

# A Brief Review of Microgenetic Method in Second Language Acquisition Research (HE728)

Lu Chen

University of International Business and Economics



## INTRODUCTION

Microgenetic method could be defined as a specific method for uncovering the trajectory and mechanism of cognitive development with a focus on variability within a specific group or a subject during a relatively short period of time, through dense observations, under in-depth quantitative and qualitative analysis.

Microgenetic method is identified with three essential properties:

- (a) an adequate observation period;
- (b) dense observation;
- (c) detailed analysis.

In this paper, I will provide a brief overview of microgenetic method and will point out its potential advantages and disadvantages. In the meantime, the current empirical researches based on this method in SLA were examined and evaluated systematically.

## THEORETICAL DEVELOPMENT

Both the name microgenetic and the idea of microgenetic designs were raised by psychologist Heinz Werner (Siegler, 2007)[3]. In the mid-1920s, he performed "genetic experiments" which aimed to describe the unfolding of successive representations that composed psychological events. Then, Werner (1940)[8] investigated how people can distinguish and represent 12 ascending, initially indiscriminable tones, after repeated presentations. It is believed that this rapid sequence of mental states parallels the much slower sequence of states in development with age, so the experiments were also labeled as "microgenetic" (Siegler, 2007)[3]. This method was later approved by many contemporaries, including Vygotsky(1978)[9] and adopted by researchers working in the area of developmental psychology, such as Piagetian, Vygotskian.

Many microgenetic studies have indicated that the development of children's cognitive abilities is a process full of variability and change. For example, different subjects use different strategies; a subject uses different strategies on the same problem on two occasions close in time, and so on (Siegler, 1996)[10]. To capture such variability and changes, Siegler (1996, 2002)[10,11] proposed the overlapping waves theory which emphasizes the unevenness and variability in development. The development of children's cognitive abilities can be fast, slow or stagnant in different time periods, sometimes it moves forward and sometimes it moves backward. For example, the successful attempt of a strategy does not mean that it will be remembered and always effective, while a failed attempt of a certain strategy does not mean that it is completely abandoned in the future. Children may temporarily deviate from the goal to be able to approach it better in the future.

Microgenetic analysis, a new methodological approach for examining and analyzing the variability and change in learning progress, is a powerful support for Siegler's overlapping waves model (Siegler, 2000)[12]. Microgenetic method and the Siegler's overlapping waves theory have posed a powerful challenge to the existing cognitive development theories which generally focus on the typical and regular performance of a certain stage, but ignore the variability. Sicgler (2002)[11] used the ladder-like model to conceptualize Piaget's cognitive development theory (sensorimotor stage, preoperational stage, concrete operational stage and formal operational stage) and pointed out that this model only reflects the macro-trend of group development, but conceals the true situation of children's cognitive development which is full of variations within a group or an individual.

## ADVANTAGES AND DISADVANTAGES

Miller and Coyle (1999)[13]summarized the four major advantages of microgenetic approach.

- (a) this method can directly observe ongoing changes in the process.
- (b) the data yielded by microgenetic studies can be analyzed from different dimensions.
- (c) this method can help us identify variability that occurs in the changes within a group or a subject.

(d) this method is of great applicability.

Limitations:

(a) this method only can be applied to small sample research. The size of sample is limited because researchers need to observe the subjects one by one, moment by moment and record in detail which is a time-consuming and labor-intensive task.

(b) this method is only suitable for highly motivated subjects. Only do the subjects make active and serious attempts in multiple experiments from the beginning to the end, can the research yield valuable findings.

(c) it is difficult to set an appropriate observation period which is very important for microgenetic studies. Some changes are too abstract and subtle to capture, so identifying when a change emerges and when it enters into a stable state is a challenge for researchers.

## EMPIRICAL REAEARCHES

Current Progress of International Research

Current microgenetic studies in SLA mainly concern trial-by-trial assessment of changes. Most related articles use microgenetic analysis to capture ongoing changes in second language writing, speaking and pragmatic ability of L2 learners based on the sociocultural theory, created by Lev Vygotsky. Most microgenetic studies explore the effect of various strategies (e.g., peer interaction, languaging, concept-based instruction, dynamic assessment and gestures) on second language learning based on the zone of proximal development (ZPD) and scaffolding theory raised by Lev Vygotsky.

- (a) Peer collaboration: De Guerrero & Villamil (2002); Platt & Brooks (2002); Belz and Kinginger (2003); Knouzi et al. (2010); DiCamilla and Antón (2012); Mirzaei and Eslami (2013).
- (b) Concept-based instruction(CBI): van Compernelle (2011); Harun and Abdullah (2017).
- (c) Dynamic Assessment(DA): Ableeva and Lantolf (2011); Davin (2016) Gesture: McCafferty (2002); Matsumoto and Dobs (2016).
- (d) Dynamic Systems Theory (DST): Verspoor and Van Dijk (2008)

Current Progress of Domestic Research

Related researches based on this method mainly focus on the frequency effects on second language acquisition, including error correction, vocabulary acquisition, second language oral abilities.

- (a) The error correction researches: Xie Mi (2009); Liu Feng, Wang Dingming (2013); Li Yuping and Han Lina (2010).
- (b) The effect of frequency: Cui Jingjing and Liu Zhenqian (2016); Zhou Dandan (2004); Zhou Weijing (2005).

## CONCLUSION

Compared with other research methods, microgenetic method can capture ongoing changes in development during a relatively short time period, through dense observation and under in-depth analysis. Given the abundant and high-quality data that this method yields and versatile statistical tools for analysis, it is reasonable to envisage a future in which microgenetic studies have proliferated in the field of SLA. Although this method has shown good adaptability in SLA researches, according to the current research situation, it has not attracted widespread attention from second language researchers, and the research scope is still limited. Current articles mainly focus on the effects of several strategies on second language acquisition, such as gestures, DA, peer revision, frequency effects and so on. Only Verspoor and Van Dijk (2008)[30] was under the DST framework to study the emergency of complexity in learner language. There are still some research gaps, such as the process of acquiring a word family, a given sentence or a lexical chunk, which are worthy of further investigation. Moreover, many researchers pointed out the potential adaptability of mirogenetic method in DST research. One of the challenges of working on SLA is to capture the ongoing emergence of complexity, fluency, and accuracy in learner language (Larsen-Freeman, 2006)[1]. Obviously, high-frequency observation and sampling required by microgenetic method can directly capture ongoing changes in learner language on a lexical as well as syntactic level.

In brief, microgenetic method is a viable tool for investigating SLA-related phenomena for L2 researchers and practitioners and there is still great room for microgenetic studies in the future, not only in terms of theoretical development, but also in terms of empirical employment.

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