

# PROGRESSIVE AND REGRESSIVE TRANSFER IN THIRD LANGUAGE ACQUISITION AND DEVELOPMENT

## An up-to-date review

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**Abstract** – This contribution provides an up-to-date classification of the most important theoretical models accounting for Third Language Acquisition (TLA). Also, it aims to enrich the gamut of studies on cross-linguistic influence (CLI) by adding up critical observations and interpretations on recent research on both progressive and regressive transfer in TLA and development. In this work, we also try to cast light on potential lines for future research, by placing emphasis on some areas of TLA studies which have been so far understudied. First, we discuss the issues in giving a univocal definition for the process of TLA, and untangle the role of linguistic and extralinguistic factors in CLI between a native language (L1), a second language (L2) and a third language (L3). Next, we sketch different scenarios for what concerns potential sources of progressive transfer: absolute/full transfer from L1, as argued by the “Developmentally Moderated Transfer Hypothesis”; privileged transfer from L2, as postulated by the “Second Language Status Factor”; transfer from any previously acquired language, as maintained by the “Cumulative-enhancement Model” and the “Typological Primacy Model”; property-by-property transfer, as supported by the “Parasitic Model”, the “Linguistic Proximity Model” and the “Scalpel Model”. Then, we present the only theoretical framework currently present in literature describing regressive transfer in TLA, i.e. the “Phonological Permeability Hypothesis”. Finally, we suggest that sociolinguistic, socioeconomic and socioeducational factors should gain more relevance in TLA studies, and that a “Dynamic Model” may have a crucial role in interpreting the intersection of all these multifaceted aspects.

**Keywords:** Third Language Acquisition; Cross-linguistic Influence; Progressive transfer; Regressive Transfer; Multilingualism

## 1. Introduction

The phenomenon of Third Language Acquisition (TLA) has spread out quickly in the last few decades, as one of the many-sided effects of the age of globalization we currently live in. Diffusion of TLA settings is indeed due, on one side, to the fast-growing amount of population movements around the globe. This claim particularly holds true for those situations in which speakers are either involved in a situation of bilingualism or *diglossia* at the time of departure (Bettoni and Rubino 1996; Rubino 2014), and/or in which migrant children speak both the host country’s language and a heritage language (HL), and at the same time learn a foreign language at school (Gabriel *et al.* 2018, p. 59). At the same time, we are also witnessing an increasing worldwide presence of school/university programs in which two or more languages are taught simultaneously.

Undoubtedly, dynamics of TLA show interesting repercussions on several levels of investigation, for instance on problems related to native language maintenance or change, transfer (either from the L1 to the L2 or L3, and *vice versa*), and on strategies of language teaching. In addition, analysing performances of L3/*L<sub>n</sub>* acquirers/learners can undeniably provide an insight on how competence in different linguistic systems is stored within the brain of the speaker, and on how and to what extent these systems may influence each other (Slabakova 2017).

As a consequence, research on multilingual settings (broadly speaking, where more than two languages are involved) and multilingual speakers has recently received mounting interest, and is starting to gain its own place within the wider dimension of non-native language acquisition studies (Angelovska 2017; Bardel, Falk 2007, 2012; Cabrelli Amaro 2017; Cabrelli Amaro *et al.* 2012; Cenoz 2003, 2013; Cenoz *et al.* 2001, 2003; De Angelis 2007; Flynn *et al.* 2004; Gut 2010; Rothman 2011, 2013, 2015; Rothman, Cabrelli Amaro 2010; Slabakova 2017; van Compernelle 2016, among others). However, as we are going to show in the following paragraphs, giving a univocal definition of third languages (L3) and L3 acquirers/learners is still posing challenges among scholars.

## 2. Second Language acquisition vs Third Language Acquisition

### 2.1. Terminological problems

First, we believe it is necessary to shed light on the problems concerning the distinction between Second Language Acquisition (SLA) and acquisition of additional languages. As De Angelis (2007) points out, the term “second” has traditionally accounted both for second language and for any other non-native language in the acquisition process (see also Ringbom 1987). According to this perspective, one may postulate the presence of a single shared pattern for both the acquisition of a second language and the acquisition of multiple/additional systems.

Quite the opposite, the discrimination between L2 and L3 – or, more generally,  $L_n$  – is indeed warranted, as prior knowledge and prior learning can play a fundamental role throughout the process. In support of this statement, empirical evidence shows that the multilingual learner’s approach to subsequent language learning diverges from that of an L2 learner (see e.g. Cenoz *et al.* 2001; Gut 2010; Cabrelli Amaro 2017, a.o.). That is, L3 learners rely on certain language-learning strategies already developed along the process of an L2 acquisition. Thus, since learning dynamics may not always be comparable across all non-native languages coexisting in a speaker’s inventory, broad interpretations could be not fully representative of the differences within types, stages and chronology of acquisition.

At the same time, unequivocally defining the chronology of the acquisition process itself represents a complex task. In fact, the terms L1, L2, L3,  $L_n$  often refer to as a consecutive and non-interrupted acquisition, although multilingual acquisition may sometimes be simultaneous and intermittent. For instance, according to Hammarberg (2001), a *first language* is any language acquired during infancy (i.e., within the first year of life), while a *second language* includes any language acquired after infancy. On the other hand, the term *third language* refers to a non-native language which is acquired or employed when the speaker already masters two or more L2s. Besides, Cenoz (2003) claims that:

[...] third language acquisition refers to the acquisition of a non-native language by learners who have previously acquired or are acquiring two other languages. The acquisition of the first two languages can be simultaneous (as in early bilingualism) or consecutive. (Cenoz 2003, p. 71)

In his standpoint, the scholar does not discriminate between individuals who have firstly acquired their native language and, at a later time, second and third non-native systems, and individuals who have acquired two languages simultaneously, and subsequently an

L3. It is noticeable that this kind of perspective substantially neglects the development of many-sided language skills and the proficiency levels attained throughout the whole process.<sup>1</sup> On the other hand, in line with Flynn *et al.* (2004), we believe that distinguishing simultaneous and sequential acquisition is necessary when assessing the role of prior language knowledge and experience in the acquisition of any  $L_n$ .

Moreover, we note discrepancies among scholars for what concerns the use of the terms “bilingual/bilingualism” and “multilingual/multilingualism”, as these have been often used as synonyms in several works on language acquisition. In his recognition of studies concerning TLA, Fouser (1995, p. 391) states that:

the terms “bilingual” and “multilingual” are themselves vague and controversial. “Bilingual” and “multilingual” often refer to two or more languages being taught and used in a given geographical unit, or to a person who is highly proficient in two or more languages. These terms should be used to describe the state of language use in society and individuals; the terms “L2” and “L3” should be used to describe the order of acquisition in the language acquisition process.

An example of such terminological ambiguity is provided by De Angelis (2007, p. 8). The author observes that the definition given by Myers-Scotton (2002, p. 1) suggests that the term “bilingual” refers to individuals who speak “two or more” languages. In this viewpoint, no discrimination is hence drawn between the bilingual and the multilingual subject: bilingual and multilingual knowledge are equated.

More recently, van Compernelle (2016, p. 62) introduced another definition. The scholar claims that the term “multilingual speaker” refers to: on the one hand, individuals immersed/raised in a bi- or multilingual environment; on the other hand, individuals who have learned additional languages later in life (for instance, foreign language learners). It follows that, in this perspective, multilingualism broadly pertains to speakers with a not necessarily high or complete mastery in a given number of languages.

In account to this, it is worth reporting the summary outlined by De Angelis (2007, p. 10), who clearly points out the difficulty in giving a univocal and coherent definition for acquisition processes involving languages beyond an L2. The author lists and discusses the following labels:

- *Multiple Language Acquisition*: this definition does not highlight the difference between simultaneous (i.e. concurrent) acquisition of two (or more) languages and sequential (i.e. at different points in time) acquisition of two (or more) languages;
- *Multilingual Acquisition*: this umbrella term might risk being ambiguous. According to the author, the adjective “multilingual” pertains to the learner, rather than to the language being learned (i.e., the individual is multilingual, not the process of acquisition);
- *Third Language Acquisition*: it is considered scarcely effective, as the adjective “third” accentuates the role of the third language, to the detriment of the other languages mastered by the learner;
- *Third or Additional Language Acquisition*: refers to all languages beyond the L2 without placing emphasis on any particular system. Literature on SLA employs the

<sup>1</sup> Also, giving an unequivocal definition for “L3” seems to pose problems. In this respect, De Angelis (2007, p. 8) observes that “a third or additional language is often referred to as an L3, regardless of whether it is a third, fourth or sixth language. Some researchers label languages according to order of acquisition (L3, L4 or L6) without taking into account issues of language proficiency”.

term “additional” as interchangeable with/equivalent to “second” language acquisition, while in the case of “third or additional language acquisition” the purpose is indeed the inverse.

Bearing in mind such distinctions, for the purposes of this work we will employ the terms “Third Language Acquisition” (TLA) and “L3 learner”, respectively to indicate the process and the speaker acquiring a third language. Furthermore, we will place emphasis on the fact that L3 learners display a larger linguistic and metalinguistic awareness, as well as wider linguistic repertoire, compared not only to monolinguals but also to second language learners (Gut 2010). With respect to L2 acquisition in particular, the L3 learner can rely on his/her previous experience with one language, as two systems of linguistic representation are already available (Puig-Mayenco, González Alonso and Rothman 2020).

In line with Herdina and Jessner (2002) and Jessner (2008) we will also consider the “multiple language system” as not simply the sum of all the languages mastered by the speaker (i.e. L1+L2+L3), but as a complex dynamic system governed by specific factors interacting with each other (see 2.2).

## **2.2. Factors involved in the L3 acquisition process**

The picture sketched so far introduces several aspects of language acquisition that can be decisive in triggering phenomena of transfer in the interplay between L1, L2 and L3. Particularly, as pointed out by several studies (e.g., Angelovska, Hahn 2012; De Angelis 2007; Llama, López-Morelos 2016; Slabakova 2017), much attention should be given by researchers on the following factors, whose nature can be either cognitive/psychological or typological/structural:

- Age of acquisition of each non-native language (i.e., adult-onset or child-onset);
- Sequence of acquisition of all languages;
- Cognitive and psychological prominence (native, strong additional or weak additional language);
- Manner of acquisition (driven learning versus natural acquisition);
- Assessment of both productive (active) and receptive (passive) skills for each language;
- Amount and context of use of each linguistic code (for example with relatives, with peers at school or in professional environments);
- Recency of use;<sup>2</sup>
- Typological/structural proximity between the languages in contact (either consciously or unconsciously perceived by the speaker).

Concerning the language distance factor, studies on TLA have established typological controls over L1, L2, and L3 to test hypotheses regarding the relationship among the three languages in contact (for instance, by comparing Indo-European languages with one another or with non-Indo-European languages) (Fouser, 1995).<sup>3</sup> In this respect, it has been

<sup>2</sup> See Dewaele (1998).

<sup>3</sup> De Angelis (2007, p. 22), however, argues that “sometimes the term formal similarity refers to a relationship of similarity between the features or components of two or more languages without necessarily implying a genetic relationship between them”. “Language distance” can in fact indicate: (a) genetic relatedness, e.g. Romance or Germanic languages, (b) typological similarity of particular

demonstrated (see 3.3) that structural closeness or distance can indeed play a crucial role, either accounting for a successful or unsuccessful acquisition,<sup>4</sup> respectively, as well as possible contact-induced changes (Llama *et al.* 2010a, 2010b).

As argued by Thomason (2010), the degree of typological distance between specific subsystems of a source language and a receiving language favours predictions of possible interference occurring under differing degrees of contact intensity.<sup>5</sup> Specifically, the scholar claims that:

minimal typological distance is in part responsible for the frequency of inter-dialectal interference involving inflectional features that are rarely transferred in cases of foreign interference. Where contact is very intense, typologically significant contact-induced changes may occur. (Thomason 2010, pp. 40-41)

The Dynamic Model of Multilingualism (DMM) introduced by Herdina and Jessner (2002) is in this sense crucial to interpret the intersection of several concurring aspects in TLA.<sup>6</sup> This framework contends that the non-linearity and the complexity of the multi-language dimension are closely related to the interaction between subject-specific and structural parameters. Furthermore, the presence of one or more language systems would condition the development of the overall multilingual system, which inevitably undergoes effects of cross-linguistic influence (CLI).<sup>7</sup> Later, Jessner (2008) proposed to apply the “Dynamic Systems Theory” (DST) (de Bot 2007, 2012) within the DMM to understand both SLA and TLA. According to the DST, the human brain hosts interconnected networks composed by subsystems, such as the syntax, the lexicon and the phonology. These networks form a language system characterised by a high degree of variability and by an ever-growing complexity, as a result of the interplay between the external input and internal self-organisation (Wrembel, Cabrelli Amaro 2018).<sup>8</sup> Through a holistic approach, the DST perspective implemented to multiple language acquisition reveals the pivotal role of metalinguistic knowledge and metalinguistic awareness throughout the process. The central contribution of the DMM will be further discussed in the final section of this paper.

structures (i.e. formal similarity) and (c) psychotypology, e.g. the learner’s perception of similarity of languages (Falk, Bardel 2010).

<sup>4</sup> Concerning adult learners’ L1, a typologically related L2 will thus be easier to learn than one that is genetically distant (Fouser 1995, p. 395).

<sup>5</sup> See also Foote (2009).

<sup>6</sup> In account to this, it is worth reporting the systematic review recently carried out by Puig-Mayenco *et al.* (2020), which thoroughly looks over all the factors concurring to determine when, how and to what extent previous linguistic experience (from either L1, L2 or both) affects the whole process of L3 acquisition in adults.

<sup>7</sup> For an in-depth discussion of the terminological differences between “CLI” and “transfer”, see González *et al.* (2017). Bearing in mind such distinction, for the mere purposes of this work we will consider these terms as interchangeable.

<sup>8</sup> Based on the Dynamic Systems Theory (DST), the interaction between external and internal factors in multiple language acquisition has been recently investigated by the two authors in a study on vowel systems in Polish heritage speakers in Germany with different parental backgrounds, enrolled in foreign language classrooms. Results showed a great variability in L1, L2, L3 and L4 mastering, which was attributed to the dynamic nature of learning conditions. In particular, the type and amount of exposition to each language – either within their families and/or at school seemed to play an important role in describing the high intra- and inter-speaker variability.

### 3. Theoretical frameworks for L3 acquisition

In the last years, several theories and models have been proposed with the aim to untangle the issue of how and to what extent previous linguistic experience may affect L3 acquisition – either at its initial stages and/or beyond.

As pointed out by Rothman, Iverson and Judy (2011), Rothman (2013) and Puig-Mayenco *et al.* (2020), four possible scenarios can be drawn for what concerns potential source of transfer: (a) no transfer occurs; (b) transfer comes exclusively from L1; (c) transfer comes exclusively from L2; (d) either the L1 and/or L2 can trigger transfer. As no evidence has been so far found for scenario (a), we will henceforth restrict our review on TLA models accounting either for (b) (3.1), (c) (3.2) or (d) (3.3; 3.4).<sup>9</sup>

#### 3.1. Transfer from L1

As observed above, a first possibility is that during the process of TLA, the newly-learned language would undergo absolute transfer from the speaker's native system. One of the first studies providing evidence for this scenario is the one conducted by Mägiste (1984), who investigated comprehension tasks and grammar performance in Swedish bilinguals and monolinguals acquiring English. As the analyses did not reveal difference across the two groups for what concerned competence in English L2/L3, the scholar suggested the presence of a pervasive L1 effect (Forsyth 2014). These results comply with the principles of the Full Access/Full Transfer Hypothesis (FTFAH), later developed by Schwartz and Sprouse (1996), which maintains that L2 development in adulthood is simultaneously led by L1 (i.e. I-language) knowledge and by universal syntactic principles. In this sense, the L1 would hence be a determiner in the acquisition of any other non-native language.

So far, no formalized model has been formulated for this scenario in the field of TLA (Puig-Mayenco *et al.* 2020; Slabakova 2017). Nonetheless, it is worth reminding the contribution given by the Developmentally Moderated Transfer Hypothesis (DMTH: Håkansson *et al.* 2002), which moves its steps from Pienemann's (1998) Processability Theory (PT: see Pienemann *et al.* 2005 for further details). In brief, the DMTH holds that the native language represents the sole source from which morphosyntactic features are transferred to the (inter)language of L3 learners. In this respect, we also recall de Bot's (2004) perspective, according to which – being the strongest language also the most activated language – influences from the L1 are more likely to occur. Namely, as the L1 is the most frequently used system, it is grounded on more solid bases with respect to L2.<sup>10</sup>

A relevant number of studies conducted on morphosyntax contend a ruling transfer from L1 (Antonova-Ünlü and Sağın -Şimşek 2015; Bley-Vroman 2009; Hermas 2010, 2014, 2015;<sup>11</sup> Jin 2009; Leung 2005; Lozano 2002; Na Ranong, Leung 2009).<sup>12</sup> However, as we will show below, the study by Bardel and Falk (2007) provided strong counter-evidence to these results. Their analysis on two groups of learners with different L1s and

<sup>9</sup> To accomplish this task, we will principally employ the classification scheme provided by Cabrelli Amaro (2012), which discusses theories accounting for L1 transfer in TLA separately from theories on L2 transfer and from models arguing for a cumulative transfer.

<sup>10</sup> This hypothesis is specifically discussed and developed by Lindqvist (2009) in her study on lexemes of 30 Swedish L1/English L2 learners of French.

<sup>11</sup> Hermas investigated the influence exerted by the native language on L3 English productions of L1 Moroccan Arabic/L2 French speakers, respectively in placement of negation and adverbs (2010), subject-verb inversion in declarative sentences (2014), and restrictive relative clauses (2015).

<sup>12</sup> See Cabrelli Amaro *et al.* (2015, pp. 24-25) for an in-depth description of each study.

L2s acquiring Swedish or Dutch as L3 showed that syntactic structures are more easily transferred from L2 than from L1 – at least at the initial state of TLA (see 3.2).

On the other hand, as noted by Gut (2010, p. 22), only exiguous phenomena of transfer – either negative or positive – from L2 have been detected by analyses on L3 phonology (García Lecumberri, Gallardo del Puerto 2003; Llisterri, Poch-Olivé 1987; Pyun 2005). Such findings are to some extent coherent with what posited by Ringbom (1987), namely that adult learners overall maintain native accent in their non-native speech – even at an advanced stage of learning. At the same time, although L1 phonological transfer to L3 is indeed preminent, Ringbom suggests that factors like recency or intensity of use may conduce to sporadic phenomena of CLI from L2 to L1 (Rothman, Cabrelli Amaro and de Bot 2013, p. 389).

### 3.2. Transfer from L2

Currently, the most important model contending a privileged status for L2 transfer is the Second language status factor model (L2SF), whose main tenet is that L2 would take on the role as the strongest source of transfer in the TLA process. Though evidence sustaining this hypothesis had been previously provided for the lexicon by Williams and Hammarberg (1998) and by follow-up studies by Hammarberg (2001, 2006),<sup>13</sup> the theoretical framework was formulated by Bardel and Falk (2007, 2012), and further supported by several experimental results within the domain of morphosyntax by Falk and Bardel (2010, 2011), Rothman and Cabrelli Amaro (2010), Angelovska and Hahn (2012), Polinsky (2013), Ghezlou, Koosha and Lotfi (2018) (see García Mayo and Rothman 2012 for a review), and within the domain of phonology, e.g., Kamiyama 2007; Wei 2006; Tremblay 2006, 2007; Llama *et al.* 2010a, 2010b; Wrembel 2010 (see Cabrelli Amaro 2012; Rothman *et al.* 2013; and Wang 2013 for a review).<sup>14</sup>

More specifically, the L2SF suggests “an orientation towards a prior L2 as a strategy to approach the L3” (Hammarberg 2001, p. 37), independently from the economy of either L1 and L2 choices (Borg 2013, p. 11). Such “preference” towards L2 can be explained as follows:

L2 and L3 are learned in similar manners, the foreign language learner (as opposed to the L1 acquirer) is aware of the fact that (s)he is learning a language, and s/he makes use of various strategies in a way that is not the case in L1 acquisition (Bardel, Falk 2012, p. 68).

Besides similar learning strategies, L2 and L3 would also share comparable characteristics for what concerns the age of onset, and both linguistic and metalinguistic awareness (Bardel, Falk 2012; Falk *et al.* 2015; Wang 2013).

<sup>13</sup> See Lindqvist (2009) for an in-depth review.

<sup>14</sup> Forsyth (2014) analysed effects of L2 syntactic transfer on L3 English written productions of 46 L1 German/L2 Italian and L1 Italian/L2 German speakers. Her data suggest that negative transfer occurs at syntactic level from learners' L2, although it was not clear whether the L2SF contributed *alone* to the results in such conditions. Hence, the scholar adopted an interpretation based on the Multiple Effects Principle, developed by Selinker and Lakshmanan (1993). In his study on L1 Polish or Ukrainian/L2 English speakers acquiring Mandarin as L3, Freundlich (2016) also found dominant influence from L2 to L3 for what concerned syntactic structures. At the same time, however, the author observed preponderant phonological transfer from L1 to L3, presumably due to orthographic ambiguities across the different alphabets.

Based on this evidence, we deduce that the crucial role of L2 might be related to the higher degree of cognitive similarity between L2 and L3 than between L1 and L3 (Bardel, Falk 2007). In this respect, the scholars recall the distinction between declarative and procedural memory proposed by Ullman (2001) and Paradis (2004, 2009), according to which L1 is stored in procedural memory and represents implicit knowledge, while L2/L3/L $n$  knowledge is stored in declarative memory and constitutes explicit knowledge. Due to its closeness to L2, L3 is therefore more easily accessible; also, L2 and L3 are more likely to exhibit interference from one another than from the native language (Rothman 2013).<sup>15</sup> In brief, the two scholars argue that: a) the mind of the multilingual speaker stores the native language separately from all non-native languages. Accordingly, subsequent language acquisition/learning is driven by different cognitive mechanisms with respect to those involving L1 acquisition; b) the process of L3 acquisition undergoes the influence of L2 in a more significant way than that of the native language. That is, as the L2 acts as a filter in L3 acquisition, it hampers a transfer from L1 (Angelovska, Hahn 2012, p. 26).

Evidence for these assumptions comes from their study conducted in 2007 on placement of negation in learners of Swedish or Dutch as L3. Using a mirror-image type methodology, the scholars analysed productions of speakers having a non-V2 language as L1 and a V2 language as L2, compared to subjects having a V2 L1 and a non-V2 L2. Overall, results suggested that L2 acted as a transfer filter from the L1 during TLA. Bardel and Falk subsequently corroborated their postulations on L2SF in their 2011 study, in which they examined L1 English/L2 French and L1 French/L2 English speakers acquiring object pronoun placement in matrix and embedded clauses in L3 German. Transfer was clearly more evident from L2, particularly for the L2 English learners. Notwithstanding the evident typological relatedness between the L1 and L3, data indicated L2 as the strongest factor accounting for transfer in TLA.

### 3.3. *Non-exclusive transfer*

The research questions lying behind the concept of “combined transfer” (Cabrelli Amaro 2012) are the following: are the grammatical properties of L1 or L2 *alone* responsible for – or have a privileged role in – subsequent language learning? Alternatively, should we hypothesize that language learning is a cumulative process which encompasses all prior languages known to the speaker?

In this respect, the Cumulative-enhancement model for TLA (CEM: Flynn *et al.* 2004) suggest that neither L1 nor another language wields a dominant role in the acquisition of the subsequent language. In other words, each linguistic system already acquired by the speaker holds the same “responsibility” throughout the process, and contributes to the subsequent language development either in a positive way (i.e. triggering a positive transfer) or in a neutral way (i.e. without activating any transfer to the target system). It follows that CEM diverges from the theories postulating the presence of negative transfer and interference along the process of subsequent language learning.

To test these hypotheses, Flynn *et al.* (2004) investigated the acquisition of restrictive relative clauses by both adults and children speaking Kazakh as native language, who acquired Russian as an L2 and English as an L3. Their analysis focused on the initial state of L3 acquisition, and yielded predictions on how linguistic development will evolve beyond that phase. Purposely, the scholars took into consideration

<sup>15</sup> See also Westergaard *et al.* (2017).



morphosyntactic features (i.e. CP: Complementiser Phrase) of three typologically different languages, with the purpose to assess whether speakers may have access to universal grammatical structures at the preliminary stages of L3 acquisition.

Moreover, to test if typological differences alone are sufficient to establish subsequent language development, they compared the trilingual acquisition pattern of Kazakh L1, Russian L2 and English L3 to those of Spanish L1 and Japanese L1 learners of English as L2, as Kazakh and Japanese are both head-final languages with left-branching relative clauses, whereas English, Spanish, and Russian are head-initial languages with right-branching relative clauses (Slabakova 2017). However, despite Kazakh is similar to Japanese for what concerns the head position, L3 acquisition of English by L1 speakers of Kazakh did not resemble L2 acquisition of English by Japanese. On the other hand, trilinguals' productions of relative clauses resembled the Spanish/English bilingual group. According to Flynn *et al.*, such behavior is due to the fact that the Japanese/English bilingual group do not dispose of a head-initial language in their linguistic repertoire, while the Spanish/English bilinguals and trilinguals with Russian as L2 do.

Based on this evidence, they postulated that prior CP development can affect development of CP structure in subsequent language acquisition, and incorporate this claim to the wider domain of universal knowledge. Accordingly, one could assume that previously acquired language-specific grammatical features are integrated within a universal grammatical knowledge, and thus may enhance the processing of L3 grammar. Moreover – and in contrast with the L2 Status Factor – CEM rejects non-facilitative transfer; also, it maintains that no specific linguistic system plays a privileged role in handling subsequent language learning.

Nonetheless, as observed by Cabrelli Amaro *et al.* (2015, p. 26), evidence in favour of CEM provided by Flynn *et al.* (2004) did not involve data from a mirror-image sample (i.e. L1 Russian/L2 Kazakh/L3 English). In order to verify the presence of a possible L2 Status Factor, Berkes and Flynn (2012) subsequently investigated CP development on L1 Hungarian/L2 German/L3 English learners compared with L1 German/L2 English learners. Hungarian and English share similar CP structures and differ from German for what concerns relative clause constituent word order. In support of the facilitative-transfer hypothesis – and consistently with Flynn *et al.* (2004) – data indicate that L1 Hungarian/L2 English learners behaved differently from L1 German/L2 English learners. Results confirmed that previous development of CP patterns can positively affect development of CP structure in subsequent language acquisition.

Within the phonological domain, a clue in support of the CEM has been subsequently provided by Gut (2010) in his study on speech rhythm and vowel reduction in trilingual speakers with different L1s. Empirical evidence disproved the exclusive influence exerted by phonological properties of the L1 on target phonological features in L3 (Mayans 2015, p. 276). In sum, these results overall suggest that an L3 learner can rely upon “templates” that have been already formed throughout earlier language acquisition – either L1 and L2 – to overcome the tasks encountered in subsequent language processing<sup>16</sup>.

The Typological primacy model (TPM) introduced by Rothman (2010, 2011, 2013, 2015) also suggests that wholesale transfer in the L3 initial state can come from any previously acquired language. In other words, learner's L1 and L2 grammars are

<sup>16</sup> Nonetheless, as properly highlighted by Mykhaylyk, Mitrofanova, Rodina and Westergaard (2015), the CEM model does not make clear assumptions for what concerns the factor playing a more important role in L3 acquisition: typological or structural similarity between L1/L2 and L3.

postulated to be both available in the preliminary stages of the subsequent language acquisition process. Nonetheless, the CEM and the TPM diverge<sup>17</sup> in that the latter predicts possible negative effects of linguistic transfer during TLA, which may be determined by either *actual* typological proximity or *perceived* typological proximity – “psychotypology”, as defined by Kellerman 1983<sup>18</sup> – between the three systems in contact, regardless of the order of acquisition (Cabrelli Amaro *et al.* 2015, p. 26; García Mayo 2012, p. 137).

The TPM assumes that psychotypology is assessed by an unconscious internal parser, that defines which of the two previously acquired systems should be transferred (Bardel, Falk 2012; García Mayo, Rothman 2012; Slabakova 2017). More specifically, perceived typological proximity is determined by the parser based on the similarities encountered in the following linguistic modules, i.e. (1) lexicon; (2) phonetics/phonology; (3) functional morphology; (4) syntactic structure.<sup>19</sup> Accordingly, the language showing a higher degree of similarity with L3 will be selected as the primary source of transfer at the initial stage.<sup>20</sup> However, García Mayo and Rothman (2012, p. 20) argue that early findings by Rothman (2010, 2011) supporting TPM were in fact not able to separate the role of psychotypology from the L2 status factor.<sup>21</sup> In this work, the scholar analysed word order and relative clause position in L1 Spanish/L2 English and L1 English/L2 Spanish learners of Brazilian Portuguese. Interestingly, Brazilian Portuguese is typologically close to Spanish, but is also similar to English for what concerns target morphosyntactic features. Results show that, although English represented the most economical source of transfer, Spanish was preferred – regardless of its order of acquisition. Hence, it was not possible to fully assess whether such primacy was either related to typological proximity or other linguistic factors. Comparable results were obtained by Giancaspro, Halloran and Iverson (2015) in their study on Differential Object Marking (DOM) transfer, conducted across three bilingual groups: L1English/L2Spanish, L1 Spanish/L2 English and Heritage Spanish/English bilinguals, all acquiring Brazilian Portuguese as L3. In this case, as well, all groups showed transfer at the initial stages of L3 acquisition from the most structurally/typologically similar language, i.e. Spanish. Overall, TPM’s predictions have been confirmed by several other studies (Foote 2009; Llana, López-Morelos 2016; Lloyd-Smith *et al.* 2017, among others). However, as we will show in the following paragraph,

<sup>17</sup> Slabakova (2017) points out that the L2SF model makes implicational predictions and the CEM yields possible outcomes on the  $L_n$  linguistic development beyond the initial state. Differently, the TPM focuses on the initial stages of TLA.

<sup>18</sup> See Rast (2010).

<sup>19</sup> As stated by Rothman (2013, p. 238), these factors are disposed along an implicational hierarchy, since not all of them are “as easily usable by or equally accessible to the parser at the same time, partially depending on the specific language pairings”. Namely, detecting similarities within the morphosyntactic domain would require a deeper knowledge of – and a more extended experience with – L3 than detecting similarities within the first two domains.

<sup>20</sup> In account to this, Hopp *et al.* (2018, p. 311) observe that: “(t)he L1 transfer approach and the TPM are applicable both to child and adult L3 acquisition, while the L2 status factor model makes predictions for adult L2/3 learners but does not apply to child L3 learners who acquire all languages in the same age range”.

<sup>21</sup> Nonetheless, it would be inappropriate to claim that the L2SF model does not incorporate the notion of typological proximity. *Vice versa*, the TPM does not hinder the privileged L2 status factor from being operative (Rothman 2010, p. 122). Ortin and Fernandez-Florez (2018, p. 443) point out the L2SF and the TPM models are in fact hypotheses which can coexist and complement each other. Specifically, “(w)hile the TPM considers typological distance a decisive force that drives the selection of transferable systems, the L2SF posits that, in absence of these typological similarities, the L2 is the preferred linguistic system to be transferred into the L3 developing grammar”.

new perspectives have recently surfaced which significantly diverge from the above-mentioned hypotheses on a holistic type of transfer to L3.

### 3.4. Property-by-property transfer

In line with the main postulations of the CEM – yet confining their predictions to vocabulary acquisition – Hall and Ecke (2003) and Ecke (2015) proposed the Parasitic Model for L3 learning.<sup>22</sup> According to this framework, both typological similarity and L2 status equally account for transfer within the lexical domain of the multilingual speaker. Specifically, the learner exploits through an automatic cognitive processing (Hall 2002, p. 72) her knowledge of pre-existing *specific* structures belonging to either L1 and/or L2 – which act as “hosts”. By means of an overlapping mechanism, new L3 words are hence linked with L1 or L2 lexical items and parasitically take on their distributional features and their conceptual representation (Hopp *et al.* 2018, p. 309). The Parasitic Strategy thus allows to acquire new items which are morphologically/semantically similar to items already stored in the speaker’s mind, based on general principles of economy and accommodation (see Hall 2002, p. 76). As demonstrated by Hopp *et al.* (2018, p. 326), this framework can be of great help to understand and assist language development in multilingual classrooms, as

teachers can build on the non-selective multilingual lexicon by integrating L1s and L2s in vocabulary exercises and affording opportunities for learners to use the L1 and the L2 as hosts for parasitic L3 vocabulary acquisition.

The presence of a property-specific transfer – either facilitative or non-facilitative – based on structural similarity is also discussed within the Linguistic Proximity Model (LPM: Mykhaylyk *et al.* 2015), which asserts that:

transfer in L3 acquisition occurs when a certain linguistic property receives strong supporting input from the involved languages, regardless of the order of acquisition (L1 or L2) or their general typological grouping. (Mykhaylyk *et al.* 2015, p. 337)

In this perspective, CLI would not exclusively manifest from either L1 or L2, or from the language that is typologically closer; on the contrary, it is selective and occurs property-by-property. This assumption has been formulated based on an experimental analysis on the acquisition of English Adverb-Verb word order by Norwegian-Russian speakers. The scholars demonstrated that *certain* syntactic properties of a typologically distinct language (in this case, Russian) influenced the learning of English target structures, thus exceeding, in specific cases, transfer from Norwegian (Westergaard *et al.* 2017). Support for the postulations of the LPM comes also from Lorenz, Bonnie, Feindt, Rahbari and Siemund (2018), who investigated pronominal object placement in Russian-German and Turkish-German heritage speakers learning English L3, compared to L1 German speakers learning English as L2. However, they suggested that the LPM should make more specific predictions for the unbalanced linguistic situation – in terms of language dominance and use – of heritage speakers, which are indeed a peculiar case among subjects learning an additional language. Results obtained by Lorenz *et al.* (2018) also provide clues in favor of another recently-developed L3 framework: the Scalpel Model of third language

<sup>22</sup> Hall (2002) first formulated the Parasitic Hypothesis to explain patterns of vocabulary development in the early stages of L2 learning.

acquisition (SM: Slabakova 2017).

The SM includes some properties of either the CEM, the TPM and the LPM, yet significantly deviates from these models for what concerns some of its predictions. In brief – similarly to what postulated by the CEM and the LPM, the SM maintains that the process of acquisition occurs property by property, and that it does not result in a wholesale transfer – as also argued by the TPM. Nonetheless, differently from CEM but similarly to the TPM and the LPM, the SM considers the possibility of non-facilitative transfer. As posited by Slabakova (2017, p. 655):

The activated grammatical possibilities of the L1-plus-L2 combined grammar act with a scalpel-like precision, rather than as a blunt object, to extract the enhancing, or facilitative, options of L1 or L2 parameter values.

Crucially, the SM takes into account additional factors operating property by property that have been to some extent neglected by the above-mentioned frameworks.<sup>23</sup> Beside structural similarity – as in the LPM – it considers the presence of unambiguous (i.e. transparent) input, amount of use of each language, construction frequency and processing complexity. As they proceed with a “scalpel-like precision”, such factors could be determinant in acquiring – or failing to acquire – a specific property in the L3, hence “thwarting the potential cumulative enhancement” (Slabakova 2017, p. 655). Overall, both LPM and SM seem to provide an all-encompassing alternative explanation of how transfer occurs along the process of TLA. So, this model allows to detect potential variables that may influence the whole process of TLA and its results. However, González Alonso and Rothman (2017, p. 694) contend that the SM does not provide an estimate of those effects. Consequently, its predictions cannot always be reliable. Overall, the scholars suggest that current research in this scope is not mature enough to propose comprehensive theories of L3 development, and that it should focus in first place on initial stages of TLA, rather than on the entire developmental line (see postulations of the TPM in 3.3).

Additionally, Hopp *et al.* (2018, p. 312) point out that neither the LPM nor the SM specifically describe how structural similarity is assessed across selected structures, and according to which criterion “factors are weighted for the recruitment of either the L1 or the L2 grammar”. In light of this evidence, we will subsequently propose supplemental observations which could be integrated in these critical remarks.

#### 4. Regressive transfer from L3 to previously-acquired languages

As so far observed, to predict which background language/s – either L1 and/or L2 – would be the better candidate as source language, CLI studies have pointed out several factors, for instance: language distance (i.e. typological relation); target language proficiency; source language proficiency; length of residence and exposure to a non-native language environment; order of acquisition, and degree of formality in the acquisition and in contexts of use.

In an attempt to identify the factors involved in TLA, however, most studies on CLI have addressed *progressive transfer* from the L1 and/or L2 to the L3, to the detriment

<sup>23</sup> See preliminary observations by Slabakova (2012) supporting the modularity of transfer in contraposition to wholesale transfer.

of L3 *regressive transfer*<sup>24</sup> (Cabrelli Amaro 2017b; Rothman *et al.* 2013;). On the contrary, the fact that transfer is “intermodular” (Karpava *et al.* 2012, p. 43) is indeed not negligible. Namely, alterations and restructuring of the systems in contact are likely to occur during both SLA and TLA, caused by a bi-/multi-directional interaction within the speaker’s mind (Lipińska 2015).

Such observations are coherent with the theoretical approach embraced by the DMM: the characteristics of non-linearity and complexity of the multi-language dimension can be subsumed within the broader view of transfer as dynamic and multi-directional. As highlighted by a wide gamut of studies (Cabrelli Amaro 2012; Flege 2007; Jarvis, Pavlenko 2010; Jessner 2008, among others), multilingual language development can undergo alterations over time and can experience manifestations of severe CLI, such as attrition and/or loss (Wrembel 2015).

Concerning the effects of late-acquired phonological systems on multilinguals’ speech production,<sup>25</sup> cross-linguistic analyses conducted by Cabrelli Amaro and Rothman (2010) and Cabrelli Amaro (2017) suggest that an L2 steady-state<sup>26</sup> phonological system is more vulnerable to L3 regressive influence than a native (simultaneous bilingual) L1 system. Based on preliminary observations presented in Cabrelli Amaro and Rothman (2010), Cabrelli Amaro (2017) compared both perception and production of word-final unstressed Spanish vowels in consecutive L1 Spanish/L2 English and L1 English/L2 Spanish bilinguals acquiring Brazilian Portuguese (BP) as L3 in adulthood. In her study, no effects of regressive influence from BP emerged from the perception task. Nonetheless, a difference was found between the productions of L1 English and the L1 Spanish speakers and those of the control groups for what concerned the parameter of vowel height. Namely, while the back-vowel height of the L1 Spanish group did not exhibit different values from the control, the back-vowel height of the L1 English speakers displayed BP-like values.

Results obtained by Cabrelli Amaro (2017) hence support the Phonological Permeability Hypothesis (PPH), which had been previously proposed by Cabrelli Amaro and Rothman (2010). The PPH assumes that late-acquired systems (i.e. an L2 acquired post puberty or in adulthood) can be more significantly affected by regressive influence from a novel phonological system (in this case, an L3), with respect to early-acquired systems (as an L1 acquired from birth). The permeability of a given system is thus determined by maturational constraints, i.e. by cognitive and age-related restrictions – in terms of a critical/sensitive window for reaching native-like knowledge.<sup>27</sup> Specifically, as proposed by Cabrelli Amaro and Rothman (2010, p. 280):

The PPH maintains that phonological systems acquired in adulthood, even in the case that they appear native-like, are configurationally different from natively-acquired systems [...]. if target-like L2 phonological systems are truly represented mentally as native systems are,

<sup>24</sup> Specifically, the term “regressive/backward” transfer (or influence) is employed in literature to indicate cross-linguistic influence exerted by a later learned on a previously acquired language (i.e. in situations where L3 affects the L2 and/or L1) (Cabrelli Amaro 2017; Cabrelli Amaro, Rothman 2010; Rothman *et al.* 2013).

<sup>25</sup> See the literature review by Cabrelli Amaro and Wrembel (2016) on studies examining phonological regressive transfer from L3.

<sup>26</sup> As defined by Herdina and Jessner (2002, p. 93), “steady states means that the development stays at the same level, that is its inputs are identical to its outputs”.

<sup>27</sup> Embracing Schwartz and Sprouse’s (1996) perspective, the scholars propose a differentiation which does not refer to a maturationally-constrained access to language universals.

then both systems would be equally impervious (or not) to influences of an additional language acquired in adulthood.

If this is on the right track, possible alterations/restructuring in native and/or non-native phonological systems may be an important cue for how multiple languages are stored and distributed in the speaker's mind. In account to this, it is worth mentioning a recent study carried out by Wrembel, Marecka and Kopečková (2019) on Polish sibilants produced by L1 German-L2 English learners of Polish L3. The novelty of this study lies in the fact that for the first time the predictions of the Perceptual Assimilation Model (Best 1995) are extended to TLA. Overall, this work suggests that general perceptual assimilation mechanism applies also to multilingual acquisition. Moreover, it takes into consideration both heritage and non-heritage speakers, thus filling a gap in the literature on L3 phonological development among different types of learners.

Cabrelli Amaro (2012) recalls that Cabrelli Amaro and Rothman (2010) make no specific claims that a L1 is invulnerable to CLI. Nonetheless, recent studies carried out by Tordini, Galatà, Avesani and Vayra (2018) and Tordini (2019) on a small community of Italo-Australian heritage speakers from Veneto show that no cross-linguistic regressive transfer has occurred from Australian English L3 to Veneto dialect L1, despite 50 years of immersion in the L3 environment. In these works, we acoustically explored fine-grained phonetic features of L1 coronals [θ, s, ʃ] and vowels [i e ε a ɔ o u] in contact with similar but not phonetically identical categories of L3 Australian English. To evaluate how and to what extent trilingual speakers' phonetic systems interacted with each other, we based our observations on the Speech Learning Model (Flege 2007). Our choice was led by the fact that this theoretical framework allows to draw predictions on CLI based on the *acoustic* properties of sounds in contact in bilingual/multilingual adult speakers. In order to assess the nature of regressive transfer from L3 to L1, we compared productions of heritage speakers from a control group of Italian speakers in Veneto who never moved from Italy. Although cues of a preliminary merge with L3 categories emerged from the acoustic analysis, such subtle differences were not significant enough at statistical level to prove the presence of CLI in first-generation heritage speakers. From a sociolinguistic perspective, the maintenance of L1 phonetic categories might be correlated with the fact that all the speakers are first-generation immigrants who have kept employing both dialect L1 and Italian L2 at home and with their peers within the Italian heritage community. Moreover, the informants did not receive formal education in English, and limited their social interactions with locals to professional relationships. In this sense, the native phonetic/phonological system of these speakers reveals itself to be impervious to L3 backward influence: to some extent, our results can be therefore considered in line with the implicit postulations of the PPH. Moreover, we also propose that (psycho)typological distance might have had a role in the absence of transfer, as local Veneto dialect L1 and Standard Italian L2 coexist along a diglossic continuum, while English L3 is perceived as structurally different with respect to the other two systems.

## 5. Conclusions and general remarks

Overall, we note that the amount of research on progressive transfer in TLA has grown dramatically in the last decade. In particular, ongoing research on regressive transfer in TLA is increasingly getting a foothold across different levels of linguistic analysis. Nonetheless, findings are not always consistent. Among the above-mentioned studies, uneven/mixed results may be due to several concurring factors, namely: the combinations

of languages involved in the study and their (psycho)typological relationship; the type of task; the number of participants; the level of proficiency in each language; the type of acquisition; the level of education; the context of use, and so on.

In line with the studies presented in § 2 (de Bot 2007, 2012; Jessner 2008; Wrembel, Cabrelli Amaro 2018) we believe that research should place more emphasis on socioeconomic, socioeducational and sociolinguistic aspects, not only to provide explanations for CLI phenomena in SLA and TLA.<sup>28</sup> Quite the opposite, such factors should be originally embedded within a given theoretical framework, as they cannot be fully separated from purely linguistic variables. Therefore, a dynamic model might describe at best the complexity and the modularity of the multi-lingual system, since it proposes to incorporate both internal self-organization and external input (Cabrelli Amaro, Wrembel 2016, p. 15). Along with psycholinguistic and individual factors, also the speaker's social networks should be given their own space in this dimension, as they can directly provide crucial information on type, amount and context of language use (Jessner 2008), and at the same time implicitly give insights on possible directions of CLI. As suggested in Tordini *et al.* (2018), future research should focus on whether and to what extent specific socio-communicative contexts could trigger phenomena of transfer and in which direction(s), and whether potential transfer differs in frequency and type depending on the interlocutor and the speaker's attitude toward that language<sup>29</sup>.

Overall, much research is still needed, especially in the following areas of investigation: heritage speakers (Gabriel *et al.* 2018; Polinsky 2015) and children (Mayr, Montanari 2015) for what concerns the typology of subjects; different combinations of Indo-European vs Non-Indo-European languages for what concerns the typology of languages; regressive transfer for what concerns the typology of CLI (see Wrembel 2015 for new research on regressive transfer in VOT values). Moreover, as pointed out by Cabrelli Amaro (2012, 2017), phonetics and phonology in TLA and L3 transfer should be more deeply investigated, as they have so far received scarce attention compared to other domains of linguistic analyses (Wrembel *et al.* 2019). In account to this, it is also worth remarking that very few studies (Tordini *et al.* 2018; Tordini 2019; Frontera 2020<sup>30</sup>) have taken into consideration phonetic properties of background languages (i.e. L1 and L2) coexisting in a *diglossic* relationship with each other.<sup>31</sup> Further investigations could thus focus on this type of language combination to evaluate possible outcomes of CLI in L3 development.

In sum, we hope that the present contribution could somehow be helpful to explore this ever-growing field, as it provides an up-to-date description of currently existing theoretical frameworks for TLA and L3 transfer, as well as a general overview of what is still understudied (or lacking) within this scope.

<sup>28</sup> For instance, Ortin and Fernandez-Florez (2018) have recently employed the methodology of comparative sociolinguistics to describe the process of transfer in TLA.

<sup>29</sup> As noted above, other lines of research maintain that the attempt to understand the full dynamic nature of TLA is still precocious (González Alonso, Rothman 2017, p. 693).

<sup>30</sup> The recent work by Frontera (2020) analysed productions of Calabrian immigrants in Argentina. Specifically, the author acoustically investigated voiceless stop consonants' aspiration as drift of Calabrian dialect L1/Italian L2 towards Spanish L3.

<sup>31</sup> Bettoni and Rubino (1996) and Rubino (2014) explored morphosyntactic features and pragmatic strategies of communication along the L1 Dialect-L2 Italian-L3 English continuum.

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