


## On the status of NCIs: An experimental investigation on so-called Strict NC languages<sup>1</sup>

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This paper investigates the status of Negative Concord Items (NCIs) in three so-called Strict Negative Concord (NC) languages (namely, Greek, Romanian, and Russian). An experimental study was designed to gather evidence concerning the speakers' acceptability and interpretation of sequences with argumental NCIs in subject, object, and both positions when *dhen/nu/ne* were not present. Our results show that NCIs are negative indefinites whose presence in a clausal domain is enough to assign a single negation reading to the whole sequence, thus arguing in support of the hypothesis that in NC structures the minimal semantic requirement to convey single negation is that one or more NCIs encoding a negative feature appear within a sentential domain. We argue that in these structures *dhen/nu/ne* are the instantiations of a negative feature [neg] disembodied from an indefinite negative NCI in order to obey a syntax–phonology interface constraint.

**KEYWORDS:** Greek, interpretation, Negative Concord Items, Romanian, Russian, Strict Negative Concord languages, (un)acceptability

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## 1. INTRODUCTION

According to Labov (1972), Negative Concord (NC) is the phenomenon where two (or more) negative elements that can express negation in isolation co-occur in the same clause and yield only one semantic negation.

It is generally agreed in the literature that these negative elements include the negative marker and so-called Negative Concord Items (NCIs), as exemplified for Non-Standard English in (1).

- (1) (a) I didn't say *nothing*.  
 INTENDED MEANING: 'I didn't say anything.'  
 (b) *Nobody* said *nothing*.  
 INTENDED MEANING: 'Nobody said anything.'

The negative marker is assumed to c-command the existential quantifier that binds the event variable (sitting in vP) or the tense variable (sitting in TP) (see Acquaviva 1995, 1997; Zeijlstra 2004, 2008; Roberts 2019). Example (1a) presumably combines a negative marker with a postverbal NCI and example (1b) combines two NCIs distributed in preverbal and postverbal position.<sup>2</sup>

An expression is an NCI (N-WORD in Laka 1990), if and only if (Giannakidou 2006, 2020):

- (2) (a)  $\alpha$  can be used in structures containing sentential negation or another  $\alpha$ -expression, yielding a reading equivalent to one logical negation; and  
 (b)  $\alpha$  can provide a negative fragment answer (i.e. without overt negation).

In languages that exhibit Strict NC (Giannakidou 1997, 1998), NCIs require that a sentential negative marker always be present in the sentence containing the NCI, no matter if the NCI occurs in preverbal or in postverbal position. In fact, Haspelmath (1997) claims that – from a typological perspective – the presence of a syntactic pattern that combines negative indefinites with verbal negation (e.g. Polish NI-SERIES) is more common than (i) a pattern in which negative indefinites never co-occur with verbal negation (e.g. Standard English NO-SERIES) and (ii) a pattern in which negative indefinites sometimes co-occur with verbal negation and sometimes do not (e.g. postverbal vs. preverbal N-SERIES in Spanish).<sup>3</sup> This raises the question

[2] Note that Ladusaw (1992: 247) claims that *didn't* in example (1a) does not express negation, a hypothesis to which we come back in Section 5.

[3] Among Strict NC languages, Haitian and Mauritian French Creoles (Déprez 2017; Déprez & Henri 2018), Greek (Giannakidou 1997, 2006; among others), Hungarian (Surányi 2006; Szabolcsi 2018a), Romanian (Ionescu 2004; Fălăuş & Nicolae 2016), and Russian (Švedova 1980; Tsurska 2010) should be mentioned.

In contrast to Strict NC languages, Non-Strict ones are those that do not require the overt presence of a negative marker when the NCI occurs in preverbal position. This group includes Italian (Acquaviva 1997; Zanuttini 1997), Portuguese (Teixeira 2012; Schwenter 2016), and Spanish (Espinal 2000; Herburger 2001; Tubau 2008; Espinal & Tubau 2016), among many others.

of what exactly the status of NCIs is. In other words, are NCIs negative or non-negative expressions? The non-negative analysis of NCIs consists in assuming (i) that they are indefinites under the scope of negation and depend on negation either semantically (Laka 1990; Ladusaw 1992, 1996; Giannakidou 1997; Déprez 1997, 2000) or syntactically (Zeijlstra 2004, 2008, 2022) or (ii) that they are universal quantifiers over the scope of negation (Giannakidou 2000, 2006; Iordăchioaia 2010). On the other hand, defenders of a negative analysis of NCIs focus mainly on the sort of strategies needed to compose a single negation interpretation: either (i) semantic resumptive quantification (Déprez 1997, 1999, 2000; de Swart & Sag 2002) or (ii) syntactic NC (Haegeman & Zanuttini 1991, 1996; Haegeman 1995).

This means that there appears to be a general consensus in the literature that the above question concerning the status of NCIs must be addressed by considering the set of strategies that is needed in order to compose a single negation reading in the theory of language (which includes licensing operations, resumptive quantification, syntactic Agree, etc.).

However, in this paper, we follow a different method. Thus, first we aim to investigate what is the acceptability of sequences containing one or more NCIs but no negative marker in three so-called Strict NC languages (namely, Greek, Romanian, and Russian). See Section 3 for a justification of the languages chosen. Second, we investigate what is the interpretation of sequences containing one or more NCIs but no negative marker in these same three languages.

In relation to the (un)acceptability of the experimental stimuli, and given what we know about the grammar of the three languages under study, it is predicted that sentences with NCIs and no negative marker would be judged as unacceptable by native speakers. In relation to the interpretation of the experimental stimuli, if NCIs are inherently negative and no covert operator is postulated in grammar, the prediction is that when forced to interpret unacceptable sequences, participants would go for a single negation reading; by contrast, if NCIs are non-negative, when forced to interpret unacceptable sequences, participants would go for a positive reading.<sup>4</sup>

With these goals in mind, this paper shows that native speakers consistently consider sequences of NCIs and no negative marker in three Strict NC languages unacceptable (to various extents). Yet, it is also observed that such sequences are robustly associated with a negative interpretation, a single negation reading.<sup>5</sup> This finding allows us to conclude that NCIs are negative indefinites, able to contribute a negative interpretation to the whole sequence (beyond fragment answers) without

[4] See in this regard Etcheberria et al. (2021), who show that *i*-indefinites in Basque are non-negative existential polarity sensitive items (PSIs) rather than NCIs.

[5] This connects with the psycholinguistic and the linguistic literature that shows that unacceptable sentences can be interpreted reliably and can inform about the grammar of particular languages as well as serve linguistic theory construction (Otero 1972; Shanon 1973; Frazier & Clifton 2011; Phillips, Wagers & Lau 2011; Gibson, Bergen & Steven 2013; Atkinson et al. 2016; Beltrama & Xiang 2016; Wellwood et al. 2018; Kaschak & Glenberg 2004; Etcheberria et al. 2018; among many others).

the presence of any overt or covert operator expressor of negation (contra Ladusaw 1992; Zeijlstra 2004).

This paper is organized as follows. In Section 2, we review the main literature on NCIs and NC languages, focusing on the question of why NCIs are problematic for a general theory of meaning composition. Section 3 presents the justification of our research questions and the motivation of our experimental study. In Section 4, we describe the participants, methods, and results obtained for the Greek, Romanian, and Russian experiments. Finally, in Section 5, we discuss these results in the light of the relevant literature on (Strict) NC. Following Tubau et al. (2023), we argue that NCIs are inherently negative indefinites by virtue of carrying a formal feature [neg] that contributes a semantic negative content and can independently be attributed a phonological realization homophonous to the negative marker *dhen/nu/ne*. This feature must c-command Tense at the syntax–phonology interface but does not enter into an Agree relation.

## 2. HIGHLIGHTS FROM THE LITERATURE ON STRICT NC AND THE STATUS OF NCIs

The core question in the study of NC has always been elucidating which of the elements in an NC structure expresses the negation (i.e. a function that is anti-additive): the negative marker (overt or covert), the NCIs, or both.

If Strict NC languages always require an overt negative marker in well-formed negative sentences, this appears to support the hypothesis that the minimal (semantic) requirement for a negative marker to express sentential negation is that it semantically outscopes vP (or TP), to ensure that sentential negation is yielded (Zeijlstra 2004, 2013, 2022). Moreover, if a negative marker is responsible for attributing one single semantic negation to the syntactic domain containing the negative marker in combination with a number of NCIs, this appears to suggest that NCIs are non-negative indefinites. This is the view defended by Zeijlstra since his seminal study on the syntax of NC (Zeijlstra 2004), according to which NCIs are neither negative quantifiers (NQs) nor plain negative polarity items (NPIs); rather, they are indefinites (Laka 1990; Ladusaw 1992) that constitute a special type of strong NPI (Giannakidou & Zeijlstra 2017), since they must stand in a syntactic Agree relation with a negative operator (Zeijlstra 2012). The set of mechanisms that guarantees Zeijlstra's syntactically driven approach to solving the compositionality of meaning of sequences with NCIs is the following: (i) NCIs carry an uninterpretable negative feature [uNeg] feature that must stand (ii) in an Agree relation with (iii) a covert interpretable negative feature [iNeg] operator (in Strict NC languages) or with either an overt or a covert [iNeg] operator (in Non-Strict NC languages). Under this view, the motivation for a covert (Last Resort) operator comes from the fact that NCIs are a special type of NPIs that, in the absence of an overt licensor, may trigger the presence of a covert negative licensor. This implies that in Strict NC languages the overt negative marker is assumed to carry a [uNeg] formal feature.

Alternatively, if NCIs are considered to be negative, on the basis of the fact that they are given interpretations that express negation (e.g. in fragment answers in all

NC languages), then they should be able to express negation whenever they occur (i.e. in preverbal position, as is the case in so-called Non-Strict NC languages, and in postverbal position without an overt negative marker, which does not appear to be the case in any NC language).<sup>6</sup> Those linguists who attribute a negative status to NCIs address the compositionality of a single negation reading by either postulating some mechanism of negative absorption (Higginbotham & May 1981), negative factorization (Haegeman & Zanuttini 1991), or resumptive quantification of two (or more) inherently negative monadic indefinite quantifiers into one bigger poly-adic NQ (Déprez 1997; de Swart & Sag 2002).

However, the fundamental problem is that NCIs appear to show an asymmetric distribution: in fragment answers, no overt licensing negative marker is required in any NC language; in preverbal position, an overt licensing negative marker is required only in Strict NC languages; and in postverbal position, an overt licensing negative marker is required in all NC languages.<sup>7</sup> This asymmetric distribution is behind the lack of consensus in the literature on the status of NCIs, that is, whether they are semantically negative or semantically non-negative. And this is exactly what motivated our experimental investigation on the acceptability and interpretation of NCIs in sentential domains in three distinct Strict NC languages. We hypothesized that, if participants were to attribute unacceptability to sequences with one or two argumental NCIs and no negative marker, this would support the need for a constraint at the syntax–phonology interface that would state that for a negative sentence to be well formed (in the three Strict NC languages considered in this paper), a negative constituent must c-command overtly the Tense features of the sentence. However, notice that this should not be considered a constraint on the assignment of sentential scope to negation, if these same participants were to attribute a negative reading to such sequences with one or two argumental NCIs

[6] Ladusaw (1992: 249) reports the judgements of a native speaker of an Italian dialect according to whom the sequences in (i) are allowed.

- (i) (a) \*Mario ha visto nessuno.  
       Mario has seen n-body  
       (b) \*Ha telefonato nessuno.  
           has phoned n-body

However, it is left unclear whether these judgements refer to their being accepted as well-formed sequences or to the possibility of being interpreted as expressing single negation.

[7] NCIs used as fragment answers are an interesting case in point: they can be used in isolation (both in Strict and Non-Strict NC languages) and are undoubtedly interpreted as negative. If fragment answers are employed as a diagnostic and derived by ellipsis (Giannakidou 1997, 1998, 2006; Merchant 2001, 2013), negative indefinites are assumed to move at narrow syntax to Spec,FocP, followed by PF-deletion of part of the structure. However, this approach neither accounts for the overt asymmetric distribution of NCIs nor supports the hypothesis that, beyond the deletion of the c-command domain of an ellipsis-licensing head, NCIs carry in all languages a [uNeg] that at LF must stand in an Agree relation with a c-commanding covert [iNeg] operator (Zeijlstra 2004).

See Espinal & Tubau (2016) for arguments against an analysis of fragment NCIs in terms of ellipsis. Although this study focuses on two Non-Strict NC languages (Catalan and Spanish), their arguments can be applied to Strict NC languages as well.

and no negative marker (cf. Herburger 2001). In other words, while we agree with the general consensus (Zanuttini 1991; Ladusaw 1992; Zeijlstra 2022) expressed in (3a), we hereby push the additional hypothesis formulated in (3b), which is conceived as a constraint that applies at the syntax–semantics interface of NC structures.

- (3) (a) The minimal semantic requirement for a negative marker to express sentential negation is that it outscopes vP (or TP) to ensure that sentential negation is yielded.
- (b) The minimal semantic requirement for a sequence to convey single negation is that one or more NCIs encoding a negative feature appear within a sentential domain.

Strictly speaking, NC concerns the phenomenon where two or more elements that, by themselves and in certain constructions, can render a well-formed negative reading (e.g. the negative marker on the one hand and the isolated NCI on the other), put together compose one single negation. Therefore, the puzzle for an account of NC is, first, to identify the negative or non-negative status of NCIs and, second, to disentangle the status of the negative marker in sentential negation and what looks like a negative marker in NC structures. Our experimental study, described in Section 3, investigates the first of these issues and provides evidence that NCIs are inherently negative. Of course, if this conclusion is correct, the hypothesis that postulates a [uNeg] formal feature for them should be reconsidered, and the remaining question to be addressed is why NCIs must be accompanied by a preverbal negative element that in morphological terms looks like a negative marker. In Section 5, we address the theoretical significance of this issue and, upon evaluating it against our experimental results, suggest new avenues for future research on the topic. See Tubau et al. (2023) for further details on the theoretical implications of a new approach to NC, for which the present paper provides empirical support.

### 3. RESEARCH QUESTIONS AND MOTIVATION FOR THE EXPERIMENTAL STUDY

In this study, we mainly aimed to investigate which is the interpretation that native speakers attribute to sequences with one or two argumental NCIs (distributed in preverbal, in postverbal, or in both positions), when no negative marker is overtly expressed, in languages that have been described to belong to the Strict NC group.

In order to advance our knowledge of what the status of NCIs is in a so-called Strict NC language, characterized by the fact that within a sentential domain the co-presence of NCIs and negative markers is required, we investigated two research questions:

- (4) (a) What is the acceptability of sequences containing one or more NCIs but no negative marker?
- (b) What is the interpretation of sequences containing one or more NCIs but no negative marker?

It was expected that participants would attribute low acceptability to sequences containing one or more NCIs but no negative marker, given the well-established generalization that Strict NC languages are symmetric languages that require an overt negative marker no matter if the NCI appears in preverbal or postverbal position. By contrast, no clear expectations follow from the literature concerning the interpretation of sentences with NCIs but no negative marker in this same group of languages. However, we hypothesized that, given the lack of evidence for covert negative operators, if NCIs were inherently negative, the sentence where they occur would also be associated with a negative interpretation (with an additional operation of feature sharing (Acquaviva 1999; Kuno 2006) or resumption when two or more NCIs combine); if NCIs, on the other hand, were non-negative, the sentence would correspondingly be associated with a positive interpretation and the NCIs with an existential reading. In other words, if participants attributed a positive reading to the sequences under examination, this would support the hypothesis that NCIs are non-negative. If, by contrast, participants attributed a negative reading to these sequences, this would support the hypothesis that NCIs are inherently negative and are not semantically dependent on another constituent that supposedly licenses and guarantees its negative interpretation.

We centered our research in three Strict NC languages, namely Greek, Romanian, and Russian, three Indo-European languages that belong to three different subfamilies. These languages share (i) a subject–verb–object (SVO) word order, (ii) the property that NC is clause-bound, and (iii) preverbal NCIs' requirement of the presence of a negative marker in preverbal position for a well-formed negative sentence to be built.<sup>8</sup>

Greek was chosen because it is one of the first languages, beyond Serbo-Croatian (Progovac 1994), that already in the 1990s was claimed to have Strict NC (Giannakidou 1997, 1998). NCIs in Greek are emphatic indefinites that may occur in isolation, as fragment answers (5). Most importantly, for our purposes, however, they can occur in postverbal – e.g. *TIPOTA* 'n-thing' in (6a) and (7) – and in preverbal position – e.g. *POTE* 'n-ever' in (6b) and *KANENAS* 'n-body' in (7) – with *dhen* 'not' in preverbal position.<sup>9</sup>

- (5) Q: Ti idhes? A: *TIPOTA*.  
 what saw.2SG n-thing  
 'What did you see?' 'Nothing'
- (6) (a) O Petros *\*(dhen)* idhe *TIPOTA*.  
 the Peter NEG saw.3SG n-thing  
 'Peter didn't see anything.'

[8] We acknowledge that while Romanian has traditionally been considered an SVO language (Pană Dindelegan 2013), some generative scholars generally analyse Romanian as a VS(O) language (Dobrovie-Sorin 1994; Cornilescu 2000). Some scholars also report instances of diachronic (Dragomirescu 2007) and diatopic (Manea 2013, 2016) variations.

[9] Contrasting with emphatic NCIs, non-emphatic PSIs (e.g. *tipota*, *pote*, and *kanenas*) cannot occur as fragment answers and cannot occur in preverbal position.

- (b) O Petros *POTE* \*(*dhen*) odhiji.  
 the Peter n-ever NEG drive.3SG  
 'Peter never drives.'
- (7) *KANENAS* \*(*dhen*) ipe *TIPOTA*.  
 n-person NEG said.3SG n-thing  
 'Nobody said anything.'

Romanian was chosen because, for this Romance language, like for French (Corblin 1995; 1996; Corblin et al. 2004; de Swart 2010), it has been claimed that when two or more NCIs occur within a sentence and certain prosodic conditions (still to be precisely defined) are met, then, in addition to a single negation reading, a double negation interpretation is also available (Fălăuş 2007; Iordăchioaia 2010; Fălăuş & Nicolae 2016).<sup>10</sup> Note that Romanian NCIs occur in isolation as fragment answers (8). Consider also the data in (9) and (10), which combine the NCIs *nimeni* 'n-body' and *nimic* 'n-thing' with *nu* 'not' and show that the presence of *nu* is needed to license NCIs both in preverbal and postverbal position and for the sentences to be grammatical.

- (8) Q: Cine a venit? A: (a) *Niciun* student.  
 who has come no student  
 'Who came?' 'No student.'
- (b) \**Niciun* student *nu*.  
 no student NEG
- (c) \**Nu* *niciun* student.  
 NEG no student
- (9) (a) *Nimeni* \*(*nu*) a sunat.  
 n-body NEG has called  
 'Nobody has called.'
- (b) \*(*Nu*) a sunat *nimeni*.  
 NEG has called n-body  
 'Nobody has called.'
- (c) \*(*Nu*) am vazut *nimic*.  
 NEG have seen n-thing  
 'I didn't see anything.'
- (10) *Nimeni* \*(*nu*) a citit *nimic*.  
 n-body NEG has read n-thing  
 'Nobody has read anything' or 'Everybody read something.'

Finally, Russian was chosen among Slavic languages, such as Polish (Przepiórkowski & Kupść 1999) and Serbo-Croatian (Zeijlstra 2004; Bošković

[10] In Romanian, PSIs (e.g. *vreun* 'any') contrast with NCIs also in the impossibility of occurring as fragment answers and in preverbal position (Fălăuş 2009).



2008), because in this language NCIs (*nikto* ‘n-body’, *ničto* ‘n-thing’, *nigde* ‘n-where’, etc.) are formed from interrogative pronouns (*kto* ‘who’, *čto* ‘what’, *gde* ‘where’, etc.) and appear to show a contrasting behavior with various series of indefinite PSIs (Brown 1999; Tsurska 2010; Garzonio 2019) that are also formed with these same interrogative pronouns and the affixes *-to*, *-nibud*’ and *-libo*.<sup>11</sup> However, PSIs are used in non-veridical contexts, such as questions and conditionals, and can even be licensed long-distance by negation, which are properties that cannot be attributed to NCIs. Consider the examples in (11) and (12), where it is shown that Russian NCIs must co-occur with *ne* ‘not’ when postverbal and when preverbal, but not when used as fragments, and in (13A), a context where NCIs occur without an overt sentential negative marker cross-linguistically.

- (11) (a) *\*(Ne) prišël nikto.*  
           NEG   came n-body  
           ‘Nobody came.’  
       (b) *Nikto \*(ne) zvonil.*  
           n-body NEG   called  
           ‘Nobody called.’
- (12) *Nikto \*(ne) porval ničego.*  
       n-body NEG   tore   n-thing  
       ‘Nobody tore anything.’
- (13) Q: *Čto ty videl?*           A: *Ničego.*  
       what.ACC you saw           n-thing.ACC  
       ‘What did you see?’        ‘Nothing.’

An experimental study was designed to gather evidence concerning the speaker’s acceptance and interpretation of sequences with argumental NCIs in subject, in object, and in both positions when no overt negative marker was present. We aimed to examine the hypothesis formulated in (3b), i.e. that NCIs are negative indefinites whose presence in a clausal domain is enough to assign a single negation reading to the whole sequence. In order to test this hypothesis, we carried out an experimental study in the terms exposed in Section 4.

#### 4. EXPERIMENTAL STUDY

##### 4.1. Participants

For our study, which consisted of three different experiments, we targeted native speakers of Greek, Romanian, and Russian. Participants were divided into three groups, depending on their native language: Gr-NSs – Greek native speakers ( $n = 55$ ), Rom-NSs – Romanian native speakers ( $n = 53$ ), and Rus-NSs – Russian

[11] For some speakers, there seems to be a preference for *-to/-nibud*’ forms over *-libo* forms, which are perceived as stylistically more formal.

	Gr-NSs ( <i>n</i> = 55)	Rom-NSs ( <i>n</i> = 53)	Rus-NSs ( <i>n</i> = 51)
Age	24.22 (SD = 6.21)	20.76 (SD = 1.72)	29.93 (SD = 9.37)
Sex	F (40), M (14), un (1)	F (42), M (10), un (1)	F (37), M (8), un (1)
L1 use	94.08 (SD = 16.41)	95.33 (SD = 12.81)	77.13 (SD = 24.95)

*Table 1*

Participants' details for the three groups (F, female; M, male; SD, standard deviation; and un, undisclosed. L1 reported use after applying inclusion criteria (>50% of L1 daily use).

native speakers (*n* = 51). We excluded participants who reported less than 50% of daily use of their native language – five were excluded for the Gr-NSs, two for the Rom-NSs, and seven for the Rus-NSs. Additionally, two participants were excluded because they reported growing up as simultaneous bilinguals of Russian and another language. A total of 159 participants were included in the final analysis. The information regarding the profile of the participants can be found in [Table 1](#).

#### 4.2. *Materials and procedure*

The main experimental component of this study consisted of a combined acceptability judgement task (AJT) and picture selection task (PST), tapping into both the acceptability judgements and interpretation of the items in the control and critical conditions. We created one version of the experiment for each of the target languages (Greek, Romanian, and Russian). Participants thus completed the experiment in their native language. The design and experimental conditions were the same across the three experiments.

In total, there were 27 target experimental items divided across nine conditions with three items in each condition. There were six CONTROL CONDITIONS, where we manipulated the appearance and position of the NCI and the presence or absence of an overt negative marker as well as the presence or absence of an indefinite expression, which led to six conditions of well-formed sentences. These control conditions aimed at establishing the speakers' capacity to attribute either existential readings to affirmative sentences containing indefinite nominal expressions in preverbal, in postverbal, and in both positions or single negation readings to NC structures containing an NCI in preverbal, in postverbal, or in both positions, always co-occurring with *dhen/nu/ne* in preverbal position. There were also three CRITICAL CONDITIONS aimed at verifying (i) the speaker's acceptance of sequences that presented the distribution of NCIs in preverbal and/or postverbal position without *dhen/nu/ne* and (ii) the speaker's interpretation of these same sequences, as conveying either an existential reading or a single negation interpretation. All experimental items in the three languages can be found in the Appendix. In (14), we exemplify each critical condition by means of an item per language.

- (14) (a) CR\_NCI\_DP  
KANENAS anighi to parathiro. *Greek*  
n-body opens the window  
'Nobody opens the window.'
- (b) CR\_NCI\_NCI  
Nimeni a pierdut nicio cheie. *Romanian*  
n-body has lost n-one key  
'Nobody lost any key.'
- (c) CR\_DP\_NCI  
Issledovatel'nicy izučajut ničego. *Russian*  
researchers.FEM investigate n-thing.GEN  
'The researchers are investigating nothing.'

Table 2 summarizes a description of all the experimental conditions targeted in this study; for each of them, we present the expected acceptability and interpretation, according to the linguistic literature presented in Sections 1 and 2. As described in these sections, there is no a priori prediction as to what interpretation will be given to the items in the three critical conditions.

During the experiment, participants were first presented with an oral stimulus of a sentence.<sup>12</sup> Once participants had heard the stimulus, they were asked to rate its acceptability in a sliding bar with labels at both extremes: right = fully acceptable and left = absolutely unacceptable. Participants were told that by placing the delimiter more to the left, they were indicating that the sentence was conceived as unacceptable and that by placing it more to the right, they were indicating that they conceived the sentence as acceptable. Each sentence was presented without a preceding context. (See Figure 1 for an example of the AJT screen in the Romanian experiment; See in particular (14a) in Greek.)

After rating the acceptability of the sentence, participants heard the same sentence again accompanied with two pictures depicting two possible readings: a single negation reading and an existential reading. They were then asked to choose the picture that, according to them, best represented the meaning of the sentence (see Figure 2 for an example of the PST screen; see in particular (14a) in Greek).

The first four items were practice items followed by all experimental ones. All sentences were randomized for each participant and the position of each picture, and depicted reading was pseudo-randomized for appearance at the right or left of screen to avoid spatial-numerical association of response codes (Dehaene, Bossini & Giraux. 1993; Fischer, 2003).

The experiments were done on the web using Gorilla Experiment Builder ([www.gorilla.sc](http://www.gorilla.sc); Anwyl-Irvine et al. 2020), and participants gave electronic

[12] Participants were presented with audio files previously recorded by native speakers of each language. This decision was motivated by the fact that Greek NCIs are emphatic, while their homophonous PSIs are not. Therefore, we needed the oral stimulus for the Greek version of the experiment. To ensure consistency across languages, we decided to present all items in the three experiments auditorily.

Conditions	Description of the condition	Acceptability	Interpretation
CONTROL			
C_NCI_neg_DP	NCI in subject position + <i>neg</i> + DP/NP in object position.	HIGH	Single negation
C_NCI_neg_NCI	NCI in subject position + <i>neg</i> + NCI in object position.	HIGH	Single negation
C_DP_neg_NCI	DP in subject position + <i>neg</i> + NCI in object position	HIGH	Single negation
C_Exist_DP	Indefinite somebody/some N in subject position + DP in object position	HIGH	Existential
C_Exist_Exist	Indefinite somebody/some N in subject position + somebody/something/ some N in object position	HIGH	Existential
C_DP_Exist	DP in subject position + somebody/ something/some N in object/indirect object position	HIGH	Existential
CRITICAL			
CR_NCI_DP	NCI in subject position + DP in object position.	LOW	?
CR_NCI_NCI	NCI in subject position + NCI in object position.	LOW	?
CR_DP_NCI	DP in subject position + NCI in object position.	LOW	?

Table 2

Description of all experimental conditions and predicted responses in both tasks.

cel mai puțin acceptabil

foarte acceptabil

Asigurați-vă să dați click pe bară pentru a vă înregistra răspunsul.

Continua

Figure 1

Example of the AJT in the Romanian experiment. Text should be read as: absolutely unacceptable; fully acceptable; make sure you click on the sliding bar to record your response.

informed consent in accordance with the Declaration of Helsinki on testing human participants.<sup>13</sup>

[13] The experiments were carried out following the regulations of the Ethics Committee on Animal and Human Experimentation of the Universitat Autònoma de Barcelona, under the approved experimental protocol number CEEAH – 4442.

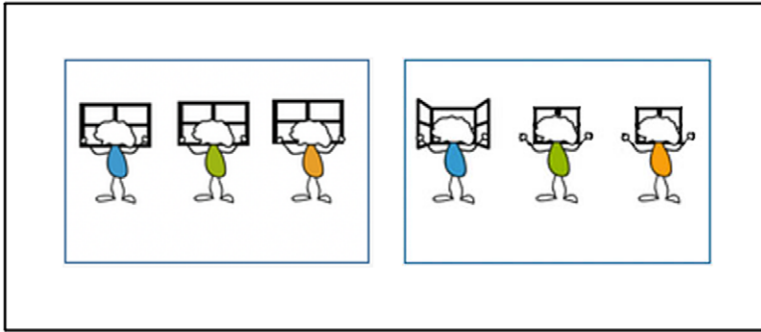


Figure 2

Example of a PST screen in the three experiments. On the left hand side the picture is expected to match a negative reading of the preverbal NCI, while on the right hand side the picture is expected to match a non-negative existential reading of the same NCI.

### 4.3. Results

#### 4.3.1. Details of the planned statistical analysis

For the AJT, data from sliding bar were converted into a numerical data point ranging from 1 to 100 (1 = unacceptable and 100 = acceptable). Responses from each participant were checked to establish whether they could rate the acceptability of the first four practice items correctly; if they did not, they were then excluded from the analysis. No participants had to be excluded. For the PST task, results were coded for target readings in a binary fashion (0 = existential reading and 1 = single negation reading).

We ran all analyses in the R environment (R Core Team 2020; Bates et al. 2015 for the lme4 package), and we used separate models for each task and each language dataset, leading to six final models, details of which we report below. Considering that the data elicited in each task was different, we employed distinct modelling. For the AJT, we used linear mixed effect models with random effects for participant and item (Baayen, Davidson & Bates. 2008). We fitted the models for this task to the centered response data given by the participants in the sliding bar. For the PST, we used generalized mixed-effects logistic regressions models and we fitted them to the binomial response data, coded as 0 for the existential reading and 1 for the single negation reading. We first ran the omnibus test and explored planned pairwise comparisons with the lsmeans package (Lenth, 2016) to see if participants treated the three critical conditions differently from the six control ones. We report all intercepts from the omnibus models in each table.

#### 4.3.2. Results for the acceptability judgement task

In Figure 3, we present results of the AJT. As can be seen in this figure, there is a clear divide between the control condition and the critical ones. All participants,

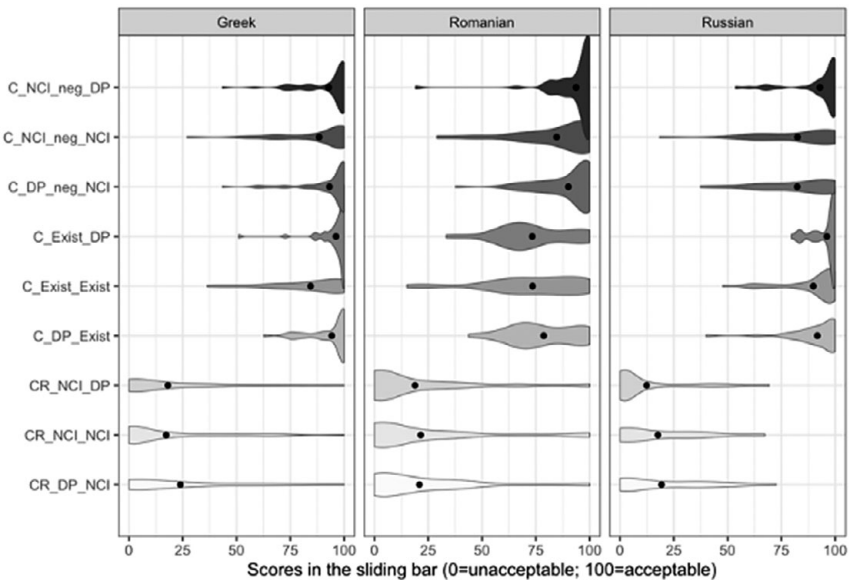


Figure 3

Violin plot illustrating the distribution of the acceptability ratings in the nine conditions of interest and across the three languages.

irrespective of language group, gave high ratings of acceptability to the control conditions, all which are predicted to be well formed based on the grammars of the languages, and low ratings of acceptability to the three critical conditions, which are all considered ill formed in accordance with the grammars of the languages.<sup>14,15</sup>

The model for the Greek data revealed that participants gave significant lower acceptability judgements in the three critical conditions compared with the six control ones. Table 3 below contains all the relevant contrasts.

The model on the Romanian data showed a similar result. It showed that participants gave significantly lower ratings to the three critical conditions as opposed to all control conditions; see Table 4 for the relevant details of the planned contrasts.

Finally, the model on the Russian data showed again similar patterns. The model revealed that participants gave lower acceptability judgements to the three critical

[14] The three control conditions with an indefinite (C\_Exist\_DP, C\_Exist\_Exist, and C\_DP\_Exist) in Romanian data seem to have slightly lower ratings of acceptability than the other control conditions (see Figure 3). We explored these contrasts in the statistical models and no significance differences were found.

[15] The black dot indicates the mean for each condition; the horizontal shape of the violins indicates the distribution of the data alongside the continuum; the vertical shape indicates the density of responses within a numerical point.

Planned contrasts		
CR_NCI_DP vs.	C_NCI_neg_DP	$\beta = -74.75, t = -32.31, p < .001$
	C_Exist_DP	$\beta = -78.18, t = -35.56, p < .001$
CR_NCI_NCI vs.	C_NCI_neg_NCI	$\beta = -71.05, t = -32.31, p < .001$
	C_Exist_Exist	$\beta = -67.06, t = -30.51, p < .001$
CR_DP_NCI vs.	C_DP_neg_NCI	$\beta = -69.28, t = -31.51, p < .001$
	C_DP_Exist	$\beta = -70.34, t = -31.99, p < .001$

*Table 3*

Planned contrasts in the Greek model for the AJT data. Intercept main model:  $\beta = -31.32, t = -14.28, p < .001$ .

Planned contrasts		
CR_NCI_DP vs.	C_NCI_neg_DP	$\beta = -74.85, t = -5.58, p < .001$
	C_Exist_DP	$\beta = -54.46, t = -4.06, p = .016$
CR_NCI_NCI vs.	C_NCI_neg_NCI	$\beta = -63.16, t = -4.71, p = .004$
	C_Exist_Exist	$\beta = -51.96, t = -3.87, p < .024$
CR_DP_NCI vs.	C_DP_neg_NCI	$\beta = -69.24, t = -5.16, p < .001$
	C_DP_Exist	$\beta = -57.78, t = -4.31, p < .001$

*Table 4*

Planned contrasts in the Romanian model for the AJT data. Intercept main model:  $\beta = -34.34, t = -3.55, p < .001$ .

Planned contrasts		
CR_NCI_DP vs.	C_NCI_neg_DP	$\beta = -79.61, t = -13.18, p = .001$
	C_Exist_DP	$\beta = -82.69, t = -13.71, p < .001$
CR_NCI_NCI vs.	C_NCI_neg_NCI	$\beta = -63.17, t = -10.47, p < .001$
	C_Exist_Exist	$\beta = -70.34, t = -11.65, p < .001$
CR_DP_NCI vs.	C_DP_neg_NCI	$\beta = -61.45, t = -10.18, p < .001$
	C_DP_Exist	$\beta = -70.96, t = -11.75, p < .001$

*Table 5*

Planned contrasts in the Russian model for the AJT data. Intercept main model:  $\beta = -34.89, t = -7.88, p < .001$ .

conditions as opposed to the six control ones. Table 5 contains the information regarding all planned contrasts.

In Russian, the C\_NCI\_neg\_DP condition has a higher descriptive mean ( $M = 93.01$ ;  $SD = 17.1$ ) compared with the other two NCI control conditions: C\_NCI\_neg\_NCI ( $M = 82.58, SD = 28.58$ ) and C\_DP\_neg\_NCI ( $M = 82.24, SD = 27.75$ ). However, statistical analysis indicates that these differences are not significant: (i) C\_NCI\_neg\_DP vs. C\_NCI\_neg\_NCI ( $\beta = 10.51, t = 1.74, p = .716$ ) and (ii) C\_NCI\_neg\_DP vs. C\_DP\_neg\_NCI ( $\beta = 10.85, t = 1.78, p = .683$ ).

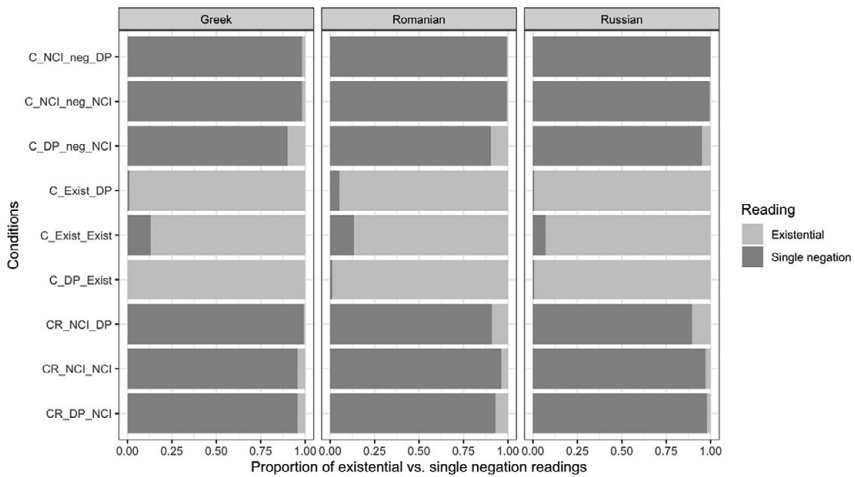


Figure 4

Stacked Bar chart with the proportion of count responses of target readings for all conditions across the three languages.

#### 4.3.3. Results for the picture selection task

Figure 4 shows the proportion of counts for the target readings in each condition, presented separately for each language. As can be appreciated in Figure 4, the participants give target readings across the control conditions irrespective of language. In the first three control conditions (C\_NCI\_neg\_DP, C\_NCI\_neg\_NCI, and C\_DP\_neg\_NCI), participants gave high proportions of single negation readings in all three languages, which is what we had predicted. In the other three control conditions (C\_Exist\_DP, C\_Exist\_Exist, and C\_DP\_Exist), participants also did what was predicted, namely they assigned high proportions of existential readings in the three languages. Recall that in the three critical conditions there were two possibilities: single negation or existential reading. Participants provided robust results and gave negative (single negation) readings to the three conditions (CR\_NCI\_DP, CR\_NCI\_NCI, and CR\_DP\_NCI) across languages.<sup>16</sup>

The model for the Greek data showed that participants had (i) a similar proportion of single negation readings in the critical conditions and the control conditions containing an NCI and (ii) significantly higher proportions of single negation

[16] For the visualization of the data in the PST, we opted for a stacked bar plot instead of a violin plot. We did so because the data for the PST were coded in a binary fashion (0 = existential reading; 1 = single negation reading) and the stack bar chart allowed us to better capture the proportion of count responses for each of the two readings accurately. As can be seen in Figure 4, the dark grey area of the bar represents the proportion of counts for single negation readings in each condition and the light grey area represents the proportion of counts for existential readings in each condition.



Planned contrasts		
CR_NCI_DP vs.	C_NCI_neg_DP	$\beta = 1.21, z = 0.72, p = .998$
	C_Exist_DP	$\beta = 1.15, z = 6.44, p < .001$
CR_NCI_NCI vs.	C_NCI_neg_NCI	$\beta = -9.49, z = -0.79, p = .997$
	C_Exist_Exist	$\beta = 6.85, z = 6.56, p < .001$
CR_DP_NCI vs.	C_DP_neg_NCI	$\beta = 5.47, z = 0.52, p = .999$
	C_DP_Exist	$\beta = 6.73, z = -6.54, p < .001$

Table 6

Planned contrasts in the Greek model for the PST data. Intercept main model:  $\beta = -5.31, z = -3.78, p < .001$ .

Planned contrasts		
CR_NCI_DP vs.	C_NCI_neg_DP	$\beta = -3.17, z = -2.17, p = .442$
	C_Exist_DP	$\beta = 6.42, z = 5.67, p < .001$
CR_NCI_NCI vs.	C_NCI_neg_NCI	$\beta = -1.83, z = -1.21, p = .953$
	C_Exist_Exist	$\beta = 6.45, z = 5.68, p < .001$
CR_DP_NCI vs.	C_DP_neg_NCI	$\beta = -4.43, z = -0.38, p = .999$
	C_DP_Exist	$\beta = 8.22, z = 6.16, p < .001$

Table 7

Planned contrasts in the Romanian model for the PST data. Intercept main model:  $\beta = -5.15, z = -4.78, p < .001$ .

readings in the critical conditions compared with the three control conditions with a non-negative indefinite expression in argument position. Table 6 contains the statistical information of all planned contrasts.

The model for the Romanian data showed the same patterns, whereby participants had similar proportion of single negation readings in the critical conditions and the control conditions containing an NCI and they gave significantly higher proportions of single negation readings in the critical conditions as compared to the three control conditions with a non-negative indefinite. Table 7 contains the statistical information of all planned contrasts.

Finally, the model for the Russian data showed the same pattern as the two previous models. Participants also gave a significantly higher proportion of single negation reading to the three critical conditions as opposed to the three control conditions with a non-negative indefinite expression. The proportion of single negation readings between the critical conditions and the three control conditions with an NCI was similar. Table 8 contains the details of the planned contrasts.

## 5. DISCUSSION AND CONCLUSION

The results just presented confirm the predictions we had for the AJT of the six control conditions and the three critical conditions. In the three languages studied, critical items without *dhen/nu/ne* received low acceptability.

Planned contrasts		
CR_NCI_DP vs.	C_NCI_neg_DP	$\beta = -15.26, z = -0.19, p = .998$
	C_Exist_DP	$\beta = 8.11, z = 5.91, p < .001$
CR_NCI_NCI vs.	C_NCI_neg_NCI	$\beta = -1.54, z = -1.11, p = .973$
	C_Exist_Exist	$\beta = 6.45, z = 5.68, p < .001$
CR_DP_NCI vs.	C_DP_neg_NCI	$\beta = .86, z = .77, p = .997$
	C_DP_Exist	$\beta = 10.29, z = 6.51, p < .001$

Table 8

Planned contrasts in the Russian model for the PST data. Intercept main model:  $\beta = -5.64, z = -4.65, p < .001$ .

Concerning the interpretation of control items, the participants gave target readings in all the control conditions no matter the language. If we compare the NCIs\_neg\_DP control items to the DP\_neg\_NCIs, participants assigned more single negation readings to the former than to the latter in the three languages studied. Concerning the interpretation of critical items without *dhen/nu/ne*, recall that, taking into account what has been said in the literature, no predictions were made. However, our results confirm that participants assigned an overall single negation reading in more than 95% of the items with an NCI in Greek, 91% of the items in Romanian, and 89% of the items in Russian. This result not only is extremely interesting in and of itself but also for the literature on Strict NC languages, because it shows that a negative reading in sequences with NCIs is triggered by the sole presence of a single NCI, no matter if it occurs in preverbal, in postverbal, or in both positions. In Greek, higher single negation interpretations are obtained in the critical preverbal NCI condition over the critical postverbal NCI condition (99.3% vs. 95.6%), and in Russian, lower single negation interpretations are given to critical preverbal NCI condition than the critical postverbal NCI condition (89.3% vs. 97.8%). In Romanian, preverbal and postverbal NCIs in the critical conditions received very similar ratings (91.2% and 92.9%). It is important to note, however, that none of these contrasts is, in fact, significant (Greek:  $\beta = -2.27, z = -1.43, p = .883$ ; Russian:  $\beta = 2.13, z = 1.97, p = .559$ ; and Romanian:  $\beta = 4.04, z = .39, p = .998$ ).

One might explain the experimental results obtained in various ways. From a generative standpoint, one might assume that NCIs are non-negative indefinites, which, as suggested by Zeijlstra (2004), could trigger the insertion of a covert Last Resort operator that is ultimately responsible for the attested negative interpretations our participants attribute to the (unacceptable) critical sentences. This proposal implies assuming that the “negative marker” that appears mandatorily in preverbal position is endowed with a [uNeg] formal feature (see Section 2) and that it itself triggers the insertion of a Last Resort [iNeg] operator that guarantees the interpretation of negative sentences. In short, under this approach, there is no overt item responsible for the negative reading of NC structures in Strict NC languages; therefore, both *dhen/nu/ne* and NCIs are postulated to be [uNeg]. Note, furthermore, that the hypothesis that a covert [iNeg] operator is always required in Strict

NC languages to account for the negative reading of NC structures is not only not falsifiable but it cannot explain the criticals vs. controls mismatch observed in Figure 3.

Alternatively, one might conclude that NCIs are negative indefinites. Accordingly, they would trigger a negative reading, no matter if they occur as fragment answers or in preverbal or in postverbal position. As pointed out by a reviewer, the fact that participants overwhelmingly assign a negative interpretation to unacceptable sentences with NCIs and no overt marker of sentential negation is largely expected, although neglected in the literature, given that in these languages NCIs can appear as fragment answers, where they are interpreted as negative. When several NCIs occur within a sentential domain, an operation such as feature sharing (Acquaviva 1999, Kuno 2006) at syntax or quantifier resumption at the level of meaning representation (Keenan & Westerstahl 1997; de Swart & Sag 2002) would guarantee either that a shared feature *F* will be interpreted as a single instance of *F* at the interface or that a quantifier might range over pairs of variables. Our results support that when two NCIs are combined, single negation is composed, but they are neutral concerning the question of whether single negation is the output of feature sharing at syntax or resumption at LF.

This view, of course, raises a central question concerning the nature and the role of *dhen/nu/ne*. If NCIs are negative, are *dhen/nu/ne* negative too and participate in the same operation of feature sharing or quantifier resumption that applies when several NCIs occur? If the answer to this question is positive, another question follows, namely what is the exact nature of *dhen/nu/ne* so that they are allowed to engage in an operation of feature sharing or quantifier resumption that is postulated for NCIs? It might also be the case, though, that *dhen/nu/ne* are non-negative, thus leaving the expression of sentential negation in NC structures to NCIs. The obvious question would then be, how can *dhen/nu/ne* possibly negate a sentence when the sentence does not contain an NCI?

Note that the questions about the nature of *dhen/nu/ne* are absolutely relevant for a theory of NC. If these lexical items are assumed to be manifestations of the syntactic category Neg, it is very counterintuitive to claim that they are non-negative in NC structures of so-called Strict NC languages. By contrast, if it is considered that they are negative, one must also assume that they can participate in feature sharing or a resumption operation with NCIs. Yet, NCIs and Neg have different distributions and seem to be distinct lexical items, so it seems unlikely that feature sharing or resumption between Neg and NCIs proceeds in the same way as between multiple NCIs. From our point of view, therefore, exploring new avenues to explain NC is totally justified.

In this paper, we postulate that *dhen/nu/ne* are instances of a Neg head (and correspond to the logical operator  $\neg$ ) only in sentences without NCIs but something else in sentences with NCIs.<sup>17</sup> Along these lines, we hypothesize that NCIs are

[17] See Tubau et al. (2023) for further details of this theoretical proposal.

negative by virtue of being specified with an inherent negative feature. Let us refer to this feature as [neg]. Our critical data support that this [neg] is the only formal feature that is needed to interpret sentences with NCIs as conveying single negation. This is so when the NCIs occur either in preverbal, in postverbal, or in both positions. When two NCIs co-occur within a sentence, feature sharing or a resumption-like operation guarantees that still one single negation is being conveyed at the interface. Thus, this explains the single negation reading of our items in the three critical conditions (exactly like in the three control conditions with NCIs) and confirms the hypothesis that the minimal semantic requirement for a sequence to convey single negation is that one or more NCIs encoding a negative feature appear within a sentential domain; see (3b). Crucially, though, our results support neither Zanuttini's (1991) proposal that a postverbal NCI must undergo LF movement to Spec,NegP to take sentential scope nor Herburger's (2001) claim that postverbal NCIs cannot take sentential scope because they cannot scope over an event quantifier.

In order to account for the different degrees of acceptability between the three critical and the three controls conditions with NCIs, we have to depend on the status and distribution of what was labelled 'neg' in the control conditions. We know that a negative marker can negate a given proposition if it scopes over the existential quantifier that binds the event variable at vP (or the tense variable at TP); see (3a). In combination with the NegFirst principle (Jespersen 1917; Horn 1989; see also de Swart 2010), according to which negation tends to precede the finite verb in natural languages, suppose, as well, that an economical way to satisfy this requirement would be to allow the formal feature [neg] of NCIs to disembody and adjoin to a pre-Infl position.<sup>18</sup> Such a feature, of course, would have to be pronounced some way or another, so that sentential negation can be interpreted at PF. Given that the meaning encoded by [neg] is negation (also corresponding to the logical operator  $\neg$ ), in Greek–Romanian–Russian it would receive the same Spell-Out as the category Neg, that is, *dhen/nu/ne*, respectively.

Under this approach to NC, the feature [neg] encoded by NCIs is semantically negative in all NC languages (contra Biberauer & Zeijlstra 2012a, b); and this feature can be disembodied (Tubau et al. 2023; cf. Chierchia 2013; Szabolcsi 2017, 2018a, b) from the NCI to satisfy a syntax–phonology interface constraint (cf. the NegFirst principle) by which in negative sentences an expressor of negation must overtly c-command the Tense features of the sentence (cf. Davidson 1967; Diesing 1992; Weiss 2002). In the case of Strict NC languages (Greek, Romanian, and Russian), the disembodiment operation of [neg] from the negative indefinite is an instance of Move F (Roberts 1998; Lee 1996). The outputs are NC sentences with a DP\_neg\_NCI word order. After F movement of [neg], the rest of the downgraded

[18] This operation of disembodiment is inspired in Postal (2000a, b), who assumes that certain expressions come with semantically significant underlying negations that map onto various surface morphologies, depending on whether those negations stay in place or are removed. See a summary of Postal's view in Szabolcsi (2004).

NCI may also be moved to a pre-Infl position, the output being NC sentences with an *NCI\_neg\_DP* or an *NCI\_neg\_NCI* word order.

In sum, [neg] is a formal feature that (i) needs to overtly c-command the Tense features of the sentence at the syntax–phonology interface (as shown in Figure 3), (ii) has a semantic negative content (as shown in Figure 4), and (iii) has a phonological instantiation homophonous to the negative marker (i.e. as *dhen/nul/ne*) (as hypothesized from the parallel behavior of controls and criticals with NCIs in Figure 4). Note that, crucially, the present approach to NC avoids having to postulate an Agree relation with an obligatorily covert [iNeg] operator (Zeijlstra 2004, 2008; Jäger 2010; Penka 2011; Biberauer & Zeijlstra 2012a, b; among others).

If our assessment is on the right track, the overall conclusion is that the distinction between Strict and Non-Strict NC is more about morpho-phonology than about the syntax–semantics interface.

An additional issue we would like to consider in this discussion is whether our study may provide any independent evidence for translating NCIs in predicate logic as either existential indefinites under the scope of negation (Ladusaw 1992, 1994; Acquaviva 1995, 1997; Déprez 1997; Espinal 2000; Zeijlstra 2004; Penka 2007) or rather as universal quantifiers outscoping negation (Szabolcsi 1981; Zanuttini 1991; Giannakidou 1998, 2000, 2006, 2020; Surányi 2002). Although truth-conditionally equivalent, the logical operations of negative absorption and negative factorization (Haegeman & Zanuttini 1996; Déprez 1997) have been formulated on the basis that NCIs are translated as  $\forall\neg$ , while quantifier resumption relies on the assumption that NCIs are translated as  $\neg\exists$ .

Some arguments that have been discussed in the literature in support of the universal quantifier view are the following: NCIs can be modified by *almost* (Zanuttini 1991), and NCIs can be used as topics and, in general, in the pre-Infl domain outscoping negation (Giannakidou 1997, 1998, 2020). A counterargument to the first claim appears to be the fact that *almost* can also modify cardinals, which are obviously not universals (Déprez 1997; Espinal 2000). Concerning the second claim, namely that NCIs can outscope negation in the pre-Infl domain, translating NCIs as universal quantifiers may not be accurate if, as we suggest, pre-verbal NCIs in Strict NC languages outscope a disembodied [neg] feature rather than a Neg head. That is, if a [neg] feature has been disembodied from the indefinite NCI by Move F to satisfy a syntax–phonology requirement of [neg] in the pre-Infl area before the NCI itself is moved, the translation in predicate logic is  $\neg\exists$  rather than  $\forall\neg$ .

Furthermore, under the assumptions that NCIs are a subclass of PSIs (Kuno 2006; Giannakidou & Zeijlstra 2017; Etxeberria, Espinal & Tubau 2023) and that PSIs (such as Greek non-emphatic *tipota*, *kanenas*) are existentials under the scope of non-veridical operators (Giannakidou 1997, 1998), NCIs are expected to be existentials too.<sup>19</sup>

[19] Notice that this is even more evident in the case of a language like Catalan, in which items such as *ningú* ‘anybody, n-body’, *res* ‘anything, n-thing’, etc., correspond to a PSI series homophonous

Still, an additional argument for considering that NCIs are negative indefinites, translated as  $\neg\exists$ , comes from a so-called Non-Strict NC language and a Non-NC language, Non-Standard English and Standard English, respectively. In varieties of Non-Standard English that have Non-Strict NC, a sentence such as *We didn't meet nobody* appears to be preferred over *We met nobody*.<sup>20</sup> Likewise, in Standard English, a variety without NC, *We didn't meet anybody* also seems to be preferred over *We met nobody*.<sup>21</sup>

The reader may still wonder to what extent NCIs are different from NQs (Quirk et al. 1985) such as *nobody*, *nothing* in Standard English. We here assume a long-standing tradition of analysing so-called NQs as the combination of an incorporated negation and an existential (Klima 1964; Jacobs 1980; Ladusaw 1992; Sauerland 2000; Penka & Zeijlstra 2010; Penka 2011; Iatridou & Sichel 2011; Temmerman 2012; among others). Within this view, English NQs contain a negative operator *not*, which enters the derivation as an independent lexical item and syntactically merges with a PSI. Thanks to a morphological operation of Fusion (Temmerman 2012), the negative operator and the PSI become a single lexical item, i.e. a NQ. Note that, regardless of how lexical items such as *nobody* and *nothing* in Standard English are analysed, what is clear is that they are not NCIs in this variety, for postverbal NQs behave differently from postverbal NCIs from a syntactic point of view: they are not subject to a syntactic operation of [neg] disembodiment that forces [neg] to overtly c-command Tense at the syntax–phonology interface.<sup>22</sup>

Overall, this paper presents an experimental study that supports the conclusion that NCIs are negative indefinites, able to convey a negative interpretation to the whole sequence in which they occur. The robust experimental results we obtained in the three different languages we studied have motivated the sketch of a new theory of NC that is not based on Agree. This new NC theoretical proposal is further developed in Tubau et al. (2023).

#### CONFLICT OF INTEREST STATEMENT

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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with an NCI series (Espinal & Llop 2022). These two series of items only differ with respect to the operator under the scope of which they are licensed.

[20] See Thornton et al. (2016) for evidence from language acquisition.

[21] According to Childs (2017), a sentence such as *We met nobody* is used when introducing new information, whereas a sentence such as *We didn't meet anybody* is used when the proposition is discourse-old. This means that the use of NQs in post-verbal position is a syntactically marked option. In addition, previous corpus-based research has shown that negation with NQs is favored with BE/HAVE, while negation with a negative marker and *any*-PIs is favored with lexical verbs (Tottie 1991a, b; Varela Pérez 2014; Childs et al. 2015; Wallage 2017).

[22] The present syntactic analysis contrasts with Iatridou & Sichel's (2011) semantic analysis of subject NQs in Standard English, according to which they follow an operation of scope diminishment (argument reconstruction of the indefinite part of the NQ) by which, while the overt order contains a subject NQ above a predicate of specific characteristics (e.g. a raising predicate or a modal), its interpretation introduces neg-split and the indefinite is interpreted below the predicate.

## APPENDIX

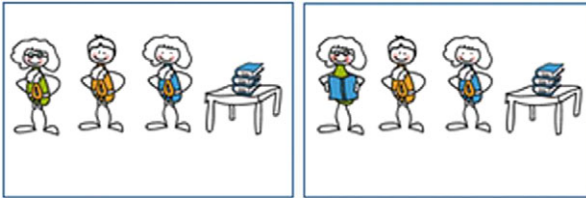
Note that the pictures used in this experimental study were the same for the three languages.

## 1. GREEK MATERIALS

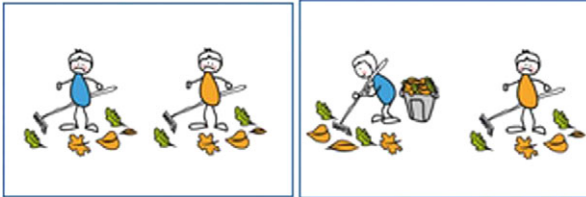
*Control conditions*

## C\_NCI\_dhen\_DP

KANENAS δεν διαβάζει βιβλία.  
 n-body not reads books  
 'Nobody is reading books.'



KANENAS οδοκαθαριστής δεν μαζεύει τα φύλλα.  
 n-one street.cleaner not picks.up the leaves  
 'No street cleaner is picking up the leaves.'

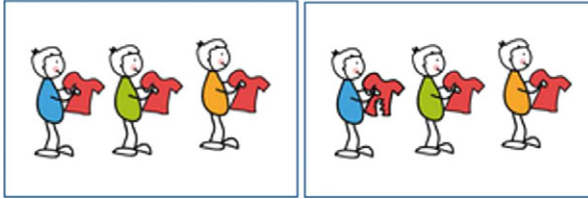


KANENAS κυνηγός δεν πυροβόλησε πουλί.  
 n-one hunter not shot bird  
 'No hunter shot a bird.'



C\_NCI\_dhen\_NCI

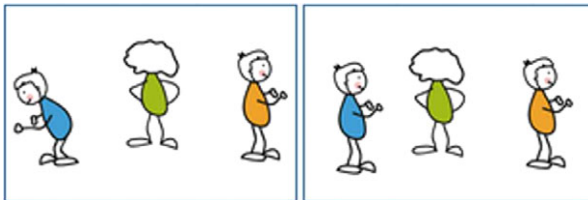
ΚΑΝΕΝΑΣ δεν έσκισε ΚΑΜΙΑ μπλούζα.  
 n-body not tore n-one shirt  
 'Nobody tore any shirt.'



ΚΑΝΕΝΑ αγόρι δεν τακτοποίησε ΤΙΠΟΤΑ.  
 n-one boy not tidied n-thing  
 'No boy tidied anything.'



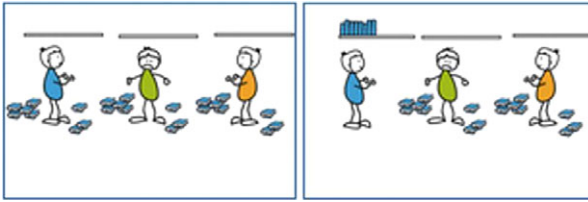
ΚΑΝΕΝΑΣ δεν κοιτάει ΚΑΝΕΝΑΝ.  
 n-body not looks n-body  
 'Nobody is looking at anybody.'



C\_DP\_dhen\_NCI

Τα αγόρια δεν τακτοποίησαν ΚΑΝΕΝΑ βιβλίο.  
 the boys not tidied n-one book  
 'The boys didn't tidy any book.'





Οι μαθητές δεν χτίζουν ΤΙΠΟΤΑ.  
the students not build n-thing  
'The students aren't building anything.'

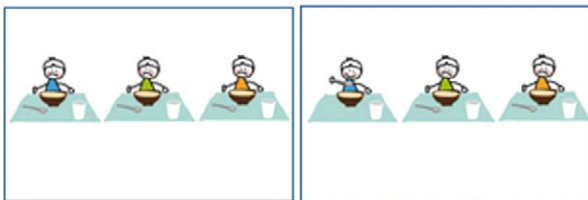


Το αγόρι με την μπλε μπλούζα δεν πετάει την μπάλα σε ΚΑΝΕΝΑΝ.  
the boy with the blue shirt not throws the ball to n-body  
'The boy with the blue shirt doesn't throw the ball to anybody.'

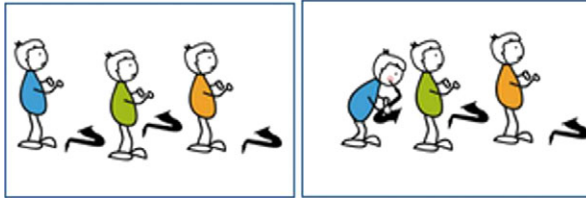


C\_Exist\_DP

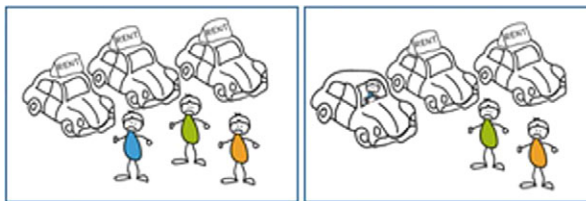
Κάποιο παιδί τρώει σούπα.  
some kid eats soup  
'Some kid is eating soup.'



Κάποιος παίζει σαξόφωνο.  
 someone plays saxophone  
 'Someone is playing the saxophone.'

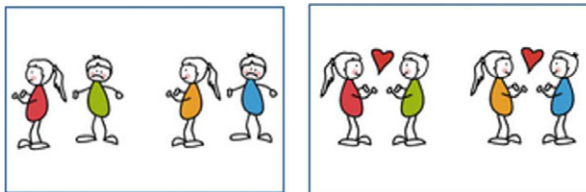


Κάποιος οδηγεί το νοικιασμένο αυτοκίνητο.  
 someone drives the rented car  
 'Someone is driving the rented car.'

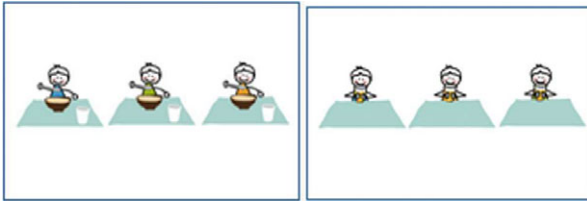


C\_Exist\_Exist

Κάποιος αγαπάει κάποιον.  
 someone loves someone  
 'Someone loves someone.'



Μερικά παιδιά πίνουν κάτι.  
 some kids drink something  
 'Some kids are drinking something.'

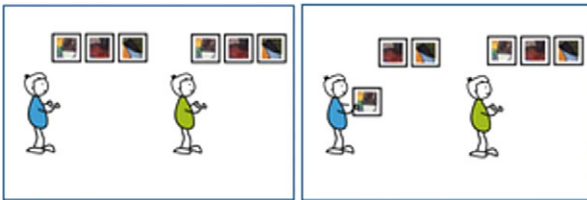


Κάποιος ψαράς ψάρεψε κάποιο ψάρι.  
 some fisherman fished some fish  
 'Some fisherman fished some fish.'



C\_DP\_Exist

Το αγόρι πήρε ένα κάδρο.  
 the boy took one painting  
 'The boy took a painting.'



Το τελευταίο αγόρι άναψε ένα κερί.  
 the last boy lit a candle  
 'The last boy lit a candle.'



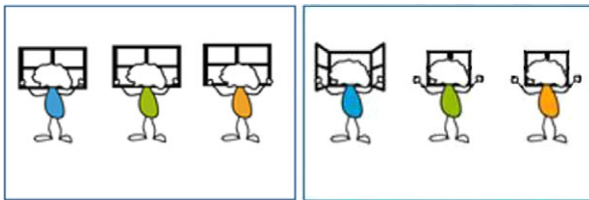
Το αγόρι που πάει μπροστά δίνει ένα δώρο σε κάποιον.  
 the boy that goes in front gives a present to somebody  
 'The boy that goes in front is giving a present to somebody.'



*Critical conditions*

CR\_NCI\_DP

KANENAS ανοίγει το παράθυρο.  
 n-body opens the window  
 'Nobody opens the window.'



KANENA παιδί τακτοποίησε βιβλία.  
 n-one kid tidied books  
 'No kid tidied books.'

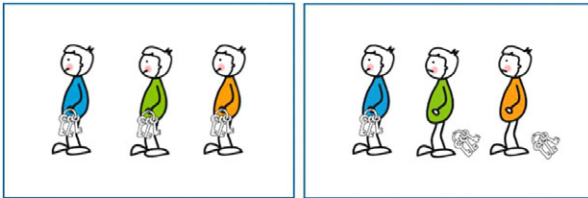


KANENAS βλέπει τηλεόραση.  
 n-body watches TV  
 'Nobody is watching TV.'

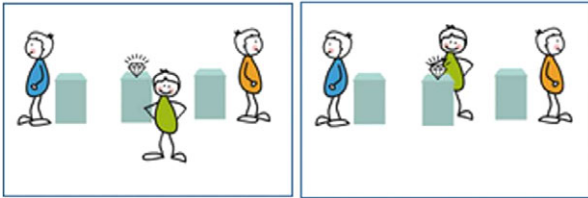


# CR\_NCI\_NCI

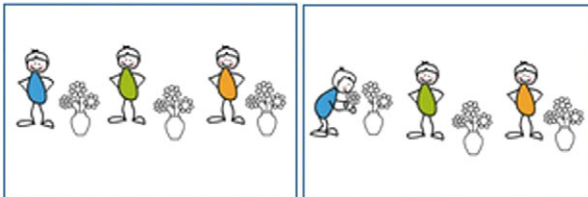
ΚΑΝΕΝΑΣ έχασε ΚΑΝΕΝΑ κλειδί.  
 n-body lost n-one key  
 'Nobody lost any key.'



ΚΑΝΕΝΑΣ επισκέπτης παρατηρεί ΚΑΝΕΝΑ κόσμημα.  
 n-one visitor observes n-one jewel  
 'No visitor is looking at any jewel.'



ΚΑΝΕΝΑ παιδί μυρίζει ΤΙΠΟΤΑ.  
 n-one kid smells n-thing  
 'No kid is smelling anything.'

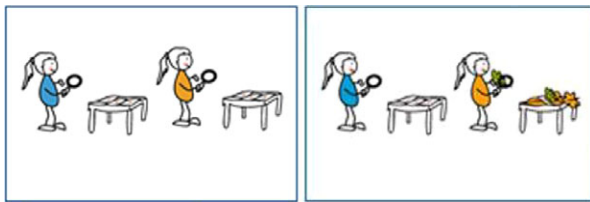


CR\_DP\_NCI

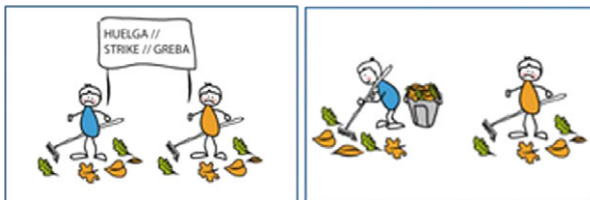
To κορίτσι έκοψε ΚΑΝΕΝΑ χαρτόνι.  
 the girl cut n-one cardstock  
 'The girl cut no cardstock.'



Οι βοτανολόγοι ερευνούν ΤΙΠΟΤΑ.  
 the botanists investigate n-thing  
 'The botanists are investigating nothing.'



Οι εργάτες βοηθούν ΚΑΝΕΝΑΝ.  
 the workers help n-body  
 'The workers are helping nobody.'



## 2. ROMANIAN MATERIALS

*Control conditions*

## C\_NCI\_nu\_DP

Nimeni nu citește cărți.  
 n-body not reads books  
 'Nobody is reading books.'

Niciun gunoier nu adună frunzele.  
 n-one street.cleaner not picks.up leaves.the  
 'No street cleaner is picking up the leaves.'

Niciun vânător nu a vânat păsări.  
 n-one hunter not has shot birds  
 'No hunter shot a bird.'

## C\_NCI\_nu\_NCI

Nimeni nu a sfâșiat niciun tricou.  
 n-body not has torn n-one shirt  
 'Nobody has torn any shirt.'

Niciun băiat nu a aranjat nimic.  
 n-one boy not has tidied n-thing  
 'No boy tidied up anything.'

Nimeni nu se uită la nimeni.  
 n-body not looks at n-body  
 'Nobody is looking at anybody.'

## C\_DP\_nu\_NCI

Băieții nu au aranjat nicio carte.  
 boys.the not have tidied n-one book  
 'The boys didn't tidy up any book.'

Elevii nu construiesc nimic.  
 students.the not build n-thing  
 'The students aren't building anything.'

Băiatul cu tricoul albastru nu aruncă mingea la nimeni.  
 boy.the with shirt.the blue not throws ball.the to n-body  
 'The boy with the blue shirt doesn't throw the ball to anybody.'

### C\_Exist\_DP

Vreun copil mănâncă supă.  
 some kid eats soup  
 'Some kid is eating soup.'

Cineva cântă la saxofon.  
 someone plays at saxophone  
 'Someone is playing the saxophone.'

Cineva conduce mașina închiriată.  
 someone drives car.the rented  
 'Someone is driving the rented car.'

### C\_Exist\_Exist

Cineva iubește pe cineva.  
 someone loves DOM someone  
 'Someone loves someone.'

Niște copii beau ceva.  
 some kids drink something  
 'Some kids are drinking something.'

Vreun pescar a pescuit vreun pește.  
 some fisherman has fished some fish  
 'Some fisherman fished some fish.'

### C\_DP\_Exist

Băiatul a luat un tablou.  
 boy.the has taken one/a painting  
 'The boy took a picture.'

Ultimul băiat a aprins vreo lumânare.  
 last.the boy has lit a candle  
 'The last boy lit a candle.'

Băiatul care merge înainte dă un cadou cuiva.  
 boy.the that goes ahead gives a present to.somebody  
 'The boy that goes in front gives a present to somebody.'

### *Critical conditions*

### CR\_NCI\_DP

Nimeni deschide fereastra.  
 n-body opens window.the  
 'Nobody opens the window.'



Niciun copil a aranjat cărțile.  
 n-one kid has tidied books.the  
 'No kid tidied up the books.'

Nimeni se uită la televizor.  
 n-body watches at TV  
 'Nobody is watching TV.'

#### CR\_NCI\_NCI

Nimeni a pierdut nicio cheie.  
 n-body has lost n-one key  
 'Nobody lost any key.'

Niciun vizitator observă nicio bijuterie.  
 n-one visitor observes n-one jewel  
 'No visitor is looking at any jewel.'

Niciun copil miroase nimic.  
 n-one kid smells n-thing  
 'No kid smells anything.'

#### CR\_DP\_NCI

Fata a tăiat nicio hârtie cartonată.  
 girl.the has cut n-one paper cardboard  
 'The girl cut no sheet of cardstock.'

Botanistele cercetează nimic.  
 botanists.the investigate n-thing  
 'The botanists are investigating nothing.'

Muncitorii ajută pe nimeni.  
 workers.the help DOM n-body  
 'The workers are helping nobody.'

### 3. RUSSIAN MATERIALS

#### *Control conditions*

#### C\_NCI\_ne\_DP

Никто не читает книги.  
 n-body not read books.ACC  
 'Nobody is reading books.'

Ни один дворник не собирает листья.  
 n- one street.cleaner not gather leaves.ACC  
 'No street cleaner is picking up the leaves.'

Ни один охотник не застрелил птицу.  
 n- one hunter not shot bird.ACC  
 'No hunter shot a bird.'

## C\_NCI\_ne\_NCI

Никто не порвал ни одной футболки.  
 n-body not tore n- one T-shirt.GEN  
 'Nobody tore any T-shirt.'

Ни один мальчик не убрал ничего.  
 n- one boy not cleared.away n-thing.GEN  
 'Nobody tidied anything.'

Никто не смотрит ни на кого.  
 n-body not look n- at who.ACC  
 'Nobody is looking at anybody.'

## C\_DP\_ne\_NCI

Мальчики не поставили на полку ни одной книги.  
 boys not put on shelf n- one book.GEN  
 'The boys didn't put any book on the shelf.'

Ученики не строят ничего.  
 pupils not build n-thing.GEN  
 'The students aren't building anything.'

Мальчик в синей футболке не кидает мяч никому.  
 boy in blue T-shirt not throw ball n-body.DAT  
 'The boy with the blue T-shirt doesn't throw the ball to anybody.'

## C\_Exist\_DP

Один ребёнок ест суп.  
 one child eats soup.ACC  
 'Some kid is eating soup.'

Кто-то играет на саксофоне.  
 somebody plays on saxophone.LOC  
 'Somebody is playing the saxophone.'

Кто-то едет на арендованной машине.  
 somebody goes on rented car.LOC  
 'Someone is driving the rented car.'

## C\_Exist\_Exist

Кто-то любит кого-то.  
 somebody loves somebody.ACC  
 ‘Somebody loves somebody.’

Некоторые дети пьют что-то.  
 some kids drink something.ACC  
 ‘Some kids are drinking something.’

Один рыбак поймал рыбу.  
 one fisher caught fish.ACC  
 ‘Some fisherman fished some fish.’

## C\_DP\_Exist

Мальчик снял одну картину.  
 boy took.off one picture.ACC  
 ‘The boy took a picture.’

Последний мальчик зажёл одну свечку.  
 last boy lit one candle.ACC  
 ‘The last boy lit a candle.’

Первый мальчик дарит подарок кому-то.  
 first boy gives present somebody.DAT  
 ‘The boy that goes in front gives a present to somebody.’

*Critical conditions*

## CR\_NCI\_DP

Никто открыл окно.  
 n-body opened window.ACC  
 ‘Nobody opened the window.’

Ни один ребёнок убрал книги.  
 n- one child put.away books.ACC  
 ‘No child put away books.’

Никто смотрит телевизор.  
 n-body watches TV.ACC  
 ‘Nobody is watching TV.’

## CR\_NCI\_NCI

Никто потерял ни одного ключа.  
 n-body lost n- one key.GEN  
 'Nobody lost any key.'

Ни один посетитель рассматривает ни одной драгоценности.  
 n- one visitor observes n- one jewel.GEN  
 'No visitor is looking at any jewel.'

Ни один ребёнок нюхает ничего.  
 n- one child smells n-thing.GEN  
 'No child is smelling anything.'

## CR\_DP\_NCI

Девочка разрежала ни одной картонки.  
 girl cut n- one cardboard.GEN  
 'The girl cut no piece of cardboard.'

Исследовательницы изучают ничего.  
 researchers.FEM investigate n-thing.GEN  
 'The researchers are investigating nothing.'

Работники помогают никому.  
 workers help n-body.DAT  
 'The workers are helping nobody.'

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