PROCESSABILITY APPROACHES TO RECEPTIVE THIRD LANGUAGE ACQUISITION: IMPLICATIONS FOR MULTILINGUAL CLASSROOMS

Helen Forsyth
Faculty of Education, Free University of Bozen-Bolzano (Italy)

Abstract

Existing research indicates a qualitative difference between Second Language Learning and Third Language Acquisition, and certain psycholinguistic and developmental aspects to multilingual learners merit investigation. The present paper examines stages in receptive learner acquisition of English as a Third Language at Italian-medium primary schools in South Tyrol in Italy employing a picture selection task and implicational scaling analysis. It highlights the role that processing approaches to acquisition proposing constraints on developmental readiness and cross-linguistic influence may play for the emergence of receptive competence in morpho-syntactic structures.

Keywords: Teachability hypothesis, processability theory, third language acquisition, receptive competence, multilingualism.

1. Introduction

An increasing proportion of the world's population is learning English as a third or, additional, language because of mass migration, globalisation and technological advances, or the presence of autochthonous minority languages. Inevitably, questions arise concerning decisions on didactic approaches to an eventual third language taken by schools in these regions (Cenoz & Gorter, 2005). Research into bilingualism has found existing competence in two languages to create advantages for Third Language Acquisition (TLA), which benefits from more language learning experience (Golonka, 2010), the effects of bilingualism on cognition (Bialystok, 2009), and access to two linguistic systems (Cenoz, 2003). Competent users of two languages may also display more positive attitudes towards learning a third language potentially thanks to sociolinguistic factors (Brohy, 2001). From a psycholinguistic perspective, bilingual competence is said to feature non-linearity, individual variation, and interdependence (De Angelis, 2007; Jessner, 2008). TLA and multilingualism has emerged as a sub-field in its own right, separate to that of bilingualism, and has produced a variety of models and theories focusing on the role of cross-linguistic influence (Rothman & Cabrelli Amaro, 2010), metalinguistic knowledge (Herdina & Jessner, 2002), and the extent and nature L1 and L2 influence in TLA (Bardel & Falk, 2007).

2. Literature review

A study of receptive acquisition from a processability perspective of morpho-syntactic structures in early stage third or additional language learners at primary school presents a little-explored means of investigating the proposed qualitative difference between Second Language Acquisition (SLA) and TLA. Processability Theory (PT) (Pienemann, 1998, 2005) is a cognitive approach to language acquisition that takes the theory-building capacity of the learner to be the driving force behind the acquisition of language competence, and seeks to explore the means by which linguistic skills become automatic, or procedural (Jordan, 2004). PT has its origins in the morpheme order acquisition studies carried out in the 1970s (Bailey, Madden & Krashen, 1974; Dulay & Burt, 1973), which took inspiration from studies on first language acquisition conducted in naturalistic settings (Brown, 1973; Cazden, Cancino, Rosansky & Schuman, 1975). Researchers found certain morpho-syntactic structures to emerge in the same set order for both L1 and L2 learners regardless of input, creating the L1=L2 hypothesis (Jordan, 2004) - a phenomenon that was attributed to unknown mechanisms at the time. Attention was also turned to SLA learners of different native language (L1) backgrounds (Pica, 1983; Pavesi, 1986) with the aim of exploring whether second language (L2) learning could be a universal and predetermined process independent of the L1 variable. As attention was increasingly applied to L2 learning contexts, Pienemann devised the Teachability Hypothesis (TH), which seeks to provide 'a set of psycholinguistic background information on which teaching methods

should be based.' (Pienemann, 1989:76), and elaborated the broader framework of PT. The TH's treatment of the theory-practice interface has since informed teaching methodology and syllabus design, which previously tended to rely on intuitive ideas for grading levels of difficulty in materials. A substantial body of empirical evidence supports the TH (Ellis, 2008: Boss, 1996; Mansouri & Duffy, 2005), and it continues to represent a theoretical model with strong predictive power for the acquisition of morpho-syntactic structures (Jordan, 2004).

3. Premises of PT

PT conceives L2 acquisition in terms of sequential progression through a series of stages, with Stage 1 comprising the processing skills that are first acquired, and Stages 5 or 6 the last skills to be acquired. The learner is said to pass upwards through the stages and activate the procedures in a cumulative fashion. Figure 1 (without numbered stages) illustrates the schedule for interlanguage production.

Figure 1. Developmental stages for L2 English morphology with examples. Source Di Biase et al. (2015)

Processing Procedure		Structure	Example
S-BAR Procedure		e.g., subjunctive marking in subordination	*I suggest he eat less.* *It's time you left.*
Sentence Procedure		SV agreement: 3rd person sg -s	*Peter loves rice.*
Phrasal Procedure	NP Procedure	phrasal plural marking	*these girls* *many dogs* *three black cats*
	VP Procedure	AUX + V: have + V-ed MOD + V be + V-ing	*they have jumped* *you can go* *I am going*
Category Procedure		past -ed plural -s possessive 's verb -ing	*Mary jumped* *my brothers working* *Mary's car* *he eating*
Lemma access		single words formula	*station here* *my name is Pim*

In addition to those within the developmental dimension, certain structures display a degree of variation (Dyson, 2004) and thus belong to the variational dimension, which is said to be more responsive to well-timed instruction and free of the constraints affecting the teachability of developmental features (Pienemann, 1989).

4. Reception (decoding) and production (encoding)

Differences may arise between learner decoding (receptive) processing and encoding (productive) processing. On a chronological level, the general assumption in SLA/TLA is that comprehension emerges earlier than production of morpho-syntactic structures (Clark & Hecht, 1983; Chondrogianni & Marinis, 2012; Gass, 2017). Another aspect is the concept of separate workspaces for production and comprehension in the brain. Larsen-Freeman finds evidence for 'overlap between a comprehension grammar and a production grammar' (2002:282), while Levelt (1989) conceptualises language production and comprehension to involve two separate modules. These issues could lead to asynchronies that language teachers need to be aware of.

5. Transfer

Considerable evidence for cross-linguistic influence has been gathered from bilinguals and a variety of models have been elaborated for TLA, including the Cumulative Enhancement Model (Flynn et al., 2004), the Typological Primacy Model (Rothman, 2013), amongst others. It is reasonable to expect the possibility of transfer effects to be increased in tri- or multilinguals. The PT-aligned Developmentally Moderated Transfer Hypothesis (DMTH) (Pienemann & Lenzing, 2015) addresses questions of transfer, which is said to be constrained by the capacity of the developing target language processor (Lenzing, 2021).

6. Study objectives

Research questions guiding the cross-sectional study in question are the following:

1) **In the groups tested, does receptive grammar develop in the same stages found for productive grammar and which are predicted by PT?**

2) **Do the L3 English study participants transfer features from their L1 and/or L2 to English? If so, under which constraints does transfer take place?**

PT-related research has typically drawn on empirical productive learner data, leaving receptive learner data and reception-production interaction mostly unexplored (Ellis, 2008). This study attempts to operationalize the emergence of morphological structures in third language (L3) learners focusing on receptive data.

7. Methodology

The following six Category Procedure (Stage 2), one Phrasal Procedure (Stage 3) and two Sentence Procedure (Stage 4) phenomena lending themselves to testing learners' comprehension were selected:

Stage 2 Subject Verb Object (SVO), Plural (Plu), Negative (Neg), Genitive (Gen) or Possessive -s, Pronoun Subject (ProSbj) and Possessive Determiner (Poss)

Stage 3 Pronoun Object (ProObj)

Stage 4 Copula Verb Agreement (AgrC) and 3rd person singular Verb Agreement (AgrV)

Instrument for observing emergence was the Early Language and Intercultural Acquisition Studies Grammar Test (ELIAS GT) versions A and B (Kersten, Piske, Rohde, Steinlen & Weitz, 2010) - a picture selection task (3 multiple choice options: correct/incorrect/distractor). The two A and B testing sessions were administered 7 days apart to maximise the concentration span of the participants. The ELIAS GT relies on morpho-syntactic contrasts and measures learners' knowledge of nine morpho-syntactic structures by instructing them to match orally presented prompts containing a target structure with pictures representing the propositional content of this prompt (Buyl & Housen, 2015). Each prompt is accompanied by three drawings: one representing the prompt, a second an error that contrasts with the prompt grammatically, and a third functions as a distractor that depicts a different propositional content to the prompt. Two intact, mixed-gender groups of 7-8 year olds (group 1, n=42), and 9-10 year olds (group 2, n=32) attending an Italian-language primary school formed the sample. They receive 4 weekly lessons of English from in the first school year, at 5-6 years old. The population investigated displays endogenous bilinguality (presence of L2 community) for Italian and German, and English is an exogenous language (absence of L3 community) (Hamers & Blanc, 2000). An emergence criterion of at least 5 out of 6 ($\geq$5/6) target-like responses was chosen to mark emergence of a production structure, classed as the 'first systematic use' (Pienemann, 1984:191). Scores of $\geq$5/6 and 6/6 responses were recorded for both groups. Implicational scaling, the preferred method of analysis in PT studies (Pienemann, 2005), which seeks to arrange the morpho-syntactic structures into a hierarchy whereby the emergence of one structure implies the previous emergence of one or more structures for each learner (Ellis, 2008), was used. A coefficient of scalability (c scal) was calculated to establish whether the data are truly scalable and unidimensional and can therefore support the PT hierarchy, with the lower threshold set at 0.60 (Hatch & Lazaraton, 1991).

8. Results

The first and second matrices for each pair achieved different results in terms of scalability:

Matrix 1; $\geq$5/6 correct n=42 (group 1): c scal 0.5000 (non-scalable)

Matrix 2; 6/6 correct n=42 (group 1): c scal 0.66672 (scalable)

Matrix 3; $\geq$5/6 correct n=32 (group 2): c scal 0.51875 (non-scalable)

Matrix 4; 6/6 correct n=32 (group 2): c scal 0.74181 (scalable)

In both sample groups, the $\geq$5/6 emergence criterion yielded non-valid scalability, while the 6/6 emergence criterion category achieved the required validity. One particular deviation in the findings for the $\geq$5/6 criterion was the mode (10 participants) for Matrix 3, whereby acquisition of the Stage 4 Copula AgrC took place before Stage 3 ProObj.

9. Interpretation

It appears that the more the responses display target-like accuracy, the more they adhere to developmental trajectory predicted for the PT Stages 2-4. There is some intra-stage variability, especially in the older group, who may be entertaining a wider variety of options for comprehension in their Hypothesis Space (Pienemann, Kessler & Itani-Adams, 2011). Regarding transfer, German is typologically more similar to English than Italian (Hakansson, 2017) and overlaps more frequently than Italian in terms of morpho-syntax, as well as phonology, something that may play an important role in comprehension tasks. However, this study found that possible facilitative transfer from L2 German does not necessarily aid

accuracy in the comprehension of certain structures such as the 3rd person possessive determiner (Poss), indicating that learners were not at the developmental stage to benefit from facilitative transfer for this structure. DMTH-constrained transfer is said to occur only from Stage 3 of the PT hierarchy (Buttkewitz, 2018). Lower scores for Poss feature more in the younger sample group. There was evidence of learners making recourse to facilitative transfer from L2 German for the Gen *'s* morpheme and 3rd person ProSbj, especially for the older group. This would support the DMTH, as older learners are more likely to have arrived at Stage 3 in the PT hierarchy.

10. General teaching implications and future research

There are a number of possible teaching implications deriving from PT-related research, which stresses the need for teachers to deliver lessons that respect learners' developmental readiness and to wait for one structure to be acquired by the class before moving on to the next, both for production and reception. Concerning teacher training, findings from PT-related studies can offer teachers increased awareness of their students' interlanguage development and orientation, consequently predicting and classifying non-target-like language and adopting realistic expectations of achievement. Regarding methodology, form-focused instruction may take a developmentally moderated approach with the aim of determining the items to target at any given point in time, and successfully utilize findings from PT research via Developmentally Moderated Focus on Form (Di Biase, 2008). Task-Based Language Learning (Norris & Ortega, 2000; Willis & Willis, 2007) is highly compatible with PT and the TH because it may be geared towards classes involving different stages of development. Further research may reveal whether data collected within the PT framework for comprehension correspond with production data chronologically. Additional research would also be needed to examine the factors involved in the acquisition of variational features in multilinguals and elaborate guidelines for identification of these features, as well as testing the DMTH for other multilingual contexts. The formulation of explicit definitions of emergence for receptive comprehension, and the devising of self-paced reading/listening or eye-tracking tasks to target online processing would also be of value. Though the study outlined is purely descriptive, third language teachers in contexts with similar language constellations may be prompted to reflect on the architecture of the language processors of their multilingual students and consequently put any pedagogically-attuned predictions into practice.

References

Bailey, M. & Krashen, S. (1974). Is there a 'natural sequence' in adult second language learning? *Language Learning,* 21(2), 235-43.

Bialystok, E. (2009). *Bilingualism in development. Language, literacy, and cognition.* 7th printing. Cambridge: Cambridge University Press.

Boss, B. (1996). German grammar for beginners: The teachability hypothesis and its relevance to the classroom. In Sola, C. A., Rolin-Ianziti, J. & Sussex, R. (Eds.) *"Who's afraid of teaching grammar? Working papers in applied linguistics,* 1, 93-103.

Brohy, C. (2001). Generic and/or Specific Advantages of Bilingualism in a Dynamic Plurilingual Situation: The Case of French as Official L3 in the School of Samedan (Switzerland). *International Journal of Bilingual Education and Bilingualism* 4(1), 38-49.

Buttkewitz, P. (2018). *Acquiring English as a Third Language: A Processability Perspective* (Doctoral dissertation, Universität Paderborn). Retrieved from https://digital.ub.uni-paderborn.de/hs/content/titleinfo/2908115

Buyl, A. & Housen, A. (2015). Developmental stages in receptive grammar acquisition: A Processability Theory account. *Second Language Research*, 31(4), 523-550.

Cazden, C., Cancino, H., Rosansky, E., Schuman, J. (1975). "Second Language Acquisition Sequences in Children, Adolescents and Adults". Cambridge, Mass.: Harvard University.

Cenoz, J. (2003). The additive effect of bilingualism on third language acquisition: A review. *International Journal of Bilingualism,* 7(1), 71– 87.

Cenoz, J. & Gorter, D. (2005). Trilingualism and minority languages in Europe. *International Journal of the Sociology of Language*. 171, 1.

Chondrogianni, V. & Marinis, T. (2012). Production and processing asymmetries in the acquisition of tense morphology by sequential bilingual children. *Bilingualism: Language & Cognition* 15, 5-21.

Clark, E. V. & Hecht, B. F. (1983). Comprehension, Production and Language Acquisition. Annual Review of Psychology. 34, 325-349.

De Angelis, G. (2007). *Third or Additional Language Acquisition*. Multilingual Matters. Berlin: De Gruyter.

Di Biase, B. (2008). Focus-on-form and development in L2 learning. In Kessler, J.-U. (Ed.), *Processability approaches to second language development and second language learning* (pp. 197-219). Newcastle: Cambridge Scholar Publishing.

Di Biase, B., Kawaguchi, S. & Yamaguchi, Y. (2015). The development of English as a second language. In Bettoni, C. & Di Biase, B. (Eds.), *Eurosla Monograph Series*, 3, 85-115. Amsterdam.

Dulay, H. & Burt, M. (1973). Should we Teach Children Syntax? *Language Learning*, 23, 245-258.

Dyson, B. (2004). *Developmental style in second language processing: A study of inter-learner variation in the acquisition of English as a Second language.* (Doctoral dissertation, University of Western Sydney). Retrieved from https://researchdirect.westernsydney.edu.au/slandora/object/uws:817/datastream/PDF/view

Ellis, R. (2008). *The Study of Second Language Acquisition* (2nd ed). Oxford: Oxford University Press.

Flynn, S., Foley, C. & Vinnitskaya, I. (2004). The Cumulative-Enhancement Model for Language Acquisition: Comparing Adults' and Children's Patterns of Development in First, Second and Third Language Acquisition of Relative Clauses. *International Journal of Multilingualism,*

Gass, S. (2017). *Input, Interaction, and the Second Language Learner*. New York: Routledge.

Golonka, E. (2010). The Influence of Prior Language Learning Experiences on Learning of Unrelated or Distantly Related Languages. *Russian Language Journal*, 60, Special Issue. American Councils for International Education.

Hakansson, G. (2017). The Typological Challenge in PT. Dyson, B. & Hakansson, G. (Eds.), *Understanding Second Language Processing: A focus on Processability Theory (Bilingual Processing and Acquisition (BPA),* Band 4. Amsterdam: John Benjamins, 79-103.

Hamers, J. & Blanc, M. (2000). *Bilinguality and Bilingualism.* Cambridge: Cambridge University Press.

Hatch, E. & Lazaraton, A. (1991). *The Research Manual.* Boston, MA: Heinle & Heinle.

Herdina, P. & Jessner, U. (2002). *A Dynamic Model of Multilingualism: perspectives of change in psycholinguistics.* Multilingual Matters 121. Berlin: De Gruyter.

Jessner, U. (2008). Teaching third languages: Findings, trends and challenges. *Language Teaching*, 41(1), 15–56.

Jordan, G. (2004). *Theory Construction in Second Language Acquisition.* Amsterdam: John Benjamins.

Kersten, K., Piske, T., Rohde, A., Steinlen, A. & Weitz, M. (2010). *Early Language and Intercultural Acquisition Studies (ELIAS).* Multilateral Comenius Project funded by the EU.

Larsen-Freeman, D. (2002). Making sense of frequency. *Studies in Second Language Acquisition* 24: 275–285.

Mansouri, F. & Duffy, L. (2005). "The pedagogic effectiveness of developmental readiness in ESL grammar. *Australian Review of Applied Linguistics,* 28(1), 81-99.

Norris, J. M. & Ortega, L. (2000) Effectiveness of L2 Instruction: A Research Synthesis and Quantitative Meta-analysis. *Language Learning* 50(3), 417 - 528.

Pavesi, M. (1986). Markedness, discourse modes and relative clause formation in a formal and an informal context. *Studies in Second Language Acquisition*, 8, 38-55.

Pica, T. (1983). Adult acquisition of English as a second language under different conditions of exposure. *Language Learning,* 33, 465-497.

Pienemann, M. (1984). Psychological Constraints on the Teachability of Languages. S*tudies in Second Language Acquisition* 6(2), 186-214.

Pienemann, M. (1989). Is language teachable? Psycholinguistic experiments and hypotheses. *Applied Linguistics, 10*, 52-79.

Pienemann, M. (1998). *Language processing and second language development: Processability theory.* Amsterdam: John Benjamins.

Pienemann, M. (2005). An introduction to Processability Theory. In M. Pienemann (Ed.), *Cross-linguistic Aspects of Processability Theory*, 1-60. Amsterdam: John Benjamins.

Pienemann, M. (2015). An Outline of Processability Theory and its Relationship to other Approaches to SLA. *Language Learning*, 65(1), 123–151.

Pienemann, M. & Lenzing, A. (2015). Processability Theory. In Van Patten, B. & Williams, J. (Eds.). *Theories in second language acquisition: an introduction,* 159-179. New York: Routledge.

Pienemann, M., Kessler, J-U. & Itani-Adams, Y. (2011). Comparing levels of processability across languages. *International Journal of Bilingualism, 15*(2), 128–146.

Rothman, J. (2013) "Linguistic and cognitive motivations for the Typological Primacy Model (TPM) of third language (L3) transfer. Timing of acquisition and proficiency considered". *Bilingualism: Language and Cognition*, 18(2), 179-190.

Rothman, J. & Cabrelli Amaro, J. (2010). "What variables condition syntactic transfer? A look at the L3 initial state". *Second Language Research*, 26(2), 189-218.

Willis, D. & Willis, J. (2007) *Doing Task-based Teaching*. Oxford: Oxford University Press.