# The implication of Dynamic systems theory on second language acquisition Based on the study of learners' motivation

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*Abstract:* Dynamic system theory is the latest development of applied linguistics. This paper mainly combs through the basic concepts of dynamic system theory and the similarities between dynamic system theory and learner's motivation. Thus, the motivation of second language learning is viewed from the perspective of dynamic system theory, which is the dynamic process of multi-resource interaction at multiple levels and multi-dimensional. This paper mainly focuses on the study of learner motivation as the starting point, expounds the possible application of dynamic system theory in learner motivation, and puts forward the relevant suggestions of teaching from the second angle.

*Key words:* Dynamic systems theory; Learners' motivation; Second language ; Acquisition teaching

## 1.Introduction

Learner motivation is one of the five important factors in learner's individual difference, which is often used to explain the reason why second language learners are more successful than other learners, so learner motivation has always been a hot topic of research. The reasons for its attention can be divided into the following points: 1. Learner motivation has a predictive effect on second language learning; 2. Learner motivation is an adjustable factor; 3. Learning motivation development is dynamic development; 4. Learning motivation research has many theoretical supports. Therefore, scholars at home and abroad have carried out extensive research.[1] but the inherent problem of second-language motivation is objective, because motivation is dynamic, it depends on complex personal and social factors, it varies with the development of individuals and changes in the environment. And the relationship between learning motivation and learning results is not linear, learning results are also affected by many factors such as learning ability, learning experience, so we should learn from the second language of the entire system, with a dynamic approach to study and look at learning motivation. However, dynamic system theory is dynamic and overall, which has important enlightenment to the study of learner's motivation. Therefore, based on this, this paper will look at the study of learner motivation from the perspective of dynamic system theory and try to propose ways to improve learner motivation.

## 2.DST theory and the study of learner motivation

To explore learner motivation from the perspective of interaction and wholeness, we have to mention the dynamic system theory, referred to as DST, which has received attention from applied linguistics in recent years. The theory attaches great importance to cognitive and social factors, emphasizing that all variables are interrelated, i.e. changes in one variable affect other variables. Because variables are always interactive, the result of the change cannot be calculated accurately or interpreted by decomposition; Therefore, complex system theory has completely related, dynamic and nonlinear development.

## 2.1 The full connectivity of the system

The primary feature of a dynamic system is that it is composed of many variables, which are interrelated and constantly moving. Learner motivation itself can be regarded as a dynamic system, learner motivation is influenced by the learner's cognitive environment (goals or needs, self-belief, learning experience, etc.), teaching environment (e.g. classroom atmosphere, teaching methods, relationship with classmates, etc.), national policy (the importance attached to the second language), social environment (the status of the second language, learning environment, social interaction, etc.), and objective material conditions. Multiple variables derived from multiple environments are interrelated on multiple levels and are therefore called comprehensive connectivity. Dynamic system theory focuses on the interaction between multiple components and the environment inside and outside the system. Taking the study of learner motivation as an example, learner motivation is abstract, depends on complex personal and social factors, and the factors that affect learner motivation are many, not only learner's emotion, self-efficacy, learning strategy, learning interest, and these dimensions are mutual influence and mutual restriction. It can be seen that learner motivation is a complex, dynamic system with many components, and these components are interrelated.

## 2.2 Nonlinear development of the system

In daily learning and teaching practice, it can be found that learners' motivation is sometimes strong and sometimes weak. This reflects the nonlinear development of learner motivation. The theory of dynamic system is expounded in depth. Since the various components of a system are linked and vary from one level to another, subtle changes in one variable not only affect changes in other variables, but also cause changes throughout the system, which is often called the butterfly effect .Muriel Saville-Troiket thinks that context is also essential for motivating students. He recorded two Chinese children named Didi and Gege over a period of several weeks while they were just beginning to learn English in the nursery school. in due time , the two children interviewed by Muriel Saville-Troiket said that they became aware that others could not understand them, and they intended to learn English. over the next few years, they were fluent in English, but none of nursery teacher and children learned even a single word of Chinese.[2]According to Muriel Saville-Troiket' study, nursery teachers and students live in a country where English is the dominant language one of influential factors of motivation which makes them no need  to learn Chinese. The motivation to learn the second language is determined by many factors, such as the policy of the state, the status of the state, the status of the second language, the goal and desire of the self, and so on. In recent years, Chinese scholars pay more and more attention to the study of motivation theory, pay attention to the study of motivation theory from all angles. Lian Jie (1998) holds that attitudes restrict the process of foreign language learning mainly through motivation. Wu Dingxuan analyzed the influence of emotion disorder on foreign language learning and learning motivation.[3] Zhou Fuqin and Yu Guoqing believe that most beginners of English in China have the motivation to increase their knowledge and improve their quality.[4] The learner's initial motivation changes under the long-term influence of external policy pressure and internal utilitarian drive. Qin Xiaoqing  discusses other perspectives of motivation and related theories, psychology and sociological theory discusses the significance of learner motivation, such as Maslow's hierarchy of needs theory, expected value theory, etc. to foreign language learning. Wang Shengsu believes that emotional factors and cross-cultural factors are two factors that affect foreign language learning. [5] A wealth of research has shown that the development of learner motivation is not a linear process, which are influenced by various internal and external factors. In the study of learner motivation, researchers should look at motivation from various angles, so as to better grasp the development and change trend of learner motivation.

## 2.3 The self-organization and attraction state of the system

In language teaching, teachers and learners often experience the phenomenon of plateau: even if the input or contact of the second language is continued, it is difficult to improve significantly, which is fossilization. From the perspective of dynamic system theory, the change and development of the system not only comes from the interaction

of many variables, but also from within the system's self-organization. self-organization refers to "the spontaneous generation of pattern changes that exist in open, constant dynamic systems". Because of the system's self-organization, the system goes through two states: one is attractor state, which is attracted by certain factor. The other is repeller state, At this point the system is in a state of severe turbulence. The attraction state of dynamic system theory is applied to the study of second language learning, which can make us understand the fossilization of intermediary language which often appears in language learning from a new angle.The appearance of fossilization phenomenon reflects the weakening of learner motivation and the temporary weakening of learner motivation. Stagnation represents precisely the state of attraction of the system, stagnation does not mean rigidity, nor is it the ultimate state of stillness, but rather represents an "infinite potential", because perhaps the system of stagnation at this moment will start moving again at the next moment.

Taking the study of learner motivation as an example, one of the reasons for the second language to fossilization phenomenon is inertia, in other words, people's motivation for a certain aspect is not strong, resulting in the learner's performance in a certain aspect of weakening or stagnation. From the perspective of dynamic system theory, the phenomenon of weak motivation should be studied from many angles and contents, including psychosocial perspective, psycholinguism and applied linguistics, to explore the reasons behind it, and to put forward measures to better enhance the motivation of learners.

To sum up, the motivation of second language learning is in constant fluctuation and change at both the macro and micro levels, and it will also become a control parameter to make language learning into a more stable state; Learner motivation has the basic characteristics of DST, and viewing learner motivation from DST perspective can provide new meaning for the field of pedagogy

## 3.Implication of Dynamic systems theory on teaching

Environmental factors are an integral part of dynamic systems, and the environment itself is changing. Therefore, the study of second language motivation from the perspective of dynamic system theory should combine the learner's inner mind with the external environment. From the teacher's point of view, in the daily teaching, from the outside to create a good language teaching environment, teachers should improve their personality charm such as the development of their own strengths, pay attention to the teacher's classroom language teaching atmosphere , the art of learning language and the use of a variety of student-centered teaching methods, such as task teaching methods, situational teaching methods, from the inside should give students a short-term goal and long-term goal, so that students always have an internal pressure and external pressure,

In addition, teachers should pay attention to the interaction between motivation system and teaching, social culture and other environmental systems. The specific teaching and learning environment and the social environment in which the learner is located have an important influence on the formation and development of the learner's motivation, so the learning experience becomes an important part of the motivation, so the teacher can interview the learning experience of the some students with lower motivation, and discover the emotion, environment and cognition and motivation in the language learning experience, so as to combine the individual differences of the learner, and develop a plan to improve the motivation of the students as a whole. From the external system of learner motivation, teachers should pay attention to the interaction between motivation and other individual factors, in teaching, teachers should pay attention to students' emotional sensitivity, reduce students' emotional anxiety, respect students' learning style, and teach students a variety of learning methods and learning strategies, so that students can experience the joy of learning. For example, in writing teaching, teachers can use reading-writing integrated tasks, so that students in the reading situation, so that students have an interest in writing, many aspects to increase students' motivation to write. In vocabulary teaching, teachers can use repetitive dynamic tests, situational teaching and other teaching methods, on the one hand to increase students' vocabulary memory, on the other hand, can increase students' motivation for vocabulary learning. From the point of view of second language learning research, dynamic system theory provides a relatively new research method for teachers, which teacher researchers can adopt longitudinal interview design Qualitative studies of the classroom

and follow-up interviews can be conducted at different points in time, so that data can be used in a real language learning environment to identify real factors that influence students' motivation to learn, rather than being limited to questionnaires. In addition, teacher researchers can use idiodynamics. First, the subjects can be recorded in class, and then the subjects watch their own videos to score their own performance. Finally, the subjects were interviewed to explain their reactions [6]

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