i] and [o]-[u] are often not phonemic in Egyptian Arabic while these neighbouring vowel categories constitute different phonological categories in Greek. In addition, stress plays a significant role in L2 perceptual studies since stressed vs. unstressed vowels are perceived differently by L2 learners.

Research in psychology and cognitive science has had significant implications for both second language acquisition and language teaching. Recently, many researchers have suggested that the cognitive approach to language learning can be useful in developing and evaluating effective computer-assisted language learning (CALL) resources and tasks that can help create successful and long-lasting learning opportunities (Chapelle 2009; Garrett 1991; Sanozi 2018). In the sixth chapter, Amel Benaissa offers a study that aims to confirm the positive role of online Quizlets and digital flashcards on EFL learners' vocabulary gains and on maximising the information-processing stages needed to acquire and retain new lexis. She conducted a quasi-experimental piece of research with first-year university students to evaluate the retention and retrieval of new words. She assessed students' improvement by means of a pre and post vocabulary test. Unlike the control group students, the experimental group participants were introduced to the computer and the mobile version of the Quizlet website. The aim behind such training is to develop three aspects of their vocabulary acquisition; i.e., their passive vocabulary, their active control vocabulary, and their active free vocabulary. Her conclusion is that the facilitative role of the Quizlets program is partly confirmed by her findings. The experimental group students outperformed their control group counterparts both in the passive and active control vocabulary results ($p < .005$) but no significant improvement was noticed in their active free vocabulary test scores ($p = .878$).

In the seventh chapter, Nora Achili explores the contribution of attribution theory to the field of learner motivation in language learning. This issue is significant, as it offers valuable insights into learners' perceptions of success and failure in past performance and how this has an effect on their future motivation and achievement. According to attribution theory, failure/success outcome is not the only reason for motivation and achievement as learners' failure and success can be determined by their thoughts and beliefs in the causes of successful and unsuccessful actions. Consequently, Achili's goal is to understand some EFL learners' attributional perceptions through Weiner's attribution theory. In order to find learners' interpretation of their success and failure in learning and achievement performance, she designs a causal attribution questionnaire and administers it to 62 English language graduate students at the University of Boumerdes. One of her key findings is that success is mostly related to internal factors such as effort, while failure is explained by both internal and external attributions. Given the noted benefit of internal factors as being the most adaptive attributional causes in successful learning, she goes on to suggest some teaching considerations to address the external attributional reasons which impact on motivation and achievement and mostly end in failure. She thus encourages teachers to help students make more adaptive attributions by turning the external factors into internal ones through adequate training programmes and strategies.

In the eighth chapter, Katia Berbar examines the relationship between anxiety and cognitive processing in learning English as a foreign language. She sets out to achieve two main objectives. First, she attempts to ascertain the degree of anxiety during the input, processing and output stages of language learning. Second, she strives to understand the impact of anxiety on students' cognitive activities. To this end, she conducts a descriptive case study at Mouloud Mammeri University of Tizi-Ouzou, Algeria, during the academic year 2016-2017. Her study involves 65 first-year students of English. Her major findings indicate that the participants suffer from high levels of input anxiety, processing anxiety and output anxiety and that anxiety is debilitating at each language learning stage. These results underscore the need to search for solutions in order to diminish the negative influence of anxiety on cognitive processing. Finally, the conclusions she draws are significant in the sense that they help us

understand the influence of anxiety on students' cognitive tasks and uncover the main factors contributing to foreign language anxiety such as difficulties in comprehending spoken and written messages in English, writing about unfamiliar topics, and the inability to find suitable words to express ideas properly.

In the ninth chapter, Hanane Ait Hamouda provides a study to show how students perceive the non- or near-exclusive use of the target language in EFL classes and to figure out whether they consider code-switching a barrier in the cognitive process of producing English. To achieve this objective, Ait Hamouda designs an online questionnaire with open and close-ended questions, and emails it to second-year master's students enrolled in the programme *Language and Communication*, in the Department of English at Mouloud Mammeri University of Tizi-Ouzou. She then collects data and employs qualitative content analysis to examine the free-text answers of the respondents. Finally, she reaches the conclusion that the EFL classes at Mouloud Mammeri University do not have a pure target language environment. In addition, the students perceive the non-pure English language environment positively. Her results also reveal that code-switching in EFL classes does not alter the students' language production process.

5. Conclusion

This introductory chapter has sought to describe the shift from behavioural to cognitive theories of learning, and to provide a short survey of research into the area of cognition and language learning. It has furthermore described the major objectives of the present volume and introduced its chapters.

It goes without saying that the chapters presented in this volume demonstrate how cognitive aspects featuring language are relevant to the field of educational linguistics. It is hoped that this book will stimulate interest in the connection between cognition and language learning and foster its exploration in many other environments. The studies in this volume show the significant potential that cognitive linguistic approaches have to shed light on the tight link between cognition, language, and education.

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