

## How to visualize and quantify variability in learner language? Advantages and limitations of CDST-inspired methods

Matthias Schwendemann

Learner languages are characterised by a fundamental variability (Wisniewski et al. 2022). At the same time, supra-individual and systematic developmental tendencies have been observed in different contexts. In the analysis of learner language, therefore, methods should be used which make variability visible, comprehensible, and thus interpretable. At the same time, methods should allow to capture supra-individual tendencies against the background of fundamental variability (Hiver / Al-Hoorie 2019). A theoretical approach that places variability at the centre of learner language analysis is the Complex Dynamic Systems Theory (CDST) (Verspoor et al. 2008).

In this presentation, exemplary results will be presented to show advantages and limitations of methods that were used in the author's dissertation (Schwendemann 2023). The dissertation project was part of a longitudinal SLA study with adult learners with German as their L2 whose L1 is Arabic, conducted by the Max Planck Institute for Human Cognitive and Brain Sciences together with the Herder Institute at the University of Leipzig. The focus of this longitudinal SLA study has been the development of different syntactic structures in learners' L2.

Specifically, two methodological procedures are presented on the basis of the above-mentioned study using written data, which have recently also increasingly become the focus of CDST-oriented approaches (Fogal / Verspoor 2020). Firstly, results of a longitudinal cluster analysis are presented which was carried out over three points in time (n=44). And secondly, change point analyses are introduced, which were carried out with the data of 2 learners at a total of 24 time points.

Such methods are strongly CDST-inspired (MacIntyre et al. 2017) and can help to make variability in learner data visible and thus possibly analysable. Especially against the background of the assumption of rather linear developmental trajectories, these approaches can help to analyse learner language in a multi-perspective and non-linear way.

Fogal, G.; Verspoor, M. (2020.): *Complex Dynamic Systems Theory and L2 Writing Development*. Amsterdam: John Benjamins.

Hiver, P.; Al-Hoorie, A. H. (2019): *Research Methods for Complexity Theory in Applied Linguistics*. Multilingual Matters.

MacIntyre, P. D.; Mackay, E.; Ross, J. / Abel, E. (2017): The emerging need for methods appropriate to study dynamic systems. In: Ortega, L.; Han, ZH. (eds.): *Complexity Theory and Language Development*. In *Celebration of Diane Larsen-Freeman*. Amsterdam: John Benjamins, 97–122.

Schwendemann, M. (to appear 2023): *Die Entwicklung syntaktischer Strukturen. Eine Längsschnittstudie anhand schriftlicher Daten erwachsener Deutschlernender mit L1 Arabisch*. Berlin: Erich Schmidt.

Verspoor, M.; Lowie, W.; van Dijk, M. (2008): Variability in Second Language Development From a Dynamic Systems Perspective. In: *Modern Language Journal* 92: 2, 214–231.

Wisniewski, K.; Lüdeling, A.; Czinglar, C. (2022): Zum Umgang mit Variation in der Lersprachenanalyse. Perspektiven aus und für DaF/DaZ. In: *Deutsch als Fremdsprache* 59: 4, 195-206.