**Subtractive language groups design – a new standard in L3A research**

*Natalia Mitrofanova[1], Yulia Rodina[1], Roumyana Slabakova[2,3] and Marit Westergaard[1,3]*

[1]UiT The Arctic University of Norway, [2]University of Southampton, [3]NTNU Norwegian University of Science and Technology

The formal study of L3/Ln acquisition is a field that has developed rapidly over the last two decades, informed both by previous work on L2 acquisition and current work on processing and inhibitory control in bi- and multilinguals.

Existing theoretical approaches are mainly focused on -- and are differentiated by their answers to -- questions related to cross-linguistic influence (CLI) from previously acquired grammars. These include: 1) source of CLI (L1, L2, typologically closest language, the dominant language etc.); 2) type of CLI (only facilitative, or also non-facilitative); 3) extent of CLI (wholesale, or property-by-property; see Rothman et al., 2019; Westergaard et al., forthcoming for an overview).

The *mirror image groups* methodology (Rothman, 2013; Marsden, 2021; see also Ringbom, 1987; Cenoz and Valencia, 1994) makes it possible to test whether the L1 or the L2 has a privileged role in influencing the developing L3 grammar, i.e., to assess the effect of the order of acquisition in L3A. This is achieved by comparing two groups of L3 learners with the same previously acquired languages but contrasting in the order of acquisition of these languages (for instance, Ringbom, 1987 compares two groups of bilinguals: L1 Swedish/L2 Finnish and L1 Finnish/L2 Swedish learners acquiring L3 English).

However, the mirror image groups methodology cannot provide a reliable answer to the question of whether only one or *both* of the previously acquired languages are the source of CLI in the L3, or to evaluate the size of the effects associated with the individual languages (see Green, 2017; Lago et al., 2021). In this talk we will present a different study design, referred to as *subtractive language groups* design, which allows us to assess the extent of CLI from each of the previously acquired languages on the L3. In experiments employing this methodology, the performance of the L3 group is compared to L2 controls – where the target language is kept constant, but the other languages are varied parametrically. For example, if we take a group with L1 Greek–L2 English–L3 Spanish, we can isolate the effect of Greek and English on the development of the L3 by comparing the performance of this group to the performance of an (otherwise matched) L1 English–L2 Spanish group and an L1 Greek–L2 Spanish group. If we find significant differences between the L3 group and the L2 control groups we can reject the hypothesis that the subtracted language does not exert influence on the L3 (i.e., we can reliably state that this language *does* influence the learners' grammatical behavior in the L3).

We will discuss the application of this methodology in a range of recent studies on L3A (Kolb et al., 2022; Jensen et al., 2022). The results of these studies provide support to a new approach to multilingual language acquisition where crosslinguistic influence is assumed to be due to co-activation of previously acquired languages in processing and is primarily governed by abstract similarity between individual linguistic properties (Westergaard et al. 2017, forthcoming; Westergaard, 2019, 2021).

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