

ALIGNMENT IN *LINGUA RECEPTIVA*: FROM AUTOMATICITY TOWARDS MONITORED CODE- SWITCHING

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Abstract. Psycholinguistic alignment is a process in which interlocutors automatically adapt their lexical, structural and conceptual representations, enhancing both comprehension and production. Multilingual constellations also demonstrate alignment patterns, but rely on more monitoring than automatic alignment. This paper focuses on *lingua receptiva* – a multilingual communicative mode in which speakers use their own language and have enough proficiency to understand each other. Whenever L2 proficiency does not guarantee mutual understanding, compensatory strategies such as code-switching (CS) can be applied. In actual mono- and multilingual constellations, it is more common to use one language at a time, yet in this experiment the participants were invited to communicate in the mode of *lingua receptiva*. Nonetheless, CS occurred in the data and was analysed in the framework of language contact. Alternations and insertions were the main forms, and their distribution depended on L2 proficiency, attitudes and exposure. It is concluded that CS can function as an alignment strategy.

Keywords: *lingua receptiva*, code-switching, Estonian-Russian communication

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1. Introduction

Psycholinguistic alignment in pertinent research refers to the processes by which interlocutors automatically modify their lexical, structural or conceptual representation towards a shared situational model in such a manner that enables mutual understanding and facilitates language production (e.g., Pickering and Garrod 2004). Multilingual constellations, such as L1–L2 dialogues or L2 comprehension tests, demonstrate cross-linguistic priming (e.g., lexical or structural activation) and other alignment patterns detected in the monolingual data, yet reportedly include more self-monitoring (Bahtina forthcoming).

This paper starts off by exploring the salient types of alignment in *lingua receptiva* (henceforth, LaRa), a multilingual mode of communication in which interlocutors both speak in their own mother tongue, and have enough competence to comprehend in L2, the L1 language

of the interlocutor (Rehbein et al. 2012). LaRa can occur between typologically close and distant languages alike (inherent and acquired LaRa respectively), the latter being the focus of this paper. The availability of cognates, similar syntactic structures and other comparable linguistic material are known to benefit understanding in inherent LaRa; in genetically unrelated languages, it is the L2 proficiency that could foster mutual understanding. Interlocutors whose L2 knowledge is not sufficient for total understanding might rely on additional communicative strategies for creating common ground. Code-switching and other synchronic adaptations (e.g., relaxed grammaticality norms in L1) are hypothesised to function as a compensation strategy. Their use is expected to depend on factors such as L2 proficiency of both interlocutors, their attitudes and exposure to bilingual situations and the socio-linguistic make-up of a given society (see Bahtina-Jantsikene in prep. for details).

The data come from a task-oriented dialogue in which the interactants in dyads find each other on a schematic map: each participant has a map with only one location marked (Point A for the follower and Point B for the guide) and have to establish the location of the first point and the route towards the second one. Dyads composed of Estonian and Russian native speakers from Estonia with various L2 proficiencies were instructed to use their respective mother tongue to complete this task. The findings reveal a list of types of mental representations that do not conflict across these languages and potentially add to the felicity conditions for acquired LaRa (e.g., aligned referential system or similar grammatical structures). According to studies on the monolingual data (e.g., Pickering and Garrod 2007), lexical alignment is recurrent in dialogues and presumably efficient in creating common ground. However, there is no set of cognates between Estonian and Russian that would allow aligning at the lexical level. In LaRa the subjects' code-switching, which is basically reverting to L2 despite the instruction to use L1, is hypothesised to be an alternative for lexical alignment. It is demonstrated that the amount of code-switching used per experiment is affected by the L2 composition of the dyads; it also predicts the speed of the task completion. Alternations and insertions are interpreted as strategies that occur whenever mutual understanding can be compromised by low L2 proficiency. This quantitative analysis of code-switching and its efficiency in LaRa paves the way for a provisional typology of code-switching as a route towards optimized dialogue in LaRa.

2. Alignment in multilingual settings

Lingua receptiva is one of the alternative modes of communication that can be applied in various multilingual settings. The unique characteristic of LaRa communication is that its users interact with each other in their own language and have enough competence to understand the language of the other. The activation of the linguistic, mental, interactional as well as intercultural competencies allows the users of LaRa to reach understanding receptively (Rehbein et al. 2012). Other multilingual options include English as a *lingua franca*, a regional *lingua franca* and code-switching (Backus et al. 2011). Technically speaking, LaRa and code-switching describe similar processes since both are defined as modes in which different languages are used in the same communicative event. The main distinction lies in the type of the unit at which the language switch occurs: unlike in code-switching that ranges from turns to words mostly within the same speaker, in a perfect LaRa dialogue the switch occurs strictly at the individual turn level, so that each interlocutor uses their own language. In practice, it is often hard to maintain one mode of communication throughout a dialogue that involves multiple languages – speakers switch back and forth between the languages as well as between modes. The methods traditionally chosen for each of the two communicative modes are therefore combined in order to provide explanations for the creative mechanisms behind multilingual understanding (see subsection 4.1).

Traditionally, communicative success in a dialogue is attributed to the processes of psycholinguistic alignment that occur when interlocutors reach a shared understanding of the relevant aspects of the world (Pickering and Garrod 2004) since alignment simplifies language processing. Generally speaking, interactants try to align their mental states by using the same references and forms for and information about certain entities (e.g., repeated syntactic structures or abstract aspects of meaning like “diagonal”). Alignment at one level supposedly leads to alignment at other levels and these adaptive strategies are claimed to be largely automatic (ibid.). Pickering and Garrod draw attention to the distinction between co-ordinated behaviour in a dialogue and alignment of representations. The former is compared to ballroom dancing, where communication is co-ordinated in a joint action and the latter refers to shared representations that are the result of automatic language processing. According to their model, automatic priming is the only mechanism used for creating alignment unless there is a need for interactive repair of a misaligned representation (ibid.: 172). This is in line with the assumption that in multilingual

constellations monitoring may be more pronounced (Bahtina forthcoming), even though L1–L2 dialogues or comprehension and production experiments with L2 input demonstrate cross-linguistic priming and other alignment patterns detected in the monolingual data. With the interlocutors speaking their own language and hearing an L2 there is more room for misunderstanding, and this is why monitoring could be a more prominent technique to first establish and then preserve the common ground. The goal of this paper therefore is to further the knowledge about alignment and its forms in multilingual settings by addressing the effects of L2 proficiency on the distribution of certain alignment strategies and overall communicative efficiency (reaching mutual understanding in each separate communicative event or completing a task in the experiment). Code-switching (henceforth, CS) is hypothesised to have a special role in creating understanding in LaRa between genetically unrelated Estonian (a Finno-Ugric language) and Russian (an East-Slavic language) that have little or no access to cognates, similar syntactic structures and other linguistic material reinforcing mutual understanding. The paper starts off by identifying the salient types of alignment from Pickering and Garrod's interactive alignment model (2004) in experimental data and deals with the question of acquired LaRa's potential as well as the CS's efficiency as a subtype of lexical alignment in multilingual settings.

3. Alignment Detected

3.1. Methodology

This paper is part of a project on *lingua receptiva* in Estonian-Russian communication and the minimal prerequisites for this mode's efficiency. It reports on an experimental study involving a task-oriented dialogue in one of two modes: LaRa or monolingual. The experiment involved 96 participants; 76 for the LaRa condition and 20 in the monolingual (control) condition. A socio-linguistic questionnaire and an L2-test were administered to collect relevant information, such as the history of respective L2 learning, previous and current exposure as well as attitudes to both languages and their speakers (see Bahtina-Jantsikene, in prep.). The experimental task is a modified version of Garrod and Anderson's (1987) Maze Game: each dyad had a follower and a guide, and their task was to find each other on the almost identical maps that they had on their individual computer screens. The instructions stated that each participant should speak their respective native language. Participants were also instructed to complete the task

as quickly as possible while the time limit was set to 10 minutes. The main findings (see Bahtina-Jantsikene, in prep.) demonstrated that low L2 knowledge does not create communicative barriers, but indicate the importance of the L2 composition of the dyad. To sum up, the dyads with mixed L2 proficiencies (i.e., high and low) were more efficient in task completion and generally faster. It was also established that L2 proficiency defined the type of meta-communicative devices that were used by the participants to foster mutual understanding. For example, dyads in which both participants had higher L2 proficiency used more devices aimed at clarifying the rules for orienting on the map whereas negotiations about terminology led to increased success in dyads with a higher L2 difference.

The current study focuses on the three types of alignment described by Pickering and Garrod (2004): conceptual, structural and lexical (phonetic and phonological representations are excluded from the analysis in this paper). This section provides a brief overview of alignment detected in a set of experiments conducted in the LaRa mode and explains why certain types of alignment are more easily identified than others. Finally, an integrated LaRa and code-switching analysis is suggested to shed additional light on the nature of establishing understanding in dialogues that contain L2 utterances despite the instruction to stick to L1.

3.2. Conceptual level

The conceptual type of alignment was elaborated in the task-oriented dialogue framed as the Maze Game (Garrod and Anderson). The spatial dimension is an example of such alignment in the experimental task: one can treat an expression “to the left” both egocentrically and allocentrically; similarly, interlocutors can choose with which description scheme to refer to the map. One of the specificities concerning conceptual alignment in this type of experiments lies in the fact that alignment is partially triggered by the nature of the task, since the subjects have to establish a system for discussing the abstract map. Garrod and Anderson made an inventory of the four ways of describing the map, which are all reflective of different ways of conceptualising the features of the map that are critical for reaching success in this experiment. These description schemes presented here are in the order of their frequency (*ibid.*).

The most common type is a tour along the paths in the maze, the so called path description (e.g., “Go two along”). Next, the map was viewed as a matrix (e.g., “I am in row three, column five”), which can be classified as the co-ordinate description of the map. The third

option was the line scheme that started with a description of a line followed by a position relative to this line (e.g., “First bottom line, third dot from the left”). Figural description is the fourth way to refer to a map: some particular configuration is described and the position is then explained with respect to this figure (e.g., “T-shape” or “Can you see a “knee”? I am right under it”).

In *lingua receptiva* the detected description schemes were similar to the original study. The subjects in this experiment aligned on unambiguous descriptions schemes that were developed by each dyad during the experiment to fit their needs. The interlocutors used the same map description schemes and would switch to alternatives only when the previous referential system did not suffice. Most dyads chose to use the matrix-type of description with the numbered rows and columns. The path-related system was often used in combination with the matrix system. Segmenting the map into sectors was frequently seen in the first stage of the experiment (establishing the first shared location). The figural descriptions were employed infrequently and mostly for checking the updated location (“Can you see a triangle on the left?”). The absolutes were used by fewer subjects, which could be partially explained by the four additional directional names in Estonian: Russian uses compounds to describe intermediate direction (e.g., “halfway between north and east” is called “northeast”) while Estonian assigns a unique word that sometimes led to confusion even among the native speakers of Estonian in the monolingual group.

This paper, however, seems differ with respect to one of the cornerstones of the interactive alignment model. It has been previously claimed (Garrod and Anderson 1987, Mills 2011, Pickering and Garrod 2004) that alignment in dialogues is not controlled by explicit negotiation, but that it is coordinated by output and input as well as interactive repair. Explicit negotiation, or rather the lack of it, has been reported in pertinent literature in relation to various levels of representations, such as lexical choice and meaning or the conceptual model.¹ The data demonstrated that the participants were consistent in their conceptualizations unless a potential or an already existing misunderstanding was detected. In such cases novel referential systems were introduced explicitly with a purpose to (re-)establish mutual understanding. Detailed discussions of the rules that go with certain systems (“Count rows from the bottom without the zero level”) were not uncommon. It is therefore concluded that conceptual alignment can take various forms, from an automatic repetition of the previously

1 This section of the paper focuses on explicit discussions of conceptual representations, but it is assumed that lexical elements also make good candidates for meta-communicative negotiations.

heard utterance to an explicit negotiation of the subject matter, both eventually leading to an improved level of mutual understanding. Such processes suggest that alignment at this level is not automatic only and can be interactively monitored by the interlocutors.

3.3. Syntactic level

The structural type of alignment is often studied in experiments on priming and routinization. Priming refers to the short-lived memory of lexical and structural units that is encountered both in production (Bock 1986) and comprehension (e.g., Ivanova et al. 2012). The findings suggest that subjects have a tendency to produce a syntactic structure that they heard or read from their interlocutor or a computer. The explanation is that these forms are activated and therefore easily accessed within a certain period of time. A study by Bernolet et al. (2007) shows that cross-linguistic priming occurs as well, however syntactic priming in multilingual situations is limited by syntactic differences between the languages (e.g., with regard to word order). The routinization processes make use of the repetitive nature of the dialogue and thus increase the mutual information content and simplify production (Garrod and Anderson 1987, Garrod and Doherty 1994).

The data from the current experiment provide examples for these types of syntactic alignment. However, repeated structures occur in the dialogue not necessarily as a result of interactive alignment. Some language constellations, like those among genetically close languages, have few conflicting or competing constructions, which makes interpretation of syntactic alignment more difficult.² In the Standard Average European (SAE) typology Estonian is treated as an exotic language that has little in common with the modern Indo-European languages of Europe (Haspelmath 2001). Nevertheless, Estonian is sometimes referred to as a peripheral SAE language. It has even acquired the SVO word order typical of the Indo-European languages and not Finno-Ugric, as Estonian genetically is (Sutrop 2004). There are claims that in addition to the tendency to accumulate SAE features, Estonian has diachronically undergone a number of morpho-syntactic changes in the direction of German and Russian (Metslang 2009). An excerpt from Figure 1 demonstrates that possible synchronic syntactic alignment occurs in the data.

2 The only way to show syntactic alignment of the non-conflicting structures is to establish that the probability of occurrence of a structure X in language 1 is increased after the occurrence of X' in language 2, as compared to a situation in which another structure, Y, was produced first.

	45 [02:25.1]
EstGuide[v]	Kas te asute vasakul pool või paremal pool ·· eee kaarti?
EstGuide[eng]	Are you situated on the left side or on the right side ·· erm of the map
	46 [02:28.6]
RusFollower[v]	ээ на · на левой части ··· я больше нахожусь на левой части ··
RusFollower[eng]	erm on the · left side ··· I am more situated on the left side ··

Figure 1. Excerpt from dialogue 35RE: Possible syntactic priming of the verb phrase between Estonian and Russian or a mere realisation of the default structure in L1 – a matter of perspective. The Estonian-speaking guide uses the “to be on X side” as an identification (segment 45). The Russian-speaking follower repeats the phrase first partially and then fully, mimicking the original structure. The article choice in segment 46 is somewhat odd since in standard Russian, unlike in Estonian, the preposition “on” would be changed to “in”.

The example from Figure 1 shows how difficult it is to qualitatively decide whether a syntactic structure originally uttered by one interlocutor and repeated by the other is a case of interactive syntactic alignment. Such a structure (segments 45–46) is the default way of answering, even though there are other syntactic options (e.g., elliptical answer indicating only the side of the map instead of the repeated phrase or a completely different phrase); similarly, the use of the preposition in the same example is grammatical but not preferred (segment 46). To sum up, structurally the utterances in these Estonian-Russian data did not demonstrate differences that would cause any major misunderstandings.

The excerpt from the dialogue in Figure 2 shows that routinization as the second type of syntactic alignment is also present in the data: some dyads repeated a construction that was fit for the experiment (e.g., “Can you see/go to X?”). Here the construction was used by the same speaker, but generally both interlocutors used it throughout the dialogue. This particular structure was useful for giving instructions, be it the follower explaining where they are or the guide leading the interlocutor towards their location.

	17 [05:47.2]	172 [05:49.9]
EstGuide[v]	Kas sul nüüd näitab diagonaal vasakule?	
EstGuide[eng]	Does by you now show a diagonal down to the left?	
EstGuide[eng2]	<i>Do you see a diagonal going down to the left?</i>	
RusFollower[v]		Да ...
RusFollower[eng]		Yes ...

	173 [05:51.2]	174 [05:52.8]
EstGuide[v]	Nii nüüd tule siia alla vasakule	
EstGuide[eng]	So now come here down to the left	
RusFollower[v]		Так ... (laughs)
RusFollower[eng]		So ... (laughs)

	175 [05:55.8]	176 [05:52.8]
EstGuide[v]	Nüüd .. tule	Kas sul näitab üks täpik alla täpselt?
EstGuide[eng]	Now .. come	Does by you now show one point down precisely?
EstGuide[eng2]		<i>Do you see a point right below?</i>

Figure 2. Excerpt from dialogue 5RE: Routinization as the second type of syntactic alignment – the interlocutors found a dialogue pattern that fits their communicative needs and use it repeatedly.

More generally, structural alignment occurred in dyads with various proficiencies in L2, both in couples where both interlocutors were fluent and in those that had less proficient speakers of L2. The interlocutors often checked every received message by repeating it in their own language (a phrase or the whole stretch). To sum up, it is important to acknowledge the existence of similar structures in Estonian and Russian in general that could be an example of automatic alignment in *lingua receptiva*, but will exclude this analysis for their ambiguity. Instead, the focus is shifted towards the more marked type of alignment that is realised in the dispreferred or ungrammatical forms. It should be mentioned that many occurrences of such kind fall into the syntax-lexicon continuum since it is the use of a certain word that seems to be unconventional. The excerpt in Figure 3 illustrates how

the interlocutors co-operate by using a certain non-default verb phrase, which can be viewed as inventing new idioms that have a shared meaning only within this specific dialogue. The Russian-speaking follower coined an expression that was understandable to the other interlocutor and was not the standard Russian expression. “Talking from the bottom” here refers to starting explanation from the lowest point on the map: the Estonian counterpart copies the same structure in his mother tongue and adds details (“from the top and from the corner”).

	64 [03:05.5]	65 [30:08.1]
RusFollower[v]	Я буду снизу говорить	
RusFollower[eng]	I will from below tell	
RusFollower[eng2]	<i>I will explain it from below</i>	
EstGuide[v]		Räägi ülevalt ja paremalt nurgast
EstGuide[eng]		Tell from the top and right corner
EstGuide[eng2]		<i>Explain it from the top and right corner</i>

Figure 3. Excerpt from dialogue 4RE: a somewhat ungrammatical form is introduced by the Russian and repeated by the Estonian interlocutor.

3.4. Lexical level

Identifying lexical alignment in multilingual interaction might also pose a problem. In alignment via literal translation from L2 to L1 (e.g., using the word “line” in L1 in reply to the same word in L2) there are normally few choices and using the L1 equivalent indicates understanding of the previous utterance. However, when the interlocutors have more than one option for the linguistic element, it becomes possible to detect alignment. Consider the word *punkt* in Estonian (“dot”) and *točka* (“dot”) versus *punkt* in Russian (“point”, “location”): the first option is a better semantic fit, but the second noun is often preferred as a cognate for the Estonian word. More overt examples contain code switching as in the excerpt below (Figure 4): the Russian-speaking participant chose an L2 word that has already been uttered by the interlocutor with very poor command of Russian; using safe terminology is in this case strategic.

	237 [06:48.5]
RusFollower[v]	Но тогда будет два täpkest
RusFollower[eng]	But then there will be two LITTLE DOTS (Est)

Figure 4. Excerpt from dialogue 5RE: a Russian interlocutor repeated the L2 noun in partitive as a safe version: the same form has been used by the Estonian-speaking participant and therefore has a higher chance to be understood.

3.5. Code-switching as alignment

To sum up, alignment enhances understanding as part of the ongoing discourse strategies and is often automatic or non-marked. The types of alignment described by Pickering and Garrod (2004) are likely to occur in the data. However, it has been demonstrated in this paper that sometimes these mechanisms are hard to classify since the languages under consideration contain non-conflicting syntactic structures and lexical equivalents or even cognates. The following section therefore investigates the non-L1 utterances in order to shed more light on the nature of alignment in LaRa dialogues. It is hypothesised that in a task with an instruction to speak one's mother tongue (see next section for methodology) the use of foreign words must be stimulated by the communicative goal. The non-L1, or the code-switched utterances, could be used phatically or used to create mutual understanding whenever there is a potentially problematic communication. As already stated in the introduction, the question is whether code-switching can be seen as an alternative type of lexical alignment. And since alignment in general is claimed to be beneficial for establishing shared mental representations, code-switching is hypothesised to be an optimization strategy in LaRa dialogues. It is predicted that the use of particular types of CS can improve experimental results of dyads with specific features: the multilingual nature of these dialogues is expected to have an effect on the type of code-switching and its efficiency depending on the dyads' L2 proficiencies.

4. Code-switching detected

4.1. CS typology

There are several reasons for applying theories on language contact to *lingua receptiva*. The former is often studied in the context of eve-

ryday in-group conversations and the focus is often on the patterns of code-switching that are possible in various language combinations and changes that such processes bring about. In this section, CS theories will be discussed in the context of CS efficiency in problem solving tasks and various factors of influence. For instance, the LaRa mode has a set of restrictions, such as the relevance of L2 proficiency (especially in acquired LaRa), socio-linguistic factors or meta-communicative knowledge. In studies on language contact, however, these factors are not used to predict the communicative failure (e.g., misunderstanding), but to account for the type of contact in terms of efficiency. LaRa, on the other hand, can offer a new perspective on the nature of language contact since in LaRa dialogues each turn starts in a different language and is a case of code-switching in itself. Given the similarities which enable comparison between the two modes and differences which justify such a comparison, the traditional CS typologies and hypotheses will be tested on a LaRa data set.

First, it is important to decide what generic types of code-switching can occur in Estonian-Russian dialogues, as relates to this paper. Muysken (2000) describes the two types of code-switching that are widely accepted in CS literature and that can be applied to acquired LaRa. *Insertion* refers to the use of lexical items or entire constituents from language 1 in the structure of language 2 and *alternation* is essentially switching between structures from two different languages. Next, a more detailed typology derived from the distribution of language choices in conversation needs to be adopted for *lingua receptiva*. The sequential patterns proposed by Auer (1995) will be the starting point. In the original typology all the patterns contain letters that represent languages and figures that stand for speakers. Thus the pattern Ia indicates that first both interlocutors speak language A until person 1 switches to language B and person 2 does the same in their next turn. The pattern Ib shows a code switch in the same speaker, which similarly to the previous example leads to a language switch in the other speaker, too.

Ia: A1 A2 A1 A2 // B1 B2 B1 B2
 Ib: A1 A2 A1 A2 A1 // B1 B2 B1 B2

The IIa pattern is in fact a traditional LaRa sequence since both interlocutors speak their own language. In pattern IIb only person 2 adapts to their interlocutor's language.

IIa: A1 B2 A1 B2 A1 B2 A1 B2
 IIb: A1 B2 A1 B2 A1 // A2 A1 A2 A1

Auer's III pattern is a combination of language switches within utterances of one speaker, used independently (IIIa) or co-occurring with the other patterns (IIIb).

IIIa: AB1 AB2 AB1 AB2

IIIb: AB1 // A2 A1 A2

Pattern IV is an example of an isolated language switch in the middle of an utterance which has no effect on the language choice that follows.

IV: A1 [B1] A1

Before the adaptation of these patterns is presented, there is another aspect relevant for LaRa. Backus and Jørgensen (2011) report on several studies demonstrating that the choice of code-switching depends on the development of other linguistic skills. Hansen (2003), for instance, provides an L2 acquisition scheme in school children: L1–L2 sequences within one speaker are the first to occur, followed by insertions from one language into the other, whereas language switches at turn taking are not acquired by all learners. According to this study, sequences of the LaRa type occur infrequently. Even though in the LaRa mode speaking proficiency is not an issue since production always takes place in a language that one speaks (near)natively, *lingua receptiva* is not a commonly used language mode and agreements about its use have to be made (e.g., Braunmüller 2007, but see Beerkens 2010). Given the fact that the data discussed in this paper come from an experiment, in which the subjects were instructed to speak their mother tongue in a bilingual dialogue, the use of LaRa was forced and the occurrence of CS is marked. The next paragraph demonstrates the possibility to analyse code-switching inside the utterances as well as at their boundaries. As concerns L2 proficiency, Auer (1998) mentions that CS is also possible with a limited knowledge of L2 since the communicative function (the need to share the meaning) does not depend on grammaticality. The prevalence of function over form is also a key concept in *lingua receptiva* where perfect command of L2 is not a pre-requisite for efficient communication (Braunmüller 2007).

The following paragraphs present the application of the adaptation of CS typology to *lingua receptiva*, as supported by the data. CS1 is the sequence of *lingua receptiva* as such since language switches occur at the turn level. In the case where “A” is the mother tongue of person 2 and “B” is the mother tongue of person 1, the communication can be described as paradoxical politeness (Verschik 2005) when the interlocutors symbolically exchange languages (i.e., each speaks the

mother tongue of their interlocutor), a mode that has been detected in naturalistic data in Estonian-Russian communication (see also Verschik 2004 and 2007). Although this pattern is not a very standard multilingual solution, in LaRa it occurs when both interlocutors decide to adapt to their partner's L1.

CS1 (IIa): A1 B2 A1 B2 A1 B2 A1 B2 or A2 B1 A2 B1

CS2 is an example of alternation since the code-switched elements form longer structures or sometimes complete sentences. Interestingly, in LaRa such switches do not necessarily lead to a change of language in the utterances that follow.

CS2 (IIb): A1 B2 A1 B2 A1 // A2 A1 A2 A1
A1 B2 A1 B2 A1 // A2 A1 B2

Insertions have been divided into three subtypes, depending on the level of morpho-syntactic integration between the two languages. CS3 is the integrated use of L2 (e.g., the inserted L2 element receives case marking from the speaker's L1).

CS3 (IIIa): AB1 AB2 AB1 AB2
(IIIb): AB1 // A2 A1 A2

CS4 differs from CS3 by its form: CS4 is a mere repetition from an earlier turn or an unintegrated L2 form (e.g., an L2 verb in infinitive where a different form is needed). Sometimes the repeated L2 form fits into the L1 structure without any changes (i.e., it cannot be integrated any further). In such cases it is impossible to decide whether the use of this form is intentional or primed; for clarity reasons such utterances are marked as CS4.

CS4 (IV): A1 [B1] A1

The data also contain examples of creative (even though ungrammatical) utterances that a speaker of language A uses in language B. For instance, an Estonian speaker confused about the words for "right" (Rus: *pravo*) and "left" (Rus: *levo*) produced "*brevo*", which is a segmental mix of the two existing words with hyper-foreignisation (henceforth, faulty AB, or FAB). It should be emphasised that grammaticality is not considered as a prerequisite and the adjective "faulty" is purely descriptive here. The focus is on the interlocutors' ability to create shared meaning based on an unknown word blend.

CS4 (IV) (FAB): A1 [*(A)B1] A1

The majority of the recorded utterances are in CS1 (the LaRa mode) and the remaining types are grouped into CS2 (alternations) on

the one hand and CS3 with CS4 (insertions) on the other: the two clusters are analysed in terms of their occurrence, effect on success in the task and dependency on exposure and attitudes. The subcategorisation presented above and showcased below helps eliminate ambiguity between alternations and insertions.

Figure 5 is an example of alternation that occasionally turns into paradoxical politeness (such exchanges are very rare as a result of the experiment's L1 instruction), which is also CS2. The Estonian-speaking participant corrects herself by rephrasing her question in L1; the L2 sentence is thus interrupted, but has been clearly intended as a whole and is considered to be an alternation. The Russian-speaking participant from the same dialogue also switches between L1 and L2, but in a clearer manner, with complete sentences.

Insertions, on the other hand, are isolated words or phrases which are novel expressions integrated into L1 speech within the same utterance or partial repetitions of the partner's speech or (Figure 6 and 7 respectively). The next section will describe the results and more examples. Statistical results will be shown to demonstrate that code-switching can be used to create common ground between the interlocutors and/or improve efficiency in the experimental task.

	132 [07:20.2]	133 [07:24.3]
EstGuide[v]	А куда ты ... eh kus sa oled?	
EstGuide[eng]	<i>But where you (Est) ... eh where you are?</i>	
RusFollower[v]		Смотри ...
RusFollower[eng]		Look ...
[MCD]	CS2E	

	134 [07:25.3]
RusFollower[v]	<i>Kas sa näed kõige kõige vasakul .. see üks · punkt</i>
RusFollower[eng]	<i>Do you see on the most left .. this · one point (Est)</i>
[MCD]	CS2R

Figure 5. Excerpt from dialogue 23RE: An example of CS2. The Estonian-speaking participant tries to speak Russian and her Russian-speaking interlocutor replies partially in Estonian. They both seem to be monitoring L2, otherwise the couple could be conversing in the mode of paradoxical politeness.

	187 [09:23.0]	188 [09:23.0]
RusFollower[v]	Вот смотри	ВОТ ТВОЯ ТОЧКА · <i>nurga peal</i>
RusFollower[eng]	Look here	your point · it is <i>in the corner</i> (Est)
[MCD]		CS3R

Figure 6. Excerpt from dialogue 23RE: An example of CS3. The Russian-speaking participant integrates the postpositional phrase into a Russian sentence, which makes the description clearer for the hearer.

	51 [02:42.8]	52 [02:44.2]	53 [02:46.0]
EstFollower[v]	Seitse		
EstFollower[eng]	Seven		
RusGuide[v]		Seitse ·	рас два три четыре пять шесть, seitse
RusGuide[eng]		<i>Seven</i> · (Est)	one two three four five six <i>seven</i> (Est)
[MCD]		CS4R	CS4R

Figure 7. Excerpt from dialogue 38ER: An example of CS4. The Russian-speaking participant repeats a part of the instruction in L2, no modifications are made to the repeated utterance.

4.2. Results

The analysis was based on the code-switched elements from the 38 dyads that took part in the experiment in the *lingua receptiva* mode (see subsection 3.1). Only five dyads completely failed in terms of the task completion (finding each other, Point A and B, on the map), 17 were able to complete the task partially and 16 dyads were fully successful. The segments that were coded as code-switching comprised a small proportion of the recorded and transcribed LaRa dialogues, approximately six per cent per dyad ($M = 5.62$, $SD = 7.48$).

A comparison between the dyads in the LaRa condition and in the monolingual condition revealed no significant differences. LaRa dyads needed 306.66 seconds ($SD=238.58$) to find Point A and 165.18 seconds ($SD=189.06$) to find Point B whereas monolingual dyads took on average 445.4 seconds ($SD=178.19$) and 219.1 seconds ($SD=234.96$). The speed difference between the two conditions is not

statistically significant: $t(46)=-1.7$, $p=.09$ for finding Point A and $t(46)=-.76$, $p=.45$ for Point B. Such results indicate that LaRa can be an efficient mode of communication.

A one-way ANOVA was administered to check whether L2 proficiency of the dyad that was expected to have an effect on efficiency in the task could predict success: interestingly, the subjects in the higher L2 proficiency dyads (those dyads in which both participants scored over 50 per cent on the L2 test) needed significantly more time to fully complete the task ($F(1,31) = 8.8$, $p < .01$). These results suggest that in addition to proficiency there could be other factors predicting success in the experimental task. Exposure to L2 (calculated from the questionnaire as the means over a number of questions with Likert scales) had no effect on the type of success in the task; however, there was a marginally significant difference in the exposure levels between the Estonian-speaking and Russian-speaking subjects, with the latter group having somewhat more regular encounters with L2 ($t(74)=-1.74$, $p=.087$). Attitudes towards multilingual situations and respective L2 played a role only for the Estonian-speaking participants: a more positive attitude towards Russian was reported in the groups with higher success (Spearman $\rho(38)=.33$, $p=.04$). These sociolinguistic factors could be partially responsible for the processes in Estonian-Russian *lingua receptiva*, yet we are going to focus on L2 proficiency combinations and their effect on code-switching as a compensation strategy for creating mutual understanding. The tests presented below were run to establish the nature and the role of code-switching in *lingua receptiva*.

Linear regression analysis was used to determine if L2 proficiency predicts the proportion (percentage) of segments that contain code-switches, in both interlocutors' utterances. First, individual proficiency scores were used as predictors. It turned out that neither L2 proficiency of the Estonian participant, nor that of the Russian-speaking participant predicted the amount of code-switching (Estonian L2 proficiency: $\beta = -0.08$, $F = 2.94$, *n.s.*; Russian L2 proficiency: $\beta = -0.066$, $F = 1.14$, *n.s.*). The same was true for alternations and insertions; the amount of these types of code-switching could not be predicted by the subjects' individual L2 scores.

The summed L2 proficiency of the dyad (composed of the Estonian and the Russian-speaking subjects' individual L2 proficiencies), however, can be shown to predict the percentage of segments with CS's ($\beta = -0.10$, $F = 5.84$, $p < .05$, $R^2 = .14$) Similarly, dyadic (summed) L2 proficiency turned out predictive of alternations ($\beta = -0.04$, $F = 4.72$, $p < .05$, $R^2 = .11$) and insertions ($\beta = -0.06$, $F = 4.35$, $p < .05$, $R^2 = .11$). Taken together, these results indicate that the higher

the summed L2, the less CS we get. The summed L2 was also predictive of the individual use of code-switching by the Estonian-speaking but not by the Russian-speaking subjects: alternations ($\beta = -0.06$, $F = 4.45$, $p < .05$, $R^2 = .11$) and insertions ($\beta = -0.08$, $F = 4.35$, $p < .05$, $R^2 = .11$).

Additional multiple regression analyses were conducted to examine the relationship between the use of CS and various socio-linguistic (both participants' exposure as well as attitudes to L2) and success predictors (the type of success, the speed of finding Point A and Point B). First, a multiple regression model with five predictors (summed L2, exposures, the speed of finding Point A and B) produced R -squared = .386, $F(5, 32) = 4.03$, $p < .01$. The Russian-speaking participants' exposure to Estonian ($\beta = -0.39$, $p = .01$) and summed C Test scores ($\beta = -0.39$, $p < .05$) had significant negative regression weights, indicating dyads with higher scores on these scales were expected to contain fewer alternations made by the Estonian-speaking participants, after controlling for the other variables in the model. The Estonian-speaking participants' exposure was moderately significant ($\beta = 0.283$, $p = .07$). The speed of finding Points A and B did not contribute to the multiple regression model. So, with other factors controlled for, higher L2 proficiency and exposure to L2 situations indicate fewer alternations used by the Estonian-speaking participants. Next, a model with six predictors (both participants' exposure and attitude to multilingual situations, type of success and summed L2) revealed the same pattern. When other factors were controlled for, the overall use of alternations was predicted by the summed L2 scores ($\beta = -0.463$, $p = .01$). The overall model fit was $R^2 = .331$, $F(6, 31) = 2.56$, $p < .05$.

To sum up the regression results, dyads with higher summed L2 scores and/or higher exposure to L2 use less CS, particularly alternations. The less predictable occurrence of insertions may be explained with their different functions: the use of L2 in general can be either symbolic (or habitual) or aimed at creating mutual understanding (intended) regardless of the participants' L2 proficiency. A more detailed discussion of the nature of L2 use can be found in Bahtina-Jantsikene (prep.).

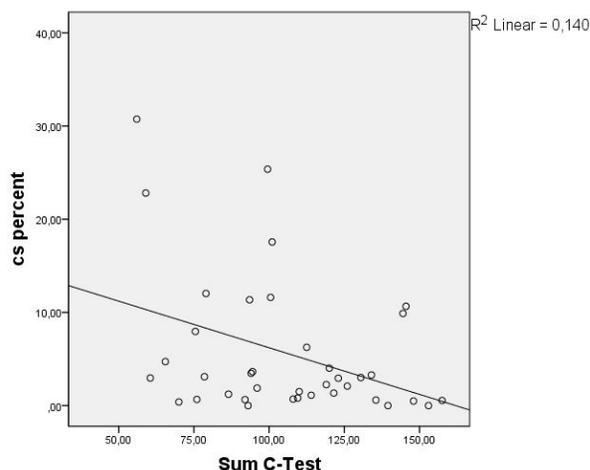


Figure 8. An example of how summed L2 proficiency predicts the overall use of code-switching. Dyads with lower L2 (left part of the x-axis) use more code-switching and dyads with higher L2 (right side of the x-axis) use it less.

Next, the occurrence of CS types was investigated in the L2 proficiency groups: both interlocutors with a high command of L2, so called high-high ($120 < \text{summed L2 score} \leq 160$), intermediate ($80 < \text{summed L2 score} \leq 120$) and low-low ($0 < \text{summed L2 score} \leq 80$). There was a significant difference in the scores for the types of code-switching used in all three groups, with insertions occurring significantly more often than alternations in all data in the LaRa condition (Figure 9). Since CS on average occurred in no more than six per cent of the segments produced in this experimental task, it was tested whether these specific types of code-switching occur in more than two percent of each dyad's segments. Alternations occur only in 1.7 per cent of all segments, whereas insertions appeared in about 3.9 percent ($t = 2.3, p < .05$). In high-high proficiency group the alternations occurred on average in under one per cent ($M = .76, SD = 1.23$) and insertions in almost 2.5 per cent ($M = 2.23, SD = 2.48$) of all segments per dyad ($t(12) = -3.01, p < .01$); in the intermediate group the alternations occurred in under 1.5 per cent ($M = 1.44, SD = 2.51$) of the segments and the insertions comprised almost four per cent ($M = 3.56, SD = 4.67$) of all segments per dyad ($t(18) = -2.97, p < .01$); the alternations remained at 1.5 per cent ($M = 1.49, SD = 2.10$) and the insertions increased until almost six per cent ($M = 5.60, SD = 7.65$), $t(8) = -2.15, p = .06$ in the low-low L2 proficiency group. Finally,

insertions were preferred as a type of code-switching also in the groups per language (Figure 9): alternations used by Estonian and Russian-speaking participants individually were similarly less frequent than insertions uttered by the same participants in dyads.

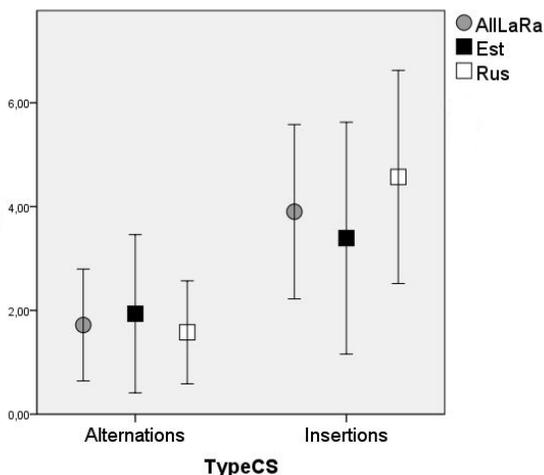


Figure 9. Insertions as the preferred type of code-switching over alternations in various language groups: total Estonian and Russian (AllLaRa), uttered by Estonian-speaking (Est) and uttered by the Russian-speaking subjects (Rus).

It should be kept in mind that the general preference for insertions is a main effect in the whole data set, but there is no interaction. What is more interesting is that there is no significant effect for all the success groups and the use of CS could therefore be linked to success or failure in the experimental task. Dyads that failed in the experiment had no preference for any type of code-switching, whereas dyads with intermediate or full success demonstrated a significant difference: the percentages of the insertions ($M = 3.41$, $SD = 4.44$) were much higher than the percentages of the alternations ($M = 1.39$, $SD = 2.36$), $t(23) = 3.39$, $p < .01$. However, the instruction to use L1 could be one of the reasons why insertions were used more extensively than alternations: longer stretches of L2 are more obvious violations of the rules whereas occasional phrases in L2 are less marked. The fact that only the successful groups used more insertions could indicate that their use of L2 was restricted to the instances when it was necessary to maintain shared representations at the lexical level. Alternatively, longer stretches of L2 could occur in situations when the interlocutors

were completely misaligned and were not able to finish the task within the time limit.

Another way to measure success is considering the time it took each dyad to complete the task (find Point A and Point B). Since the time was limited to 10 minutes after which the experiment was stopped, the remaining time was counted, transformed into a natural logarithm (coded LnA, LnB and LnAB for finding the two points separately and together) and analysed. A Spearman's CS-time correlation coefficient was computed to assess the relationship between the amount and the type of code-switching and participants' efficiency in the experiment. There was a negative correlation in all data between the speed of finding Point A (LnA) and alternations (Spearman $\rho = -0.47$, $n = 26$, $p < 0.05$); dyads that completed the task fully demonstrated no significant correlations. Dyads with intermediate success had a negative correlation both for alternations (Spearman $\rho = -0.70$, $n = 10$, $p < 0.05$) and for insertions (Spearman $\rho = -0.66$, $n = 10$, $p < 0.05$); no calculations could be made for the dyads that failed the task completely. To sum up, the dyads that completed the task faster used significantly fewer alternations and the dyads in the intermediate success group used fewer alternations and insertions. However, the nature of these correlations should be subject to a qualitative analysis. The fact that lower CS numbers co-occur with higher efficiency might simply indicate that dyads which had no communicative problems (e.g., no interlocutor with a low L2 proficiency) could proceed with the task while those with a potential for misunderstanding activated all interactional resources to repair communication. Thus, code-switching can be seen as a mechanism used by the interlocutors to create understanding locally. The speaker in Figure 10 anticipated a misunderstanding by providing an insertion in L2, classified as CS4. Another example is what we call FABs: creative use of language A by the speaker of language B (Figure 11). Not all the code-switched data, however, has the function of establishing linguistic understanding. Speakers with various L2 proficiencies used L2 phatically (discourse markers, jokes, etc.). This is especially the case in the Russian-speaking participants. This is probably why the amount of code-switching was not predicted by their individual command of Estonian. To conclude, the data demonstrate that alternations and insertions can improve mutual understanding locally; whether or not the subjects who used code-switching also managed to complete the overall task of the experiment is a question that has to be tackled qualitatively.

	23 [00:55.3]
EstFollower[v]	ee aga need · need tulbad ··· või · eh КОЛОНКИ · jah?
EstFollower[eng]	ee but now · those columns ··· or eh COLUMNS (Rus) · yes?
[Meta]	CS4(Est)

Figure 10. Excerpt from dialogue 9ER: The Estonian-speaking follower, also fluent in Russian, helped their less L2 proficient interlocutor by inserting a translation of a word that could create misunderstanding (CS4).

	201 [09:45.8]	202 [09:49.9]
RusFollower[v]	и на ·· перекрестке/ RISTMIKUL	
RusFollower[eng]	and at the ·· crossroads *CROSSROADS · up	
EstGuide[v]		ristmikul jah
EstGuide[eng]		at the crossroads
[Meta]	FAB(Rus)	

Figure 11. Excerpt from dialogue 23RE: The Russian-speaking follower provides what she believes to be a translation of a word potentially unknown to the Estonian guide who is not fluent in Russian. The newly coined word derived from the word “cross” (Est: *rist*) is easily decoded by the Estonian-speaking participant.

5. Conclusions

The initial aim of this study was to see how an automatic account of alignment in dialogue can be applied to *lingua receptiva*. Alignment strategies have been discussed as patterns enhancing mutual understanding, a process that simplifies both monolingual and multilingual comprehension and production at the level that is not controlled by the interlocutors. It has been shown that LaRa dialogues contain examples of alignment at the conceptual, syntactic and lexical levels. However, it has been argued that the use of a specific structure can either be primed by the previously heard utterance in L2 or used as a default way of conveying meaning. The studies on priming eliminate this issue by choosing linguistic elements with multiple options (e.g., parallel syntactic structures or synonyms), but in natural

language production there is little control over such choices. The author is inclined to believe that it is the automatic alignment that governs dialogues, but since that type of alignment is not so easy to define within the scope of LaRa experiments, a more straightforward methodology was adopted. Since the experiment contained instructions to use the mother tongue so that the subjects would always receive input in L2 while speaking their respective L1, any occurrence of code-switching, be it just one word or a longer stretch of talk in L2, presents an interesting case for analysis.

Code-switching was hypothesised to function as a compensation strategy to create common ground in some cases where total understanding of L2 was not to be presumed. A LaRa-based adaptation of the CS typology was derived from the distribution of language choice, ranging from the LaRa sequences per se (not counted as CS in this paper) to FABs (the creative L2 utterances). For the analysis all CS elements were categorised as alternations and insertions since grammaticality and the level of integration of the code-switched element are considered irrelevant in the context of creating mutual understanding. The results showed a strong preference for insertions over alternations, in all data as well as in more successful dyads. Such an outcome could be partially explained by the nature of the task: the subjects were instructed to stick to their L1, so they avoided longer stretches of L2 whenever it was possible. It has been demonstrated that the occasional use of CS depends on various characteristics of the subjects in dyads (e.g., L2 proficiency, attitudes, etc.) and can have an impact on the success rates in the experiment. It is therefore suggested that code-switching efficiency should be studied in a natural environment when the interlocutors have no restrictions about the languages to be spoken or are encouraged to use more languages than just their mother tongue. Next, overall use of CS types was negatively correlated with the speed of task completion, which could be expected since sequences with code-switching are claimed to occur in dyads with a potential for misunderstanding as a strategy to help the interlocutor get aligned; the use of additional strategies can take more time than a dialogue with interlocutors originally aligned on more levels (i.e., linguistic proficiency).

Dialogues in which both interactants had enough L2 proficiency or communicative competence were able to communicate in the suggested LaRa mode and complete the task. The fact that code-switching was mostly used in dyads with lower summed L2 proficiency demonstrates that speakers can monitor their language use to a great extent. The subjects in dyads with lower L2 proficiency ignored the L1 restriction and used another language to maintain lexical alignment,

which in its turn lead to better alignment at other levels. This also draws attention to the fact that high L2 proficiency is not a prerequisite for being able to switch languages. The results of the individual CS use indicate that the Estonian-speaking participants used more alternations and insertions in dyads with lower summed proficiency. The Russian-speaking participants did not demonstrate any systematic behaviour in this respect and the interpretation for that is based on the nature of CS. In other words, the Estonian-speaking subjects switched to Russian when they needed to and the Russian-speaking subjects switched to Estonian when they wanted to. Indeed, not all cases of non-L1 were motivated by the need to create linguistic common ground or to structure knowledge. This phatic use of L2 was especially pronounced in the Russian-speaking subjects: they are more likely to use Estonian, the official language of the state, in their daily lives and thus find it natural to use CS occasionally. A qualitative analysis is needed to develop a methodology to distinguish between code-switching as a common practice and the one aimed at optimizing understanding in a dialogue.

The experimental data recorded in the *lingua receptiva* mode were analysed from the perspective of alignment as a process that enhances mutual understanding. It has been demonstrated that all the features described in pertinent literature, such as emerging shared representations of the interlocutors at the conceptual, syntactic and lexical levels, are also present in this data set. The assumed automaticity of these processes is probably the reason why psycholinguistic alignment is not traditionally viewed as a socio-linguistic accommodation strategy. This paper gives evidence of the interlocutors' ability to adapt to each other's linguistic needs by using various meta-communicative devices, code-switching being one of them. More specifically, code-switching functions as a subtype of lexical alignment in some cases where mutual understanding is not to be presumed due to lower L2 proficiencies of one or more interlocutors. As a result of the L1 format of the experiment, the subjects tried to monitor their use of L2, which led to the fact that alternations were used significantly less frequently than insertions, the former being obvious cases of breaking the L1 rule. A study in various other settings is recommended where no language use restrictions are imposed or where code-switching is encouraged. It could be expected that code-switching would function as an alignment strategy also in communication beyond this experiment, yet the proportion of the different CS types would probably change.

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Kokkuvõte. Daria Bahtina-Jantsikene: Koodivahetus *lingua receptiva*'s.

Psühholingvistiline joondamine (ingl. *psycholinguistic alignment*) on protsess, mille käigus vestluskaaslased automaatselt kohandavad oma leksikaalset, struktuurilist ning kontseptuaalset esitust, mis soodustab nii arusaamist kui ka rääkimist. Sellist eritasanditel kooskõlastatud vestlust on vaadeldud ka mitmekeelsetes olukordades, kus keeli kasutatakse väidetavasti suuremal määral teadlikult. Antud uurimistöö keskendub *lingua receptiva*'le – mitmekeelsele kommunikatsiooni viisile, milles kaasvestlejad räägivad oma emakeelt (K1) ning nende võõrkeele tase (K2) on piisav partnerist arusaamiseks. Juhul kui K2 teadmised ei garanteeri sujuvat suhtlemist, aitavad üksteise mõistmiseni jõuda kommunikatiivsed strateegiad nagu nt koodivahetus (ingl. *code-switching*). Tavaelus on eelistatud rääkida ühes keeles korraga, aga eksperimendis vestluspartnerid suhtlesid *lingua receptiva* viisil. Keele vahetamine oli tingitud koodivahetuse erifunktsioonist, mida analüüsiti keelekontakti meetodite abil. K2 juhtumeid on jagatud gruppideks keelte jaotuse põhjal. Vaheldus (ingl. *alternation*) ning sisestus (ingl. *insertion*) olid peamisteks vormideks; nende kasutamine sõltus K2 tasemest, suhtumisest võõrkeelde ja selle kõnelejaatesse ning mitmekeelsuse kogemustest. Tulemuste põhjal on järeldatud, et koodivahetus toimib joondamisstrateegiana ning soodustab arusaamist.

Märksõnad: *lingua receptiva*, koodivahetus, eesti-vene kommunikatsioon