



临沂大学博士教授文库
LINYIDAXUE BOSHI JIAOSHOU WENKU

第二语言习得中的 自动性语言能力 评价问题研究

DIERYUYANXIDEZHONG DE
ZIDONGXINGYUYANNENGLIPINGJIAWENTIYANJIU

李昌真 著

山东人民出版社

全国百佳图书出版单位 国家一级出版社



临沂大学博士教授文库

LINYIDAXUE BOSHI JIAOSHOU WENKU

第二语言习得中的 自动性语言能力 评价问题研究

李昌真 著

山东人民出版社

全国百佳图书出版单位 国家一级出版社

图书在版编目(CIP)数据

第二语言习得中的自动性语言能力评价问题研究/李昌真著. —济南:山东人民出版社,2013.9

ISBN 978 - 7 - 209 - 07376 - 9

I. ①第… II. ①李… III. ①第二语言 - 研究
IV. ①H003

中国版本图书馆 CIP 数据核字(2013)第 179028 号

责任编辑:李楠



第二语言习得中的自动性语言能力评价问题研究

李昌真 著

山东出版集团

山东人民出版社出版发行

社址:济南市经九路胜利大街39号 邮编:250001

网址:<http://www.sd-book.com.cn>

发行部:(0531)82098027 82098028

新华书店经销

山东省东营市新华印刷厂印装

规格 16开(169mm×239mm)

印张 23.25

字数 370千字

版次 2013年9月第1版

印次 2013年9月第1次

ISBN 978 - 7 - 209 - 07376 - 9

定价 40.00元

如有质量问题,请与印刷厂调换。(0546)6441693

Preface

Effective and efficient language production does not only require the learners to use the language correctly and appropriately, but also automatically. Hence, a second language (L2) learner's competence should include three dimensions: being linguistically accurate, sociolinguistically appropriate, and psycholinguistically automatic. In more general terms, three dimensions of L2 competence can be identified: accuracy, appropriateness and automaticity. The notion of automaticity has been operationally defined in a variety of ways of information/language processing and the assessment of automaticity is also diverse corresponding to different definitions. The assessment of the L2 learner's competence is of primary importance in second language acquisition (SLA) research, for it is directly related to the ultimate goal of SLA research. It is also essential to study the processes involved in SLA. Exploring the appropriate measurement strategies and the accurate assessment methods is one of the major research goals in SLA. This book presents an account of automaticity in L2 competence and the methods or paradigms that are of potential use in assessing automaticity from multiple perspectives, with a clear focus on psycholinguistics and cognitive science.

Assessing Automaticity in Second Language Acquisition covers essential topics such as the domains of a three-dimensional model of L2 competence, cognitive processing, automatic language processing, neuroimaging and neurocognitive studies of automaticity, neural correlates of L2 automaticity. Throughout the book, each chapter concentrates on a particular aspect of automaticity. Chapter 1 is reviewed with regard to definitions of automaticity, acquisition models. Automaticity in SLA is also presented through word recognition, grammatical recognition, and syntactic feature recognition. Chapter 2 is centrally concerned with the assessment of automaticity in the light of a

three-dimensional model in L2 competence, including highlighting the importance of the automaticity dimension and demonstrating how to apply psycholinguistic methods or paradigms that are of potential use in assessing automaticity. Chapter 3 and Chapter 4 provide a review of much recent L2 research on fluency in cognitive processing, centering on measuring L2 oral fluency. Chapter 5 explores processing automaticity from a cognitive science perspective, indicating automaticity defined as ballistic processing and automaticity as processing stability. It is central to attention-based aspects. Chapter 6 represents neurocognitive and neuroimaging studies of automaticity, covering neuroscientific issues, neural correlates studies in L2 processing. Chapter 7 describes the nature of L2 automaticity from cognitive science perspective, and broad theoretical viewpoints are presented, such as memory-based theories, dynamic systems theory.

This book is an indispensable resource for scholars interested in the cognitive aspects of SLA, applied linguistics, psycholinguistics, cognitive psychology. Recently there has been a move to measuring L2 performance in terms of fluency, accuracy and complexity. A three-dimensional model of L2 competence: accuracy, appropriateness, and automaticity, makes a major contribution to this literature, clarifying many aspects and simultaneously clearly identifying areas in which more research is needed. And it can also serve as an ideal textbook for postgraduate and graduate courses in these fields.

Many people contributed directly and indirectly to the writing of this book. First and foremost, I would like to thank Zhang Jing, Wu Yiwei, Wu Shufang, Lian Lingling, Li Hui, Ge Nana, Li Jianping, my closest colleagues, for their support and especially for their abilities to organize the drafts throughout the process. Many of the ideas in this book are based on their research-based ideas regarding L2 pedagogy and SLA. Without their support, this book simply would not have been possible. I would especially like to thank Miss Li Nan for her patience and helpful suggestions in her role as editor of this book.

Li Changzhen

Contents

Preface / 01

Chapter 1 Automaticity and Second Language Acquisition / 01

1.1 Introduction / 01

1.2 Why Study Automaticity? / 01

1.3 Definitions of Automaticity / 06

1.4 Theories of Automaticity / 13

1.5 The Acquisition Models and Promotion of Automaticity / 18

1.6 Automaticity in SLA / 23

Chapter Summary / 30

Chapter 2 Assessing Automaticity in Second Language Acquisition / 32

2.1 Introduction / 32

2.2 A Three-Dimensional Model in L2 Competence / 34

2.3 Automaticity: An Easy Neglected Dimension in Assessing L2
Competence / 37

2.4 Methods for Assessing Automaticity in L2 Competence / 43

2.5 Assessing the Development of Automaticity in L2 Word Recognition / 73

2.6 Pedagogical Implications from Automaticity / 80

Chapter Summary / 81

Chapter 3 Fluency in Cognitive Processing / 83

- 3.1 Introduction / 83
- 3.2 Definitions of Fluency / 84
- 3.3 Fluency Heuristics / 93
- 3.4 Measures of L2 Fluency / 101
- 3.5 Fluency as a Synonym of Oral Proficiency / 109
- 3.6 Transfer Appropriate Processing / 115
- 3.7 Processing Flexibility / 121
- Chapter Summary / 129

Chapter 4 Measuring Second Language Oral Fluency / 131

- 4.1 Introduction / 131
- 4.2 Fluency and Automaticity / 132
- 4.3 Categories of Fluency / 135
- 4.4 The Tasks for Measuring Oral Fluency / 140
- 4.5 Judging Oral Fluency on Different Tasks / 144
- 4.6 Potential Markers of L2 Oral Fluency / 149
- Chapter Summary / 168

Chapter 5 Second Language Cognitive Automaticity / 169

- 5.1 Introduction / 169
- 5.2 A Cognitive Science Perspective on Processing Automaticity / 170
- 5.3 Automaticity and L2 Processing Efficiency / 186
- 5.4 Automaticity Defined as Ballistic Processing / 193
- 5.5 Automaticity as Processing Stability / 199
- 5.6 Attention-Based Aspects of L2 Cognitive Automaticity / 205
- Chapter Summary / 220

Chapter 6 Neurocognitive and Neuroimaging Studies of Automaticity / 222

6.1 Introduction / 222

6.2 Neuroscientific Issues in L2 Automaticity / 222

6.3 Neural Correlates of Automaticity / 226

6.4 Neural Correlates Studies in L2 Processing / 232

6.5 Neural Correlates of Attention Control in Language Selection / 239

6.6 Cognitive Formal Modeling / 246

6.7 Philosophical Approaches / 264

Chapter Summary / 273

Chapter 7 Automaticity and Cognitive Science / 275

7.1 Introduction / 275

7.2 A Cognitive Science Approach to Automaticity / 276

7.3 The Nature of L2 Automaticity from Cognitive Science Perspective / 278

7.4 Memory-Based Theories of Automaticity / 285

7.5 Dynamic Systems Theory Approach / 291

7.6 Instructed Implications of Automaticity / 299

Chapter Summary / 303

References / 305

Chapter 1

Automaticity and Second Language Acquisition

1.1 Introduction

This book is about second language (L2) automaticity. It examines automaticity from multiple vantage points that together constitute a cognitive science perspective. In doing so, it examines research in SLA and bilingualism that point to promising avenues for understanding and ultimately helping to promote fluent L2 skills. This introductory chapter provides an overview of the volume as a whole. It presents seven anchor aspects of automaticity that the volume will deal with.

In this chapter, studies are reviewed with regard to automaticity in terms of three dimensions of L2 competence, definition, theories, models and its function in second language acquisition (SLA), such as word recognition, grammatical recognition and syntactic feature recognition; and the implications of automaticity for L2 instruction are also discussed. It is argued that automaticity needs to be carefully defined operationally and always viewed in the larger context of how the control system operates in the acquisition and performance of complex skills.

1.2 Why Study Automaticity?

Automaticity refers to the way we perform some mental tasks quickly and effortlessly, with little thought or conscious intention. Automatic processes are contrasted with deliberate, attention-demanding, conscious, controlled aspects of cognition.

In the study history of SLA, there is a rich literature on the necessity and importance of automaticity. The assumptions of automaticity are manifest in many areas of L2

research, including L2 proficiency and fluency (Segalowitz & Freed, 2004, p. 173-199), implicit knowledge (Jiang, 2007), and function of attention in L2 processing.

Automaticity can also be understood when we can go quickly without errors and without much conscious attention. Any person, who speaks a language, does not concentrate on vocabulary, or on sentence structure, or on grammar. His mind is focused on what he wants to say. If the skill on the primary task is automatized, it will not be disrupted by concurrent processing on the secondary task because automatic processing does not take up attentional resources. If, on the contrary, the skill is not automatized, it will be disrupted by concurrent processing of a second skill because two skills are then competing for limited attentional resources. Therefore, when a person attempts to speak a language in which he has not become yet, he will necessarily have to divide his attention between the content of his message and the language itself. Hence, he will speak haltingly and with great difficulty.

This also applies to the act of reading. The person, whose foundational skills of reading (for example, visual discrimination of position in space and visual discrimination of forms) have not yet become automatic, will read haltingly and with great difficulty. The poor reader is forced to apply all his concentration to word recognition, and therefore has “no concentration left” for content, and as a result he will not be able to read with comprehension.

Segalowitz (2003) reports that questions about automaticity are really part of a larger set of questions about the role played by attention and effort in skill acquisition. The interconnection between automaticity, attention, and skill can be appreciated by considering the following observation, which nearly everyone can attest to. As one’s skill level in a domain increases, the amount of attention and effort required to perform generally appears to decrease.

The development of automaticity involves a shift in brain usage and a reduction in brain activity. The processing of new information makes heavy use of working memory. Dramatic changes in brain activity can be seen on fMRI scans as automaticity develops. The development of automaticity of skills generally reduces the load of the working memory (Ashcraft, et al., 1992).

It is essential to understand automaticity and how it is achieved to better a student performance. This is also important for teachers because automaticity should be focused on in early years to ensure higher level reading skills in adolescence. At the same time, although most people may have some knowledge of at least one L2 (as is customary in the literature), any language beyond the first, including third, fourth, etc., languages, will also be referred to here as L2, they nevertheless are rarely able to use it with the same or even close to the same level of skill as their first language (L1). Not only is knowledge of the L2 weaker, but typically people are markedly less fluent using what L2 knowledge they do have.

Based on an overall study of automaticity, we can summarize that the reason why people lay so much stress on the study of automaticity in SLA may mainly lies in the following two aspects. The one is that automaticity is an intrinsic property of our ability to use language, that is, it is one of the indispensable dimensions of learner's L2 competence; the other consists in the pedagogical significance and benefits of automaticity.

1.2.1 The Indispensable Dimension of L2 Competence

The term linguistic competence is a key concept both in theoretical and applied linguistics. To put forward a precise definition of L2 competence, it is necessary to put the difference between native language competence and L2 competence. Native language competence infers the ability to use or present the language facilitated by the mechanism. While, it is quite different for L2 speaker. Here, L2 competence refers to any L2 knowledge that has been internalized and can be automatically put to use in spontaneous meaning-oriented L2 use. The activation and application of such knowledge is subconscious and does not require attentional resources (Jiang, 2004). Such knowledge may become an integrated part of one's L2 competence directly through the exposure to L2 input, or it may be first obtained through explicit formal instruction and later integrated into one's L2 competence through extensive practice and use in spontaneous communication.

An L2 learner's competence should include three dimensions: being linguistically accurate, sociolinguistically appropriate, and psycholinguistically automatic. In more general terms, however, three dimensions of L2 competence can be identified. They are

accuracy, appropriateness, and automaticity (Li, 2008, 2010 see more details in chapter 2 of this book). The dimension of automaticity is closely related to the psycholinguistic aspect of L2 competence. Automaticity can be attached various definitions in many different ways (see Segalowitz, 2003, for an excellent review of various attributes of automaticity as defined in cognitive psychology). In this volume, automaticity throws most lights on the ability to use linguistic structures without paying conscious attention to them or their well-formedness. Just like accuracy and appropriateness, automaticity is an indispensable dimension of human competence in language use. The importance of automaticity has also been recognized in the proposal that the ultimate goal of L2 learning and teaching is the development of the learners' ability to use the target language automatically as well as accurately and appropriately (e.g., Ellis, 1993; Hulstijn, 2001; Segalowitz, 2003).

In the review of the characteristics of automaticity, N. Segalowitz (2003) listed the following features that have been investigated by empirical research in the past 30 years: fast, ballistic (unstoppable), load independent (independent of the amount of information to be processed), effortless, and unconscious. Research evidence seems to suggest that although it is generally true that automatic processing is faster than controlled processing, the development of automaticity is not only a quantitative change as proposed by Shiffrin and Schneider (1977). Nor was sufficient support gained for the assumption that automatic processing is always load-independent (Schneider & Shiffrin, 1977; Shiffrin & Schneider, 1977). Studies conducted in the field of automaticity, however, seem to indicate that automatic mental processes are ballistic (Neely, 1977), effortless (Posner & Boies, 1971), and unconscious (Jacoby, 1991). Neely's research showed that automatic processes such as word recognition are ballistic, in other words, unstoppable, as his participants were unable to avoid the processing of the meaning of presented words. Posner and Boies (1971) demonstrate that automatic tasks do not require effort and attention, and therefore they do not slow down performance on another task. Jacoby (1991) devised an ingenious set of experiments with the help of which he was able to find empirical support for the unconscious nature of automatic processes. The two most important characteristics of automaticity are that it does not require processing capacity

and attention.

Based on the importance and characteristics of automaticity, in the practical teaching and learning, the teachers and learners should find the effective way to facilitate the acquisition of L2 automaticity.

1.2.2 The Ultimate Goal of L2 Learning and Teaching

The importance of automaticity has also been recognized as the ultimate goal of L2 learning and teaching. Achieving automaticity marks an important step towards success for L2 learners (Segalowitz, 2003: 382-408). The most commonly cited one is that automatic processing consumes fewer attentional resources than does controlled processing, the more automatic performance becomes the more attentional resources there are left over for other purposes. Thus, if one can handle the phonology and syntax of an L2 automatically, then more attention can be paid to processing semantic, pragmatic, and sociolinguistic levels of communication.

The theory of automaticity relates to theories of cognitive capacity and cognitive load, which suggest that at any given time we have a finite amount of attention to give to an activity or process. When a process becomes more automatic, less attention is needed and attention can therefore be given to other processes or tasks.

In teaching, automaticity can greatly contribute to the teachers to concentrate more on their students and the learning that is taking place. In the course of teaching teachers are able to make certain processes automatic (such as planning, instruction and classroom management), which in turn frees up more attention for other processes. Similar to teaching, promoting automaticity in learning will stimulate students to process information quickly and accurately, which will in turn promote fluency.

A second possible reason to favor automaticity is that once a mechanism becomes automatic it will process information very quickly and accurately, being immune to interference from other sources of information. This in itself improves the quality of performance.

Many researchers have emphasized the importance of automaticity as one pedagogical goal in SLA. Hulstijn (2001) discusses what he sees as a regrettable lack of appreciation in curriculum development for automatic skills in listening and reading word recognition,

and he makes some practical suggestions regarding how this situation might be corrected. Robinson (2001a) proposes ways in which learning tasks might be sequenced according to various criteria of complexity in order to facilitate automatization, among other things. Johnson (1996) develops in some detail a proposal to promote automaticity through management of the “required attention” for the task at hand.

All automaticity proposals for enhancing SLA are based, in one way or another, on the idea that extended practice, under particular conditions and circumstances, will increase fluency by developing automaticity. Where theorists differ in terms of how explicit they are about the boundary conditions under which this will happen. We might start with a very basic question: what is the evidence that practice will enhance fluency? The literature, actually, is not so very clear on this question. A useful discussion of the issues can be found in Ellis and Laporte (1997), who review both field and laboratory studies dealing with various types of practice and their impact on SLA.

To sum up what is mentioned above, if one wants to produce natural, exact and fluent language, he must have the ability to perform without conscious awareness or while utilizing minimum attentional resources, that is, automaticity (Jiang, 2007, p. 2).

1.3 Definitions of Automaticity

This part deals with what is perhaps the most important issues of all: what automaticity refers to. Though intuitively it is easy to tell what it is that someone does automatically and what processes are nonautomatic, there are numerous and often conflicting definitions of what automaticity means. DeKeyser (2001) collected 14 different criteria of automaticity proposed in the field of psychology between 1974 and 1993. These characteristics include the following: fast, parallel, effortless, capacity-free, unintentional, result of consistent practice, little interference from and with other processes, unconscious, always based on memory retrieval, does not benefit from further practice, error-free and flexible, strong production rule, no interference from working memory, and no correlation between the mean and standard deviation in performance measures. Looking at the definitions from a historical perspective, we can see that in the

most influential view of the 1970s and 1980s (Schneider & Shiffrin, 1977) automatic processing and its counterpart, which was termed controlled processing, were regarded as dichotomies, that is, as two points at the end of a continuum.

Although automaticity is receiving more attention from SLA and applied linguistics scholars, the definition of automaticity in text processing research is usually inconsistent or completely absent. Furthermore, scant research has directly investigated the nature of automaticity in text processing. This imbalance between the centrality of the notion of automaticity in theories of text processing on the one hand and the relative lack of conceptual consistency or direct empirical investigation on the other motivated the highest level goals of the present work: to advocate for clearer conceptualization of automaticity in theories of text processing and to stimulate discussion about the nature of automaticity within text processing.

Automaticity reflects the economical restructuring of underlying processes. We early defined automaticity very generally in terms of speed and ease of performance. If we wish to develop an operational definition that enables us to assess automaticity, we will have to be more precise. A review of the literature will quickly reveal, however, that there is no single, universally agreed upon operational definition of automaticity.

In the encyclopedia, automaticity is defined as the ability to do things without occupying the mind with the low level details required, allowing it to become an automatic response pattern or habit. It is usually the result of learning, repetition, and practice.

It refers to knowing how to perform some arbitrary task at a competent level without requiring conscious effort, i.e. it is a form of unconscious competence. It also refers to the way we perform some mental tasks quickly and effortlessly, with little thought or conscious intention.

Meantime, automaticity has been operationally defined in various ways. It is quite necessary to consider some of the different ways automaticity has been discussed and operationalized in the research literature. There exist two reasons. One is that the term “automaticity” has been used to refer to many logically distinct possibilities in the way psychological mechanisms may operate; it is an empirical question whether automaticity in any one of these senses entails automaticity in some or all of the other senses. The

second reason is that we often read references in the literature to process becoming or failing to become automatic without further specification of which sense of automaticity is intended. While it may be convenient to use “automaticity” as a shorthand term, the imprecision this entails can potentially create problems for the conduct and interpretation of research on the role of automaticity in skill.

The first operational definition is to regard automaticity as fast processing. Under this understanding, the characteristic most frequently associated with automaticity is speed of processing. It is natural to think that once a mechanism has become automatic it will operate faster than it did earlier. Speed of operation has thus become one of the hallmark characteristics of an automatic process in virtually all theories of automaticity (see, e.g., the review by DeKeyser, 2001).

However, there are theoretical and practical difficulties in using speed as a defining characteristic of automaticity. While automatic processing may entail fast processing, it does not follow that all fast processing is necessarily automatic. This is because “fast” is nearly always understood in a relative rather than absolute sense. Hence, merely observing that performance was fast does not necessarily indicate it was automatic.

Some authors have tended to rely strongly on speed as an indication of automatic processing. Recently, N. Segalowitz & Segalowitz (1993; S. J. Segalowitz, Segalowitz, & Wood, 1998) have suggested how it might be possible to use RTs to make inferences about automaticity without simply equating fast with automatic. According to Segalowitz & Segalowitz, such an outcome would indicate that there has been a qualitative change in performance, consistent with the idea of increased automaticity.

Ballistic processing is another definition. In terms of this definition, a process is considered automatic when its operation is shown to be ballistic or unstoppable. This corresponds to one ordinary language use of automaticity, as, for example, when we say that a computer automatically booted up when the power was turned on. One of the most famous demonstrations of such ballistic processing is the Stroop color word task (Stroop, 1935). Neely (1977) constructed a clever experiment demonstrating that recognition of a word’s meaning by skilled L1 readers of English can be automatic in this ballistic sense. What was clever about this experiment was that it demonstrated the subjects’ inability to

avoid processing a word's meaning despite their conscious attempt to do so.

According to Shiffrin & Schneider (1977), automaticity is considered as the load independent processing. They have conducted a set of seminal studies examining the conditions under which practice leads to automatic performance. In this case, automatic processing was operationally defined as load-independent processing. A process was said to be automatic if it operated without regard to how much information had to be processed. The paradigm these authors developed involved searching a small display of items (letters, digits) for a remembered target. The researchers reasoned that if the RT to locate a target was slower the larger the display, then processing was load dependent, and by definition, not automatic. They found that processing started out as non-automatic or load dependent but under certain conditions could become automatic or load independent. This result, that automatic (load-independent) processing resulted from stimulus-response experiences involving consistent mapping, has important pedagogical implications.

Effortless processing is another operational definition. A study reported by Posner and Boies (1971) demonstrated letter processing to be automatic in the sense of not requiring attention or effort (see Jiang, 2004). Here, "effort" means the expenditure of a limited attentional resource. While Posner and Boies argued that performing a primary task that is effortful (non-automatic) should interfere with simultaneously performing a secondary effortful task. They indexed such interference by the extent to which performance on the secondary task was slowed down. On the other hand, they argued that if the primary task is largely automatic and therefore does not draw attention capacity or effort away from performance of the secondary task, then there should be no slowing down on the secondary task.

Compared with others, Jacoby (1991) defines automaticity as an unconscious processing, and this expression is broadly accepted by many researchers. He has addressed the role of automaticity in recognition memory by showing how one can separate the contributions of unconscious, automatic processes from those of consciously controlled processes.

Shift to instance processing is Logan (1988)'s definition to automaticity. He has investigated the improvements in performance that derive from practice using "alphabet