The use of English relativizers by non-natives.
A comparison of Danish, Serbian and Slovene students

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Abstract: This paper presents a study of the acquisition and use of English relativizers by non-native university students of the English language. Danish students of English Business Communication, Serbian students of general English studies and Slovene students of Translation Studies serve as informants for this work, which is quantitative and comparative in nature. The informants' mastery of English relativizers is investigated by questionnaire surveys. The study tests 3 hypotheses concerning challenges that the learners are likely to face due to possible interference from their mother tongues. The study does not only address the hypotheses themselves, but also possible ramifications for the theory of cross-linguistic influence. Two of the hypotheses are shown to be valid, showing that cross-linguistic influence is indeed real. The hypotheses in question concern the correct choice of relativizer with respect to animacy, and the misuse of *whom* in subject position. The results regarding the third hypothesis, i.e. concerning problems thought to be specific to Danish informants, are inconclusive, suggesting that cross-linguistic influence alone cannot explain all the challenges that non-native users of a language face.

Keywords: Relativization, error analysis, linguistic experiments, language acquisition, cross-linguistic influence.

1. Introduction

This paper is part of an on-going study of the difficulties that Danish university students have with the acquisition of theoretical grammar and of written English (Madsen 2017a). According to the error analysis in said project of a corpus consisting of over 600 000 words by almost 600 informants, mistakes with English relativizers make up about 1% of all the mistakes detected. It may not seem much; nevertheless, mistakes with relativizers are among the most frequent *grammatical* mistakes that Danish students make. Furthermore, fellow university teachers too indicate that this type of mistakes figure prominently in their thinking as an area that merits extra attention in the teaching of English.

For this reason, a paper (Madsen 2017b) was dedicated to relativization in Danish students' interlanguage, in which paper the issue was studied in a questionnaire-based experiment. The paper at hand is a direct follow-up of that study. It employs the same experimental set up; however, it goes a step further. It does not only test another group of Danish students in a revised experiment, but also Serbian and Slovene students. The purpose is twofold. One of the goals is to validate the first study's findings; the other is to investigate to what extent the contrastive theory of language acquisition (or the theory of cross-linguistic influence) is justifiable (Odlin 1989). Results in the above-mentioned project so far suggest that up to 75% of the mistakes that students make can be explained by cross-linguistic influence, i.e. interference from the students' L1's. However, even if this finding is correct, 25% of the mistakes still beg for an explanation, not to mention that also the 75% seemingly already accounted for may need corroboration. To this end, the present study also involves the Slavonic informants as control groups in an attempt to ascertain the limits of the contrastive theory.

The following three hypotheses are tested in this study. (1) All the informant groups should have difficulties with relativizer agreement concerning animacy since none of these languages shows agreement between the relativizer and the antecedent in animacy. (2) Danes may use *as* and *there* erroneously as relativizers whereas Serbs and Slovenes should not. (3) Danes may use *whom* instead of *who* whereas Serbs and Slovenes should not. An elaborate description and justification of the

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hypotheses can be found in Section 2.1.

2. Theory

As mentioned in the introduction, up to 75% of the mistakes that Danes make when using English can be explained by referring to the differences between English and Danish. The main theory of this study is therefore the contrastive analysis theory developed by Lado (1957).

The main postulate of Lado's theory is that it is possible to identify a priori the areas of difficulty a particular foreign language will present for native speakers of another language by systematically comparing the two languages. To be precise, it is expected that learners will have difficulties with those areas of the target language that differ from their mother tongue's system.[1] Corder (1967, 1981) later modified the contrastive approach by arguing that one should not make a priori assumptions about what might be difficult for learners but should instead focus on learners' actual errors. He believed that the errors of learners are what can reveal reliably the areas of difficulty for the learners. For it has transpired that not all cross-linguistic differences are equal, i.e. not all of them are indeed problematic for language learners. This so-called error analysis is thus the method followed in this study.

Because of the less than perfect predictive power of the contrastive theory, it is not only used as the theoretical framework of this paper, but also as one of the objects of the study. For even though the contrastive theory can explain a large portion of the mistakes made by Danes, it may not be the only or even the best explanation for those mistakes (Jarvis 2000; Jarvis and Pavlenko 2008). That is why two control groups, who were exposed to the same task, are used to validate the findings. The two groups are Serbian and Slovene students of English, respectively. These groups were selected for two reasons that make them suitable objects of comparison to Danish students. One is that their mother tongues are generally quite different from Danish. The other is that the relativization systems of these languages nonetheless bear significant similarities to that of Danish.

There are two overarching assumptions based on the contrastive theory in this study. One is that the three groups of informants should perform in the same way in the cases where their mother tongues' relativization systems are similar to each other but different from English. The other, converse, assumption is that they should perform differently in the cases where their mother tongues' relativization systems differ from each other. How differently they should perform in these cases should depend on the exact differences between the relativization system of English and the relativization systems of their L1's. This section gives a brief overview of the relativization systems of the languages involved in the study, after which the concrete hypotheses to be tested are presented. In the analysis, the hypotheses are also tested numerically with the help of the chi-square test of independence (Urdan 2012; Hartshorn 2015).

Table 1 shows the nature of the antecedents and of the relativizers in the sentences used in the questionnaires. The prepositions expected depend on the concrete verbs in the relevant sentences. The actual questionnaire given to the informants can be seen in Appendix A. The following description of the relativization systems is not exhaustive but focuses on the parts that are relevant for this study.

Inspired by Keenan and Comrie (1977), the term relativizer is used as a generic term for a linguistic element that refers back to a nominal element (the antecedent) and starts a subordinate clause. The relativizer indicates that the antecedent is described or modified by the subordinate clause in which the relativizer appears (the relative clause). Relativizers thus subsume relative pronouns, relative particles, specific subordinators, etc., depending on the language described and the

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[1] It has since been acknowledged (Odlin 1989; Jarvis 2011; Madsen 2015) that not only one's mother tongue can influence one's non-native languages, but also a non-native language can influence one's mother tongue or another non-native tongue. Hence, it is common to use the term cross-linguistic influence to refer to any kind of interference between languages in use.

grammatical nomenclature followed by a given description.

Table 1: The antecedents and relativizers employed in the study

	Antecedent's animacy	Relativizer's function	Expected English relativizer
1	?[2]	Subject	which/who
2	Animate	Possessor	Whose
3	inanimate	direct object	Which
4	inanimate	Subject	Which
5	animate	Subject	Who
6	inanimate	locative adverbial of containment	in which[3]
7	animate	indirect object	to whom
8	animate	direct object	Whom
9	animate	prepositional complement	after/from whom
10	inanimate	prepositional complement	about/of which
11	inanimate	Possessor	Whose
12	inanimate	Possessor	of which

Each of the 12 combinations in Table 1 appears both as a multiple-choice and a cloze-type question, cf. Section 3 on methodology. As suggested by the expected English relativizers, all the relative clauses are parenthetical and finite. Consequently, the animacy-neutral relativizer *that* and the zero relativizer are not allowed in any of the cases; nevertheless, some of the informants did use them sometimes. None of the antecedents is a clause. To sum up, the paper studies postmodifying finite relative clauses with explicit relative-clause-initial relativizers and nominal antecedents. Such structures are completely ordinary in all the four languages (Svane 1958; Bray 1980; Jug-Kranjec 1995; Huddleston & Pullum 2002; Togeby 2003; Greenberg 2006).

   A major difference between English and the other three languages and therefore one of the objects of this study is that English relativizers agree with their antecedents in animacy. There is no such agreement in the other languages.[4] Tables 2 thru 4 give overviews of the relativizers which are expected to appear in the translation equivalents of the English sentences in the questionnaires.

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[2] Here the antecedent is a collective noun, the name of a company, and the purpose of this question is to determine whether the informants prefer to construe such a collective noun as animate or inanimate.

[3] Most informants preferred to use *where* regardless of their L1.

[4] It is obviously not claimed that *all* English relativizers show agreement in animacy, and there is also a very limited possibility for such agreement for Danish relativizers, see below.

Table 2: The relativizers of Danish

Relativizer	Antecedent	Function in relative clause
som	any except clause	any except possessor
der	any except clause	only subject
hvis	Any	only possessor

Som and *der* are the relativizers that are used by far most frequently in modern Danish. They do not show any kind of agreement with the antecedent. When *som* serves as a prepositional complement in the relative clause, the preposition is invariably stranded similarly to the case when *that* is used as a relativizer in English. A further similarity to *that* is that *som* can be omitted when it is not the subject of a relative clause. On the other hand, neither *som* nor *der* is limited to restrictive relative clauses. *Hvis* is also invariable. It is the cognate of *whose* and can – just as *whose* – also be used with inanimate antecedents.

For the sake of completeness, it must be noted that *hvilken* and *hvem* can also be used as relativizers. They are the cognates of *which* and *whom*[5], respectively, and thus show agreement with the antecedent in animacy. However, they are almost exclusively used as interrogative pronouns in modern Danish, only very seldom as relativizers with nominal antecedents and even so only when they are preposition complements. If *hvilken* is indeed used, it agrees with its antecedent in grammatical gender and number. In modern Danish, *hvilken* – in its neuter singular form *hvilket* – is virtually restricted to clausal antecedents. Because of the extreme scarcity of Danish relativizers showing agreement in animacy, it is assumed that animacy is an unknown category to Danes with respect to relativization. This assumption is strongly corroborated by the findings so far (Madsen 2017a).

A phenomenon specific to *som* and *der* is that they are homonymous with words that have nothing to do with relativization. Thus, they are also the translation equivalents of *as* and *there*, respectively. *Der* is, furthermore, the cognate of *there*. This homonymy, causing noticeable challenges for Danes, is the basis of one of the hypotheses below.

Table 3: The relativizers of Serbian

Relativizer	Antecedent	Function in relative clause
koji	any except clause	Any
čiji	any	Possessor

Koji agrees with the antecedent in number, and in grammatical gender for inanimate antecedents and in biological sex for animate antecedents. It is declined for case in accordance with its function in the relative clause. When a preposition is called for, it is placed invariably before *koji,* as Serbian does not employ stranded prepositions. *Čiji*, corresponding to *whose*, agrees with the possessum in gender, number and case not with the antecedent.

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[5] *Hvem* is originally the dative form of the animate interrogative and relative pronoun; however, it has completely replaced the original nominative form *hvo*, which appears only in a couple of proverbs in modern Danish.

Table 4: The relativizers of Slovene

Relativizer	Antecedent	Function in relative clause
ki	any except clause	any except possessor and prepositional object
kateri	any except clause	Any

Ki is the relativizer used most frequently in Slovene. It does not agree with the antecedent in any way and is not declined for any grammatical category. When the antecedent has the role of the subject of the relative clause, *ki* is used alone. When it is not the subject, pronominal repetition is employed alongside with *ki* to refer back to the antecedent. This resumptive pronoun (Lehmann 1984) is an enclitic form of the 3rd person personal pronoun. It agrees with the antecedent in number and grammatical gender for inanimate antecedents, and in biological sex for animate antecedents. It is also declined for case appropriate for its function in the relative clause.

When the relativizer functions as possessor or the complement of a preposition in its own clause, *kateri* is used instead of *ki*. The preposition is placed invariably before *kateri* as Slovene does not employ stranded prepositions. *Kateri* agrees with the antecedent in number and grammatical gender or biological sex. It is also declined for case in accordance with its function in the relative clause.

2.1 The hypotheses
Based on the brief contrastive comparison of English and the three languages in the study above, the following three hypotheses are formulated and tested.

1. Danes as well as Serbs and Slovenes should have difficulties with relativizer agreement (*who* vs *which*) since none of these languages has agreement between the relativizer and the antecedent in animacy. Of course, all these three languages make the distinction between animate and inanimate entities somewhere in their grammars, but not in their system of relativization with an explicit antecedent. Although Danish does so on paper, there is, as mentioned above, ample documentation that the virtually exclusive use of *som* and *der* as relativizers makes Danes susceptible to this pitfall. Thus, the three groups are expected to perform equally well (or poorly) in this test.

2. Danes may erroneously use *as* and *there* as relativizers; Serbs and Slovenes should not. Since the Danish relativizing words *som* and *der* can also be translated as *as* and *there*, respectively, Danes may and do sometimes believe that the latter words can function as relativizers in English too. Since the Slovene and Serbian relativizers are not homonymous with other words, such or similar misuses should not occur in their English.

3. Danes may use *whom* instead of *who*; Serbs and Slovenes should not. This is to be expected – and has been amply documented – because modern Danish lacks case inflection. Consequently, Danes are unfamiliar with the kind of distinction that exists between *who* and *whom*. This challenge is exacerbated by the fact that *hvem* in modern Danish, meaning 'who', is similar to *whom*, not to *who*. This seems to suggest to Danes concentrating on choosing the right relativizer with respect to animacy that *whom* is a viable choice with respect to case even when it is not with respect to case. On the other hand, Slovenes and Serbs are familiar with case inflection, and none of the words in their native vocabulary can make *whom* a favorable choice instead of *who*.

3. Method
The analytical method is a comparative analysis of the performance of 51 Danish students of English Business Communication, 18 Serbian students of general English studies and 26 Slovene students of Translation Studies.[6] All the informants are first-year university students. Hence, they have had a comparable institutional exposure to the English language. However, the Danish students are on average 2 years older than their Slavonic colleagues because many pupils spend 10 years in elementary school instead of the prescribed 9 years. For Danes, it is also customary to take a sabbatical year before starting at university. During the sabbatical, many travel abroad, and English-speaking countries, especially the US and Australia, are favorite destinations. Thus, the Danish students are likely to have had a longer informal exposure to English than their Slavonic counterparts.

The informants were asked to fill in the questionnaire consisting of 12 cloze-type questions and 12 multiple-choice questions (see Table 1 above). For each multiple-choice question, the same 12 choices were given, of course in a random order (Oppenheim 1992; Gillham 2007). Table 5 presents the choices. See also Appendix A for the actual sentences in the questionnaire.

Table 5: The choices in the multiple-choice questions

as	*there*	*which*	*Who*	*Whom*	*whose*	*where*
why	*what*	*from whom*	*because*	*to whom*	*of which*	*about which*

As can be seen, the choices included the words *as* and *there,* which Danes, but not Slovenes and Serbs, were expected to use erroneously. Employed were also distractors (*why, what* and especially *because*) which were not at all reasonable choices. The cloze-type questions could be reasonably answered only with *who(m)* or *which*; in some cases by using only the relativizers on their own, and in other cases by using the relativizers with a preposition. The physical layout of the questionnaire did not make it possible to use stranded prepositions. Prepositions, when called for, had to be preposed the relativizers. Regrettably, this proved to be a nuisance because it seems to have caused extra challenges for the Danish informants, to whom placing a preposition before the relativizer does not come naturally. The responses are classified into 6 categories:

(i)   Correct in all respect.
(ii)   Correct with respect to animacy, but erroneous in other respect, e.g. wrong preposition or spelling error.
(iii) Incorrect animacy without regard to the correctness of spelling and choice of preposition if applicable.
(iv)   Danicism, i.e. the erroneous use of *as* or *there* as relativizers as per hypothesis 2.
(v)   Erroneous use of *whom*. For the questions for which the expected response was *who* as the subject of the relative clause, it was noted whether *whom* was used erroneously instead.
(vi)   Miscellaneous, i.e. none of the above, e.g. the use of entirely inappropriate words.

The Danish informants were requested to do the survey in their grammar class as part of their regular classroom activities. It was administered to them electronically in Moodle. The Serbian and Slovene informants were asked to do the survey at leisure in Google Formulas. This difference in the way the survey was administered explains why there are so many more Danish informants in this study. In hindsight, it would have been desirable to employ a more comprehensive set of questionnaires. However, preference was given to garnering as many responses as possible instead of a broader questionnaire. For experience has shown that prospective informants tend to opt out when a

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[6] Many thanks are due to Milica Vitaz, Belgrade, for administering the questionnaires to her students.

questionnaire is lengthy (Dörnyei 2014). This is likely reflected in the smaller numbers of Serbian and Slovene informants who self-selected for filling in the questionnaire.

The animacy of the antecedents was assumed to be obvious with the exception of one question per question set.[7] The two exceptions are collective nouns, which are used to probe whether the informants prefer to interpret collective nouns, such as the names of companies, as animate or inanimate antecedents. It was made sure that the verb's form (singular vs plural) could not give any bias as to the choice of the relativizer. All statistical calculations have been performed in Microsoft Excel (Bovey et al. 2009; Jelen & Syrstad 2010; Carlberg 2014; Harmon 2014).

4. Analysis

To start with, the main outcomes are shown at the beginning of this section. Then, the three hypotheses are discussed one by one, and further details are tabulated as necessary. Table 6 and Table 7 present the frequency analysis of the multiple-choice questions for animate and inanimate antecedents, respectively. Table 8 combines the responses in which the choice of the relativizer was correct with regard to animacy, summating the first two columns of the previous tables. The tables also show the corresponding aggregated results synthesized from Table 5 in Madsen (2017b: 100), which are called "DNK previous".

Table 6: Frequency analysis of multiple-choice questions with animate antecedents

Informants	Correct	Correct animacy	Incorrect animacy	Danicism	Misc
SLO	88.46%	7.69%	2.88%	0.00%	0.96%
SRB	81.95%	11.11%	2.78%	4.17%	0.00%
DNK	79.41%	9.31%	4.90%	1.96%	4.41%
DNK previous	75.62%	17.28%	5.25%	0.62%	1.23%

Table 7: Frequency analysis of multiple-choice questions with inanimate antecedents

Informants	Correct	Correct animacy	Incorrect animacy	Danicism	Misc
SLO	74.04%	11.54%	2.88%	4.81%	6.73%
SRB	69.44%	16.67%	1.39%	4.17%	8.33%
DNK	60.78%	20.59%	6.86%	7.84%	3.92%
DNK previous	55.56%	27.16%	4.32%	9.26%	3.70%

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[7] Incidentally, question 12 in the cloze-type questionnaire (see Table 1) is also a collective noun. However, since the structure of the relative clause facilitates the expression *the major product [of* relativizer*]* the relativizer functioning as possessor, and because *of whom* is not considered well formed in this context, it is assumed that this context should provide clear evidence that the antecedent is construed as inanimate.

Table 8: Aggregated frequencies of correct choices of relativizer with respect to animacy, disregarding formal mistakes in responses to multiple-choice questions

Informants	Animate antecedent	Inanimate antecedent
SLO	96.15%	85.58%
SRB	93.06%	86.11%
DNK	88.72%	81.37%
DNK previous	92.90%	82.72%

Table 9 and Table 10 present the frequency analysis of the cloze-type questionnaire for animate and inanimate antecedents, respectively. Table 11 combines the responses in which the choice of the relativizer was correct with regard to animacy, summating the first two columns of the previous tables. The tables also show the corresponding aggregated results synthesized from Table 4 in Madsen (2017b: 99).

Table 9: Frequency analysis of cloze-type questions with animate antecedents

Informants	Correct	Correct animacy	Incorrect animacy	Danicism	Misc
SLO	74.04%	11.54%	1.92%	0.00%	12.50%
SRB	80.56%	13.89%	1.39%	0.00%	4.17%
DNK	53.44%	32.35%	4.90%	0.00%	9.31%
DNK previous	45.99%	41.98%	6.79%	0.00%	4.94%

Table 10: Frequency analysis of cloze-type questions with inanimate antecedents

Informants	Correct	Correct animacy	Incorrect animacy	Danicism	Misc
SLO	62.50%	0.96%	0.00%	0.00%	36.54%
SRB	68.06%	6.94%	0.00%	0.00%	25.00%
DNK	61.28%	12.75%	0.98%	0.00%	25.00%
DNK previous	45.37%	33.64%	2.78%	0.62%	17.28%

Table 11: Aggregated frequencies of correct choice of relativizer with respect to animacy disregarding formal mistakes in responses to cloze-type questions

	Animate antecedent	Inanimate antecedent
SLO	85.58%	63.46%
SRB	94.45%	75.00%
DNK	85.79%	74.03%
DNK previous	87.96%	79.01%

As Table 8 and Table 11 show, the two Danish groups perform fairly similarly when animacy is concerned. A chi-square test, presented in Table 12, also suggests that the two studies of Danish

informants have consistent results in this respect.[8] Note that because similarity between the studies of Danish informants is sought here, higher *p* values are "better", indicating samples that differ from each other only non-significantly.

Table 12: *p* values of comparing the two studies of Danish informants in a chi-square test

	Multiple-choice	Cloze-type
animate antecedent	0.098	0.411
inanimate antecedent	0.694	0.163

4.1 Hypothesis 1

Based on the findings above, Hypothesis 1 seems to be confirmed since none of the groups achieved 100% precision in the choice of the relativizer with respect to animacy. However, there are several details worth observing.

One of these details is that all the groups perform better with animate antecedents, i.e. get the animacy of the relativizer right, than with inanimate antecedents. This suggests that for some reason, the informants generally prefer using *who* as relativizer to using *which* as relativizer. Nothing in the informants' mother tongues lends itself as an explanation for this difference. This finding might be tentatively explained by a general human preference for animate objects and thus for words that refer to animate objects. Another reason may be that *who* as a relativizer occurred more frequently than *which* as a relativizer in the informants' previous exposure to English. Whether the latter supposition – if true – is accidental or based on the former supposition is unknown. In any case, these are just speculations at the moment.

Interestingly, the aforementioned seeming preference for *who* is corroborated only for the Danish informants by their choice between *who* and *which* when referring to a collective antecedent (Table 12). The Serbian informants clearly prefer *which* in this case while the Slovene informants' preference for *which* is less pronounced. To probe into the differences between the groups, the chi-square test is employed, and the significance level set at 0.05. Based on the calculated *p* values for both questionnaires (multiple-choice questionnaire *p* = 0.011; cloze-type questionnaire *p* = 0.001), a statistically significant difference could be established.

Table 13: Preferences with respect to animacy in the case of a collective noun, the company Apple. Prevailing values within the informant groups are highlighted.

	which		*who*		*whom*		Misc	
	mult.	cloze	mult.	cloze	mult.	cloze	mult.	cloze
SLO	**57.69%**	**65.38%**	34.62%	19.23%	0.00%	0.00%	7.69%	15.38%
SRB	**83.33%**	**55.56%**	5.56%	11.11%	0.00%	0.00%	11.11%	33.33%
DNK	37.25%	27.45%	**41.18%**	**50.98%**	5.88%	3.92%	15.69%	17.65%

There comes a further corroborating element for the preference of animate antecedents from the use of *whose*. As Table 13 and Table 14 show, all the informant groups use it more correctly when the

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[8] The larger difference between the Danish groups, which can be seen in the numbers of their entirely correct responses, is due to the fact that disproportionately many informants had challenges with certain questions in the previous questionnaire that also required prepositions.

antecedent is animate. 'Correct' means that the informants actually use the word *whose*. 'Correct animacy' means that the informants do not use *whose*, which is a mistake of course, but they use a relativizing form that matches the antecedent's animacy. In a similar fashion, 'incorrect animacy' means that the informants do not use *whose* but a relativizer which does not match the antecedent in animacy.

Table 14: The use of *whose* with animate antecedent.

	Correct		Correct animacy		Incorrect animacy		Misc	
	mult.	cloze	mult.	cloze	mult.	cloze	mult.	cloze
SLO	88.46%	57.69%	7.69%	19.23%	3.85%	0.00%	0.00%	23.08%
SRB	94.44%	77.78%	5.56%	5.56%	0.00%	0.00%	0.00%	16.67%
DNK	94.12%	56.86%	5.88%	31.37%	0.00%	3.92%	0.00%	7.84%

Table 15: The use of *whose* with inanimate antecedent.

	Correct		Correct animacy		Incorrect animacy		Misc	
	mult.	cloze	mult.	cloze	mult.	cloze	mult.	Cloze
SLO	42.31%	42.31%	53.85%	53.85%	0.00%	0.00%	3.85%	3.85%
SRB	77.78%	72.22%	16.67%	22.22%	5.56%	0.00%	0.00%	5.56%
DNK	54.90%	31.37%	43.14%	60.78%	1.96%	1.96%	0.00%	5.88%

It seems that all these non-native groups of students disfavor *whose* with inanimate antecedents even though there is nothing in their mother tongues compelling them to do so. One explanation may be that non-native English speakers believe it to be restricted to animate antecedents simply because it is similar to *who* but not to *which*.

One more detail emerging from the results shown above is that the Danish informants tend to perform less precisely than the Slavonic groups. Only in one case do they perform slightly better than the Slovene informants, namely in the cloze-type questionnaire where the matter of animacy is concerned and if formal mistakes are disregarded (Table 11). If only impeccable responses are considered, the Danes consistently fall behind.

However, even though it has been noted that Danes may be less proficient in English than they like to think (Madsen 2017a), this result may also be an artefact of the informant groups' composition. The Danish group consists of virtually all students of a given year, including weaker students whereas the Slavonic groups consist of self-selected informants, and it may be the case that only the more proficient students attempted the questionnaires. Moreover, a chi-square test based on Table 8 and Table 11 does not indicate a statistically significant difference between the informant groups with respect to the sense of animacy since none of the p values (Table 15) is below 0.05.

Table 16: *p* values of correct choice of relativizer with respect to
animacy according to the chi-square test of independence

	Multiple-choice	Cloze-type
animate antecedent	0.075	0.510
inanimate antecedent	0.133	0.114

4.2 Hypothesis 2

Hypothesis 2 cannot be confirmed. In the cloze-type questionnaire (Table 9 and Table 10), none of the informant groups produce Danicisms whereas in the multiple-choice questionnaire (Table 6 and Table 7) all the groups do. In fact, in the case of animate antecedents, the Serbian informants produce more Danicisms than the Danish informants.

It is peculiar that the Danish informants do not produce Danicisms in the cloze-type questionnaire. For there is ample evidence that they produce such deviations in free writing, which the cloze-type questionnaire resembles better than the multiple-choice questionnaire does (Madsen 2017a). Perhaps, the informants pay more attention to precision in a questionnaire than they do in free writing.

On the other hand, the presence of *as* and *there* in the multiple-choice questionnaire might suggest to the informants that these may be viable choices. After all, *as* can function as a subordinator, in which capacity it resembles relativizers, perhaps further reinforcing the idea for the informants that *as* is a reasonable choice. Indeed, as can be seen in Table 16, *as* is used in the overwhelming majority of the cases, not *there*. *There* is – as expected – used erroneously only by the Danish informants.

Table 17: The absolute number of occurrences of *as* and *there*
in the responses to the multiple-choice questionnaire

	as	*there*
SLO	8	0
SRB	5	1
DNK	20	5

The reason why the Slavonic informants use *as* as a relativizer cannot be explained by reference to their mother tongues and cannot be deduced from this small-scale study. However, it shows clearly that interference from one's mother tongue is not the only factor that leads to mistakes when using one's non-native language. It is again the case that all the informant groups perform better with animate antecedents than with inanimate ones (Table 6 and Table 7), i.e. use *as* or *there* erroneously in fewer cases when the antecedent is animate than when the antecedent is inanimate. However, the chi-square test does not indicate a statistically significant difference between the groups as the computed *p* values are 0.127 in the case of animate antecedents and 0.414 in the case of inanimate antecedents.

4.3 Hypothesis 3

Hypothesis 3 is on somewhat shaky grounds. Table 17 shows the extent to which the informants use *whom* instead of *who* in subject position. Together with Table 12, it clearly shows that Danes are susceptible to using *whom* where only *who* is correct, and that they are more susceptible to it than the Slavonic informants. In line with the contrastive analysis, the Serbian informants manage to avoid the pitfall of *whom* altogether. However, unexpectedly, some Slovene informants do make such

mistakes.

Table 18: The erroneous use of *whom* instead of *who* where the relativizer is subject

	Correct		*whom* instead of *who*		Misc	
	mult.	Cloze	mult.	cloze	mult.	cloze
SLO	88.46%	57.69%	3.85%	3.85%	7.69%	38.46%
SRB	94.44%	94.44%	0.00%	0.00%	5.56%	5.56%
DNK	92.16%	66.67%	5.88%	9.80%	1.96%	23.53%
DNK previous	87.65%	80.25%	7.41%	9.88%	3.70%	9.88%

Yet, once again, the difference between the groups based on the values in Table 17 is not statistically significant although it comes very close to statistical significance ($p = 0.053$) in the case of the cloze-type questionnaire. The p value is 0.629 in the case of the multiple-choice questionnaire. The difference between the Danish groups is insignificant as the p values are 0.634 and 0.099 for the multiple-choice and cloze-type questionnaires, respectively.

Unfortunately, only one question per questionnaire is designed with Hypothesis 3 in mind, i.e. an animate antecedent's relativizer being the subject in the relative clause. Thus, even though Danes do seem to be more prone to use *whom* erroneously than the Slavonic groups, the result must be taken with some caution.

5. Conclusion

First of all, it is to be acknowledged that ours is a small-scale study, and thus the findings may not be robust. In hindsight, a couple of shortcomings could have been avoided. For one, it would have been desirable to have another control group too, say Hungarians, whose mother tongue exhibits the same distinction in relativizers with respect to animacy that English does. For another thing, more care should have been taken to only use questionnaire items that are about equally difficult for all the informant groups by, for instance, avoiding relativization in combination with preposed prepositions.

Nevertheless, some clear patterns transpire, which shows that a study such as this would be worth an effort on a larger scale as well. First, a previous study and the present one yield roughly the same results for the Danish informants, showing that the approach is reliable. Hypothesis 1 is clearly confirmed, as all three informant groups exhibit challenges when choosing the proper English relativizer with respect to animacy.

Not only do all the groups show the same kind of deviation from standard English, but also the same preference for animate antecedents. That is, all the groups are more precise when the antecedent is animate as if their default choice of relativizer were *who*, not *which*. No statistically significant differences are found between the groups in this respect except for collective nouns as antecedents. Here, the Slavonic groups prefer to treat companies as inanimate objects whereas the Danes prefer to construe them as animate objects.

Hypothesis 2 cannot be confirmed based on the data available because all the groups behave in a similar way. This counters Hypothesis 2, which posited a difference between the Danish and Slavonic informant groups. Whether this is an artefact of the questions used or has another underlying explanation can only be answered by a follow-up study.

Hypothesis 3 seems to be confirmed insofar as the groups do behave differently in line with the hypothesis. However, the difference only approaches but does not reach statistical significance. Therefore, more data is needed to gain a clearer picture.

As for the theoretical goal of the paper, it is clear that the theory of cross-linguistic influence cannot be dismissed since Hypothesis 1 holds, and Hypothesis 3 is not falsified either. Hence, this study, too, demonstrates that a considerable number of errors that L2 learners make are related to interference from their L1's. Nevertheless, this study also uncovers phenomena in L2 use that cannot be explained by reference to the L1's (alone), which is evident in relation to Hypothesis 2.

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Appendix A: The questionnaire

The table below displays the questionnaire used in the research. Questions starting with *m* were presented as multiple-choice questions, those with *c* as cloze-type questions.

Q	Sentence to fill in	Expected response
m1	People either love or hate Apple, ( ) had had the Macintosh line of products before the iThings came along.	which/who
m2	I admire Jackie Chan, ( ) dexterity is remarkable.	whose
m3	The US bought Alaska, ( ) the Russian Tsar had set on sale.	which
m4	I drove a Seat Leon, ( ) could exceed 150mph, in my Easter holiday.	which
m5	Those students ( ) ask questions tend to do best.	who
m6	Nordrhein-Westfalen, ( ) you can see many castles, is - precisely for this reason - one of my favorite federal states of Germany.	in which
m7	Peter, ( ) James has sold his dilapidated house, is a gullible fellow.	to whom
m8	Satan, ( ) Satanists worship, is the archenemy of the good and righteous.	whom
m9	Alfred Nobel's father, ( ) he inherited his interest in technology, died in 1872.	from whom
m10	The Large Hadron Collider, ( ) you must have heard, is the biggest machine ever built by humans.	about/of which
m11	The book "On the Origin of the Species", ( ) author was Charles Darwin, revolutionized science.	whose
m12	The last sacrament, the proper Catholic name ( ) is "the anointment of the sick", is usually given to a dying person.	of which
c1	Because of "Bendgate", many criticized Apple, { } had to do some damage control.	which/who
c2	I liked Carl Sagan, { } works popularized astronomy.	whose
c3	I liked the film "A Shot in the Dark", { } Peter Sellers made in the 1960s.	which
c4	I liked the series "The Invaders", { } scared the shit out of me when I was a child.	which
c5	I like the movies of Jackie Chan, { } is one of my idols.	who
c6	Mauritius, { } you can enjoy many different activities, counts as a part of Africa.	in which
c7	My students, { } I often tell short stories, might one day become teachers themselves.	to whom
c8	Carl Sagan, { } many people admired, was an eminent astronomer.	whom
c9	I'd like to meet Prof. Poliakoff, { } I have already learnt a lot.	from whom
c10	The topics, { } my students read in the grammar exams, all interest me.	about which
c11	Liechtenstein, { } capital is Vaduz, is one of the smallest states in the world.	whose
c12	Apple, the major product { } used to be computers, was co-founded by Steve Jobs.	of which