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Spatial Support Relations by Chinese Learners of Estonian and Polish

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Abstract

This study aimed to understand how explicit instruction to Chinese learners of Estonian on how to use the Estonian postpositions küljes *'attached to' and* otsas *'at the tip, attached to the tip', which do not have conceptual counterparts in Chinese, influences their usage, and whether it is easier to produce or comprehend them. Additionally, this study investigated whether it is easier for Chinese native speakers to acquire a native-like way of expressing these spatial relations if a language (in this study Polish) has a similar logic to Chinese for expressing spatial relations in instances where Estonian native speakers use the postpositions* küljes *and* otsas*. In order to answer these questions, three experiments were conducted: two picture description tasks (one with Chinese learners of Estonian [n=9] and one with Chinese learners of Polish [n=17]) and one sentence comprehension task with the same group of Chinese learners of Estonian. The results revealed that minimal instruction on the Estonian postpositions* küljes *and* otsas *is sufficient to elicit a significant rise in production of those postpositions in comparison to Chinese learners of Estonian who did not receive such instruction. The results suggest that there is no marked difference in the difficulty between production and comprehension of these postpositions. Furthermore, the results seem to indicate that for Chinese native speakers acquiring conceptually new means in Estonian to express spatial support relations by using the Estonian postpositions* küljes *and* otsas *to describe spatial relations is no more difficult than acquiring conceptually similar means in Polish.*

Keywords: L2 acquisition, spatial language, spatial relations, location markers, language typology, Estonian, Chinese, Polish.

Streszczenie

Wyrażanie relacji przestrzennych podpierania przez rodzimych użytkowników języka chińskiego uczących się języka estońskiego i języka polskiego

Celem tego badania było wyjaśnienie tego, jak instruowanie chińskojęzycznych osób uczących się języka estońskiego o tym, w jaki sposób używać estońskich poimków „küljes" 'przyczepione do' i „otsas" 'przyczepione do górnej części, na górnej części' wpływa na użycie przez nich tych konceptualnie nowych poimków, które nie mają swoich odpowiedników w języku chińskim. Badanie to miało także na celu określenie, czy łatwiej jest tworzyć, czy rozumieć wyrażenia *relacji przestrzennych przy pomocy tych dwóch poimków. Dodatkowo, próbowano znaleźć odpowiedź na pytanie, czy rodzimemu użytkownikowi języka chińskiego łatwiej jest przyswoić sposób wyrażenia wymienionych relacji przestrzennych, którym posługują się rodzimi użytkownicy języka (w tym przypadku języka polskiego), jeżeli występuje w nim podobna do języka chińskiego logika w kwestii wyrażania relacji przestrzennych tam, gdzie w języku estońskim używa się poimków „küljes" i „otsas".W celu znalezienia odpowiedzi na przytoczone wyżej pytania, wykonano trzy eksperymenty. W dwóch z nich należało opisać ilustracje ukazujące różne relacje przestrzenne – był to eksperyment z rodzimymi użytkownikami języka chińskiego uczącymi się języka estońskiego [n=9] oraz z rodzimymi użytkownikami języka chińskiego uczącymi się języka polskiego [n=17]. Trzeci z eksperymentów miał na celu sprawdzenie rozumienia zdań z poimkami „küljes" i „otsas" i był przeprowadzony z tą samą grupą, co pierwszy eksperyment. Wyniki wskazują na to, że nawet minimalna instrukcja udzielona chińskojęzycznym studentom uczącym się języka estońskiego w zakresie użycia poimków „küljes" i „otsas" może znacznie zwiększyć częstotliwość ich użycia przez te osoby w opisach relacji przestrzennych w porównaniu do innych chińskojęzycznych studentów, które nie zostały w żaden sposób poinstruowane w tym zakresie. Dodatkowo z przeprowadzonych badań wynika, że różnica w poziomie trudności między tworzeniem i rozumieniem opisów z poimkami „küljes" i „otsas" jest nieznaczna. Co więcej, wyniki sugerują, że dla rodzimych użytkowników języka chińskiego przyswojenie konceptualnie nowych sposobów wyrażania relacji przestrzennych w języku estońskim przy użyciu poimków „küljes" i „otsas" nie jest znacznie trudniejsze niż przyswojenie konceptualnie podobnych sposobów na wyrażanie tych relacji w języku polskim.*

Słowa kluczowe: przyswajanie drugiego języka, język przestrzenny, relacje przestrzenne, znacznik położenia, typologia językowa, język estoński, język polski, język chiński.

1. Background of the study

In previous studies (Bleive 2022, 2023) it has been discovered that in Estonian there are two specific kinds of spatial relations that are especially difficult to express for Chinese learners of Estonian (henceforth CLE): the support relation with attachment, where the *locatum* (the figure) is attached to the *relatum* (the ground) and the support relation with support at the tip of something where the *locatum* is attached to the tip of the *relatum* or is at the tip of the *relatum* without attachment. These relations are expressed by the postpositions *küljes* ('attached to') and *otsas* ('at the tip, attached to the tip') respectively. Both are used very frequently by Estonian native speakers (henceforth ENS) to describe spatial relations (Bleive 2022), whereas CLE hardly ever use these postpositions. They usually replace them with the adessive case or the postposition *peal* 'on', both having a similar meaning to the Chinese postposition 上 *shang* 'on', which is used in Chinese to describe any kind of support relation (including support with attachment and support at the tip of something) (Bleive 2023). This way of expressing support relations without any differentiation between regular support and support with attachment is similar to Chinese logic for expressing support relations. As it is acceptable for ENS to use the adessive in almost all cases where the postposition *küljes* and *otsas* can be used, it cannot be said that there is something fundamentally wrong with the way CLE use to describe Estonian spatial relations, it is just not very native-like.

Support relations here refer to any kind of relation that involves contact without containing the object, and containment relations refer to any kind of relation that involves containment. The approach of Bowerman and Choi (2001) was applied, according to which most of the static spatial relations have been divided into support and containment relations. The small adjustment to this schema is that, as pointed out by Kolstad (1991; referred via Mandler 1992), most of the containment relations also involve support, and thus containment relations are seen as relations with contact. I have also added the third group of support relations with attachment, which is specific to Estonian and some other languages like Dutch or German. Other relations that lack contact and containment are depicted as well, as shown in Table 1. The static spatial relations are segregated according to whether or not the placement involves contact, containment and attachment. As can be seen in Table 1, the two big differences between Chinese and Estonian are that Chinese lacks the locative markers specifically designed for support relations with attachment (as does Polish), while Estonian features two locative markers specifically for this kind of relations. Another big difference is that there are two locative markers 上面 *shàngmian* 'on, above', 上方 *shàngbian* 'on, above' in Chinese that can be seen as expressing a support relation with contact (as English preposition *on*) or no support relation and hence no contact (as English preposition *above*), depending on the context. In this regard Polish is similar to Estonian, making a clear distinction between support relations and relations without contact.

Table 1. Support and containment relations with Estonian, Polish and Chinese examples

Type of spatial relation →	Containment relations ↓	Regular support relations ↓	Support relations with attachment ↓	Other spatial relations ↓
Type of placement →	Contact + Containment + Attachment –/+	Contact + Containment – Attachment –/+	Contact + Containment – Attachment +	Contact – Containment – Attachment –
Estonian examples →	*sees* ‘in, inside’, inessive	*peal* ‘on’, adessive	*küljes* ‘attached to’, *otsas* ‘attached to the tip, at the tip’	*kõrval* ‘next to’, *ääres* ‘beside’, *juures* ‘at’, *ees* ‘in front of’, *taga* ‘behind’, *kohal* ‘above’
Chinese Examples →	里 *li* ‘in’, 里面 *lǐmian* ‘in, inside’, 里边 *lǐbian* ‘in, inside’	上 *shang* ‘on, 上面 *shàngmian* ‘on, above’, 上方 *shàngbian* ‘on, above’	None	旁边 *pángbiān* ‘beside’, 前 *qián* ‘in front of, 后 *hòu* ‘behind’, 上面 *shàngmian* ‘on, above’, 上方 *shàngbian* ‘on, above’
Polish examples →	*w* ‘in’	*na* ‘on’	None	*Obok* ‘next to’, *przy* ‘beside, at’, *przed* ‘in front of’, *za* ‘behind’, *nad* ‘above’

It was supposed, in line with Odlin (2005), that because of the influence of one’s native language, it is more difficult to acquire and to use in a native-like way the conceptual categories that are not expressed in one’s native language. Also, following Danesi’s (Danesi & Grieve 2010) conceptual error theory, creating new concepts for the target language should be more difficult than just transferring already existing concepts as it is on the third level of Danesi’s conceptual errors (Danesi & Grieve 2010: 3-4): “It is not simply a matter of an error in lexical substitution; it is the result of not knowing the differential conceptualisations of the same thought and how they are lexicalised.” However, the results of this study seem to show that using new spatial concepts that do not exist in Chinese is not a big problem for Chinese native speakers (henceforth CNS) while speaking Estonian. As Finkbeiner (1998: 56) puts it[1]: "We can claim that L2 learners are not learning new concepts per se (after all, *over* must exist in some form or another in all languages), but, rather, are learning new shades of meaning and constraints on usage for a given preposition". The same is valid for postpositions of *küljes* and *otsas,* which express spatial concepts that exist in the real world (support with attachment and support to the tip of an object). Thus, these concepts are equally available for speakers of every language, although not every language has special linguistic means reserved specifically for this kind of spatial relation, and even if there are such linguistic means, their use might not be equally obligatory in different languages[2].

This discovery gave rise to two different possible explanations for the situation: 1) the concepts of support with attachment and support to the tip of an object are difficult to understand and to learn for CLE because there are no linguistic means to express exclusively these concepts in their native language; 2) The concepts are actually easy to learn for CLE, but they have received no explicit instruction (about importance of explicit instruction see, for example, Akakura 2012; Stratton 2023) on how to use them nor on how important it is to use them in order to express oneself in Estonian in a native-like way. So they choose to use the adessive and postposition *peal* simply because it is easier and faster for them to process and use linguistic means that are more similar to their native language. In order to verify which explanation is more realistic, two research questions were formed.

> Research question 1: If CLE are instructed on how and when to use the Estonian postpositions *küljes* and *otsas,* does it influence them to use these postpositions more, and if so, are they able to use them in a native-like way?

This research question is important to answer in order to understand if instruction has an impact on how CLE use the postpositions *küljes* and *otsas.* To answer this research question Experiment 1 was designed.

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[1] His comment concerns the acquisition of the English preposition *over,* which is lacking in Chinese, just as the counterparts for Estonian postpositions *küljes* and *otsas* are.

[2] The descriptions 在山顶 *zài shāndǐng* 'on the tip of a mountain' and 在棍子一端 *zài gùnzi yīduān* 'at the one extreme end of a stick' could serve as good examples, potentially perfect translational counterparts for the Estonian postpositon *otsas* that were used by some CNS in describing those two pictures in Chinese where ENS used *otsas* for Estonian descriptions. Even though those expressions are available in their native language, no CLE without explicit instruction about the usage of the postpositions *küljes* and *otsas* thought that they should use the Estonian postposition *otsas* to describe those pictures, most probably because of the fact that this kind of descriptions are not obligatory and not very often used in Chinese.

> Hypothesis 1: The CLE start to use the postpositions *küljes* and *otsas* a little more when explicitly instructed about them, but often in a non-native-like way (not always in those places where Estonian native speakers use them) and also not so often as native speakers. Much training with usage examples is needed in order to start using these postpositions in a native-like way.

> Research question 2: Is it easier to comprehend or produce the postpositions *küljes* and *otsas*?

This research question is important to answer in order to understand if the CLE are able to understand the two concepts of support with attachment and support to the tip of an object, which are missing in their native language. If they are not able to produce descriptions using the postpositions *küljes* and *otsas,* they should at least be able to understand them. To answer this research question Experiment 2 was designed.

> Hypothesis 2: The CLE are better at comprehension than at production when it comes to the postpositions *küljes* and *otsas.*

In addition, in order to verify if it is easier for CNS to express spatial relations in a native-like way in a language that uses a similar logic to Chinese, a third group of language learners was added to the study: Chinese learners of Polish (henceforth CLP). This is the first study to compare the acquisition of Estonian and Polish as a second language. Polish is a language where in those cases where ENS use the postpositions *küljes* and *otsas,* there is a similar kind of logic to that used in Chinese (according to an experiment that I conducted with Polish native speakers [henceforth PNS]). See details below. In almost all the descriptions of the pictures, where ENS used *küljes* or *otsas,* the PNS consistently used the preposition *na* 'on', which in those cases corresponds quite well to the Chinese usage of 上 *shang* 'on'. Thus, studying CLP enables us to see if it is indeed easier for CNS to express spatial relations in a native-like way in a language that uses a similar logic to Chinese. Based on this, a third research question was formulated.

> Research question 3: If a language (such as Polish) has a similar logic to Chinese for expressing spatial relations in those cases where ENS use the postpositions *küljes* and *otsas,* is it then easier for the Chinese learners of that language to acquire a native-like way of expressing those spatial relations? If the lexical means of expressing those relations in Polish corresponds to the lexical means of Chinese quite accurately, is it

easier for CLP to express those spatial relations in a native-like way in Polish than for CLE expressing those relations in Estonian?

Hypothesis 3: The CLP have far fewer difficulties in describing in a native-like way in Polish the pictures where ENS predominantly used the postpositions *küljes* and *otsas*.

In order to answer these questions, two experiments with CLE, one experiment with CLP, one validation experiment with ENS, and one validation experiment with PNS were conducted. In the following sections, I will give an overview of these experiments and their results, followed by a discussion about the reasons for the results and what it means for L2 acquisition and teaching.

2. Experiment 1

The goal of the experiment was to see if the CLE are able to understand the postpositions *küljes* and *otsas* and differentiate them from other kinds of spatial relations which are expressed by the adessive case and the postpositions *peal* 'on', *najal* 'leaned to', *kõrval* 'next to', *juures* 'by, near to', *ääres* 'beside', *ees* 'in front of', *taga* 'behind'.

2.1. Method

The experiment consisted of 30 trials, with 15 filler trials and 15 target trials. In each trial, the participants saw a set of three similar pictures that depicted two objects. In one set the objects were the same, the only difference being the spatial relation between the two objects. The target trials used the Estonian locative postpositions *küljes* 'attached to' and *otsas* 'attached to the top/tip, being at the top/tip', and the filler trials used the Estonian locative postpositions *peal* 'on' and *kõrval* 'next to'.

In every target trial there was one picture that depicted a support relation with attachment or with being on the tip of something (with *küljes* and *otsas* as corresponding postpositions), one picture that depicted a regular support relation without attachment or being on the tip of something (with *peal* and *najal* etc. as corresponding postpositions), and one picture that depicted a spatial relation without any contact between the two objects (with *juures, kõrval* etc. as corresponding postpositions). Postpositions used in the trials and postpositions that could have possibly been used to describe the pictures in the trials are listed in Table 2.

Table 2. Postpositions of Experiment 1

Postpositions in target trials	**Possible interpretations of target trials**	**Postpositions in filler trials**	**Possible interpretations of filler trials**
küljes ‘attached to’	adessive	*peal* ‘on’	adessive
Otsas ‘attached to the tip, at the tip’	*peal* ‘on’	*kõrval* ‘next to’	*peal* ‘on’
	najal ‘leaned to’		*najal* ‘leaned to’
	kõrval ‘next to’		*kõrval* ‘next to’
	juures ‘by, near to’		*juures* ‘by, near to’
	ääres ‘beside’		*ääres* ‘beside’
	ees ‘in front of’		*ees* ‘in front of’
	taga ‘behind’		*taga* ‘behind’
	küljes ‘attached to’		*sees* ‘in, inside’
	otsas ‘at the tip, attached to the tip’		inessive
			vahel ‘between’
			läbi ‘through’

The filler trials followed the same logic, the only difference being that instead of a support relation with attachment another kind of spatial relation was used, namely a containment relation (with the inessive case and *sees* ‘in’, *läbi* ‘through’, *vahel* ‘between, in the middle of’ as corresponding postpositions).

2.1.1. Process of creating the input for the experiment

In order to choose the pictures for the experiment, 18 ENS answered a questionnaire which consisted of 120 pictures. For every picture, the participant had to describe the location of the *locatum* in relation to the *relatum* by finishing a sentence with the appropriate postposition, like for example in a sentence, *sai on õnge ...* ‘the bread is … hook’ (see the example picture in Figure 1).

Figure 1. Example picture of a trial in a validation study for Experiment 1.

Every *locatum* and *relatum* occurred together three times, but the type of relation was different so that the pictures were not identical, although the objects were repeated three times. In 60 pictures (those that were validated with the aim of becoming the target trials in the final experiment) the three-picture series always followed the same logic: the first picture depicted a support relation with regular contact (mostly expressed with the postposition *peal* or the adessive case); the second picture depicted a support relation with attachment (expressed with the postpositions *küljes*) or with support at the tip of the object (expressed with the postposition *otsas*); and the third picture depicted a spatial relation without any contact (expressed mostly with the postpositions *kõrval, juures, ees, taga* etc). In the other 60 pictures (those that were validated with the aim of becoming filler trials in the final experiment), a similar but not identical logic was followed: in the first picture, a containment relation was depicted (mostly expressed with the postposition *sees* or the inessive case); in the second picture, a regular support relation (mostly expressed with the postposition *peal* or the adessive case) was depicted; in the third picture, a spatial relation without any contact was depicted (expressed mostly with the postpositions *kõrval, juures, ees, taga* etc). All the trials were presented in a randomised order.

2.1.2. Validation of the pictures

The criteria for validating the pictures was that in all three, at least 50% (the only exception being *pudel on kivi otsas* as it was the only picture that was very near to this border and fulfilled all other criteria as well) of ENS had to describe the situation in the first picture as a support relation with attachment, in the second picture as regular support and in the third picture without any contact. Additionally, at least 50 percent of the respondents had to use the same postposition. Also, the postpositions *küljes* and *otsas* could be used only to describe one picture in a single three-picture series. If they were used to describe other pictures, then those pictures were automatically excluded from the final experiment. If there were other postpositions that were used for more than one picture of the series of three pictures, then those picture series had to be excluded as well because in this case it was not clear which kind of spatial relation ENS use to describe given pictures. Finally, five three-picture series where regular support and support with attachment/being at the tip were mixed up by ENS were left out: *käepide on ukse…, pesulõks on nööri…, lips on tassi…, raamat on kuhja…, sai on õnge ….*

2.1.3. Possible limitations

One thing to keep in mind with this experiment is that some of the situations depicted in the picture series were not very typical. It was important to create picture series where all three kinds of non-containment relations (support with contact and attachment, support with contact, and relation without contact) were represented using exactly the same objects in the whole series of three pictures so that the only thing that changed in the picture was the location of the *locatum*. This created situations that are not very common in real life, like for example the flag being laid on a roof or the balloon put onto a stick (without being attached to it). So, in every trial the picture which depicted support with attachment or being on the tip of something was more typical than the picture where the same objects had only regular contact without attachment or being on the tip of something. But those situations were not completely unrealistic or impossible in real life, so even if they do not occur often, the language speakers still should be able to describe them. Still, the possibility exists that the less realistic situations are treated somewhat differently by the respondents than the more realistic situations. There were no such problems with the third kind of pictures which depicted the spatial relation without contact. Those pictures depicted quite natural situations.

2.1.4. Final choice of pictures

In the end, nine picture series were chosen where the postposition *otsas* was used and six picture series where the postposition *küljes* was used. Five picture series out of 20 could not be validated. As there were more pictures with *otsas* that could be validated, the final experiment included more trials where the postpositon *otsas* was targeted (9) and less trials (6) where the postposition *küljes* was targeted. As for the fillers, all 20 picture series were validated, but as five picture series for target trials were excluded, five pictures for filler trials were excluded as well. In total, 30 three-picture series with a total of 90 pictures were chosen for the final experiment.

2.1.5. Participants

Nine participants took part in the experiment, four males and five females. All the participants were 19 or 20 years old. All the participants were students of Estonian studies at the Beijing Foreign Studies University. At the time of conducting the experiment, they had had three semesters of intensive learning of Estonian language in the classroom environment in Beijing. They were moving towards the B1 level of Estonian competence, but due to varying individual motivation, the actual language knowledge differed to some degree.

2.1.6. How the participants were taught to use spatial postpositions

The group that took part in my experiment had been instructed in the first year of their studies how to use the postpositions *küljes* and *otsas* and what they meant. To make the meanings of the two postpositions clearer, the grammaticalisation chain from body parts (*külg* 'side of body' → 'side of something' → postposition 'attached to something', *ots* 'forehead' → 'extreme point of something' → postposition 'to be attached to the extreme point of something, to be on tip of something') to those postpositions was explained. Also, some examples of usage were given while showing the corresponding situations in real life. They used a textbook (that was still in the testing phase at the moment of conducting the experiment) that was specifically designed by Ilona Tragel and Tian Zhang for the Chinese native speakers who learn Estonian. The part about the postpositions *küljes* and *otsas* was added after the results of the study by Bleive (2023), which revealed problems with producing the postpositions *küljes* and *otsas* by CNS. In Figure 1 of the appendix, there is an extract from their textbook.

With regard to the exercises, the students had to answer the question *where is ...* (an object from the picture) using different postpositions, including *küljes* and *otsas.* In Figure 2 of the appendix, there is an extract from the draft of the textbook version that was used to teach them.

Altogether, not too much training of the postpositions *küljes* and *otsas* was included, but it was still considerably more than in regular Estonian classes, where textbooks without any explicit grammar and usage explanations of the postpositions *küljes* and *otsas* are used. If the students comprehend the sentences with *küljes* and *otsas*, then it probably means that this kind of minimal instruction is enough to make CNS use those postpositions in Estonian. On the other hand, if they are not able to comprehend those sentences, then it is clear why in Bleive's 2023 study the CLE did not produce descriptions with *küljes* and *otsas.* If one cannot understand the meaning of a postposition, then it is impossible to use it in a native-like way consistently.

2.1.7. Interviews

A few days after conducting the experiment, all the participants were questioned about the five most difficult (with two or more non-native-like interpretations) pictures to understand (*Ehe on kaelakee küljes*, *Leht on oksa küljes*, *Pudel on kivi otsas*, *Õun on varda otsas*, *Lipp on maja küljes*). The questions were about the reasons why they had chosen the picture that they chose and why they did not choose another picture that depicted a similar kind of relation, and also what kind of objects they saw.

2.2. Results of Experiment 1

As can be seen in Tables 3 and 4, CLE did not have difficulties to comprehend the descriptions of spatial relations in a native-like way with most of the picture series:

Table 3. Answers of CLE in Experiment 1.

	Ehitusplokk on kraana ***otsas*** 'A building block is hanging on a hook of a crane'	*Skulptuur on künka* ***otsas*** 'A sculpture is on the tip of a mountain'	*Kuusk on mäe* ***otsas*** 'A fir tree is on the tip of a mountain'	*Õun on varda* ***otsas*** 'An apple is pierced by a rod'
Native-like answers	9/9	8/9	9/9	7/9

	Pesa on posti ***otsas*** 'A nest is on the tip of a pole'	*Paber on naela* ***otsas*** 'a piece of paper is pierced by a nail'	*Pudel on kivi* ***otsas*** 'A bottle is on the tip of a rock'	*Pirn on puu* ***otsas*** 'A pear is on a tree'	*Õhupall on kepi* ***otsas*** 'A balloon is attached to the tip of a stick'
Native-like answers	9/9	8/9	6/9	8/9	8/9

	Ehe on kaelakee ***küljes*** 'A gem is on a necklace'	*Pesakast on tüve* ***küljes*** 'A nest box is on a tree trunk'	*Sang on käekoti* ***küljes*** 'A handle is on a handbag'	*Leht on oksa* ***küljes*** 'A leaf is on a branch'	*Lipp on maja* ***küljes*** 'A flag is on a house'	*Ratas on auto* ***küljes*** 'A wheel is on the back of a car'
Native-like answers	4/9	9/9	7/9	6/9	7/9	9/9

There were four pictures where both the postpositions *küljes* and *otsas* were used with almost equal frequency by Estonian native speakers (*ehitusplokk on kraana otsas, pirn on puu otsas, õhupall on kepi otsas, ehe on kaelakee küljes*), so this could have influenced the results somehow because for the final experiment, only one option was chosen (the one that was more prevalent). But as the first three trials were all answered with more than 90% accuracy, it appears that even though the ENS used both the *küljes* and *otsas* option to describe the situation, they were not particularly confusing for CLE.

In addition, there were two pictures where a significant percentage of CLE (around 30% in both cases) could not understand the description in a native-like way (*leht on oksa küljes* and *pudel on kivi otsas*. In the case of the picture *leht on oksa küljes*, all of the three respondents who chose the non-native like way of understanding the picture mentioned that because the leaf is actually growing while being on the branch, the postposition *küljes* cannot be used. In the case of *pudel on kivi otsas,* some respondents thought that the surface of the contact area was too big in order to use the postpositions *otsas* for the picture where native speakers used it, so the method of exclusion was used and another picture chosen. In all the other trials, except for *ehe on kaelakee küljes* (the only trial picture that was not recognised correctly by some [2] CLE, instead of a necklace/rope, a ball was seen), at least 67% of answers were accurate and five trials had 100% accuracy. It seems that the comprehension of the trials with the relations using the postposition *otsas* in their descriptions were slightly easier. The average accuracy of all those trials was 89%, whereas the average accuracy of the trials with the relations using the postposition *küljes* in their descriptions was 78%; and if the only trial with hardly understandable objects is removed, the accuracy increases to 84%. So, it is possible to state that the relations described with both postpositions are quite easily understandable for CLE with explicit instruction about the usage of the postpositions *küljes* and *otsas* during the teaching process.

The interviews revealed that, in general, the CLE had understood the general principles of how to use the postpositions *küljes* and *otsas* for describing static spatial relations quite well. There were some instances of interpreting the postposition *küljes* as indicating a relation where the *relatum* has to be at the side of the *locatum* (probably because of the meaning of the noun *külg* 'side', the source from where the meaning of the postposition has been grammaticalized; Ojutkangas 2000). During the interviews, eight respondents out of nine mentioned the aspect of *relatum* being attached to the *locatum* when explaining why they had chosen a relation that was described in Estonian with the postposition *küljes.* Similarly, seven respondents out of nine mentioned the aspect of *relatum* being at the tip or top of the *locatum* when explaining why they had chosen a relation that was described in Estonian with the postposition *otsas.* Additionally, there were some respondents who specified that they chose a certain picture because the usage of the postposition *küljes* or *otsas* implies that the contact surface is not so big as when using the postposition *peal* or the adessive case.

Some students mentioned that they had used the method of exclusion to determine which picture corresponded to the Estonian description with the postposition *küljes* or *otsas.* Even though making a choice between only three items makes it easier to use the method of exclusion, it was not possible to rely only on this method without any knowledge of the postpositions *küljes* and *otsas* because the meanings of the adessive and *küljes/otsas* overlap to some degree (which is exemplified by the fact that among the descriptions by ENS, there were also instances of using the adessive case, even though most of the native speakers preferred the more precise way of describing the pictures by using the postposition *küljes* or *otsas*). The main difference between the usage of *küljes* or *otsas* and the adessive is that the same relations can be described more exactly by using the postpositions *küljes/otsas,* while it is also possible to describe them with less precision by using the adessive case. The relation between the adessive and *küljes/otsas* in this case is that of hypernym (adessive) and hyponym (*küljes/otsas*).

3. Experiment 2: production of spatial relations by CLE

I conducted a second experiment with the same group (n=9) of students as in the first experiment. This was the group that had been instructed on how and when one should use the postpositions *küljes* and *otsas*. The aim of the experiment was to compare the group who had been explicitly instructed on how and when one should use the postpositions *küljes* and *otsas,* and the group who had been taught without any attention to postpositions *küljes* and *otsas.* It was a replication of a previous experiment with a group of CLE who had not been instructed on how to use *küljes* and *otsas* (Bleive 2023). The participants had to describe the spatial relations of 40 pictures that they saw by answering the question *Kus on …….* 'Where is ……' (different *locatum*). To make the task easier, they were provided with the genitive forms of the *relatum.*

4. Experiment 3: production of spatial relations by CLP

I translated the same experiment into Polish and conducted it with CLP (n=17). They were third year students of Polish at the Beijing Foreign Studies University, and at the time of participating in the experiment they had been studying Polish for more than two years. In order to transform the Estonian experiment into Polish, I carried out an additional experiment with PNS (n=10) to understand what are the most common ways of describing the objects in Polish on the 40 pictures from the Bowerman and Pederson pictures series (Bowerman & Pederson 1992) that were used in the experiment with CLE. For every picture, I picked the most frequently named objects by the PNS in the additional experiment and translated the questions of Experiment 2 into Polish for Experiment 3. The translation was made by using the objects named by PNS, so the question that the respondents saw was *Gdzie jest ......* 'Where is ……' (different *locatum*). Similarly to the Estonian experiment, the CLP were also provided with the object names of the *relatum*, although no genitive form was given as it is irrelevant for Polish.

4.1. Results of Experiments 2 and 3

Out of the 39 test pictures, the CLE described 24 pictures by using the postpositions *küljes* or *otsas* at least once. Table 4 below shows all those 24 occasions where the CLE (with explicit instruction about the usage of the postpositions *küljes* and *otsas*) used the postpositions *küljes* and *otsas* in comparison with their usage by ENS (from Bleive 2022), and the usage of counterpart locative markers by CLP, PNS and CNS (the data of ENS and CNS is from Bleive 2022 study):

Table 4. The most used locative markers of Experiment 2 and 3. Green: *küljes* was used at least once; yellow: *otsas* was used at least once; grey: *küljes* and *otsas* both were used at least once.

Picture no:	**CLE most used locative marker**	**ENS most used locative marker**	**CLP most used locative marker**	**PNS most used locative marker**	**CNS most used locative marker**
20	*otsas* 'at the tip, attached to the tip'	*otsas*	*na* 'on'	*na*	上 *shang* 'on'
22	*otsas*	*otsas*	*w/na* 'in/on'	*na*	上 *shang*
27	*otsas*	*otsas*	*na*	*na*	上 *shang*
41	*otsas*	*küljes*	*na*	*na*	上 *shang*
56	*otsas*	inessive	*na*	*na*	上 *shang*
57	*otsas*	*küljes* 'attached to'	*na*	*na*	上 *shang*
70	*otsas*	*otsas*	*w/na*	*na*	上 *shang*
9	*küljes/* inessive	inessive	*na*	*na*	上 *shang*
58	*küljes*	*najal* 'leaning to'	*przy* 'by'	*o* 'about, against'	上 *shang*
61	*küljes*	*küljes*	*na*	*na*	上 *shang*
7	adessive	inessive	*na*	*na*	上 *shang*
33	adessive	adessive	*na*	*na*	上 *shang*
42	adessive	*ümber* 'around'	*w/na*	*na*	上 *shang*
44	adessive	adessive	*na*	*na*	上 *shang*

46	adessive	*ümber*	*na*	*na*	上 *shang*
63	adessive	inessive	*na*	*na*	上 *shang*
66	inessive	*küljes*	*na*	*przy/na*	上 *shang*
10	inessive	inessive	*na*	*na*	上 *shang*
26	inessive	inessive	*na*	*na*	上 *shang*
4	*ümber*	*ümber*	*na*	*na*	上 *shang*
55	*ümber*	*ümber*	*wokół* 'around'	*wokół*	上 *shang*
30	*sees* 'in'	*läbi* 'through'	*w*	*w*	中 *zhōng* 'amidst, in'
53	*all* 'under'	*all*	*pod* 'under'	*pod*	下 *xià* 'under'
65	*peal* 'on'	*otsas*	*w*	*na*	上 *shang*

4.1.1. *The usage of* otsas *by CLE and its counterparts for CLP*

In seven pictures, *otsas* was the most used postposition for the CLE. For the same pictures, the ENS used *otsas* the most in four cases, and in the remaining three cases it was the second most used postposition. So in these cases, the usage of *otsas* by the CLE with explicit instruction was quite similar to the ENS. The situation is similar with the CLP in that they also tended to use predominantly the same preposition *na* 'on' as the PNS, only with some more variation in other prepositions used by a minority of respondents (the PNS used quite uniformly the preposition *na* for all the pictures). The most surprising cases of alternative prepositions by the CLP was the usage of *w* 'in' instead of *na* 'on', thus changing a support relation into containment relation. For every picture, there were between one and four respondents of the CLP who decided to use the preposition *w,* with the exception of picture 22 (pieces of paper pierced by a nail), where six respondents used the preposition *w* and six used the preposition *na.* This is surprising as all the answers of the CNS for these pictures were described by using the postposition 上 *shang* 'on', so nothing suggests that the CLP could see containment situations here.

There was one picture where the ENS used predominantly *otsas* (picture 65, a tree on the tip of a mountain), but the CLE with explicit instruction mostly *peal* but also *otsas* and *tipus* (the latter being very similar to *otsas* in meaning, in this case). This picture was surprisingly difficult for the CLP because even though the CNS saw it as a support situation, as many as nine CLP saw it as a containment situation and used the preposition *w.* Three respondents used the description *na szczycie góry* 'on the peak of a mountain', which is interestingly similar to the logic of ENS and usage of *otsas* in this case. The underlying reason for this is probably that the CNS also used, in addition to 上 *shang*, the option of describing the picture as 在山顶 *zài shāndǐng* 'on the tip of a mountain'. Only three respondents answered in the same way as the PNS, using the preposition *na* + the noun *góra* (some of them in plural, unlike the PNS).

There was one picture (66) where the CLE with explicit instruction used *otsas* twice, but the ENS not at all; and one picture where the CLE used *otsas* once (picture 30), after *sees* and *sisse,* but the ENS used mostly *läbi* 'through', the latter hardly being used at all by the CLE. The CLP described picture 66 (a handle on a handbag) mostly in a native-like way, with 14 respondents using the same preposition *na* as the PNS; but again, surprisingly, two respondents used the preposition *w,* while all the CNS used the postposition 上 *shang* for this picture.

Picture 30 (an arrow through an apple) was also described mostly in a native-like way, with one surprising exception of using the preposition *na* to describe the given picture. The CNS only saw it as a containment situation, similar to PNS, using the postpositions 中 *zhōng* 'amidst, in' and 里 *li* 'in'.

In general, the usage of *otsas* was quite native-like, which is in striking contrast with the CLE without explicit instruction from the Bleive 2023 study. Also, the descriptions by the PLC of these pictures were quite native-like, with the exception of picture 22.

4.1.2. The usage of küljes *by the CLE and its counterparts by the CLP*

On the other hand, the usage of the postposition *küljes* by the CLE with explicit instruction was a little less native-like. *Küljes* was the most used postposition in three cases, whereas in two out of these three cases, the ENS did not use the postposition at all (picture 58) or used it only once (picture 9).

Another two pictures where the CLE used predominantly *küljes* had quite native-like descriptions by the PLC, but again with the remarkable exception of either one or two respondents in both pictures who opted for the preposition *w* 'in' and saw containment situations, although the CNS only saw support situations in all three pictures and unanimously used the postpostion 上 *shang* 'on'. There was one picture (66) where the ENS used *küljes* seven times but the CLE with explicit instruction only twice; and there was another picture (55) where the CLE with explicit instruction used *küljes* twice but no ENS used this postposition. Instead, they used the adpostion *ümber.* This situation is explainable by the fact that the Chinese counterpart 周围 *zhōuwéi* ‘around’ for *ümber* ‘around’ corresponds only to the situations where there is no tight-fit (see Norbury, Waxman and Song 2008 for details about this term) situation. It is thus understandable why the CLE were more reluctant to use *ümber* as they probably associated it with the Chinese 周围 *zhōuwéi.* Both these pictures were described by the CLP predominantly in a native-like way, with either two or three exceptions in the case of both pictures, where, again surprisingly, the preposition *w* was preferred although the CNS only used 上 *shang* for these pictures.

In pictures 53, 4, 7, 63, 33, 42 and 44, *küljes* was used quite similarly in both the CLE and ENS groups (not the most used postposition, but with some occasional usage). The CLP described these pictures mostly in a native-like way, with the exception of two pictures. In picture 42, six respondents saw a support situation similar to the PNS and used the preposition *na,* but, surprisingly, six respondents saw a containment situation and used the preposition *w.* And in picture 33, four respondents saw a containment situation and used the preposition *w,* in contrast to the PNS and CNS. In the case of pictures 4, 7 and 44, only either one or two respondents described them as containment situations instead of a support situation, in contrast to the PNS and CNS; the rest of the answers were native-like. Picture 53 did not pose any difficulty at all, as all the CLP described it in a native-like way.

There was one picture (58, a ladder leaning to a wall) where no ENS used *küljes*, but four out of nine CLE did. The ENS preferred *najal* ‘leaning to’ instead, which was not used by the CLE at all as it is less common in Estonian and was thus not included in their textbook. In order to compensate for the lack of this postposition, they used *küljes* instead. Since during the instruction the grammaticalisation of the Estonian noun *külg* ‘side’ into the postposition *küljes* ‘attached to’ was explained, it is easy to understand why some of the respondents preferred to use the postposition *küljes* also in cases where something is at the side of a *relatum* (reference object) without actual attachment (cases where native Estonians would never use *küljes*). The same picture was also quite puzzling for the CLP because only one of them used *o* ‘about, against’, the most preferred preposition by PNS, while 12 of them used the preposition *przy* ‘by’, which was used only by three PNS. Meanwhile, the CNS described the situation as a simple support relation by using the postposition 上 *shang* unanimously.

There was also one reversed situation where no CLE used *küljes,* whereas four ENS did (picture 27); and one picture (66) where the ENS preferred *küljes* in seven answers out of 10, but the CLE preferred mostly the inessive (four answers out of nine) and *küljes* only shared second place (two answers out of nine). Those two images probably had smaller percentages of native-like usage because they were less prototypical cases of attachment as the area of contact is quite small. Finally, there was one picture (63) where no CLE used the postposition *otsas* but two ENS did. This picture, again, could be a little confusing as there are two possible interpretations. As some ENS interpreted it as a lamp attached to a cable and others as a lamp hanging from the ceiling (the only interpretation possible for the CLE as they were provided with the reference object's name in genitive case), it is not surprising that some ENS used the postposition *otsas* (those who interpreted the image as a lamp attached a cable), while none of CLE did.

Altogether, there were two pictures (58, 55) out of 24 where there was overproduction of *küljes* by the CLE, two pictures (27, 66) where there was underproduction of *küljes* by the CLE, and one picture (63) where there was underproduction of *otsas* by the CLE. In other pictures, the usage of *küljes* and *otsas* by CLE was similar to that of the ENS.

5. Discussion

As can be seen from the results, one group of the CLE used the postpositions *küljes* 'attached to' and *otsas* 'at the tip, attached to the tip' much more often than the other. Those, who were conscious about the wide usage of the Estonian postpositions *küljes* and *otsas* for describing static spatial relations and had been instructed about the logic of their usage, used them much more often. This is partly in accordance with hypothesis one, which assumed that explicit instruction does indeed influence the usage frequency of the postpositions *küljes* and *otsas.*

The surprising part not in line with the hypothesis is that the increased use of these postpositions was so sharp and that the CLE with explicit instruction about the usage of the postpositions *küljes* and *otsas* started to use them even slightly more than the ENS. Remarkably, the CLE with explicit instruction not only used these postpositions much more often but also did so in an almost native-like way. This is surprising considering the fact that their native language Chinese does not distinguish between the regular support situations and support with attachment (*küljes, otsas*) or support at the tip of something (*otsas*) (Bleive 2022).

There are several possible explanations for this situation. First, it seems that in the case of static spatial relations, the concepts that one needs to learn differ from other new concepts that one has to learn in the L2. As space is universal and surrounds us in the same way everywhere in the world, it is impossible that there is a completely new concept that has to be learned on every level, unlike a new cultural concept that might or might not exist in another language.

As Finkbeiner (1998b) states: “There is no evidence that basic conceptual representations are different between languages.” The spatial concepts are comparable with the way the color spectrum is conceptualised and encoded lexically. For example, Russian obligatorily divides the colour blue into two conceptual categories, unlike English (Winawer et al. 2007), but those categories are not cultural in the sense that they are conceivable without any additional instruction by every person with healthy eyesight. Also, they are easily learnable because English speakers have been found to easily distinguish between light blue and dark blue almost exactly in the same way as Russian *goluboy* ‘light blue’ and *siniy* ‘dark blue’ are distinguished, as Winawer et al. (2007) clearly demonstrated. The only difference is that they were slower in responding because it is not compulsory to distinguish those categories lexically in English, so the English speakers do not have to distinguish between them as often as Russian speakers do. This lack of training in distinguishing between light blue and dark blue implies that there is no other difficulty than processing time for English speakers starting to use the Russian concepts of *goluboy* and *siniy*.

The situation described above is similar to the CLE’s usage of *otsas* and *küljes.* They are able to understand these concepts, and it is possible to express them in Chinese, but as it is not compulsory to do so and the lexical means in Chinese to express these concepts are rather descriptive – meaning that one needs to describe the whole situation to express the same relation as *küljes* or *otsas* do – they are not trained to distinguish them. Thus, with proper instruction and awareness about the quasi-obligatoriness of these postpositions in Estonian, it is actually quite easy for CLE to start to use them, as the results of the experiments in this study show.

The situation is different with cultural concepts, like the concept of privacy in Russian according to Pavlenko’s (2003) study. This concerns not only lexical encoding but also the differences in personal boundaries and interpersonal relations between the English-speaking and Russian-speaking world. Thus, a Russian learner of English needs much more time and real life experience in the English speaking world to be able to acquire and start using the concept of privacy.

On the other hand, spatial concepts exist in the world of objects, and one can understand concepts related to universal cognitive abilities like space much more easily than cultural concepts, which are related to specific cultural contexts. Teachers have the possibility to show through real world objects how spatial postpositions work, and at the same time they can also check quite easily if the students have understood the spatial usage of given postpositions. The usage of *küljes* and *otsas* should be quite regular and logically relatable to the organisation of space so that one can deduce when exactly one should use them from the meanings and explanations.

It is surprising that it is possible to start using the postpositions *küljes* and *otsas* quite accurately after only having understood the general logic of their usage and their grammaticalisation chain, but without going through massive amounts of usage examples and training. It seems that these postpositions are conceptually easily acquirable for CNS and possibly even for speakers of other languages that do not have such categories and that the only reason behind the very limited usage of these postpositions in earlier production experiments (Bleive 2022, 2023) is the lack of any explicit instruction on them. This result has a significant impact on teaching because it shows that a short instruction about the usage of these postpositions might be sufficient for learners of Estonian as a second language. It also indicates that at least in the domain of using the postpositions *küljes* and *otsas* explicit learning might be more effective than implicit learning, contrary to some studies (Bell 2017; Gunawardena 2024). This does not demand very many resources, so it is possible to adapt one's teaching plans in a way that this gap in teaching could be easily covered.

With regard to the other research question about the difficulties with production vs comprehension, it seems that the second hypothesis, surprisingly, does not hold true. Namely, it does not seem to be the case that comprehension of *küljes* and *otsas* is substantially easier than the native-like production of these postpositions. As the two experiments had different kind of designs which do not have one-to-one relationship, it is difficult to compare the results very precisely, but the general tendency of percentage of non-nativeness while comprehending and producing the spatial relations with *küljes* and *otsas* seems quite similar. It can be seen that there was some confusion as to which parameters determine the use of the postpositions *küljes* and *otsas,* but, in general, after the instruction the CLE understood the concepts of *küljes* and *otsas* quite accurately. According to Ray Jackendoff's (1996: 5) theory of Representational Modularity, "Conceptual structure is an encoding of linguistic meaning that is independent of the particular language whose meaning it encodes. It is an 'algebraic' representation in the sense that conceptual structures are built up out of discrete primitive features and functions". As a result, it makes sense that it is not so difficult to connect a spatial conceptual structure that is not expressed lexically in one language to an adposition in another language because the speakers of both languages have the conceptual structure in their understanding of the world.

Both in production and comprehension, there were around 15-20% of trials where a substantial part of the CLE could not comprehend or produce in a native-like way. It can be concluded that there is no substantial difference in difficulty between producing and comprehending expressions with postpositions *küljes* and *otsas* in a native-like way. One reason for this could simply be that the comprehension task was more complex in terms of the experiment's design and pictures' clarity. Another reason could be the way CLE learn Estonian. Traditionally (Li 2023), Chinese learners of languages are used to putting a lot of emphasis on memorising words and phrases, which leads to an unusual situation where the producing ability could be even ahead of the comprehension ability. This, combined with the fact that CLE struggle with comprehension to a degree that they can sometimes produce grammatically correct phrases which they cannot fully understand themselves, probably leads to a situation where comprehension and producing skills of spatial descriptions are surprisingly similar.

In addition to the postpositions *küljes* and *otsas,* which are the main topic of the article, there is another adposition that was not at the focus of this study but supports its findings. The ambiposition *läbi* 'through' also lacks a conceptual counterpart in Chinese. At the same time, it was not included in the textbook that was used by the CLE of this study. This means that the students were not instructed explicitly how to use *läbi* in the same way as with the postpositions *küljes* and *otsas.* There were two pictures where the ENS used this adposition. In the descriptions of picture 30, it was the dominant adposition, used eight times out of 11 and in the descriptions of picture 70, it was the second most used adposition, used four times out of 14. In the answers of the CLE, it was used only once in the case of picture 30 and not at all in the case of picture 70. The reason for this is probably that the respondents simply had not received instruction about the usage of the adposition *läbi* in the same way as they had been instructed on how to use the adpositions *küljes* and *otsas.* This seems to confirm the importance of instruction and the addition of any adposition into textbooks that is deemed important enough to be acquired by the CLE already in the early phases of acquisition of Estonian.

With regard to the third research question, it seems that the initial hypothesis was also proven wrong. Contrary to the prediction, the comparison of the answers of the CLP and CLE reveals that there appears to be no substantial difference for Chinese learners of languages between the difficulty of producing native-like forms in a way that is conceptually different from their native language (like descriptions with using the postpositions *küljes* and *otsas* to describe support relations in Estonian) and in a way that is conceptually similar to the learner's native language (like descriptions that use the preposition *na* to describe support relations in Polish). In general, both groups had not many difficulties in describing the 24 pictures from Table 4 in a native-like way. On average, only between one and two non-native-like answers were produced for every picture, with some exceptions. In the case of the CLP, the surprising fact was that for almost every picture there were some respondents who described the pictures as containment situations (using the preposition *w* 'in') instead of support situations (with the preposition *na* 'on'), even though the similarity with Chinese would suggest that there are no difficulties at all. Despite the overlap in how the Chinese postposition 上 *shang* 'on' and the Polish preposition *na* 'on' are used to describe support relations, especially in those cases where the postpositions *küljes* and *otsas* were used in Estonian descriptions, it is surprisingly not easier for the CLP to produce native-like descriptions in Polish than for the CLE to produce native-like descriptions in Estonian.

One possible reason for this finding is that the CLP are not aware of the similarity of the two languages in describing the support relations because they were not explicitly told about this similarity. Another reason could be that they do not identify the prepositions *na* and *w* as locative prepositions that divide locative expressions into two categories (support relations and containment relations), but rather as general locative prepositions that can be used to describe any kind of static locative relation. This could also happen to the CLE, at least if we look at Bleive's (2023) data. But as the general rates of native-like answers were quite high, it means that those difficulties affected only a small part of the respondents.

6. Conclusion

All in all, the results seem to indicate that acquiring conceptually new ways of expressing spatial relations is not more difficult than acquiring a similar kind of system. If, as Finkbeiner (1998: 46) states, "According to Representational Modularity, the lexicon is a learned mapping between levels of representation (such as conceptual structure or syntactic structure) within the language faculty" then "learning a new L2 spatial preposition means learning how to combine particular spatial representations with particular conceptual structures in ways that, perhaps, have never been done before in the L1" (Finkbeiner 1998: 56). Thus, there is no essential difference between CLP learning the Polish adpositions that combine lexical items with certain conceptual structures that are similar to Chinese and CLE learning Estonian adpositions that combine lexical items with conceptual structures that are different from Chinese. As Jackendoff (1996: 7) points out, "languages can differ in what elements of conceptual structure they require the speaker to express", but the difficulty does not lie in the fact that "languages can have different strategies in how they typically bundle up conceptual elements into lexical items" (Jackendoff 1996: 8) and learning how to use those different lexical encodings of conceptual elements, but rather in being aware that a lexical encoding different from one's native language exists in a particular L2 and that it is necessary to use this encoding in the given L2. The current study seems to lend some support to this claim.

For teaching purposes, this means that one needs to raise awareness about the existence and scope of different lexical encodings for spatial relations in the L2 and about the importance of using them in order to produce native-like spatial expressions. This kind of explicit instruction while teaching is crucial in any case, even if the scope of a given lexical encoding in the native language is similar to the lexical encodings in the L2, as the Polish data shows. The only difficulty in this situation is the precondition that the instructor by her-/himself needs to be well acquainted with the scope of a given lexical encoding in the source language as well as in the language that is being taught. The good news, contrary to what was supposed before conducting this study, is that not much more is needed in order to start producing and comprehending spatial relations in a native-like way. This means that only small adjustments in teaching methods are needed in order to enhance the acquisition of spatial language in the L2, at least with regard to Estonian as a L2 for Chinese speakers. How much this result is generalisable to native speakers of other languages learning Estonian or Polish or to other languages learned by CNS and native speakers of other languages remains a question for future research.

Acknowledgements

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Appendix

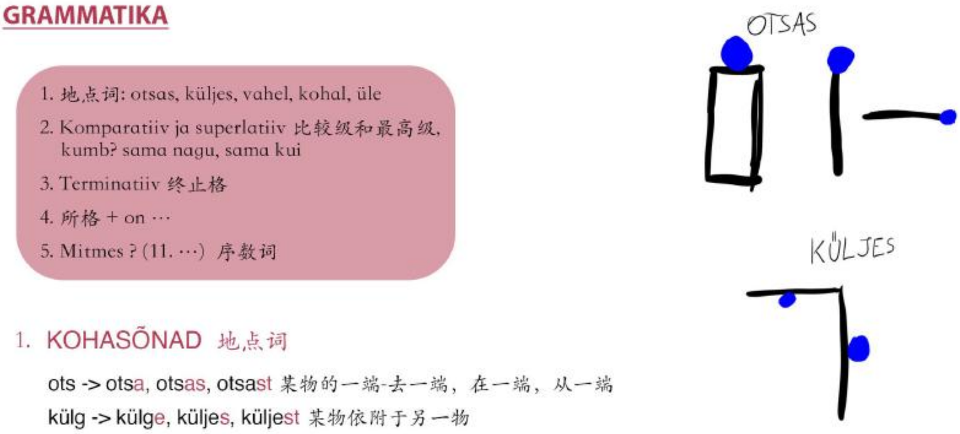

Figure 1. Textbook explanation of the postpositions *otsas* and *küljes*.

2. 请根据图片回答问题！
从下列词组中进行选择并完成表格，你也可以自己添加词组

KUS ON..

.. Eesti lipp? ____________________
.. Hiina lipp? ____________________
.. pilv? ____________________
.. puu? ____________________
.. õun? ____________________
.. lind? ____________________
.. vikerkaar? ____________________
.. must kass? ____________________
.. pruun triibuline kass? ____________________
.. hall kass? ____________________
.. tüdruk? ____________________
.. poiss? ____________________
.. torn? ____________________
.. maja? ____________________

Figure 2. Textbook exercise for spatial relations.

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