

The use of microgenetic method in SLA research

Mohammad Javad Ahmadian
(PhD, University of Isfahan, Iran)
Ahmadian.edu@gmail.com

(Received: 23.12.2012, Accepted: 19.02.2013)

Abstract

Microgenetic method is a specific method for studying change in abilities, knowledge, and understanding during short time spans, through dense observations, and over a relatively long period of time. In this paper I will attempt to provide a brief overview of microgenetic method and will point out its potential advantages and disadvantages in the context of second language acquisition. To illustrate the utility of microgenetic method in SLA research, I will then discuss a SLA-related issue which could be addressed via this research method, namely the effects of written corrective feedback on L2 acquisition.

Keywords: Microgenetic method; SLA; corrective feedback; writing.

Introduction

It may go unchallenged to assert that the process of Second Language Acquisition (SLA) is enormously complex. It is complex both in the literal sense of the word and in the technical and metaphorical sense which is realized in a Complexity Theory approach to SLA. The essential prerequisite of unraveling this complexity is embracing and coming to grips with constant flux as well as non-linear, dynamic, and emergent behavior. This might involve a change of perspective and seems to be inevitable; in that the study of second language acquisition is the study of a complex developmental phenomenon which is, by its very nature, interwoven with change, variation, and non-linearity. Viewed from this vantage point, a *macro*-developmental approach (embodied in conventional cross-sectional and longitudinal methods) may not afford comprehensive and adequate descriptions

and explanations of the SLA-related phenomena. This is because, as useful as it may be for depicting the *products* of a process of change, a macro-developmental approach (e.g., longitudinal research) is like taking snapshots with certain intervals in between (Siegler & Crowley, 1991) and thus cannot provide detailed information about *how* developmental changes occur (Lee & Karmiloff-Smith, 2002; Siegler & Crowley, 1991). To the contrary, a *micro*-developmental approach (embodied in microgenetic method and dynamic systems method), which resembles making a movie (Siegler & Crowley, 1991), helps observing developmental changes directly as they occur.

Microgenetic method could be defined as a specific method for studying change in abilities, knowledge, and understanding during short time spans, through dense

observations, and over a relatively long period of time. The findings obtained from this method of research bear potential significance for both SLA researchers and language teachers. As regards researchers, this provides answers to such (longstanding) questions as: Whether the provision of written corrective feedback leads to L2 acquisition, and if so, how (a highly controversial issue since 1996 which will be further discussed in this article)? This research method could also yield findings, or perhaps “provisional specifications” (Stenhouse, 1975) for that matter, which are more readily accessible to teachers in a wide range of contexts, since through this method “researchers can identify when interventions may work and when teaching may become beneficial; [and thus] they can provide more accurate predictions, and contribute to improved teaching” (Granott & Parziale, 2002, p. 14). Furthermore, microgenetic researchers are assumed to “[simulate] real agents of change” and thus manipulations in the laboratory have to do with what happens in the real world (in this case, language classrooms) (Thelen & Corbetta, 2002, p. 60). This being the case, one of the problems inherent in laboratory research – namely the lack of ecological validity – may be overcome.

In this paper, I will attempt to provide a brief overview of microgenetic method and will point out its potential advantages and disadvantages in the context of SLA. To illustrate the utility of microgenetic method in SLA research, I will then discuss a SLA-related issue which could be addressed via this research method, namely the effects of written corrective feedback on L2 acquisition.

Microgenetic method: Brief history and general overview

The concept of microgenetic method was coined by the Austrian developmental

psychologist Heinz Werner in the mid 1920s during his experiments which aimed to investigate the unfolding of successive representations that comprised psychological events. He hypothesized that cognitive changes over various timescales – ranging from milliseconds to a year – share important commonalities (Siegler, 2006) and this very hypothesis has turned into a fundamental assumption underlying microgenetic method. Microgenetic method was later approved by Vygotsky (1978) and further adopted by Piagetian, Vygotskian, and information-processing-oriented researchers working in the area of developmental psychology (see Siegler & Crowley, 1991 for a brief review). This method aims to (artificially) expedite the natural process of change by providing participants with frequent instances of a stimulus (or a particular exercise/instruction) which is hypothesized to drive the cognitive development so as to enable the researcher to observe the change process as it transpires (Kuhn, 1995).

Microgenetic method is identified with three essential properties which distinguish it from conventional longitudinal methods (Granott & Parziale, 2002; Siegler, 2006): (a) observations span a period from the beginning of a process of change until a relatively stable state; (b) within this period the density of observations is high relative to the rate and the period of change; and (c) observations are analyzed intensively via trial-by-trial analyses which zero in on inferring the processes that gave rise to qualitative or quantitative changes. It is important to note, however, that both micro- and macro- developmental approaches (i.e. both conventional longitudinal and microgenetic methods) subscribe to the same epistemological position which, as Lee and Karmiloff-Smith (2002) point out, allows for the objective observations and independent replications of the

developmental phenomena, quantification of the developmental phenomena in terms of meaningful units, manipulation of the developmental phenomena so as to identify the underlying factors which drive specific developments, and the application of scientific reasoning to the description and explanation of the developmental phenomena in question.

Advantages and disadvantages

Overall, microgenetic method has the potential to help SLA researchers deepen their understanding of L2 acquisition and is applicable to both laboratory and classroom contexts (Siegler, 2006). The advantages of microgenetic method are diverse. Drawing on Granott and Parziale (2002), I will summarize and categorize these advantages under three main headings and will attempt to discuss them in the context of L2 acquisition:

(a) Data: The dense observations during short time-spans provide us with valuable information regarding the *processes* and *mechanisms of change* that trigger learning and the development of language. In effect, despite conventional longitudinal research methods which normally adopt a *state-oriented perspective*, microgenetic method approaches language development from a *process-oriented perspective* and thus affords a comprehensive and dynamic picture of L2 acquisition. Some four decades ago, Selinker (1972) argued that the data that would be relevant for the study of SLA are those that deepen our understanding of the psycholinguistic mechanisms and processes which underlie L2 performance and by extension L2 acquisition. Microgenetic method has the potential to yield such data. This method is particularly useful for studying L2 acquisition precisely because it is geared towards identifying *dynamic* and *self-constructive* processes of change (Parziale, 2002) – two features with

which interlanguage is increasingly being identified (Larsen-Freeman, 2006).

(b) Analysis: Analyzing the data obtained through microgenetic method could potentially reveal important attributes of change (Siegler, 1996), namely its *path* (sequence of development); *rate*; *variability* (individual difference); and *sources* (i.e. causes which give rise to change). As it happens, all these issues have featured in SLA research over the last three decades or so (see Ellis, 2008 for an excellent account), nevertheless our current understanding regarding these concepts is, to a considerable extent, based on *inferences* drawn from data obtained under rigorously controlled (quasi)experimental conditions. For example, the source(s) of second language production, Gass and Mackey (2000) rightly point out, is not clear at all as there are often numerous explanations for the language that learners produce and these explanations could only be explored if we adopt a process-oriented perspective. In addition to providing the opportunity for direct observation of change processes, such analyses can illuminate how instructions actually bring about their effects (Siegler, 2002) which could be of paramount importance to applied SLA researchers.

(c) Implications: The rich data and detailed analyses which are the hallmarks of microgenetic method can assist applied SLA researchers to predict when teaching and pedagogical interventions can be beneficial. Within the context of SLA, for instance, the erroneous forms that learners produce after a period of accurate production are perhaps precursors of a change process in their interlanguage systems and indicators of an appropriate time for the provision of (intensive) pedagogical feedback, for, from a microdevelopmental perspective, participants are more prone to positive

change when they *lose stability* (Thelen & Corbetta, 2002) or when *backward transitions* are manifest in their developmental behavior. This, of course, is not a new idea. Even a cursory examination of the SLA literature reveals that such notions as U-shaped or Omega-shaped patterns of learning have been around for decades now and several empirical studies have testified to the fact that the initial appearance of a new grammatical feature does not necessarily mark its consistent use. But, surprisingly, this very fact is all too often simply ignored – a case in point is the way language development and accurate production of language are viewed and dealt with in the majority of studies conducted on the effects of written corrective feedback on L2 acquisition. Microgenetic method has proved a useful tool for studying developmental phenomena which exhibit such characteristics (see Kuhn, 1995). In addition, and more importantly, it “can reveal the steps and circumstances that precede a [developmental] change, the change itself, and the generalization of change beyond its initial context” (Siegler & Crowley, 1991, p. 608).

These positive points notwithstanding, a number of disadvantages stand out. In fact, not unlike any other research method, microgenetic method is very much easier described and discussed than actually done! Succinctly put, microgenetic method is difficult and time-consuming and participants’ linguistic abilities and developments need to be assessed individually so as to glean the kind of detailed data with the properties delineated above (Siegler & Crowley, 1991). Apart from cumbersome data collection procedures and in turn coding problems which may in part result from the researchers’ attempts to artificially accelerate the change processes, the statistical tools with which to analyze such

data are perplexing and may necessitate team-based research endeavors. However, the high-quality and detailed data that this research method yields is certainly worth all the trouble.

An illustration: Written corrective feedback and L2 acquisition

Since the publication of John Truscott’s (1996) critical article on the futility and harmfulness of written corrective feedback (WCF) in L2 writing classes, the area of second language writing has witnessed a burst of interest in investigating the issue of WCF as a popular practice in L2 writing classrooms (Bitchener, 2008; Bitchener & Knoch, 2008, 2009, 2010; Chandler, 2003; Sheen, 2007, to name but a few). Yet, after more than a decade, reviewing the WCF literature reveals that researchers have as not yet reached a consensus as to the effectiveness of WCF for L2 development (Ferris, 2004; Guénette, 2007; Truscott, 2007, 2010). There is also a considerable debate on which type or combination of different types of WCF the best is.

Second language writing researchers now agree that to move towards a complete dismissal of claims made by Truscott (1996, 1999, 2007, 2010), there is a need for more systematic and replicable research studies to examine both short-term and long-term benefits of distinct types and combination of various types of WCF under different circumstances and in both ESL and EFL contexts. Inspired by Ferris (2004), Guénette (2007) claims that the existing controversy on the effectiveness of WCF is to a very large extent attributable to the fact that research studies conducted so far have indeed made use of so different (and in most cases somewhat problematic) research designs and methodologies. At times, according to Guénette (2007), the internal validity of such research is subject to doubt since quite rarely have researchers

controlled for the potential confounding variables such as participants' differential motivation and a myriad of contextual factors. Thus, as Guénette (2007) and Ferris (1999, 2003, 2004) maintain, if we are to reach any consensus as to the efficacy of WCF, the first step is to follow tightly controlled procedures which help conducting systematic and replicable research studies.

Therefore, based on this account, one may argue that the complex nature of WCF would warrant studying this phenomenon via conventional, albeit methodologically rigorous, longitudinal studies (e.g., Bitchener & Knoch, 2010). However, results of such studies, per se, provide but an incomplete picture of L2 acquisition and may not be readily of use for language pedagogy and thus, this article argues, they need to be complemented with the results of process-oriented research (e.g. microgenetic method). This is because there are, undoubtedly, innumerable factors which influence L2 acquisition and in the long run it would be tremendously difficult, if not impossible, to isolate the effects of WCF on L2 development. Also, note that teaching is essentially a 'contingent act' (Larsen-Freeman, personal correspondence) and thus the more we control for extraneous/confounding variables the less ecologically and externally valid our study will be.

This paper argues that microgenetic method has the potential to enable us to examine not only the effects of WCF on L2 acquisition but, more importantly, when, where, and how to supply WCF in order for it to efficiently exercise its effects. The rationale behind this argument is twofold: (1) as it was noted in the previous section, microgenetic method accelerates the change processes by providing participants with

frequent provisions of instruction/stimulus in a way that would not occur in normal experience and this would place us in a position to argue that the accelerated process of change is to a very large extent a function of the intensive treatment given to learners (cf. Kuhn, 1995); and (2) since microgenetic method yields detailed information about both *inter*- and *intra*-individual variability, we can ascertain, with some degree of certainty, when, where, and how participants lose stability or exhibit backward transition in their developmental behavior. As it was pointed out, participants are more prone to developmental change when variability or backward transition surface in their linguistic functioning and these points in time may constitute appropriate opportunities for the provision of WCF.

From this illustration it may become clear how viewing L2 acquisition from a microdevelopmental perspective benefits both SLA research and L2 pedagogy: SLA researchers deepen their understanding of the nature of interlanguage systems and the variables which may affect its development, and since such studies are ecologically valid and explore the underlying acquisitional processes, which are essentially the same in all human beings, results could be used as a basis for empirically-informed decision making in the classrooms.

Conclusion

This short paper aimed to introduce microgenetic method and justify its utility as a viable tool for investigating SLA-related phenomena. Microgenetic method is very difficult to conduct, nevertheless, given the high-quality and detailed data that this research method yields and in light of the increasing ease with which to analyze complex data – thanks to the advancements in designing versatile statistical software – it is not irrational to envisage a future in which

microgenetic studies have proliferated in the field of SLA. This may make it imperative for SLA researchers to not only keep abreast of the cutting edge language-related developments made in the field of psychology using this research method but to consider this method as a useful option in their research tool kit.

References

- Bitchener, J. (2008). Evidence in support of written corrective feedback, *Journal of Second Language Writing*, 17, 102–18.
- Bitchener, J. & Knoch, U. (2008). The value of written corrective feedback for migrant and international students, *Language Teaching Research*, 12, 409–31.
- Bitchener, J. & Knoch, U. (2009). The relative effectiveness of different types of direct written corrective feedback. *System*, 37, 322–329.
- Bitchener, J. & Knoch, U. (2010). The Contribution of Written Corrective Feedback to Language Development: A Ten Month Investigation, *Applied Linguistics*, 31, 193–214.
- Chandler, J. (2003). The efficacy of various kinds of error feedback for improvement in the accuracy and fluency of L2 student writing. *Journal of Second Language Writing*, 12, 267–96.
- Ellis, R. (2008). *The study of second language acquisition*. 2^{ed} edn. Oxford: Oxford University Press.
- Ferris, D. R. (1999). The case for grammar correction in L2 writing classes. A response to Truscott (1996), *Journal of Second Language Writing*, 8, 1–10.
- Ferris, D. R. (2004). The ‘Grammar Correction’ debate in L2 writing: Where are we, and where do we go from here? (and what do we do in the meantime . . .?). *Journal of Second Language Writing*, 13, 49–62.
- Ferris, D. R. (2003). *Response to Student Writing: Implications for Second Language Students*. Lawrence Erlbaum Associates.
- Gass, S. & Mackey, A. (2000). *Stimulated recall methodology in Second Language Research*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Granott, N., Fischer, K. W., & Parziale, J. (2002). Bridging to the unknown: A transition mechanism in learning and development. In N. Granott & J. Parziale (Eds.), *Microdevelopment: Transition processes in development and learning* (pp. 131–156). Cambridge, England: Cambridge University Press.
- Guénette, D. (2007). Is feedback pedagogically correct? Research design issues in studies of feedback on writing. *Journal of Second Language Writing*, 16, 40–53.
- Kuhn, D. (1995). Microgenetic study of change: What has it told us? *Psychological Science*, 6(3), 133–139.
- Larsen-Freeman, D. (2006). On the need for a new understanding of language and its development. *Journal of Applied Linguistics*, 3(3), 281–304.
- Lee, K., & Karmiloff-Smith, A. (2002). Macro- and microdevelopmental research: Assumptions, research strategies, constraints, and utilities. In N. Granott & J. Parziale (Eds.), *Microdevelopment: Transition processes in development and learning* (pp. 243–265). Cambridge, England: Cambridge University Press.
- Parziale, J. (2002). Observing the dynamics of construction: Children building bridges and new ideas. In N.

- Granott & J. Parziale (Eds.), *Microdevelopment: Transition processes in development and learning* (pp. 157–180). Cambridge, England: Cambridge University Press.
- Thelen, E., & Corbetta, D. (2002). Microdevelopment and dynamic systems: Applications to infant motor development. In N. Granott & J. Parziale (Eds.), *Microdevelopment: Transition processes in development and learning* (pp. 59–79). Cambridge, England: Cambridge University Press.
- Selinker, L. (1972). Interlanguage. *International Review of Applied Linguistics*, 10, 209–231.
- Sheen, Y. (2007). The effect of focused written corrective feedback and language aptitude on ESL learners' acquisition of articles. *TESOL Quarterly*, 41, 255–283.
- Siegler, R. S. (2002). Microgenetic studies of self-explanation. In N. Granott & J. Parziale (Eds.), *Microdevelopment: Transition processes in development and learning* (pp. 31–58). Cambridge, England: Cambridge University Press.
- Siegler, R. (2006). Microgenetic studies of learning. In D. Kuhn & R. Siegler (Eds.), (W. Damon & R. Lerner, Series eds.), *Handbook of Child Psychology: Vol. 2. Cognition, Perception, and Language*. Hoboken NJ: Wiley. (6th ed.).
- Siegler, R. S., & Crowley, K. (1991). The microgenetic method: A direct means for studying cognitive development. *American Psychologist*, 46, 606–620.
- Stenhouse, L. (1975). *An Introduction to Curriculum Research and Development*. London: Heinemann.
- Truscott, J. (1996). The case against grammar correction in L2 writing classes, *Language Learning*, 46, 327–69.
- Truscott, J. (1999). The case for 'the case for grammar correction in L2 writing classes': A response to Ferris. *Journal of Second Language Writing*, 8, 111–122.
- Truscott, J. (2007). The effect of error correction on learners' ability to write accurately, *Journal of Second Language Writing*, 16, 1–18.
- Truscott, J. (2010). Some thoughts on Anthony Bruton's critique of the correction debate, *System*, 38, 357–316.
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.