Tracking developmental patterns in learner corpora: Focus on longitudinal studies[1]

Fanny Meunier

Université catholique de Louvain
Center for English Corpus Linguistics
fanny.meunier@uclouvain.be

Abstract
The paper first briefly reviews some of the research data and methods used to track development in Second Language Acquisition (SLA) studies. The focus is then narrowed down to data and methods in learner corpus research (LCR) and arguments for the use mixed-method research approaches are presented. The third section consists in a concrete illustration of how such mixed-methods can be implemented through the presentation of a multi-disciplinary project on the acquisition of L2s in immersive and non-immersive settings. The last section includes concluding remarks.

Keywords: learner corpus research (LCR), longitudinal data, second language acquisition (SLA), content and language integrated learning (CLIL), mixed-method research

1 Introduction

Various definitions of SLA can be found in the literature but I particularly like Kramsch's (2000: 315) in which she states that SLA is concerned "with the process by which children and adults acquire (learn) second (third or fourth) languages in addition to their native language" and is interested "in the nature of these learners' language and their development throughout life". Three main reasons account for this preference:

[1] The present article is a (slightly revised) written up version of the plenary talk delivered at the 23rd ISTAL Conference organized by the Aristotle University of Thessaloniki (31 March-2 April 2017).

- a distinction is made between 'acquisition' and 'learning', thereby acknowledging the differences that may exist between various contexts and settings in terms of, for instance, amount of input, opportunities for interactions, instruction;
- explicit mention is made of third or fourth – and why not more – languages that can be acquired or learned by multilingual learners and users;
- emphasis is clearly laid on development throughout life.

As this paper addresses ways of tracking developmental patterns in learner corpora, I will first (Section 1) present a short review of the various research data types and methods used to track development in Second Language Acquisition (SLA) as a whole. The focus will then be laid on data and methods used in learner corpus research (LCR) and I will comment on some of the methodological changes that have taken place in LCR over time. I will also plead for an increased use of mixed-method research approaches and will illustrate how this can be achieved concretely (in Section 3) through the discussion of multi-disciplinary project on the acquisition of L2s in immersive and non-immersive settings. The last section includes some concluding remarks and a short discussion of avenues for future longitudinal studies.

2 Research data and methods used to track development in Second Language Acquisition (SLA)

As pointed out by Ionin (2013: 119) "Given the interdisciplinary nature of [Second Language Acquistion] SLA, the field has drawn on the methodologies used in other fields, including linguistics, first language acquisition, psychology, sociology, and education, among others". The research designs used can have various characteristics and be of the main following types[2]:

a. quantitative (involving measurement, numerical results, and statistical analyses);
b. qualitative (with a focus on a rich description rather than on measurement and quantification);
c. observational (where participants are observed in their natural setting, with no

[2] The list is not exhaustive and is organized in no particular order of preference.

intervention from the researchers);

d. experimental (with researchers manipulating variables and assigning participants to different conditions)
e. quasi-experimental (where the experimental intervention is often incorporated into an existing natural setting, such as a second language classroom);
f. longitudinal (following one or more individuals over time);
g. cross-sectional (examining a cross-section of the population at a single point in time).

Whilst some data types can be used in various research designs (e.g. interviews used in cross-sectional or longitudinal quantitative or qualitative research), some designs call for specific data types (e.g. experimental designs typically do not collect authentic 'ecological' usage-based data). Very often, qualitative studies use data collection tools and methods such as observations, interviews, diaries, ethnographies. As for quantitative research, typical data types include surveys, questionnaires and interviews which are collected to learn more about participants' background, attitudes, and opinions relevant to the study of language; language production data, language comprehension and/or judgments tasks are used to, for instance, elicit information about the state of learners' interlanguage; and online psycholinguistic tasks (such as self-paced reading, priming tasks, eye-tracking techniques) can be used to obtain real-time information on cognitive processes involved in language receptive and productive skills.

The – sometimes erroneously perceived – duality of certain data types and methods has led to SLA and Learner Corpus Research (LCR) being put in opposition, with LCR being considered as an exclusively quantitative approach. Whilst, it cannot be denied that earlier LCR studies have often collected data types lending themselves mainly to more quantitative approaches (viz. questionnaires to collect information on participant or text variables; and language production data to analyze the state of learners' interlanguage), current LCR has evolved significantly in terms of data types used, variables collected and research designs implemented (see Sections 2 and 3 for more details; and see Barlow 2005, Granger 2009, and Lozano & Mendikoetxea 2013 for lengthier discussions on the SLA vs LCR debate).

Luckily, 'bidirectional moves' (Myles 2015: 309) between LCR and LA have been observed. viz. more LCR in SLA and more SLA theory in LCR. Granger (2009:

28) explains that learner corpus research is slowly but surely being integrated into SLA, that there is recognition among SLA researchers of the value of the learner corpus approach, together with a corresponding recognition among LC researchers of the importance of SLA findings and frameworks. Myles (2015) attests to an increase in the number, size and diversity of learner corpora (better design criteria) and increased sophistication in the tools used to exploit them. Sections 2 and 3 will analyze and illustrate the LCR-SLA links in some more details.

3 Studying development in LCR

To perform longitudinal studies, it is typically recommended to have a minimum of three repeated observations "on at least one of the substantive constructs of interest" (Ployhart & Vandenberg 2010: 97). Having access to three data-collection points makes it possible to uncover developmental patterns (linear progression or regression, U- or reversed U-shaped behaviour) which would not possibly be revealed with only two data collection points. Longitudinal data collected at numerous intervals are called 'dense data collection' (especially when rich metadata is available), as the more collection points we have, the more refined the interpretation.

Whilst what precedes is certainly true, collecting longitudinal data is a very cost- and time-consuming task (see Meunier 2016) which requires much planning ahead if one wants to minimize - to quote only one issue - attrition (i.e. participants dropping out as 'learning histories' cannot be predicted for certain). Such considerations have often led research teams to fall back on cross-sectional designs to study development, viz. to use different groups of learners at different developmental stages (hence the labels of pseudo- or quasi-longitudinal studies found in the literature. In such studies the 'time' variable of development is measured by a proxy such as the age of the learners or their proficiency level. Such groups, whilst containing different learners, often share a number of characteristics in order to warrant homogeneity in the data (e.g. same mother-tongue background or same learning context). But pseudo-/quasi-longitudinal designs have their limitations as truly individual trajectories cannot be assessed (only group development can be measured). What can be analyzed, however, is individual variation within each group or sub-group.

Such considerations led to a call for new practices/requirements in longitudinal learner corpus data collection. These include (Meunier 2015: 396-398):

- promoting the collection of truly longitudinal data,
- collecting and using more variables (typically recorded as metadata) as dependent variables, potential predictors or dynamic factors impacting SLA,
- analyzing learners' productions as being representative of larger groups or populations (on the basis of the variables encoded in the corpus) and also investigating within-group variability and individual trajectories,
- collecting L1 production data to enable an integrated comparison of the learners' proficiency levels in their L1 and L2 as this greatly enhances the interpretation of the results for individual trajectories (bi-/multi-literacy perspective).

In addition, Myles (2015) also pleads for:

- the collection of more oral data (to increase access to implicit knowledge),
- the use of more varied communicative activities and tasks to gather L2 data (including tasks encouraging the production of infrequent or rare constructions),
- the collection of a wide range of different languages collected, as both L1s and L2s,
- the representation of all proficiency levels in learner corpora.

Given the amount of work (and time) involved in fulfilling such requirements, teamwork and collaborative enterprises are essential. The return on investment – to use a business metaphor – is also greatly be enhanced if other data types are collected in collaboration with researchers specializing in other fields (such as psychology, psycholinguistics or education). A mixed-method research approach including a multi-data and multi-focal perspective on development seems to be a good option to follow if one wants to maximize the quality of the data collected and, subsequently, the quality of the analyses and their interpretations in terms of developmental patterns.

The next section presents a concrete illustration of a collaborative project on the

acquisition of L2s in immersive and non-immersive settings. This multidisciplinary 5-year research project (which started in September 2014) aims to compare Content and Language Integrated Learning (CLIL) to more traditional foreign language classes in French-speaking Belgium. On the basis of a large-scale longitudinal study, the project aims to gain insight into the linguistic, cognitive, socio-affective and educational aspects of foreign language learning and to understand how the interplay between these perspectives may underlie L2 acquisition processes. The data collected for the project involves French-speaking CLIL and non-CLIL learners (control group) with Dutch or English as a target language, at different times during their final two years of primary and secondary school education.

4 CLIL vs non-CLIL in foreign language development: an integrated approach

The project presented below involves a team of four PhD-students, one post-doctoral researcher and six academics (for a lengthier description of the project and the Belgian context, see Hiligsmann et al. 2017). Basically, the team aims to compare CLIL and non-CLIL learners in terms of L2 development in answering three main research questions: what are the differences between the two groups in terms of language development and proficiency? for which linguistic aspects? and according to which cognitive, socio-affective and instructional factors?

Recently published surveys have confirmed that CLIL learners outperform non-CLIL learners as far as target language test scores are concerned (see e.g. Admiraal et al. 2006; Dalton Puffer 2011; Lasagabaster 2008; Lorenzo et al. 2005; Ruiz de Zarobe 2008, 2010; Zydatiß 2007). In recent years, however, voices have risen to downplay the conclusions drawn from CLIL research (Bruton 2011; Ruiz de Zarobe 2010; Seikkula-Leino 2007) and, to this date, it remains largely unclear how much, in what respect and thanks to which (internal and external) processes/factors CLIL students are better than traditional learners. Only limited empirical research has been conducted to evaluate CLIL effectiveness in relation to learners' linguistic achievement, their cognitive development and the teaching and learning processes with regard to teacher education (Cheng 2012; Coyle 2007; Coyle et al. 2010). Some of the gaps in the literature include the fact that:

- vocabulary knowledge is mainly tested on single word knowledge,

- few studies include usage based data/corpora,
- little is known about the exact role of a possible selection bias,
- very few studies include cognitive variables,
- the impact of teaching processes is not documented,
- the actual proportion of the 'content' and 'language' integration is unclear.

To answer our research questions, a large-scale study was launched in which 13 primary schools, 9 secondary schools and a total of 928 pupils are involved. The distribution of the various groups and target languages is presented in Table 1 below.

	CLIL Dutch	Non-CLIL Dutch	CLIL English	Non-CLIL English
Primary school pupils (455)	175	71	103	106
Secondary school pupils (473)	141	114	104	114

Table 1. Distribution of learners per target language and learning condition

For all learners, numerous data types have been/are being collected. To facilitate reading, the five main data types collected are presented in the form of tables with, each time, the description of what it exactly it includes, the types of investigations that can be carried out on that basis, and some comments. Some additional comments are provided given after each table. Table 2 details corpus data; Table 3 questionnaires; Table 4 cognitive and psycholinguistic tests; Table 5 observational data; and finally Table 6 focus group data.

Data type	Includes	To investigate	Comments
Corpus data (MulTINCo)	**For the same pupils:** • **Written data** **L1 French** **L2 English (CLIL & non-CLIL)** **L2 Dutch (CLIL & non-CLIL)** **Control corpus of** **L1 Dutch** **L1 English** • **Spoken data** **L1 French** **L2 English (CLIL & non-CLIL)** **L2 Dutch CLIL & non-CLIL)**	**Linguistic analyses** - **Lexical and syntactic complexity** - **Formulaic language (phraseology)** - **Adjective intensification**	**first data collection point (Oct-Nov 2015) second data collection (April-May 2017)** **Collected (April-May 2017) but not transcribed/analysed yet**

Table 2. Corpus data

It should be noted here that corpus data has only been collected for secondary school pupils (i.e. 473 learners). As can be seen from Table 2, both written and spoken data are collected, in the learners' L1 and L2. In addition two L2s are targeted: English and Dutch (a language for which much less corpus data is available in research today). As for the control L1 Dutch and English corpora, they have been collected from native speakers of a similar age (late teenagers) and on similar topics.

Data type	Includes	To investigate	Comments
Questionnaires	**For pupils, parents, teachers, school principals**	**socio-linguistic variables, SES background data, attitudes and motivation**	**collected**

Table 3. Questionnaires

The collection of numerous questionnaires (from all actors of the educational settings we are analyzing) enabled us to include rich metadata in our database (e.g. learner sociolinguistic variables) but also to access socio-affective data (related to attitudes and motivation for instance).

Data type	Includes	To investigate	Comments
Cognitive and psycholinguistic tests	Tests in the L1 Tests in the L2	IQ Non-verbal intelligence Inhibition processes Executive control etc.	first data collection point (Oct-Nov 2015) second data collection (April-May 2017)

Table 4. Cognitive and psycholinguistic tests

The experimental data types collected though cognitive and psycholinguistic tests are helpful for the analysis of cognitive aspects in themselves but they also serve as variables potentially impacting language acquisition.

Data type	Includes	To investigate	Comments
Classroom observations	Recordings and observation grids	e.g. L1 vs L2 use Focus on form Type of feedback Use of non-verbal cues	Data collected (but not analysed yet)

Table 5. Observational data

Data type	Includes	To investigate	Comments
Focus groups	Small groups Semi-guided interviews	Qualitative analysis of a number of previous findings	Data collected (but not analyzed yet)

Table 6. Focus group data

The observational and focus group data collected enable us to carry out more qualitative analyses and to provide us with more interpretative elements for the various analyses carried out.

The availability of multiple data types makes it possible to investigate the interplay between various aspects in SLA. Whilst some of the studies carried out in the framework of the project include purely linguistic analyses (see Bulon et al. 2017

on the use of global complexity measures to assess second language proficiency and compare CLIL and non-CLIL learners of English and Dutch in French-speaking Belgium), others have focused on elements such as classroom anxiety and enjoyment and the possible differences between various target languages (Dutch vs English) and instructional settings (CLIL or not (see De Smet et al. 2018); another example is a study on the effects of input on L2 writing skills in English and Dutch (Van Mensel et al. submitted).

5 Concluding remarks

The new practices or requirement for the study of developmental patterns (called for and listed in Section 2) can be met when a mixed-method and multi-data approach is used. The project presented in Section 3 has, for instance, collected L1 production data to enable an integrated comparison of the learners' proficiency levels in their L1 and L2, has collected written and oral data produced by the same learners, has used communicative activities and tasks that differ from the typical 'write an essay on xxx' task, has collected data for both English as an L2 and for a less represented language (Dutch here), and data at less represented proficiency levels (primary and secondary school pupils). Such an enterprise would, however, have been impossible without a team of researchers. That is why I would strongly encourage researchers to collaborate on the data collection and analysis front to ensure the collection of rich longitudinal data and to contribute to a better understanding of all the variables that interact in the complex process of multilingualism.

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