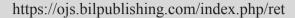# Review and Evaluation on the Sociocultural Theory and Bottleneck Hypothesis

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ABSTRACT

Over the past three decades, a growing number of different theories in second language acquisition field have come out in an effort to provide explanations as to how language learning takes place, to figure out what variables are effective for second language acquisition as well as to offer guidance to mass second language learners and language teachers. Because behind every teaching approach exists certain kind of theory of language acquisition and good theory in turn can help students master language skills in an effective and efficient way.

Each theory is considered to have contributed to the field by highlighting a specific aspect of the language acquisition process. Second language acquisition theories are intrinsically related with various disciplines such as applied linguistics, psychology, education, sociolinguistics, neurology, etc. Considering the impossibility to elaborate all second language theories, I will focus on sociocultural theory and bottleneck hypothesis in second language acquisition. There is an overview which follows the introduction to the Sociocultural Theory and Bottleneck Hypothesis and its contribution to second language acquisition respectively, and then I will evaluate them to see their contributions to the SLA disciplinary development.

1. Introduction

The ability to effectively communicate is the goal of all language learners. The processes by which people try to learn and acquire a language in addition to their native language is called second language acquisition (SLA). Till now, linguistics at home and abroad have conducted various theoretical as well as empirical studies to shed light on the process of second language acquisition. As a result, many approaches, hypotheses, models, and theories have emerged in an effort to describe the way SLA occurs. In this paper, I will probe into sociocultural theory and bottleneck hypothesis. Each of them has its research significance, though, they are not dominant in the realm of SLA. Van Patten and Williams make a clear distinction between theory and hypothesis. They put that a theory has its duty "to account for or explain observed phenomenon and make predictions about what would occur under specific conditions" (Van Patten and Williams 2015: 2) [1]. They define hypothesis as "usually an idea about a single phenomenon" instead of unifying various phenomena.

To conclude, I will review the sociocultural theory and the bottleneck hypothesis one by one at first. Delighted by

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what and Long (2007) has proposed, I want to evaluate them to see whether they are good or necessary for SLA research and what they have contributed to SLA disciplinary progress [2].

2. Review on Sociocultural Theory

Sociocultural Theory (SCT), put forward by the Russian psychologist L. S. Vygotsky and his colleagues, is known as an approach to mental development at the very beginning. SCT tells that human mental functioning is indeed a mediated process which is organized by cultural artifacts, activities, and concepts (Ratner 2002) [3]. That is to say, by making use of the existing goods, humans are able to create new and cultural artifacts which allow them to monitor, control and improve their performance in settings like workplace, family life, peer interaction, and to name only a few. In addition, the roots of Vygotsky's SCT has grounded in Marxism that emphasizes locating individual development within material, social, and historical environment, which is in accord with the nomenclature "sociocultural theory". SCT proposes that human neurobiology itself makes a necessary condition for higher mental processes, but the key forms of human cognitive activity develop through interaction within social and physical world, including conditions found in institutional contexts like schooling and tutoring (Engeström 1987) [4]. Consistent with what Ratner and Engeström have put, Wertsch (1985: 199) suggests that Vygotsky's study is illuminated by three influential principles of Marxist theory: (a) that human consciousness is fundamentally social in origin, rather than merely biological, (b) that human activity is mediated by existing material artifacts (e.g. books, chairs, schools) as well as psychological and symbolic tools (e.g. language, concepts, pictures), and (c) that units of analysis for understanding human activity and development should be holistic in nature [5].

Since the theory has great explanatory power, it has gradually penetrated into different fields, with its influence expanding these days. For years, James Lantolf has dedicated himself to introducing SCT into the scope of second language acquisition, which Ortega (2013) deems as a significant epistemological diversity to the contemporary SLA landscape and contributes to the social turn since the mid-1990s [6].

Lantolf and Thorne (2007: 217-218) [7] suggest that SCT is grounded in a perspective which never separates the individual from the society but SCT indeed shows that the individual emerges from social interaction, thus, the individual is always fundamentally a social being. That is, it is under social surroundings that learners use language by observing and imitating others. It is also by collaborat-ing with other social actors consciously or unconsciously that learners make progress.

2.1 Main Constructs of SCT

In the following part, I will briefly introduce the main constructs of the theory, namely, mediation, internalization and the Zone of Proximal Development, within the domain of SLA.

2.1.1 Mediation

The relationship between people and the world appears to be an indirect way. In hope of directing at the world, people need to utilize both physical tools (e.g. hammers, shovels, saws) and symbolic tools (e.g. art, numbers, languages) to control and change the world. It is the psychological mediation via symbolic tools that interests SCT researchers. Also, among all these symbolic tools, language is the most powerful and effective one that ordinary people possess to interact with the world, to peers, and to themselves. The linguistic signs have two functions consisting of an outwardly communicative function and an inwardly psychological function, which is also called private speech.

When Vygotsky (1986) [8] conducts several studies on Children's psychological development, he finds that children can produce some private speech with distinct interactive traits. He then concludes that the private speech is socialized in essence. The functions of private speech are two-folds. On one hand, it helps facilitate the speaker's cognitive functioning and on the other hand, it can make any problems that may appear in the present communicative setting visible.

2.1.2 Internalization

Wertch (1998) [9] points out that the concept of "internalization" can be easily mixed with Descartes's binary opposition of materialism and consciousness, and then makes the internal factors go against with the external factors. Thus, he prefers "appropriation" to "internalization", emphasizing the role of interpersonal communication in social settings at the level of appropriating. Under his influence, Lantolf (2000) [10] regards L2 learning as a process that learners borrow from second language's knowledge by continuous practice and trials. In this paper, I adopt the nomenclature "internalization".

Internalization is defined as the process through which people control their behaviors by adopting language as the medium and then transforming what they have learned in interpersonal communication into self-knowledge (Swain, et al. 2011) [11]. There are three kinds of regulations: object

regulation (tools in the physical world), other regulation (mediation by other people), and self-regulation (individuals' utilization of the internalized external forms of mediation for accomplishing a task).

The development of human thinking is the result of the fusion of social and cultural collisions, and eventually forms human's higher cognitive functions. The process of internalization takes place in two planes: the process of transforming from social and collaborative activities to individual and independent activities, and also the mutual transformation between the inter-psychological category and the intra-psychological category.

2.1.3 The Zone of Proximal Development

In traditional tests, researchers only focus on two layers of information: what learners can do on their own and what learners fail to do. Despite the previous dichotomy of learners' learning stage, Vygotsky suggests that there is also a Zone of Proximal Development (ZPD for short) in the middle. It is what learners can do with more capable others' help and then what they will be able to do independently in the future. That is, for language development to take place, the learners' current as well as potential levels of competence need to be taken into consideration.

Scaffolding, considered as an assistance one learner gets from another person (e.g. teachers, parents, peers) or other mediums during the process that he arrives at the ZPD, helps enable him to complete a learning task. ZPD together with scaffolding provides a dynamic path between learners' current level and potential level. According, in order for the guidance and mediation to be effective, it has to be sensitive to learners' ZPD, with implicit hints given at the initial stage and then explicit ones if necessary. Capable peers also need to offer dynamic instead of static help, consequently, learners are likely to move from other-regulation to self-regulation. This phenomenon has been listed in the agenda of collaborative learning research.

To conclude, constructs like mediation, internalization, ZPD enrich the contents of SCT. Mediation is the central theme to SCT, as language use in SCT is regarded as a dynamic cognitive processing, covering L2 development in process. Object regulation, other regulation, and self-regulation work together as a social interactive process during language learning. ZPD is a zone where other regulation helps an individual to do what he or she could not have done and also promotes self-regulation. In SCT-oriented work, learning, development, and education are viewed as embodying social and cultural mediation in which individuals are involved in learning as a process of adaptation and psychological development.

3. Bottleneck Hypothesis

It is often the case that second language learners experience certain language properties as a challenge and the error rates are relatively higher than other language points. There also exists a gap between the input and the linguistic knowledge that learners acquire. Here comes the question: what are the obscure and complex properties of language and why should that be?

In order to address this fundamental issue, Dekeyser (2005) [12] puts forward a central question: what is easy and what is hard to learn in SLA? In addition to individual difference factors, second language researchers are interested in offering reasonable explanations. Slabkova (2006) [13] proposes the Bottleneck Hypothesis (BH), aiming at partially answering to the question. The hypothesis argues that functional micromorphology is the bottleneck and thus the most challenging part in SLA. Functional morphology carries much information as it bundles a variety of semantic, syntactic, and morphological features (Jensen et.al) [14]. To be more specific, functional morphology, in line with a syntax-before-morphology perspective, is deemed as more difficult than other linguistic domains such as syntax and semantics, and locates at the heart of language acquisition.

Drawing on the development of bottleneck hypothesis, Ellis (2006) describes the bottleneck problem as "the fragile features of language", that is, language learners fail to transform input into intake regardless of the frequent occurrences of certain language features. Jiang (2004) finds that advanced Chinese English learners, though live in American for many years, are still insensitive to grammatical meanings like subject-verb agreement and singular & plural forms [15]. The lack of progress in inflectional morphology is also included in some longitudinal studies (e.g., Schimidt 1983) [16]. The generative framework of SLA identifies the harder or the easier language properties based on their inherent features, which allows people to output and command language. Principles of UG are able to be transferred from the native language; parameter values different from the native ones but available from UG have to be reset to the target value accordingly. Then the latter process is discussed as creating difficulty in SLA. Lardiere (1998) [17] comes up with Feature Reassembly Hypothesis, which leads revolutions UG's understanding or parameter resetting in SLA. He states that morphological competence should be given a special status and thus differentiate itself from syntactic competence.

Having a closer look at the bottleneck hypothesis and its explanatory power in grammatical morphemes, let us begin with the very initial question: how are meanings ac-

quired? Four separate acquisition tasks indeed are of great importance when we learn a second language. Clearly, the lexical items come at the first place, because people cannot speak a language without its words. But learning the grammatical endings is s qualitatively different thing. Once people learn that the *-ed* ending of the verb means past tense, they get the rule and they can apply it to all the regular verbs. Research findings have shown that, lexical items take time to learn and have to be memorized one by one by rote, though, grammatical word endings are actually the hardest to learn despite the truth that they frequently occur in sentence after sentence.

The picture below shows the bottleneck of SLA[18]. In the picture, there are two bottles, the bottle on the left is supposed to illustrate one's native grammar. When people try to use the same grammar and other pieces of knowledge that they have learned in the second language. People turn to the bottle on the right in hope of utilizing target language. In the picture, the process is realized by spilling out some beads. Surely, they cannot come out as fast as they can since there is a bottleneck at work. This picture illustrates that even if people have a good command of the second language, the tight place through which it all comes pouring out are the little words and the word endings with grammatical meaning. We call these parts of words grammatical or functional morphemes. Without those morphemes, sentences do not work.

Figure 1. The bottleneck of SLA (adapted from Slabakova 2014)

In a nutshell, functional categories or functional morphology marks the most salient difference among languages, as it embodies semantic, syntactic, and phonological characteristics and influences the acceptability of a whole sentence.

Here presents a brief summary to the previous two parts: basic information about SCT and Bottleneck Hypothesis, and also some previous studies conducted by researchers are reviewed. In the subsequent part, I will focus on evaluating them in light of their contributions to the second language theories development

4. Evaluations on Sociocultural Theory and Bottleneck Hypothesis

Cases are that most SLA theories are not primarily interested in language learning. Long (2007) argues that it makes no sense to judge to SLA theories solely but they should be evaluated on the basis of their effectiveness and meaningfulness for classroom teaching, as any theory of SLA is likely to be relevant to language teaching practice.

In terms of the pedagogic value and the comprehensibility to teachers, SCT boasts its efforts to language teaching. Gradually it can also shape people's concept of learning. SCT holds that learners' thinking develops in line with the mediation afforded by social interaction. As to teachers, they should prepare suitable study resources, also design reasonable classroom teaching, and also create a better learning environment, which can eliminate negative feelings, lead to team work and finally make students turn from other-regulation to self-regulation. As far as the ZPD is concerned, it also depicts the blueprint that learners can arrive at and that how learners will be able to do on their own in the future. In addition, ZPD, by highlighting the interaction between children, peers, and adults, also helps to activate children's potential and then form a mental mechanism. A remarkable application of SCT in SLA is dynamic assessment, by which many researchers have conducted studies to classroom teaching. Different from traditional tests, the dynamic assessment aims to depict the learners' development potential. Only when teachers know the true level of students' capability, can they teach students in accordance with their aptitude. Though SCT has received furious criticism by cognitive field, it flourishes in recent years. As SCT views language as an important part of minds and also a tool to promote the development of human brain. With the framework of SCT, SLA researches get to know second language learners' level not only from the quality of their language output but find out factors resulting from the sophisticated interaction between language, minds, social interaction, and cultural artifacts. Moreover, the dynamic assessment and the ever-changing status of ZPD need teachers to have a closer look at students' learning process, and in turn contributes to the development of teachers' teaching ability. In my opinion, SCT emphasizes the importance of social interaction in SLA, so it naturally neglects the operation of brain mechanism and only reflects one side of SLA.

Here goes one question: why is it so important to know what language properties are easy and what are difficult to acquire? The reasons are roughly two-folds. For one thing, it helps learners to focus on these properties and then make progress. For another thing, it works as a prac-

tical benefit related to language pedagogy. The Bottleneck Hypothesis tries to reveal what properties are difficult to acquire no matter how frequent usage or occurrences they are. Also, as what have been listed before, most researchers come at an agreement that functional morphology is the most salient difference between languages and thus a bottleneck for second language learners. As language instructors, they can attach more importance to the difficult properties in the language classrooms. As a result, they are likely no to waste time for teaching the easy material that comes to the learners for free. In addition to the advantage that teachers learn to balance the time allocation, they will also be illuminated to relocate the teaching difficult points, functional morphology in particular, and then make a better course design. The Bottleneck Hypothesis tells that functional morphology is difficult for second language learners, but the good news is that the bottleneck can expand itself with practice, which also testifies the motto that "practice makes perfect". Accordingly, teachers can give special tasks for students to practice and learn, and students themselves are encouraged to be cautious with grammar like subject-verb agreement. Possibly, different teaching needs will come up based on the learning target and the native languages, on input and exposure to the various language properties and so on. However, it is always beneficial to keep in mind the functional morphology learning will make a difference to students' SLA. The Bottleneck Hypothesis is an idea trying to explain a language phenomenon, that is, trying to answer the question "what properties are difficult to acquire in SLA". Based on previous empirical studies and also taking personal English learning experience into consideration, I am in favor of this hypothesis. But China has a great population of second language learners, but few studies have taken Chinese as the target language and there are few intervening measures applicable in teaching practice at home and abroad.

5. Conclusion

The second language acquisition theories reviewed in this article have been specific to the Sociocultural Theory and the Bottleneck Hypothesis. Although theories are basically set up for providing explanations about the mechanisms and processes of second language acquisition, each theory may in fact only shed one light on the theory development.

The SCT shows the important contributions that society makes to individual development, addressing the interaction between language learners, the cultural artifacts, and members of the society (usually more capable others). As a result, a person's cognitive development is to a large extent shaped by his surrounding culture. Constructs like mediation, internalization and ZPD have their practical applications in the classroom teaching. Teachers also attach importance to the dynamic development of students' language level and then give suitable guidance. But SCT, highlighting social and cultural elements, might neglect the function of human brain.

Bottleneck Hypothesis answers to the question that "what properties are difficult to learn in SLA" and concludes that functional morphology is the bottleneck for language learners because lots of important information is packed into the functional morphemes and then they influence the understanding of sentences. Since the bottleneck is not at immobile status, it can be flexible in terms of practice. Consequently, teachers can adjust their teaching aim to functional morphology. However, it is a pity that there are only few intervening measures applicable in teaching practice at home and abroad.

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