Aspectual shift in Romance: A preliminary study[1]

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Abstract. Bare plurals in English are known to induce a shift in the aspectual properties of verbal complexes, turning telic eventualities into atelic ones. In this respect, they contrast with singular indefinites (e.g., *a*) and non-specific plural indefinites (e.g., *some*) which have been claimed to not trigger such an aspectual shift. In this work, we address two questions: (i) how much different types of indefinites vary in their ability to cause aspectual shift and (ii) what happens to aspectual shift in languages where bare plurals have a more constrained distribution than in English or are altogether unattested. We investigate these questions through two experimental studies in three closely related Romance languages: French, Italian and Romanian. We also discuss consequences of our findings for current theoretical proposals on the topic. To our knowledge, this work constitutes the first attempt to investigate aspectual shift across languages experimentally.

Keywords: aspectual shift, indefinites, bare plurals, French, Italian, Romanian.

1. Introduction

Bare plurals in English are known to induce aspectual shifts that turn telic eventualities into atelic ones. They contrast in this respect with singular indefinites such as *a* and plural indefinites such as *some*. This behavior is illustrated in (1), where DPs headed by *a* and *some* – in contrast to bare plurals – are infelicitous as arguments of the telic verb *kill*:

(1) a. *Zoe killed *a mosquito* for an hour.
b. *Zoe killed *some mosquitos* for an hour.
c. Zoe killed *mosquitos* for an hour.

The sentences in (1) have been at the center of intense scrutiny over the years. Two main approaches have been proposed in the literature to account for this aspectual shift. The Quantificational approach (Dowty, 1979; Moltmann, 1991; Deo and Piñango, 2011; Champollion, 2013: a.o.) attributes the source of the deviance in (1a-c) to the scope of the DP with respect to *for an hour*. On this approach, the durative modifier *for an hour* expresses universal quantification over subintervals of a one hour interval and only combines with VPs that can hold at any of these subintervals (or are naturally iterable). By default, the bare plural in (1c) can scope below the modifier; the result is grammatical and the sentence is interpreted as saying that during a one-hour interval there were repeated events of mosquito-killing. In contrast, quantified DPs can only be understood with the object DP taking wide scope over the durative modifier *for an hour*; the result is a degraded sentence, as the event of killing is not iterable on one and the same participant (1a) or set of participants (1b). This approach requires a constraint that prevents scope-shifting operations from assigning to durative adverbials wide scope over

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the quantified DPs in e.g., (1a-b). On the Measure out approach (Krifka, 1998; Kratzer, 2007; Landman and Rothstein, 2012a, b; Champollion, 2016: a.o.), durative modifiers are measure adverbials restricted to verbal complexes with a specific property that makes them atelic, e.g., cumulativity, homogeneity, incrementality. For example, Krifka (1998) argues that quantificational DPs are quantized, hence telic, whereas bare arguments allow for a mode of predication that ends up involving the whole kind and as such is cumulative/unquantized. The problem here is to find a definition of quantization that differentiates between e.g., (1b) and (1c), which are truth-conditionally equivalent, yet contrast in acceptability. Recent theories of durative modifiers and aspectual shift combine features of both kinds of approaches. To capture the data in (1), Chierchia (2023) assumes that durative modifiers are universal quantifiers (in line with the Quantificational approach), properly constrained by scope economy, and that kinds (and properties) can be direct bearers of thematic roles, which allows them to enter aspectual shift (a feature of Measure Out approaches, e.g., Landman and Rothstein (2012a)). This explains why only kind-denoting arguments (e.g., bare plurals in (1c)) can create atelicity with durative modifiers.

What is at stake in these debates is the nature of (a)telicity across languages. Various issues arise in this connection that we think make it particularly useful to gather quantitative data across languages to try to move the discussion forward. One issue that cuts across both kinds of approaches mentioned above is how strongly contrasts such as those in (1) are perceived. Out of the deviant sentences in (1), (1b) 'feels' like a lighter violation, but its status is rarely discussed in the literature (see however Landman and Rothstein, 2012a; Chierchia, 2023). If indeed plural indefinites like *some mosquitos* are systematically perceived as better than their other quantificational counterparts – even if in English they are still substandard, one would want to know why. But this makes it necessary to resort to ways of measuring 'degrees of acceptability' by collecting quantitative data. The second question we want to address is what happens to aspectual shift in languages where bare plurals have a more constrained distribution or are altogether unattested. In Italian for example, bare arguments are positionally restricted: they occur as complements of lexical heads (V or P), but are disallowed in subject position. There are *a priori* two possibilities: (i) bare plurals, whenever allowed, act like bare plurals in English, or (ii) bare plurals act like quantified DPs in English. What about languages that ban the use of bare arguments, such as French? Here, as well, there are two conceivable options: (i) no aspectual shift, or (ii) aspectual shift is possible with some other DPs in the language.

In this paper, we investigate these questions through two experiments conducted in three Romance languages – French, Italian and Romanian. To our knowledge, this work constitutes the first attempt to investigate aspectual shift across languages experimentally. The paper is structured as follows. Section 2 provides some background on the different types of indefinites tested in our studies in the three languages. Sections 3 and 4 present Experiments 1 and 2, respectively. Finally, Section 5 discusses the findings of both experiments and consequences for current theoretical proposals on the topic.

2. Background

We tested aspectual shift in three closely related languages: French, Italian and Romanian. Like English, they disallow the use of the singular indefinite with durative modifiers, as illustrated by the unacceptability of the counterparts of (1a) in each of the three languages:

(2) a. *Zoe a tué *un moustique* pendant une heure. *French*
b. *Zoe ha ucciso *una zanzara* per un'ora. *Italian*
c. *Zoe a omorât *un țânțar* timp de o oră. *Romanian*

The situation is more diverse when it comes to plural indefinites, i.e., the equivalents of (1b) and (1c). French has no bare arguments (Dobrovie-Sorin and Laca, 2003: a.o.)[2], so it always resorts to quantified DPs: the so-called partitive-*des* (formed by the preposition *de* followed by the plural definite determiner *les*) in (3a) and *quelques* 'some' in (3b). Out of the two options, only (3a), with partitive *des* is perceived as acceptable; *quelques* is deviant with durative modifiers.

(3) a. Zoe a tué **(des) moustiques* pendant une heure. *French*
b. *Zoe a tué *quelques moustiques* pendant une heure.

Italian and Romanian on the other hand have bare plurals (see e.g. Benincà, 1980 and Longobardi, 1994 for Italian, and Dobrovie-Sorin, 2013 for Romanian), which produce the same aspectual shift as in English.

(4) a. Zoe ha ucciso *zanzare* per un'ora. *Italian*
b. Zoe a omorât *țânțari* timp de o oră. *Romanian*

Sentences with plural indefinites come in two different versions, both of which appear to be degraded in combination with durative modifiers. The first option involves what could be described as the 'weakest' plural indefinite in the language: partitive *dei* in Italian (a cognate of French *des*, formed by the preposition *di* 'of' plus the definite determiner) and the (non-partitive) plural determiner *niște* in Romanian. We will use the term 'weak plural indefinites' to refer to these determiners.

(5) a. *Zoe ha ucciso *delle zanzare* per un'ora. *Italian*
b. *Zoe a omorât *niște țânțari* timp de o oră. *Romanian*

The other option involves the plural indefinite determiners *alcuni* in Italian and *câțiva* in Romanian, illustrated in (6). Like the determiners in (5), they trigger ignorance inferences characteristic of non-specific indefinites; they differ from *dei/niște* in two aspects: (i) they involve a 'quantitative' component, which gives rise to a low-quantity scalar inference (similar to e.g., English 'a few'); (ii) they exhibit positive polarity behavior, i.e., they cannot take scope below negation. We will use the term 'scalar plural indefinites' to refer to these determiners.

(6) a. *Zoe ha ucciso *alcune zanzare* per un'ora. *Italian*
b. *Zoe a omorât *câțiva țânțari* timp de o oră. *Romanian*

We wanted to determine which types of bare and quantificational DPs induce aspectual shift in these languages. Moreover, we were interested in variation (i) across DPs (e.g., do quantified DPs behave uniformly within each language?) and (ii) across languages (e.g., do bare plurals behave similarly in Italian and Romanian?). To test these questions, for each language, we considered three types of indefinites:

[2]Constructions that seem to escape this restriction in French are coordinated structures and predicative structures. See Heycock and Zamparelli (2003), a.o., and Beyssade (2011) and Mari and Martin (2008), respectively for details about those particular constructions.

(i) **non-shift indefinites**, which correspond to the singular indefinite determiner in all three languages.

(ii) **shift indefinites**, which correspond to bare plurals in Italian and Romanian and partitive-*des* in French (where bare plurals are banned).

(iii) **plural indefinites**, which correspond to other non-specific indefinite DPs in each language.[3] As we have seen above, French has only one other (non-specific) plural determiner, i.e., *quelques* 'some' that meets our criteria. Italian and Romanian on the other hand have two such determiners: the **weak** plural indefinites–*dei* (and its feminine form *delle*) in Italian and *niște* in Romanian; and the **scalar** plural indefinites–*alcuni* (fem. *alcune*) in Italian and *câțiva* (fem. *câteva*) in Romanian.

The following table summarizes the indefinites tested in all three languages.

Table 1. Type of indefinites.

	French	Italian	Romanian
Non-Shift indefinites	*un/une*	*uno/una*	*un/o*
Shift indefinites	*des*	bare plurals	bare plurals
Weak plural indefinites	*quelques*	*dei/delle*	*niște*
Scalar plural indefinites	*quelques*	*alcuni/alcune*	*câțiva/câteva*

Each kind of indefinite was used in object position of predicates like *kill* or *crush*, which are reported in the literature to give rise to the kind of aspectual shift discussed for (1) above. Crucially, we chose verbal complexes that work similarly in all three languages, an intuition we tested with native speakers and pilot studies prior to our experimental studies.

Based on the judgments reported above for the three languages in our study, together with the well-documented behavior of bare plurals and quantificational DPs in English, our expectations were the following:

- Singular indefinite determiners do not induce aspectual shift;
- Bare plurals induce aspectual shift; French *des*-indefinites behave like bare plurals;
- Plural indefinite determiners, be they weak or scalar, do not induce aspectual shift.

We ran two experiments, which we present in detail in the following sections.

3. Experiment 1

The aim of Experiment 1 was (i) to find out what type of indefinites – among non-shift indefinites, shift indefinites and weak plural indefinites – can yield aspectual shift and (ii) whether there is variation across the three Romance languages under study, namely, French, Italian and

[3]We excluded from consideration indefinite determiners that may have specific interpretations, which arguably have different scope properties. This led to the exclusion of the equivalents of English *certain* or the partitive indefinite determiner *unii/unele* in Romanian.

Romanian. As outlined in the previous section, we expected shift indefinites in all three languages to induce aspectual shift, and to contrast in this respect with non-shift and weak plural indefinites.[4]

3.1. Method

3.1.1. Participants

25 adults native speakers of French, 27 adults native speakers of Italian and 31 adults native speakers of Romanian participated in the study. All the participants were recruited from the Prolific participant recruitment website and paid 2€ for their participation. No participant had language related disorders at the moment of the testing, as reported on Prolific. Consent was given by participants themselves prior to testing. The recruitment and testing procedures were approved by the Ethical Committee of Nantes Université (i.e., *Comité d'Ethique, de Déontologie et d'Intégrité Scientifique (CEDIS)*).

3.1.2. Materials

This first study involved an acceptability judgment task. Participants were presented with sentences made up of an indefinite DP in object position followed by a durative modifier and were asked to judge their naturalness on a Likert-scale from 1 (not natural) to 7 (completely natural), as illustrated in Figure 1. We used a labeled Likert scale as it has been shown to offer a sensitivity advantage with single presentation of target sentences (Marty et al., 2020). For readability purposes, we provide below the English translation of one of the experimental items to illustrate the task. Participants were however presented with the version of the experiment in their native language, namely French, Italian, or Romanian.

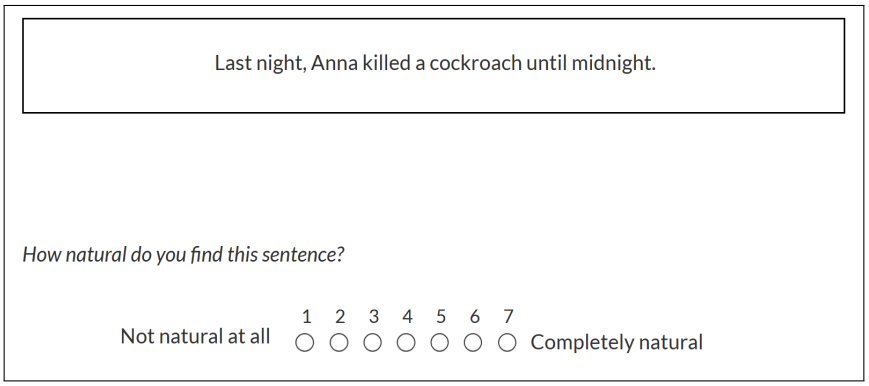

Figure 1. Example of an experimental item in Experiment 1.

Each experimental item involved one of the three following types of indefinites, as defined in Section 2: (i) a *non-shift indefinite*, or (ii) a *shift indefinite*, or (iii) a *weak plural indefinite*. The indefinites tested in the three languages are summarized in Table 2.

Experimental items were all constructed in the same way. More specifically, they started with a time adverb which was followed by the subject of the sentence and one of the six predicates

[4]All experimental materials, data and statistical analysis scripts of Experiments 1 and 2 are available at Zenodo: `https://doi.org/10.5281/zenodo.15310442`.

Table 2. Type of indefinites used in Experiment 1.

	French	Italian	Romanian
Non-Shift indefinites	*un/une*	*uno/una*	*un/o*
Shift indefinites	*des*	bare plurals	bare plurals
Weak plural indefinites	*quelques*	*dei/delle*	*niște*

which we discuss below. The indefinite DP occurred in object position and was followed by a durative modifier – a *for*-adverbial in half of the experimental items and an *until*-adverbial in the other half. There were three versions of the experiment, one in French, one in Italian and one in Romanian. We provide below a set of experimental items in each of the three languages.

(7) *French*

a. La nuit dernière, Léa a tué *un cafard* jusqu'à minuit.
the night last Léa has killed a cockroach until midnight
'Last night, Léa killed a cockroach until midnight.' *Non-shift*

b. La nuit dernière, Léa a tué *des cafards* jusqu'à minuit.
the night last Léa has killed of+the cockroaches until midnight
'Last night, Léa killed cockroaches until midnight.' *Shift*

c. La nuit dernière, Léa a tué *quelques cafards* jusqu'à minuit.
the night last Léa has killed some cockroaches until midnight
'Last night, Léa killed some cockroaches until midnight.' *Weak plural*

(8) *Italian*

a. La notte scorsa, Giulia ha ucciso *uno scarafaggio* fino a mezzanotte.
the night last Giulia has killed a cockroach until at midnight
'Last night, Giulia killed a cockroach until midnight.' *Non-shift*

b. La notte scorsa, Giulia ha ucciso *scarafaggi* fino a mezzanotte.
the night last Giulia has killed cockroaches until at midnight
'Last night, Giulia killed cockroaches until midnight.' *Shift*

c. La notte scorsa, Giulia ha ucciso *degli scarafaggi* fino a mezzanotte.
the night last Giulia has killed some cockroaches until at midnight
'Last night, Giulia killed some cockroaches until midnight.' *Weak plural*

(9) *Romanian*

a. Noaptea trecută, Ana a omorât *un gândac* până la miezul nopții.
night last Ana has killed a cockroach until at middle night
'Last night, Ana killed a cockroach until midnight.' *Non-shift*

b. Noaptea trecută, Ana a omorât *gândaci* până la miezul nopții.
night last Ana has killed cockroaches until at middle night
'Last night, Ana killed cockroaches until midnight.' *Shift*

c. Noaptea trecută, Ana a omorât *niște gândaci* până la miezul nopții.
night last Ana has killed some cockroaches until at middle night
'Last night, Ana killed some cockroaches until midnight.' *Weak plural*

Using the considerations described in Section 2, we chose (the equivalent of) the following 6 predicates in the experimental items: *find*, *pick*, *kill*, *eliminate*, *crush*, and *flatten*. This resulted in 6 items per indefinite type and a total of 18 experimental items per language. In addition to

the experimental items, we included 18 fillers (9 'good' and 9 'bad') to ensure that participants were paying attention to the task.

3.1.3. Procedure

The experiment was implemented using the online platform Labvanced (Finger et al., 2017). The duration of the task was less than 10 minutes. Participants took the study on their own, either on a phone, a laptop or a tablet. They could interrupt the study whenever they wanted.

Every participant saw every item. The order of presentation of the experimental items was fully randomized. The fillers were randomly interspersed among the experimental items. Before starting the experimental phase, participants went through a training phase of three items (one including a non-shift indefinite, one including a shift indefinite and one including a weak plural indefinite) to get used to the task and to the use of the Likert scale.

3.2. Results

Participants who did not correctly answer at least 80% of the filler items were excluded from the analysis. We considered responses greater or equal to 5 as correct answers for 'good' fillers and responses less than or equal to 3 as correct answers for 'bad' fillers. This led to the exclusion of 2 Italian-speaking participants and 8 Romanian-speaking participants. As a result, 25 French speakers, 25 Italian speakers and 23 Romanian speakers were included in the analysis.

During the initial exploration of the data, it was discovered that participants in all three languages seem to have been confused by the items involving the predicate *find* (contrary to the results we had in our pilot studies). Specifically, these items were rated as unacceptable across conditions and across languages, in contrast to all the other items. For this reason, we removed them from the dataset for all participants.

Figure 2 below represents, for each language, the mean acceptability ratings for each indefinite type, namely, shift, weak plural and non-shift indefinites.

We fitted a Cumulative Link Mixed Model to the Likertscale responses with the *clmm*() function from the ordinal package (Christensen, 2023) in R (R Core Team, 2024). TYPE OF INDEFINITES (*shift*, *weak plural*, *non-shift*) and LANGUAGE (*French*, *Italian*, *Romanian*), and their interaction were included as fixed effects. LANGUAGE was sum-coded, whereas TYPE OF INDEFINITES was treatment-coded with *non-shift* as the reference level. As random effects, we included by-item slopes for LANGUAGE and by-subject slopes for TYPE OF INDEFINITES. This was the maximal random effect structure justified by our design and supported by our data (Barr et al., 2013). This model was then compared to models that were equivalent, except that they lacked one of the fixed effects, using a Likelihood Ratio Test. These comparisons revealed a significant effect of TYPE OF INDEFINITES ($\chi^2(2) = 45.29$, $p < 0.0001$), no significant effect of LANGUAGE ($\chi^2(2) = 2.93$, $p = 0.23$), but a significant interaction between TYPE OF INDEFINITES and LANGUAGE ($\chi^2(4) = 11.23$, $p < 0.05$). As can be seen from Figure 2, the TYPE OF INDEFINITES effect is caused by the fact that shift and weak plural indefinites were judged as more acceptable than non-shift indefinites. As for the interaction between TYPE OF INDEFINITES and LANGUAGE, it is caused by the fact that the difference between non-shift and weak plural indefinites is lower in French than in the other two languages.

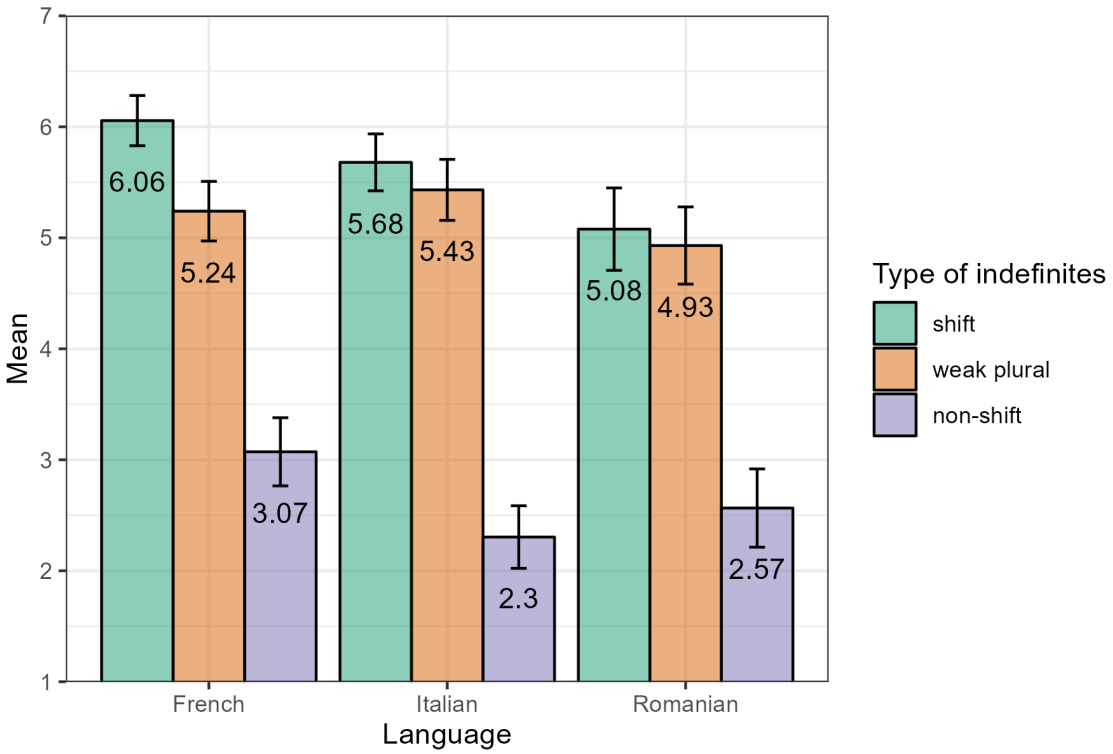

Figure 2. Mean acceptability ratings per indefinite type for each language. Error bars denote 95% confidence intervals.

We conducted follow-up tests on the factor TYPE OF INDEFINITES whose results are summarized in Table 3. These tests revealed that across all three languages, there was a significant difference between the acceptability of sentences involving *non-shift* and *shift* indefinites on the one hand, and between sentences involving *non-shift* and *weak plural* indefinites on the other hand, but only in French was there a significant difference between sentences involving *shift* and *weak plural* indefinites.

Table 3. Results of follow-up tests. P-values were adjusted for multiple comparisons using the Tukey method (Tukey, 1949).

Language	Contrast	Estimate	SE	df	t.ratio	p.value
French	*non-shift* vs. *shift*	-4.094	0.480	Inf	-8.532	<0.0001*
	non-shift vs. *weak plural*	-2.652	0.453	Inf	-5.853	<0.0001*
	shift vs. *weak plural*	1.442	0.371	Inf	3.883	<0.001*
Italian	*non-shift* vs. *shift*	-4.550	0.517	Inf	-8.805	<0.0001*
	non-shift vs. *weak plural*	-4.154	0.503	Inf	-8.250	<0.0001*
	shift vs. *weak plural*	0.396	0.407	Inf	0.972	0.59
Romanian	*non-shift* vs. *shift*	-3.771	0.879	Inf	-4.290	<0.001*
	non-shift vs. *weak plural*	-3.299	0.870	Inf	-3.792	<0.001*
	shift vs. *weak plural*	0.472	0.815	Inf	0.580	0.83

3.3. Discussion

Experiment 1 was designed to test whether non-shift indefinites, shift indefinites and weak plural indefinites can yield aspectual shift, and whether there is variation across the three Romance languages under study, French, Italian and Romanian. Overall, we found that the language did not have any effect on the acceptability of these indefinites in general, and as a result on whether these can yield aspectual shift. Zooming in on the different types of indefinites, we found in all three languages a difference between sentences involving shift indefinites which were judged as acceptable and sentences involving non-shift indefinites which were not. This shows that partitive-*des* in French and bare plurals in Italian and Romanian yield aspectual shift, unlike singular indefinite determiners which do not, in line with our expectation. This first result is in line with what has been claimed in the literature for English bare plurals and English singular indefinite determiners (see references in Section 1). In addition, we found that sentences involving weak plural indefinites were judged as more acceptable than sentences involving non-shift indefinites in all three languages, but only in French did we find a difference between sentences involving shift indefinites vs. weak plural indefinites, with the former judged as more acceptable than the latter. This second result suggests that in French, the behavior of the plural indefinite *quelques* is in between partitive-*des* and the singular indefinite determiner and shows some difficulty at shifting. In contrast, the weak plural indefinites *dei* and *niște* in Italian and Romanian seem to behave like bare plurals and thus produce aspectual shift, contrary to the expectation outlined in Section 2. Our results regarding weak plural indefinites in Romance languages contrast with what has been reported in the literature about English *some*, which does not shift, just like the singular indefinite determiner.

In the next section, we turn to Experiment 2 which investigates whether the second type of plural indefinites that Italian and Romanian have, namely scalar plural indefinites, can yield aspectual shift.

4. Experiment 2

The aim of Experiment 2 was to replicate the results of Experiment 1 as far as non-shift and shift indefinites are concerned and to investigate whether scalar plural indefinites can yield aspectual shift while still addressing the broader question of whether there is variation across the three Romance languages. We repeat below our expectations regarding the three types of indefinites in the three languages:

- Non-shift indefinites do not induce aspectual shift;
- Shift indefinites induce aspectual shift;
- Scalar plural indefinites do not induce aspectual shift.

4.1. Method

4.1.1. Participants

25 adults native speakers of French, 39 adults native speakers of Italian and 27 adults native speakers of Romanian participated in this study. None of these participants had participated in the first study. As was the case for Experiment 1, the participants were recruited from the Prolific participant recruitment website and paid 2€ for their participation. No participant had lan-

guage related disorders at the moment of the testing, as reported on Prolific. Consent was given by participants themselves prior to testing. The recruitment and testing procedures were approved by the Ethical Committee of Nantes Université (i.e., *Comité d'Ethique, de Déontologie et d'Intégrité Scientifique (CEDIS)*).

4.1.2. Materials

This second study involved the same task as the first study, namely, an acceptability judgment task. In order to encourage participants to use the whole scale, we used a 5-point Likert scale instead of a 7-point Likert scale. That is, this time participants were asked to judge the naturalness of sentences made up of an indefinite DP in object position followed by a durative modifier on a Likert-scale from 1 (not natural) to 5 (completely natural).

Experimental items involved one of the following three types of indefinites, as defined in Section 2: (i) a *non-shift indefinite*, or (ii) a *shift indefinite*, or (iii) a *scalar plural indefinite*. As discussed in Section 2, French only has one relevant non-specific plural determiner. As a result, the indefinites used in this experiment for French are exactly the same as those used in Experiment 1. In contrast, in Italian and Romanian where scalar plural indefinites differ from weak plural indefinites, we tested new indefinite determiners, as shown in Table 4.

Table 4. Type of indefinites used in Experiment 2.

	French	Italian	Romanian
Non-Shift indefinites	*un/une*	*uno/una*	*un/o*
Shift indefinites	*des*	bare plurals	bare plurals
Scalar plural indefinites	*quelques*	*alcuni/alcune*	*câțiva/câteva*

Another difference between Experiment 1 and Experiment 2 concerns one of the predicates used in the experimental items. As the reader may remember, experimental items involving (the equivalent of) the predicate *find* did not yield expected results in Experiment 1 (see Section 3.2). More specifically, all items involving *find* were judged unacceptable by participants across the three languages. For this reason, we replaced *find* with a predicate close in meaning, namely *discover*, in this new study. As a result, (the equivalent of) the following 6 predicates were used in Experiment 2: *discover*, *pick*, *kill*, *eliminate*, *crush*, and *flatten*.

Putting aside the different kinds of plural indefinites that were tested in Italian and Romanian as well as the change in the predicates used, the experimental items of this second study were constructed in the same way as the experimental items of the first study. We had 6 items per indefinite type and a total of 18 experimental items per language. There were three versions of the experiment, one in French, one in Italian and one in Romanian. In addition to the experimental items, we included 18 fillers (9 'good' and 9 'bad') to ensure that participants were paying attention to the task.

4.1.3. Procedure

The procedure was the same as the procedure of the first study (see Section 3.1.3).

4.2. Results

Participants who did not correctly answer at least 80% of the filler items were excluded from the analysis. We considered responses greater or equal to 4 as correct answers for 'good' fillers and responses less than or equal to 2 as correct answers for 'bad' fillers. This led to the exclusion of 14 Italian-speaking participants and 3 Romanian-speaking participants. As a result, 25 French speakers, 25 Italian speakers, and 24 Romanian speakers were included in the analysis.

During the initial exploration of the data, it was discovered that participants in all three languages seem to have been confused by the items involving the predicate *discover*. Specifically, these items were rated as unacceptable across conditions and across languages, in contrast to all the other items. For this reason, we removed them from the dataset for all participants.

Figure 3 below represents, for each language, the mean acceptability ratings for each indefinite type, namely, shift, scalar plural and non-shift indefinites.

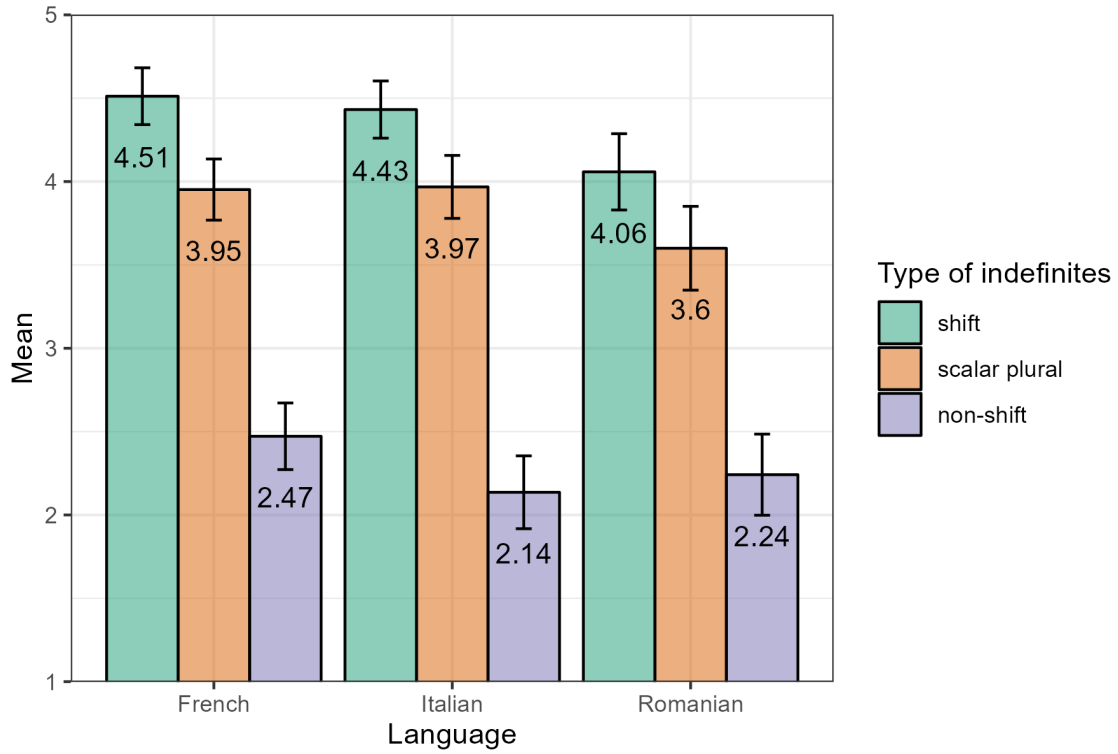

Figure 3. Mean acceptability ratings per indefinite type for each language. Error bars denote 95% confidence intervals.

We fitted a Cumulative Link Mixed Model to the Likertscale responses with the *clmm*() function from the ordinal package (Christensen, 2023) in R (R Core Team, 2024). TYPE OF INDEFINITES (*shift*, *scalar plural*, *non-shift*) and LANGUAGE (*French*, *Italian*, *Romanian*), and their interaction were included as fixed effects. LANGUAGE was sum-coded, whereas TYPE OF INDEFINITES was treatment-coded with *non-shift* as the reference level. As random effects, we included by-item slopes for LANGUAGE and by-subject slopes for TYPE OF INDEFINITES. This random effect structure is maximal in the sense of Barr et al. (2013). This model was

then compared to models that were equivalent, except that they lacked one of the fixed effects, using a Likelihood Ratio Test. These comparisons revealed a significant effect of TYPE OF INDEFINITES ($\chi^2(2) = 35.89$, $p < 0.0001$), no significant effect of LANGUAGE ($\chi^2(2) = 3.80$, $p = 0.15$), and no significant interaction between TYPE OF INDEFINITES and LANGUAGE ($\chi^2(4) = 4.67$, $p = 0.32$).

Follow-up tests on the factor TYPE OF INDEFINITES revealed that across all three languages, there was a significant difference between the acceptability of sentences involving *non-shift* and *shift* indefinites on the one hand, and between sentences involving *non-shift* and *scalar plural* indefinites on the other hand. In addition, in both French and Italian we found a significant difference between sentences involving *shift* and *scalar plural* indefinites. The results of these tests are summarized in Table 5.

Table 5. Results of follow-up tests. P-values were adjusted for multiple comparisons using the Tukey method (Tukey, 1949).

Language	Contrast	Estimate	SE	df	t.ratio	p.value
French	*non-shift* vs. *shift*	-4.013	0.461	Inf	-8.710	<0.0001*
	non-shift vs. *scalar plural*	-2.437	0.412	Inf	-5.919	<0.0001*
	scalar plural vs. *shift*	-1.576	0.387	Inf	-4.071	<0.001*
Italian	*non-shift* vs. *shift*	-4.455	0.563	Inf	-7.917	<0.0001*
	non-shift vs. *scalar plural*	-3.226	0.533	Inf	-6.053	<0.0001*
	scalar plural vs. *shift*	-1.229	0.499	Inf	-2.463	<0.05*
Romanian	*non-shift* vs. *shift*	-3.551	0.710	Inf	-5.002	<0.0001*
	non-shift vs. *scalar plural*	-2.566	0.694	Inf	-3.697	<0.001*
	scalar plural vs. *shift*	-0.986	0.661	Inf	-1.492	0.29

4.3. Discussion

Experiment 2 was designed to test whether non-shift indefinites, shift indefinites and scalar plural indefinites can yield aspectual shift, and whether there is variation across the three Romance languages under study, French, Italian and Romanian. As was the case in Experiment 1, we found that the language did not have any effect on the acceptability of the indefinites in general, and as a result on whether they can trigger aspectual shift. As far as the different types of indefinites are concerned, we replicated the results of Experiment 1 regarding shift and non-shift indefinites: that is, in all three languages we found a difference between sentences involving shift indefinites which were judged as acceptable and sentences involving non-shift indefinites which were not. This result confirms that partitive-*des* in French and bare plurals in Italian and Romanian induce aspectual shift, unlike singular indefinite determiners which do not, in line with our expectations. Zooming in on scalar plural indefinites, we found that sentences involving these indefinites were judged as more acceptable than sentences involving non-shift indefinites in all three languages, and we further found that sentences with shift indefinites were judged to be more acceptable than those with plural indefinites in both French and Italian. As far as French is concerned, we replicated the results of Experiment 1 as expected: that is, we found that the plural indefinite *quelques* shows more difficulty at shifting than partitive-*des*,

but less than the singular indefinite determiner. The results in Italian were similar, namely, we found that the scalar plural indefinite *alcuni* shows more difficulty at shifting than bare plurals, but less than the singular indefinite determiner. This interestingly contrasts with the behavior of the Italian weak plural indefinite *dei* in Experiment 1. Surprisingly however, the scalar plural indefinite *câțiva* in Romanian did not behave like its Italian counterpart, but rather behaved like bare plurals in allowing aspectual shift, just like the weak plural indefinite *niște* in Experiment 1. Overall, the acceptability of plural indefinites remains higher than what one might expect on the basis of English.

5. General discussion

Our experiments were designed to track the role of different types of indefinite noun phrases as objects of telic verbs under durative modifiers, which constitute the ultimate test for atelicity. We expected certain DPs to be systematically felicitous in these environments, suggesting a successful aspectual shift, and others not to be felicitous. We dubbed shift NPs those we expected to trigger felicitous shifts, non-shift indefinites those that we expected would not. Bare plurals play the role of shift indefinites in Italian and Romanian, while partitive-*des* indefinites take on this role in French. We then added into the mix two other kinds of plural indefinites, both of which were regarded as infelicitous in the literature under durative modifiers, a judgement we shared. What we found confirms our expectations only partially.

Shift indefinites behaved as expected across our language sample. We further showed that the distinction between shift and non-shift indefinites is cross-linguistically robust. In contrast to bare plurals and partitive-*des*, singular indefinites do not produce aspectual shift in any of the three languages studied. But we found out that plural indefinites form a heterogeneous class. In French, the plural indefinite *quelques* shows more difficulty at shifting than partitive-*des* but less than the non-shift indefinite. In Italian, we found that the two types of plural indefinites do not behave the same way. More specifically, the weak plural indefinite *dei* behaves like bare plurals in allowing aspectual shift, whereas the scalar plural indefinite *alcuni*, similarly to French *quelques*, shows more difficulty at shifting than bare plurals, but less than non-shift indefinites. In Romanian however, we found that both types of plurals indefinites – namely, the weak plural indefinite *niște* and the scalar plural indefinite *câțiva* – seem to behave like bare plurals, and hence allow aspectual shift.

Taken together, the present results have two main far reaching consequences. First, they show that in languages that do have bare plurals in a restricted form – like Italian and Romanian, those take on the role of shift indefinites. Accounting for aspectual shift in these languages requires an analysis that can derive both the restricted distribution of these bare plurals and the fact that they induce aspectual shift. No theory can account for the 'intermediate' status of weak and scalar indefinites we are finding. To give more concreteness to the theoretical consequences of our findings, let us review how we could account for what is happening on, say, the approach outlined in Chierchia (2023), which does formulate a concrete hypothesis on these matters. According to it, Italian is like English in allowing bare arguments as devices for kind reference, albeit in a more restricted way than English. Specifically, while English allows kind formation via the covert kind operator $\cap$ in any position, Italian only allows for it in restricted positions.[5] The analysis of the sentence in (10) then proceeds as follows. A kind

[5]Basically, as sisters of lexical heads (V, P) and in certain topic positions. The covert kind operator $\cap$ turns a

argument is fed into the object position of the predicate through the use of an applicative head TH_K, as illustrated in (11). The durative modifier is interpreted as a universal quantifier, so the sentence winds up having a meaning informally paraphrasable as in (11b).

(10) Lucia ha ucciso *zanzare* per un'ora.
Lucia has killed mosquitos for an-hour
'Lucia killed mosquitos for an hour.' *Italian*

(11) a. $\exists e[AG_w(e)(Lucia) \wedge$ for an hour $(\lambda e'.TH_{Kw}(e')(^{\cap}mosquitos) \wedge killed_w(e'))(e)]$
b. ∃ e'. e' is a killing event which lasted one hour whose agent is Lucia and whose theme is the mosquito-kind, and this event is the sum of subevents of the same sort (i.e., mosquito-killings), distributed over suitable subintervals of the relevant interval.

This approach predicts that events that are not iterable (e.g., killing one specific mosquito), would yield something deviant. Furthermore, Chierchia proposes, following Champollion et al. (2017), that durative modifiers trigger a 'same protagonist constraint', whereby the subevents must have the same protagonists (i.e., the same themes and agents), something that an event that has kinds as themes, can clearly meet. Our results show that in languages that have bare plurals in a restricted form, singular indefinites pattern like their English counterparts in not allowing aspectual shift, thus contrasting with bare plurals. As a result, the account of a sentence like (12) can proceed in a manner parallel to its English counterpart, namely as in (13).

(12) *Lucia ha ucciso *una zanzara* per un'ora.
Lucia has killed a mosquito for an-hour
'Lucia killed a mosquito for an hour.'

(13) a. $\exists e[AG_w(e)(Lucia) \wedge$
for an hour $(\lambda e'.\exists x[mosquitos_w(x) \wedge TH_K w(e')(y) \wedge killed_w(e')])(e)]$
b. ∃e'. e' is a killing event which lasted one hour whose agent is Lucia, and this event is the sum of subevents of the same sort, (i.e., killing of a mosquito) distributed over suitable subintervals of the relevant interval.[6]

The account for Romanian is arguably similar to the one sketched for Italian, given that the two languages have similar constraints on the distribution of their bare plurals (see e.g. Gonzalez and Mihoc, 2018). That is, kind formation is only allowed in restricted positions, and kind arguments are fed into the object position of a predicate with the durative modifiers following the same semantic path as in Italian. This results in bare plurals yielding aspectual shift. As for singular indefinites, the same protagonist constraint will give rise to an implausible reading, just like in Italian and in English.

Second, the present results show that in languages that ban bare plurals like French, the 'weakest' plural quantificational indefinites take on that role of shift indefinites. Chierchia (2023) accounts for this pattern along the following lines. *Des* indefinites are interpreted predicatively as a plural property, which is fed into the object position of the predicate through the use an applicative head TH_P, which allows the theme of the event of mosquito-killing to be the property

property ranging over pluralities into a kind (see Chierchia, 1998).

[6]Notice that even if *for an hour* has scope over the existential quantifier, the same protagonist constraint forces the event to be the sum of killing of the same mosquito, whence its deviance.

mosquitos itself. This applicative head TH_P is parallel to TH_K used with kinds in Italian and Romanian. Chierchia (2023) further proposes that the reason why TH_P is allowed only with *des* (and not with e.g., *quelques*) is because *des* is the weakest indefinite in French.

(14) Zoé a tué *des* *moustiques* pendant une heure.
Zoe has killed of+the mosquitos for an hour
'Zoe killed mosquitos for an hour.'

(15) a. $\exists e[AG_w(e)(Zoe) \wedge$ for an hour $(\lambda e'.TH_{P_w}(e')(mosquitos) \wedge killed_w(e'))(e)]$
b. ∃ e'. e' is a killing event which lasted one hour whose agent is Zoe and whose theme is the property mosquitos, and this event is the sum of subevents of the same sort (i.e., killings that have as theme the mosquitos), distributed over suitable subintervals of the relevant interval.

Properties get around the same protagonist constraint, just like kinds do. In sum, languages like Italian and Romanian on the one hand and French on the other hand vary in the kind of arguments they choose for the purpose of creating atelicity with durative modifiers – i.e., kind denoting arguments for Italian and Romanian and property denoting arguments for French. As for singular indefinites, the three Romance languages pattern in the same way: that is, singular indefinites never shift. As a result, the analysis proposed for Italian and Romanian can be extended to French.

More generally, our results reveal a three-way distinction concerning the ability of bare and quantificational DPs to induce aspectual shift. While the distinction between shift and non-shift indefinites is expected and can be explained by current theoretical proposals, the behavior of plural indefinites cannot be accounted for. The emerging picture is further complicated by the fact that plural indefinites do not behave uniformly: French *quelques* and Italian *alcuni* display greater resistance to shifting, whereas weak plural indefinites *dei/niște*, but also the scalar plural indefinite *câțiva* in Romanian, seem to behave like bare plurals in allowing aspectual shift. How robust are these differences and how can they be captured? In future work, we plan to further probe the behavior of the different types of plural indefinites, employing other experimental tasks to determine the ability of weak and scalar plural indefinites to induce aspectual shift, and how they compare to bare plurals and partitive-*des* in this respect.

6. Conclusion

In this work, we conducted two experiments to test which types of DPs – among singular indefinites, bare plurals and partitive-*des*, weak plural indefinites and scalar plural indefinites – induce aspectual shift and whether the three Romance languages French, Italian and Romanian, vary in this respect. We found that in all three languages, singular indefinites never shift. In contrast, bare plurals in Italian and Romanian, and partitive-*des* in French do shift. We argue that these results are compatible with the account proposed by Chierchia (2023) who claims that kinds (in languages like Italian and Romanian) and properties (in languages like French) can be direct bearers of thematic roles. Finally, our findings regarding plural indefinites point to open questions that warrant further investigation, which we aim to pursue in future research.

References

Barr, D. J., R. Levy, C. Scheepers, and H. J. Tily (2013). Random effects structure for confirmatory hypothesis testing: Keep it maximal. *Journal of Memory and Language 68*(3), 255–278.

Benincà, P. (1980). Nomi senza articolo. *Rivista di Grammatica Generativa 5*, 51–63.

Beyssade, C. (2011). Bare nouns in predicate position in French. *Logic and grammar*, 1–16.

Champollion, L. (2013). The scope and processing of for-adverbials: A reply to Deo and Piñango. In *Proceedings of Semantics and Linguistic Theory*, pp. 432–452. Linguistic Society of America.

Champollion, L. (2016). Covert distributivity in algebraic event semantics. *Semantics and Pragmatics 9*(15), 1–65.

Champollion, L., J. Bledin, and H. Li (2017). Rigid and flexible quantification in plural predicate logic. In *Proceedings of Semantics and Linguistic Theory*, pp. 418–437. Linguistic Society of America.

Chierchia, G. (1998). Reference to kinds across languages. *Natural language semantics 6*(4), 339–405.

Chierchia, G. (2023). Kinds, properties and atelicity. In *Proceedings of Semantics and Linguistic Theory*, pp. 62–87. Linguistic Society of America.

Christensen, R. H. B. (2023). *ordinal—Regression Models for Ordinal Data*. R package version 2023.12-4.

Deo, A. S. and M. M. Piñango (2011). Quantification and context in measure adverbs. In *Proceedings of Semantics and Linguistic Theory*, pp. 295–312. Linguistic Society of America.

Dobrovie-Sorin, C. (2013). Bare nouns. In C. Dobrovie-Sorin and I. Giurgea (Eds.), *A Reference Grammar of Romanian*, pp. 49–96. Amsterdam: John Benjamins.

Dobrovie-Sorin, C. and B. Laca (2003). Les noms sans déterminant dans les langues romanes. In *Les langues romanes. Problèmes de la phrase simple*, pp. 235–281. Paris: CNRS Editions.

Dowty, D. R. (1979). *Word meaning and Montague grammar: The semantics of verbs and times in generative semantics and in Montague's PTQ*, Volume 7. Dordrecht: Kluwer.

Finger, H., C. Goeke, D. Diekamp, K. Standvoß, and P. König (2017). Labvanced: a unified JavaScript framework for online studies. In *International conference on computational social science (Cologne)*, pp. 1–3.

Gonzalez, A. and T. Mihoc (2018). A neo-Carlsonian approach to bare plural nominals in Romanian and French. Paper presented at the *47th Linguistic Symposium on Romance Languages (LSRL)*, University of Delaware, April 20-23, 2017.

Heycock, C. and R. Zamparelli (2003). Coordinated bare definites. *Linguistic Inquiry 34*, 443–469.

Kratzer, A. (2007). On the plurality of verbs. In *Event Structures in Linguistic Form and Interpretation*, pp. 269–300. De Gruyter.

Krifka, M. (1998). The origins of telicity. In *Events and grammar*, pp. 197–235. Springer.

Landman, F. and S. Rothstein (2012a). The felicity of aspectual for-phrases – part 1: Homogeneity. *Language and Linguistics Compass 6*(2), 85–96.

Landman, F. and S. Rothstein (2012b). The felicity of aspectual for-phrases – part 2: Incremental homogeneity. *Language and Linguistics Compass 6*(2), 97–112.

Longobardi, G. (1994). Reference and proper names: A theory of N-movement in syntax and logical form. *Linguistic inquiry*, 609–665.

Mari, A. and F. Martin (2008). Bare and indefinite NPs in predicative position in French. In F. Schäfer (Ed.), *Working Papers of the SFB 732 Incremental Specification in Context*, pp. 119–144.

Marty, P., E. Chemla, and J. Sprouse (2020). The effect of three basic task features on the sensitivity of acceptability judgment tasks. *Glossa: a journal of general linguistics 5*(1), 72.

Moltmann, F. (1991). Measure adverbials. *Linguistics and philosophy*, 629–660.

R Core Team (2024). *R: A Language and Environment for Statistical Computing*. Vienna, Austria: R Foundation for Statistical Computing.

Tukey, J. W. (1949). Comparing individual means in the analysis of variance. *Biometrics 5*(2), 99–114.