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二语习得中的个体差异:

外语学能与工作记忆

● 戴运财 著



Preface by Dai Weidong

戴运财给我比较深的印象主要有两点:一是二语习得的著作与论文看得比较多,知识面很宽,二语习得的理论基础扎实。在读博期间,他阅读了大量的国内外文献资料,奠定了坚实的理论基础,掌握了科学的研究方法。长期以来,他通过坚持浏览与分析国内外核心期刊上发表的文章,对整个学科的研究内容与方法有着很好的宏观把握和清晰的认识,因而能紧跟国际二语习得研究的前沿与发展趋势。二是有很强的创新意识,创新能力强。在与我讨论论文写作的过程中,我发现他始终坚持以“创新是科学研究的灵魂,学术论文一定要有创意”这一思想为指导。此外,他对学术问题非常敏感,有着敏锐的学术分析和判断能力。在纷繁复杂的问题表象下,他善于找出问题的内在规律,然后提出新的观点或假设,并且还能比较准确地采取不同的方法去验证和发展这些假设。

戴运财所具有的扎实的二语习得基础、强烈的创新意识和优秀的创新品质在他的博士论文中得到很好的体现。在博士论文的选题与撰写过程中,他反复与我商讨,坚持高标准要求,并牢牢抓住三个基本原则:(1)选题要有意义,所选的研究内容必须是学术界关注的热点问题,且要有较高的理论价值与应用价值;(2)在研究方法上,要坚持理论与实证研究相结合,并以实证研究为主,目的是为了能够比较准确地反映本学科的基本特征与属性;(3)研究必须有一定的深度,要以小见大,把所选问题研究透彻,避免泛泛而谈。为满足这些要求,在论文的选题、研究设计、分析讨论等的每一步,他都与我以及其他几位学术同行进行了多次论证,并几易其稿。

二语习得是以语言学、心理学、教育学等为基础的一门跨学科的研究领域;二语习得的过程是一个复杂的动态系统,二语的发展受制

于作为主体的人、语言、环境这三个系统以及它们之间的动态交互,换言之,学习者、语言与环境系统之间的交互作用决定了二语习得的发展速度与最终水平。戴运财的博士论文有机地联结了制约二语习得的这三个方面的主要因素,它以学习者个体认知差异中的外语学能和工作记忆(作为主体的人的因素)为立足点,并扩展到句法复杂性(语言因素)和教学方式(环境因素)。

学习者的个体差异是影响二语习得效果的最重要的内容之一, Ellis(2008: 720)认为:“任何对二语习得的解释若没有充分考虑学习者个体差异因素的作用都是不完整的。”而作为个体差异中的一个主要变量,外语学能在大量的调查研究中被发现与二语习得结果的相关程度超出其他任何变量,因此成为二语学习结果最有预测力的影响因素之一。更重要的是,上世纪90年代中期以来,随着二语习得心理研究的深入与认知科学的发展,外语学能研究通过工作记忆的作用被尝试与二语习得的另一重要领域——习得过程联系起来,因此对其研究的价值得到重新评估,这方面的研究由此也在世界范围内得到越来越多的关注。

本书是对学习者的个体认知差异(重点是外语学能与工作记忆)与二语习得的关系所进行的系列研究成果的展示。在全面梳理前人研究的基础上,作者首先找出了拟需进一步研究的问题,然后通过三个互为关联的实证研究来寻找问题的答案。纵观全书,它全面、系统地调查与论证了外语学能、工作记忆及其他相关因素在中国语境下对二语习得的整体水平与句法规则习得的影响。具体说来,该研究具有以下几个特点。

1. 研究内容具有高度的系统性。它以个体差异中的外语学能为起点,并延伸至学习策略、性别、工作记忆、教学方式、任务难度等。被调查研究的变量涉及二语习得中的认知因素、教学因素、语言学因素等,且有机地联系了二语习得的两个重要领域:学习者个体差异与学习过程;此外,被调查的依存变量既包含整体的二语水平的发展,还包含对句法规则的习得。因此,该研究对学习者的认知能力的调查不仅全面而且具有系统性。

2. 研究设计比较合理、科学。该系列研究采用了横向比较研究

和后续跟踪研究相结合的方法;调查对象包含四个不同水平层次的五组受试者;统计方法涉及相关分析、回归分析和方差分析等;因此,研究结论更具科学性和说服力。

3. 论证比较严密,理论分析透彻。在对调查结果进行分析讨论时,该研究还综合运用了认知心理、语言学与语言教育等领域的理论来进行阐释,充分体现了二语习得跨学科的特点;同时本研究还验证了相关的语言学假设,提升了学习者个体差异在语言习得研究中的作用,并促进了相关理论的建设。

4. 理论联系实际,具有一定的应用价值。本研究既联系中国语境下外语学习的实际,提出要以汉语的语言特征为基础,制订新的外语学能测量工具,又联系外语教学的实际,提倡要客观对待学习者类型的多样性,并根据学习者类型进行因材施教,最大限度地发挥不同学习者的优势。

当然,同其他任何二语习得研究一样,本研究成果也并非完美无瑕。对于该研究中的不足,作者在本书的结尾部分作了比较客观的分析,这些分析为后续的进一步研究指明了方向。瑕不掩瑜,从内容来看,本书论点明确,论据充分,论证严密,具有一定的深度和创新性;从篇章写作的角度来看,全书结构严谨,前后衔接自然,首尾呼应,学术语言比较规范。因此,该书不失为二语习得研究的众多论文中的一个优秀范例。是为序。

戴炜栋

教育部高等学校外语专业教学指导委员会主任委员

上海外国语大学教授

2011.4

Preface by Stefan Gries

These are exciting times to work on second/foreign language acquisition (S/FLA), exciting in the way that different developments within linguistics give rise to and support discovery in S/FLA. First, there is a growing recognition that the knowledge of language is intimately tied to its use by speakers in settings that are characterized by communicative, sociocultural and psychological characteristics. Virtually every aspect of language acquisition, representation, processing and historical development has been shown to be affected by language use, and linguistic research is more and more aware of how frequencies of use/exposure, characteristics of our cognitive systems (determinants of processing costs, the workings and limitations of our memories, and many others) shape linguistic knowledge and behavior. Second, in a somewhat synergistic turn of events, a parallel development can be witnessed in the linguistic toolbox, the data that are explored, and the methods with which they are explored. As for the former, the number of studies using experimental and/or corpus-based data is ever increasing, even in journals that are not explicitly associated with particular theories, data, or methods. And in a sense this is only natural; if theoretical linguistics increasingly recognizes the roles of, say, frequencies and cognitive mechanisms, then it is only normal that corpus data are used to discover and discuss frequency data, and that experimental data are used to probe into the inner workings of our cognitive systems. As for the latter, the increasing reliance on such types of data coincides with a big change in the methods linguists are

using. While some subfields in linguistics have long been quantitative in nature-sociolinguistics is maybe the prime example-these days, there are many studies in just about every subfield of linguistics that routinely use inferential and/or exploratory statistics to cope with the multi-faceted nature of increasingly complex data and psycholinguistically-informed theories.

Against this background, this dissertation is a very welcome contribution to research on S/FLA, one that is at the forefront of all of the above trends. In his three experiments, Dai Yuncai explores a huge range of complex and interrelated notions from the three central types of notions, surrounding, influencing, and interacting with S/FLA. More specifically, his discussion involves

- (i) the human factor, e. g., in the form of distinguishing differently proficient learner groups and sexes;
- (ii) the cognition factor, e. g., in the form of involving notions such as language aptitude, working memory and learner strategies;
- (iii) the language factor, e. g., in how linguistic complexity affects the learning of syntactic rules;

and all of these are then interwoven with an analysis of different linguistic approaches that again involve aspects of semantics and working memory (e. g., NP accessibility) and cognitive processing (e. g., distances between fillers and gaps). The empirical data involve a multitude of linguistic tests and capabilities as well as both punctual and longitudinal results, and the data are analyzed statistically with a range of methods. Finally, a variety of implications, from a rather applied (e. g., instructional and/or curricular), a more general methodological, and an even more general theoretical perspective are discussed. This study, therefore, has far-reaching potential in how it will allow researchers from many different perspectives and subfields within

applied linguistics to base their work on what Dai Yuncai has accomplished here, and many immediately available ways of extension and follow-up work are already pointed out by the author himself. Given the way in which this work unites many of the current and exciting developments in our field, it can only be hoped that it will inspire a flurry of research activity in its wake; Dai Yuncai must be congratulated on having presented findings, and thereby developed a research agenda, here that scholars in this field of inquiry will find invaluable.

Stefan Th. Gries
Professor of Linguistics
Department of Linguistics
University of California, Santa Barbara, USA

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I am also greatly indebted to other course teachers at Shanghai International Studies University, in particular, Professor Yu Jianhua, Professor He Zhaoxiong, Professor Xu Yulong, and Professor Feng Qinghua. They have inspired my increasing interests in other branches of language-related studies and helped deepening my understanding of those subjects.

Equally I would like to thank Professor Stefan Gries of the University of California, Santa Barbara and Professor Cai Jinting of Luoyang Foreign Languages Institute. Professor Gries gave me much advice and encouragement in the course of my PhD study and happily wrote a preface for this dissertation. Dr. Cai Jinting spent much time discussing critically with me about my research proposal on several occasions and offered me many insightful suggestions.

More than 10 people directly participated in the research work of this project. A partial list would include Associate Professor Hu Huiling from Zhejiang University of Technology, Professor Zhu Xiaoshen from

Wenzhou University, and Associate Professor Chen Shengwei, Associate Professor Zhang Xiaowen, Associate Professor You Chenjing, Ms Chen Hong, and Ms Chen Xuyin from Zhejiang University of Agriculture and Forestry, where I host a post currently; besides, four MA students at Wenzhou University also helped me with data collection. My sincere gratitude goes to all of them.

My deepest appreciations also go to the students at Zhejiang University of Agriculture and Forestry, Wenzhou University, Linan High School, and Wenzhou Foreign Languages School. Their willingness to spend much of their time and great efforts in partaking in the different tests, and their active response in each test inspired me tremendously and consequently consummated this research project.

Finally, I would like to express my thanks to my family; they always steadily support me to strive for a higher-standard of academic excellence.

On the other hand, while I was given much support, I take full responsibility for all errors and misinterpretations committed in this book.

List of Abbreviations

ACH	Aptitude Complex Hypothesis
ADH	Ability Differentiation Hypothesis
CCRST	Computerized Chinese Reading Span Test
CCRST(RT)	Reaction Time for the CCRST
CCRST(CZ)	Composite Z-Score for the CCRST
DO	Direct Object
ERPs	Event-related Potentials
ESL	English as a Second Language
FDH	Fundamental Difference Hypothesis
FGDH	Filler-gap Distance Hypothesis
FLA	Foreign Language Aptitude
fMRI	Functional Magnetic Resonance of Imaging
FSH	Fundamental Similarity Hypothesis
GEN	Genitive
GJT	Grammatical Judgment Task
IDs	Individual Differences
IO	Indirect Object
L2	Second Language
MDH	Markedness Differential Hypothesis
MLAT	Modern Language Aptitude Test
MTE	Matriculation Test of English
NPAHH	Noun Phrase Accessibility Hierarchy Hypothesis
OBL	Object of Oblique
OCOMP	Object of Comparison
OPREP	Object of Preposition

OO	Object RC in the Object Position of the Matrix Clause
OS	Object RC in the Subject Position of the Matrix Clause
PA	Paired Associates
PLAB	Pimsleur Language Aptitude Battery
RC	Relative clause
RM	Rote Memory
SCT	Sentence Combination Task
SILL	Strategy Inventory for Language Learning
SLA	Second Language Acquisition
SO	Subject RC in the Object Position of the Matrix Clause
SPLT	Syntactic Prediction Locality Theory
SS	Subject RC in the Subject Position of the Matrix Clause
SU	Subject
TRCs	Test of Relative Clauses
TTCSs	Translation Test of Complex Sentences
WM	Working Memory
WS	Words in Sentences
+ EANP	Extraction Across NP
+ EAVP	Extraction Across VP
+ EANP(RT)	Reaction Time for +Extraction Across NP
+ EAVP(RT)	Reaction Time for +Extraction Across VP
- EANP	- Extraction Across NP
- EAVP	- Extraction Across VP
- EANP(RT)	Reaction Time for -Extraction Across NP
- EAVP(RT)	Reaction Time for -Extraction Across VP
+ EANP(CZ)	Composite Z-Score for +Extraction Across NP
+ EAVP(CZ)	Composite Z-Score for +Extraction Across VP
+ Es(CZ)	Composite Z-Score for +Extractions
- EANP(CZ)	Composite Z-Score for -Extraction Across NP
- EAVP(CZ)	Composite Z-Score for -Extraction Across VP
- Es(CZ)	Composite Z-Score for -Extractions
± Es(CZ)	Composite Z-Score for All the Types

中文摘要

作为二语习得中个体差异的主要因素之一,外语学能迄今为止反复被证明对二语习得的结果具有最佳预测作用,因而在二语习得研究中也受到更多的关注。20世纪90年代以来,随着二语习得及其相关学科如语言学、认知科学、语言教育等领域研究的进展,以及二语习得相关学科的交叉融合,对外语学能的研究不仅内容越来越丰富,而且研究视角也越来越宽广。但是,本领域的研究主要集中在美国等西方发达国家,而国内在这方面的研究,不仅数量较少,而且研究的内容也有待深入。不仅如此,外语学能研究快速发展的一个重要体现就是尝试将工作记忆作为外语学能的一个重要组成部分,然后通过工作记忆的作用将外语学能与二语习得的过程连接起来,进而使外语学能进入二语习得研究的核心领域。外语学能研究者的注意力焦点因此也逐渐从整体的外语学能转向具体的工作记忆能力。此外,我们还可以看到,外语学能和工作记忆在不同难度的任务中的作用会发生变化,因为语言习得任务的复杂性对二语习得的结果产生一定的影响,这也导致外语学能和工作记忆在二语句法习得中的作用在一定程度上取决于被习得结构的复杂性。

为了全面、系统、深入地研究外语学能及其相关因素在中国语境下对二语习得的影响以及紧跟国际上外语学能研究的发展趋势,我们对外语学能的作用进行了三个互为关联的实证研究,本书即为该系列研究成果的展现。在结构安排上,本书由九章组成。第一章介绍了本研究的背景、理据和意义,第二、三、四章分别综合分析了与外语学能有关的三个方面的文献,即外语学能与二语习得的关系,工作记忆与二语习得的关系,工作记忆、任务难度与二语习得的关系,第五章总结了前三章文献综述的内容,并在此基础上提出本研究拟解

决的问题。第六、七、八三章报告了三个实证研究的内容、过程、方法与结论,为研究问题提供了答案。第九章对全文作出总结,并指出本研究在理论上和教学实践上的启发意义以及本研究的不足与将来进一步研究的方向。

本研究的核心内容是三个实证研究。第一个实证研究调查了具有不同二语习得水平的两组大学生,调查内容包括外语学能、学习策略、二语习得整体水平,并就他们的外语学能、性别、学习策略与二语习得的整体水平之间的关系进行了相关分析和多元回归分析,以期发现外语学能及其相关因素对中国学习者二语习得水平的影响。该研究由横向比较研究和后续跟踪研究两部分组成,前者是为了比较外语学能对不同二语水平学习者的二语习得的影响,后者是为了发现外语学能在一年半时间后的发展变化以及其对二语习得的动态影响。第二个实证研究首先调查了某外国语学校初中二年级两个平行班级的全体学生的工作记忆,然后对他们就关系从句的句法规则采用两种不同的方法进行教学,教学完成后对他们进行即时测试。在收集相关的数据后,我们进行了描述性统计分析,单因素方差分析和双因素方差分析,目的是为了探明工作记忆与教学处理对简单句法规则习得的影响以及这两者是否存在交互作用。由于关系从句具有语言共性特征,对关系从句的习得难度在一定程度上能反映语言加工的心理限制特点,因此作为主研究的附带研究,本文还调查研究了含有关系从句的四种不同结构的句子的复杂性及其习得难度,该难度主要由关系从句类型和位置所引起。对调查的结果我们还运用了相关的五个语言学理论来进行解释。这五个理论分别是名词短语可及性层级假设,标记差异假设,句法预测局域性理论,填充词与缺位的距离假设和语言学习的操作原则。第三个实证研究调查了工作记忆在中高级水平大学英语专业学生对复杂的句法规则习得中的作用,目的是为了与第二个实证研究中工作记忆在简单句法规则习得中的作用相对照;此外,该实证研究还调查了工作记忆与外语学能中的机械记忆和语言分析能力之间的相关性,以及这三个变量分别与复杂句法规则的习得的关系。因此第三个实证调查既是对第二个实证研究的延伸,也是对第一个实证研究的补充,它进一步反映了工作

记忆、外语学能的本质属性。

本研究中的三个实证调查紧密相连,构成一个有机的整体,这些研究以外语学能为核心,并延伸至其他学习者个体差异,如性别、学习策略、工作记忆以及部分相关因素如教学处理、任务难度等,被调查的变量涉及二语习得中的认知能力、教学方法、习得过程等。在研究设计上,本研究结合了横向比较研究与后续跟踪研究,一共调查了分属于四个不同水平层次的五组受试者,统计分析了上述变量对二语习得的影响,而且这些影响不仅被反映在二语习得整体水平的发展,而且还反映在对简单句法规则与复杂句法规则的习得。从研究方法来看,本研究采用了量化分析,使用了多种测量工具如国际权威的外语学能测试(现代语言学能测试)、国内学者研发的工作记忆测试(汉语阅读广度测试)、两个国内标准化的英语水平测试(英语专业四级测试,全国高考英语测试)、一项自行设计的关系从句测试以及一项国外学者设计的复杂关系从句测试。此外,对本研究的结果,我们还综合运用了二语习得的认知取向理论和语言学取向理论进行了诠释。因此,本研究真正反映了二语习得研究跨学科的本质。

三个实证研究的结果表明:(1)现代语言学能测试所测量的外语学能对中国语境下的第二语言整体水平的发展也具有预测作用,并且外语学能在二语习得中与性别显著相关,但与学习策略没有明显相关。(2)一方面,工作记忆在简单与复杂的句法规则的习得中均发挥一定的作用,另一方面,工作记忆与外语学能中的机械记忆能力和分析能力不存在显著的相关,因此工作记忆可以被作为外语学能的一个重要组成部分;此外,虽然教学处理也明显影响简单的句法规则的习得效果,但它与工作记忆之间没有发生交互作用。(3)外语学能中的机械记忆能力与分析能力对复杂的句法规则的习得没有产生显著的影响,但工作记忆在复杂句法规则的习得中发挥显著的作用,这不仅提升了工作记忆研究的意义,同时也进一步证明了相关的研究假设——传统的外语学能对高水平的语言学习的预测作用是有限的。

根据本系列调查研究的结果,本研究还在理论上与教学实践上指出如下启发:(1)随着学界对外语学能结构的理论的重建,新的外

语学能测试必须被制订出来,因为设计现代语言学能测试的初衷是为了预测高中、大学和成人在听说法的学习环境中学习外语的结果,尤其是初级阶段的语言学习;而在交际语言学习课堂,以及对高水平的语言学习而言,新的学能测试需要融入其他重要元素如工作记忆来满足这些变化的需要。(2)由于外语学能与母语能力相联系,而且中国语言与罗曼语系的语言在语言类型上存在根本的差异,为了更好地反映中国学习者的第二语言学习认知能力,我们有必要创建以汉语的语言特征为基础的中国版本的外语学能测试。(3)虽然在本研究中外语学能、工作记忆都被发现对中国学习者的二语习得产生显著影响,但是由于中国的语言、学习者、学习环境都具有自身的特点,中国语境下的外语学习完全不同于在其他国家的二语学习,因此,构建有中国特色的二语习得模式同等重要。(4)从教学实践的角度来看,教学者应该重视学习者类型的多样性,根据学习者类型进行因材施教,并设计恰当的任务最大化地满足各类型学习者的需要。

关键词:个体差异;外语学能;工作记忆;教学处理;任务难度;二语习得

Abstract

As one of the major individual differences (IDs) in second language acquisition (SLA), foreign language aptitude (FLA) has consistently been proved to be one of the two best predictors of the outcome of SLA so far, thus it has received much attention in SLA research. However, the study of the relationship between FLA and SLA mainly appears in America and other developed countries, far fewer research findings can be obtained in China. Besides, in the past 30 years or so, with the advance of the research into SLA and its feeding disciplines, such as linguistics, cognitive science, and language education, the study of FLA has also experienced tremendous development, of which one essential aspect is that FLA can be linked with the processes of SLA through the role of working memory (WM), which may be a key component of FLA, and this specific cognitive ability has attracted most of the attention of scholars in FLA research. Furthermore, linguistic complexity may play a certain role in the outcome of SLA; subsequently, FLA and WM might affect the acquisition of the target structure to a different extent depending on the complexity of the structure to be acquired.

To address the aforementioned issues, three empirical studies have been conducted in the present research corresponding to them. The first study investigated two groups of college students at different levels of second language (L2) proficiency aiming to find out the effects of FLA and its related factors including gender and learning strategy on the overall development of a second language by Chinese learners of

English as a second language (ESL). The study is composed of a cross-sectional study and a follow-up study so as to compare the difference of the effects that FLA has on SLA for learners of different L2 proficiency and to identify the variation of FLA spanning one and a half years of time. Using two classes of junior high school students as subjects, the second study was conducted to discover the effects of WM and instructional treatment on the acquisition of syntactic rules in the case of relative clauses (RCs) as well as to explore the interactive effects of the two factors. Incidentally, the acquisition difficulty induced by RC type and RC position was examined in terms of five linguistic theories, namely Noun Phrases Accessibility Hierarchy Hypothesis, the Markedness Differential Hypothesis, the Syntactic Prediction Locality Theory, the Filler-gap Distance Hypothesis and the Operational Principles of Language Learning. The third empirical study was carried out to determine the relationships among WM, rote memory (RM) and analytic ability, and the extent to which WM, RM and language analytic ability affect the acquisition of complex syntactic rules in comparison with simple syntactic rules by investigating a group of college students majoring in English at the advanced level of second language learning.

The three empirical studies, which are coherently associated with each other, consist of a range of related variables probing into cognitive factors, instructional treatments, learning processes of SLA as well as linguistic theories. The effects of these variables on SLA are examined and reflected in the overall development of a second language and the acquisition of simple and complex syntactic rules by investigating five groups of learners at four levels of L2 proficiency. The research design of the present study combines both the cross-sectional study and the follow-up study. Multiple quantitative analyses are conducted in the present study with the use of a variety of measures including the internationally influential FLA test (the Modern Language Aptitude Test