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Verbal Agreement with Collective Nominal Constructions: Syntactic and Semantic Determinants

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This corpus-based study investigates the patterns of verbal agreement of twenty-three singular collective nouns which take *of*-dependents (e.g., *a group of boys*, *a set of points*). The main goal is to explore the influence exerted by the *of*-PP on verb number. To this end, syntactic factors, such as the plural morphology of the oblique noun (i.e., the noun in the *of*-PP) and syntactic distance, as well as semantic issues, such as the animacy or humanness of the oblique noun within the *of*-PP, were analysed. The data show the strongly conditioning effect of plural *of*-dependents on the number of the verb: they favour a significant proportion of plural verbal forms. This preference for plural verbal patterns, however, diminishes considerably with increasing syntactic distance when the *of*-PP contains a non-overtly-marked plural noun such as *people*. The results for the semantic issues explored here indicate that animacy and humanness are also relevant factors as regards the high rate of plural agreement observed in these constructions.

Keywords: agreement; collective; *of*-PP; distance; animacy; corpus

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Concordancia verbal con construcciones nominales colectivas: sintaxis y semántica como factores determinantes

Este estudio de corpus investiga los patrones de concordancia verbal de veintitrés nombres colectivos singulares que toman complementos seleccionados por la preposición *of*, como en los ejemplos *a group of boys*, *a set of points*. El objetivo principal del estudio consiste en explorar la influencia que este complemento preposicional ejerce sobre el número del verbo. Para ello, he analizado factores sintácticos, como la morfología plural del elemento nominal en la *of*-PP o la distancia sintáctica, y factores semánticos como la animacidad o el carácter humano o no humano del referente de la *of*-PP. Los resultados confirman la importancia de

la frase preposicional introducida por *of* en la selección del número del verbo: la presencia de este complemento preposicional favorece una mayor proporción de formas verbales plurales. No obstante, esta preferencia por patrones verbales en plural disminuye considerablemente a mayor distancia sintáctica, especialmente cuando el complemento preposicional contiene nombres con plural no marcado morfológicamente como *people*. En lo que concierne a la semántica, este estudio demuestra que la animacidad y el carácter humano del elemento nominal en la *of*-PP son también factores relevantes ya que influyen en el elevado porcentaje de formas verbales plurales obtenidas.

Palabras clave: concordancia; colectivo; *of*-PP; distancia; animacidad; corpus

1. Introduction

Collective nouns in English have been the object of numerous investigations aimed at exploring their patterns of agreement (Levin 2001, 2006; Depraetere 2003; Hundt 2006, 2009).[1] These nominal elements can collocate with singular or plural verbal forms depending on the speaker's focus, either on the group or on the individual members, as exemplified by (1) and (2) respectively.

(1) The crowd here *is* really thick despite the weather.
(2) [T]he crowd *are* on their feet, roaring and waving their arms (Depraetere 2003, 86).

This alternation of verbal agreement is further complicated when the collective noun takes a plural *of*-dependent, as in (3), which may interfere in the relationship of agreement between the collective controller and the verbal target.

(3) A random bunch$_{SG}$ *of people*$_{PL}$ are$_{PL}$ waiting (COCA: FIC Mov: Bean).

This study investigates the extent to which the syntactic and semantic characteristics of these *of*-dependents influence and determine the patterns of verbal agreement of twenty-three collective noun-based constructions. To this end, both syntactic and semantic variables have been analysed in data obtained from samples of the British National Corpus (BNC) and the Corpus of Contemporary American English (COCA). Based on the results obtained, it will be argued that the morphology and the animacy of the *of*-dependent are important variables inasmuch as they contribute to the high rate of plural agreement that these structures show. Besides, syntactic distance will also be discussed, as it evinces a direct correlation with the patterns of verbal agreement presented here.

The structure of the paper is as follows. First, a brief theoretical background is presented in section 2. Then in section 3, after describing the methodology used, I focus on the analysis of the different syntactic and semantic determinants of agreement in the constructions in question. Finally, the main conclusions and questions for further research are put forward in section 4.

2. Theoretical Introduction

Agreement, sometimes referred to as concord, is a controversial linguistic phenomenon which, despite the extensive research in the field, still constitutes a challenge for current linguistic investigations. The main complications of agreement concern not only the

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cross-linguistic but also the language-internal variation and inconsistencies which it evinces. In this regard, the English language shows significant variation in terms of the patterns of verbal agreement of the object of study here, that is, collective noun-based constructions taking *of*-dependents such as (4):

(4) *A band of children* were careering about (BNC: AN7 2024).

Agreement can be defined as the "systematic covariance between a semantic or formal property of one element and a formal property of another" (Steele 1978, 610). The two elements involved in any relationship of agreement are the controller, that is, the element determining the agreement relation (usually nominal), and the target, which is the element being conditioned by the feature specifications of the controller (Corbett 2006, 4-5). In collective noun-headed constructions, the collective noun is the controller and the main verb is the target. When these two elements match in form, as in (5) below, they conform to grammatical or syntactic agreement (Corbett 2006, 155):

(5) The committee$_{SG}$ *has*$_{SG}$ decided.

By contrast, when the form of the target is determined by the semantic characteristics of the controller, we obtain an instance of semantic or notional agreement such as (6) (Corbett 2006, 155):

(6) The committee$_{SG}$ *have*$_{PL}$ decided.

Semantic agreement is a frequent option in the case of collective nouns. Despite being morphologically singular, these nominal elements are inherently plural and, thus, as in (6), they may also take plural targets. Their patterns of verbal agreement, however, may be complicated even further if potential agreement-carriers such as the *of*-dependents studied here are involved.

(7) A group$_{SG}$ *of parents*$_{PL}$ were$_{PL}$ standing in the corner (BNC: CHR 861).

Cases such as (7), in which a plural non-head nominal element inflected for number interferes in the subject-verb agreement relation, resemble those instances of the so-called phenomenon of "attraction" or "proximity concord." In the psycholinguistic literature, attraction is associated with errors or ungrammatical instances such as (8) below, in which the interference of a plural nominal element between the head noun subject and the verb results in the erroneous assignment of plural verb number—see Bock and Miller (1991), Bock and Eberhard (1993), Bock et al. (2001), Haskell and MacDonald (2003), Bock et al. (2006), Acuña-Fariña (2009; 2012) and the references cited there.

(8) The readiness$_{SG}$ of our conventional forces$_{PL}$ are$_{PL}$ at an all-time low (Bock and Miller 1991, 46).

In (8) the singular head noun subject (*readiness*) and the verb (*are*) are separated by an *of*-PP which contains a plural nominal element (*forces*). The plurality of this oblique noun is precisely what interferes in the agreement relation and finally "illegally attracts [plural] agreement on the verb" (Acuña-Fariña 2009, 392), with the subsequent subject-verb disagreement and the ungrammatical outcome.

Some of the examples examined here—see (7) above or (9) below—also involve potential agreement conflicts but, given the flexibility of the collective head noun in terms of agreement, we cannot consider them to be errors resulting from attraction. Instead, in collective noun-headed constructions the intervening plural nominal element within the *of*-PP is determinant in verb agreement inasmuch as it reinforces the conceptual plurality inherent to the collective noun and, thus, favours a higher likelihood of plural verb number, although the outcome is in any case grammatical and acceptable.

(9) The majority$_{SG}$ of screenwriters$_{PL}$ were$_{PL}$ dismissed and half the production staff sacked (BNC: A7L 987).

This study shows how the influence of this prepositional dependent on verb agreement is constrained by syntactic and semantic issues. In fact, as will be presented in the following sections, the patterns of verbal agreement of the constructions under scrutiny undergo significant changes depending on factors such as the morphology or the animate and/or human character of the *of*-dependent, corroborating the important role of this prepositional constituent for agreement operations.

3. Case Study: Verbal Agreement with Collective Nominal Constructions

This section introduces the corpora and the data supporting the conclusions of this paper and is rounded off by investigating the syntactic and semantic determinants of the patterns of verbal agreement in collective noun-based constructions.

3.1. Methodology and data retrieval

The data for this corpus-based study were retrieved from the written components of the British National Corpus (BNC) and the Corpus of Contemporary American English (COCA): fiction, magazines, newspapers and academic texts in both corpora as well as non-academic and miscellaneous texts in the British corpus. The former contains 98,363,783 words from British English and covers the period from 1970s to 1993, while the latter contains 464,020,256 words from American English texts published between 1990 and 2012.

The main object of study in this investigation concerns the patterns of verbal agreement of collective noun-headed subjects. These binominal (i.e., containing two noun phrases, *NP of NP*) subjects comprise a singular collective head noun and an oblique noun, that is, the noun within the *of*-PP. As regards the former, twenty-three singular collective nouns that usually take *of*-complementation were included: *band*, *batch*, *bunch*, *class*, *clump*, *couple*, *crowd*, *flock*, *gang*, *group*, *herd*, *host*, *majority*, *minority*, *number*, *pack*, *party*, *rash*, *series*, *set*, *shoal*, *swarm* and *troop*.[2] This list of collectives has been retrieved from the section on "quantifying collectives" in the *Longman Grammar of Spoken and Written English* (Biber et al. 1999, 249) and from "number-transparent nouns" in *The Cambridge Grammar of the English Language* (Huddleston and Pullum et al. 2002, 503).

The search patterns used were the following: N_1 _PRF (+) (+) (+) _N_2 in the BNC data and N_1 of (*) (*) (*) *.[N_2] in COCA. In these formulas N_1 stands for the collective head noun, *_PRF/of* for the preposition *of*, and N_2 for the three different types of oblique noun within the *of*-PP under scrutiny here, namely (i) singular nouns such as *population* in (10) (retrieved by means of the tag NN1), (ii) overtly-marked plural nouns such as *workers* in (11) (the tag in this case was NN2) and (iii) the non-overtly-marked plural noun *people*, as in (12).[3] The elements in parentheses represent the determiners or potential modifiers of the oblique noun (from zero to three).[4]

(10) [T]he majority of the *population*$_{SG}$ adheres happily, or unhappily, to the roles which society expects of them (BNC: EE2 1266).

(11) [E]ach group of *workers*$_{PL}$ builds up a complete car from a box of component parts (BNC: CAN 1233).

(12) A crowd of *people*$_{PL}$ is still standing around in front of Gideon's house (COCA: FICMov:ToSleepWith).

Since the object of study is verbal agreement, only those instances containing verbs inflected for number were included in the database. Due to the size of the corpora, this investigation was limited to a maximum of 6,000 instances per collective noun. Among them, the examples not valid for this study—those that did not show verbal agreement—were manually discarded and, as a result, the total number of hits was set at 5,377.

[2] Only the collective/quantificational meanings of these collective nouns have been considered. Instances such as "[Our band of hearing] include all the sounds which are significant for us" (BNC: FEV 929), for example, have been excluded.

[3] In previous preliminary studies, further non-overtly-marked plural nouns were retrieved by means of the tags NN0 in the BNC and NN in COCA. However, given the diversity of this category—which also comprises other nouns being neutral for number (i.e., singular nouns with invariable plurals such as *fish*)—and the high incidence of the non-overtly-marked plural noun *people* in the data—almost 80% of the instances of NN0/NN retrieved from both corpora—only *people* is considered in the data and analysis presented here.

[4] The decision to restrict the number of modifiers to a maximum of three was taken in view of the already low incidence of constructions with three modifiers, below 1.80% of the total instances retrieved in both the BNC and COCA.

3.2. Analysis of the data

This section presents the result of a corpus-based study with a view to measuring the extent to which the syntactic and semantic properties of *of*-dependents affect the patterns of verbal agreement of collective noun-headed constructions. To this end, the role of the *of*-dependent in general (§3.2.1.), and of its syntactic (§3.2.2.) and semantic (§3.2.3.) characteristics in particular, are analysed and discussed in depth in the ensuing sections.

3.2.1. Implications of the *of*-dependent

As commented earlier, I have explored collective noun-based constructions with *of*-PPs containing singular nouns, overtly-marked plural nouns and the non-overtly-marked plural noun *people*. Special attention was paid to those cases in which syntactic agreement is overridden or, in other words, when the number of the verbal target differs from that of the collective nominal controller, as in (13)-(15):

(13) [T]he *majority*$_{SG}$ of the population *are*$_{PL}$ implicitly absolved from responsibility (BNC: CAF 1227).
(14) [A] *group*$_{SG}$ of parents *were*$_{PL}$ standing in the corner (BNC: CHR 861).
(15) A *bunch*$_{SG}$ of really tired people *get*$_{PL}$ together to talk about school (COCA: ACAD IndepSchool).

With respect to these deviations from syntactic agreement, and as already commented in the introduction, I claim that the different syntactic and semantic factors of the *of*-PP are the ultimate determinants of the number of the verbal target. One set of data that supports this working hypothesis is presented in Table 1.

Table 1. Verbal agreement with *of*-PPs and without *of*-PPs

	BNC			COCA		
	SING.VB.	PL.VB.	TOTAL	SING.VB.	PL.VB.	TOTAL
WITH *OF*-PP	776 (36.52%)	1,349 (63.48%)	2,125	1,354 (41.64%)	1,898 (58.36%)	3,252
WITHOUT *OF*-PP[5]	9,431 (72.23%)	3,625 (27.77%)	13,056	42,461 (81.31%)	9,758 (18.69%)	52,219

[5] For the data of collectives without *of*-PP the interface of the Brigham Young U. was used and they were retrieved using the pattern N1.[NN1] *.[(VBDZ/VBZ/VHZ/VVZ/VDZ)] for singular verbal forms and N1.[NN1] *.[(VBDR/VBR/VHO/VVO/VDO)] for plural verbs. Given its invariable plural form, series was not categorised as [NN1] and therefore no tag was used in this case.

Despite the fact that only singular collective head nouns are taken into consideration in this study, in general terms, as Table 1 illustrates, both the BNC and COCA show a preference for plural agreement when the *of*-dependent is present (63.48% and 58.36%, respectively). The significance of this constituent is confirmed by the results obtained for the same set of collective nouns when the *of*-dependent is absent, as in (16). In fact, as can be observed in Table 1, both the BNC and COCA show an overall preference for singular agreement (over 70%) when the collective noun-based constructions do not take *of*-PPs: $\chi^2(1)$, $p<0.0001$ for the contrast between the presence vs. the absence of the *of*-PP in both corpora.

(16) When a whole *group*$_{SG}$ *is*$_{SG}$ having a go (BNC: ATAW_non_ac_soc_science).

Table 2 below presents in more detail the data according to the number of the noun in the *of*-dependent, singular—NN1—or plural—both NN2 and *people*:

Table 2. Verbal agreement with singular vs. plural *of*-dependents

	BNC			COCA		
	SING.VB.	PL.VB.	TOTAL	SING.VB.	PL.VB.	TOTAL
SING. *OF*-PP	162 (72.65%)	61 (27.35%)	223	313 (88.92%)	39 (11.08%)	352
PL. *OF*-PP	614 (32.28%)	1,288 (67.72%)	1,902	1,041 (35.90%)	1,859 (64.10%)	2,900

As expected, Table 2 demonstrates that the presence of the plural *of*-PP is strongly associated with plural verbal patterns in this study. Accordingly, the results show a clear preference for plural verbal forms in collective noun-based constructions with plural dependents (67.72% in the BNC and 64.10% in COCA), indicating that the tendency is equally frequent and significant ($\chi^2(1)$, $p<0.0001$) in both varieties of English.

In addition to the results for plural agreement supporting our hypothesis, Table 2 evinces some other significant data which are also worth mentioning. Even though plural agreement is the predominant tendency with plural *of*-dependents, the rate of singular agreement with plural *of*-PPs is still noteworthy in both varieties (32.28% in the BNC and 35.90% in COCA), a finding which is illustrated in (17) below, and which suggests the need for a more fine-grained analysis in order to explore the determinants of these particular patterns of verbal agreement. Likewise, the still significant rate of plural verbal forms with singular dependents (27.35% in the BNC and 11.08% in COCA), as demonstrated in (18), is an issue which will be also discussed in detail in section 3.2.3.

(17) This group$_{SG}$ of *people*$_{PL}$ *was*$_{SG}$ recognised by the meeting in Tokyo (BNC: CJP 41).
(18) The majority$_{SG}$ of the general *public*$_{SG}$ *know*$_{PL}$ little about or understand the implications of results from research (COCA: ACAD Mercury).

3.2.2. Syntactic determinants: Number of the oblique noun and distance

This section tackles the different syntactic variables that have been shown to influence the subject-verb agreement relationship in collective nominal constructions taking *of*-dependents. In particular, I controlled for the number of the oblique noun and the syntactic distance separating the *of*-dependent (and, hence, the collective) from the verbal target.

3.2.2.1. Number of the oblique noun

The first issue that will be analysed pertains to the influence that the plurality of the dependent exerts on verbal agreement. As already mentioned in section 2, the collective constructions examined here are very similar to those involved in processes of attraction, yet, unlike the latter, the former cannot be considered ungrammatical or unacceptable since collective nouns allow for both singular and plural agreement patterns. Nevertheless, despite the flexibility and variation of the collective noun with respect to verb number, this study demonstrates that the influence of the oblique noun, in particular of its morphology, is one of the determining factors of the plural number of the main verb.

Prior literature on the topic has overlooked the relevance of these *of*-PPs and their syntactic characteristics. In fact, to the best of my knowledge, there only exist the studies by Bock and Eberhard (1993) and Haskell and MacDonald (2003), which explored the extent to which the regular and/or irregular morphology of the oblique noun affects verb number with experimental items such as (19) and (20):

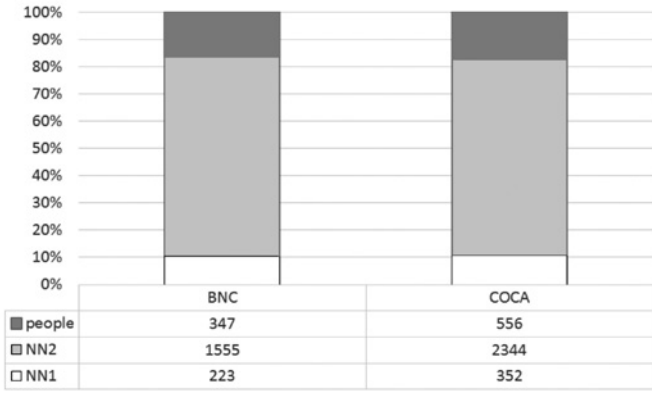
(19) the trap for the *mouse*/*rat* vs. the trap for the *mice*/*rats* (Bock and Eberhard 1993, 75).
(20) the class of *children* vs. the class of *kids* (Haskell and MacDonald 2003, 777).

In particular, Haskell and MacDonald (2003) demonstrated that morphological regularity favours a higher rate of plural agreement when grammatical factors conflict. Likewise, given that the binominal structures analysed here are potential triggers of agreement conflict, in this investigation I explored the role that morphology plays with respect to the patterns of verbal agreement of these collective noun-based constructions.

As already noted, the examples retrieved from both the BNC and COCA show predominantly plural verb number, although only singular collective head nouns are considered. In this respect, I have claimed that the presence of the *of*-dependent is a possible factor determining this high proportion of verbal plurality. As demonstrated

in Figure 1, the data from both corpora show a clear preference for overtly-marked plural oblique nouns (NN2), which is evidenced in more than 70% of cases in both corpora. If we also consider the instances obtained for the non-overtly-marked plural noun *people*, the proportion of plural oblique nouns rises to almost 90% in both English varieties.

Figure 1. Frequency of each oblique noun in the BNC and COCA data



If we contrast the type of oblique noun with verb number, there are significant differences in verbal agreement depending on the type of oblique noun used ($\chi^2(2)$, $p<0.0001$ in each corpora). Specifically, those instances comprising singular oblique nouns in the *of*-PP collocate almost exclusively with singular verbal forms, that is, they conform to syntactic agreement, as Figures 2 and 3 illustrate:

Figure 2. Verbal agreement with each oblique noun in the BNC data

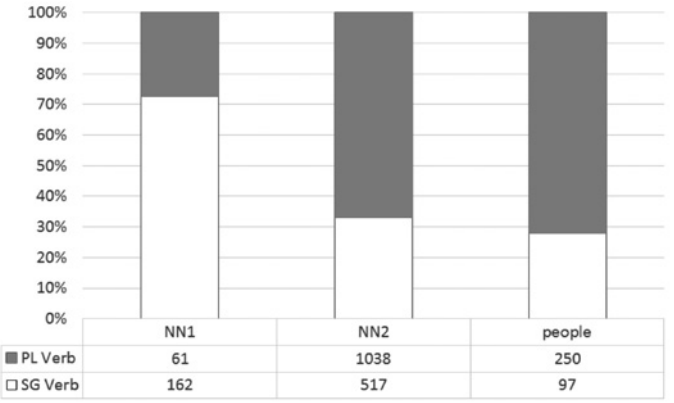
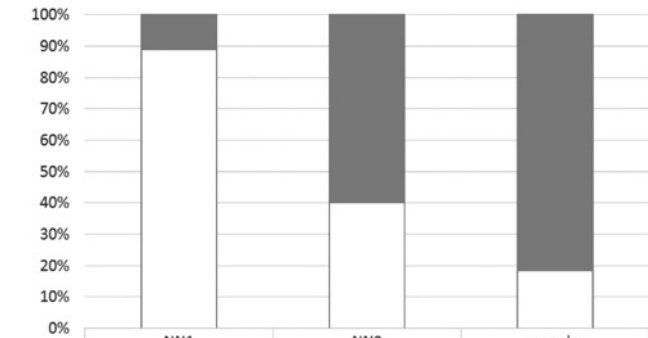


Figure 3. Verbal agreement with each oblique noun in the COCA data



The data presented in Figures 2 and 3 clearly indicate that semantic agreement with the collective nouns explored here is very unlikely if the *of*-dependent contains a morphologically singular nominal element: about 27% in the BNC and 11% in COCA. In contrast, when the oblique noun is plural, these constructions are more permeable to the interference of the plural morphology of the oblique noun on the number that the verb eventually takes. In this same vein, and in light of the data presented thus far, the significant frequency of plural oblique nouns—both overtly-marked plural nouns, i.e., NN2, and *people*—with plural verbal forms observed in the tables comes as no surprise. Hence, the data obtained provide statistical support for the syntactic interference of the oblique noun on verb agreement, as the rate of plural agreement with NN2 and *people* is higher than 60% in both the BNC and the COCA data.

Despite these results, Figures 2 and 3 also evince incipient differences between these two different nominal elements which are worth noting. Contrary to expectations, *people*—the oblique noun which lacks overt plural marking—exerts a higher influence on the number of the verb than overtly-marked plural nouns such as *boys*—66% and 72%, respectively, in the BNC and about 60% and 81% in COCA. This difference, which is statistically significant only in American English ($\chi^2(1)$, $p<0.0001$), leads us to suggest that in collective-headed constructions taking *of*-dependents overt morphology does not necessarily increase the probability of finding a higher proportion of mismatches in number. Consequently, this study does not support Haskell and MacDonald's (2003) predictions for the direct correlation between regular morphology and plural agreement.

3.2.2.2. Syntactic distance

Authors such as Corbett (1979) and Levin (2001) claim that as the distance between the controller and the verbal target increases, so too does the likelihood of finding

plural (i.e., semantic) agreement. This tendency is especially relevant in the case of collective nouns, since across syntactic boundaries it is easier for us to keep the semantic characteristics of previous linguistic elements activated, which in turn implies that formal features are not pervasive in short-term memory (Levin 2001, 95). Levin found empirical and statistical support for the direct correlation between the incidence of plural verb number and the increase in the number of words separating the collective noun and its verbal target. Following this same argument, in this study one would expect to find similar or even higher proportions of plural agreement since, apart from the semantically plural collective noun, the structures examined here contain a further nominal element which is both semantically and morphologically plural. To test this, syntactic distance in terms of the number of words separating the oblique noun (i.e., the element interfering in the subject-verb agreement relation) and the verb was considered.

Before discussing these data, a brief comment is in order. The data retrieved from both the BNC and COCA comprise instances which, according to the shallow syntactic structure of the *of*-PPs, can be classified into: (i) bare constructions, (e.g., *the majority of (the) girls*); (ii) constructions which are premodified (e.g., *a group of deaf people*), postmodified (e.g., *a band of boys from London*) or both pre- and postmodified (e.g., *the majority of competent people in this field of science*); (iii) coordinated structures (e.g., *a bunch of boys and girls*); and (iv) *of*-PPs which contain a relative clause (e.g., *a host of people who live abroad*). The data presented in this section, however, exclude the last two constructions so as to avoid factors which could potentially bias the data towards plural verbal patterns. To put it simply, the notional (and often morphological) plurality of coordinated structures and the high incidence of plural verbal forms in the relative clauses retrieved in this study may end up influencing the data and favouring a higher rate of plural agreement. Accordingly, in the remainder of this section I will focus exclusively on those constructions that only contain the oblique and/or its postmodifiers to focus exclusively on the interaction between the number of the oblique noun, the number of the verb and the distance (in number of words) separating them.

Tables 3 and 4 below present the rates of plural verbal forms with plural obliques—both NN2 and *people*—in relation to the number of words separating the oblique itself from the verb in the BNC and COCA, respectively.[6] As can be observed, when there are no intervening words in between the plural oblique and the verb, the oblique noun *people*, which lacks an overt plural marker, shows a higher percentage of plural verbal forms in both varieties: 91.67% in the BNC and 89.00% in COCA. By contrast, overtly-marked plural nouns such as *boys* (NN2) display a less significant proportion of plural agreement when they are adjacent to the verb: 64.82% in the BNC and 58.26% in COCA. The contrast between the results obtained for NN2 and *people* is in this case

[6] It must be noted that the instances considered for this variable contain not only dependents but also further constituents modifying the verbal phrase or the whole sentence (i.e., adjuncts and/or disjuncts). Thus, a more fine-grained analysis in this respect should be carried out in the future.

statistically significant in both varieties of English ($\chi^2(1)$, $p<0.0001$), which seems to suggest important processing implications: the conceptual plurality of *people* appears to be stronger than the morphological and semantic plurality of NN2 as a determining factor of verb number.

Table 3. Percentage of agreement in relation to distance in number of words between the oblique and the verb in the BNC data

Words between the oblique and the verb	BNC					
	NN2			*people*		
	Sing.Vb.	Pl.Vb.	Total	Sing.Vb.	Pl.Vb.	Total
0	159 (35.18%)	293 (64.82%)	452	10 (8.33%)	110 (91.67%)	120
1-5	110 (39.01%)	172 (60.99%)	282	42 (42.42%)	57 (57.58%)	99
>5	58 (41.43%)	82 (58.57%)	140	20 (44.44%)	25 (55.56%)	45

Table 4. Percentage of agreement in relation to distance in number of words between the oblique and the verb in the COCA data

Words between the oblique and the verb	COCA					
	NN2			*people*		
	Sing.Vb.	Pl.Vb.	Total	Sing.Vb.	Pl.Vb.	Total
0	273 (41.74%)	381 (58.26%)	654	22 (11.00%)	178 (89.00%)	200
1-5	148 (38.24%)	239 (61.76%)	387	24 (17.27%)	115 (82.73%)	139
>5	64 (34.22%)	123 (65.78%)	187	17 (38.64%)	27 (61.36%)	44

As the distance between the oblique and the verb increases, differences are observed. As Tables 3 and 4 illustrate, with increasing distance the rate of plural verbal forms with NN2 decreases in the BNC sample, but slightly increases in the COCA data, although differences do not reach statistical significance ($\chi^2(2)$, $p>0.1$). Hence, the data from this study do not corroborate Levin's or Corbett's claims and predictions. However, the presence of an overt morphological marker for plurality would seem to be a plausible explanation to account for the noteworthy proportions of plural agreement of NN2.

People, by contrast, shows a progressive decline in its collocation with plural verbal forms with increasing syntactic distance. In other words, as different elements intervene between this oblique noun and the verb, the conceptual plurality of *people* and its effects on verb number are notably affected. Accordingly, as the number of words separating the subject from the verb increases, the influence exerted by *people* on verb number in local syntactic domains diminishes significantly in both varieties of English ($\chi^2(2)$, $p<0.0001$ in both the BNC and COCA).

All in all, this section has shown that morphology and syntactic distance are determining factors of the patterns of verbal agreement of collective noun-based constructions taking *of*-dependents. The data examined have shown that, contrary to expectations, syntactic distance does not increase the likelihood of finding plural agreement, not even when the oblique position is occupied by a plural noun, be it overtly-marked or non-overtly-marked. In fact, what is observed instead is an overall decline in the frequency of plural verbal forms, especially in the British variety and with the non-overtly-marked plural noun *people*. The data thus refute Levin's (2001) arguments and findings with regard to the effects of distance on the agreement patterns of collective nouns, at least as far as the constructions analysed here are concerned. The results also revealed the differences underlying the overt and non-overt morphology of the oblique nouns explored here. In this respect, *people* proved to exert a higher influence on verb number in local syntactic domains, hence failing to support the findings of the few studies carried out on this matter. The lack of an overt plural marker, however, involved a considerable loss of its effects on verb number over distance, thus triggering a decrease in plural verbal forms as the number of words intervening between *people* itself and the verb increases. Overtly-marked plurality, by contrast, turned out to be stronger in postmodified contexts and thus, as a consequence, the influence of this plurality was more pervasive over distance—i.e., the percentages of plural agreement were higher than those of *people*.

3.2.3. Semantic determinants: Animacy, humanness and verb meaning

Apart from syntax, semantics constitutes another essential area implicated in the phenomenon of agreement. This section discusses the influence that the semantics of both the oblique noun and the verb exerts on verb agreement. In particular, in this investigation I have controlled for the animate and/or human character of the nominal elements within the *of*-PPs, and for the extent to which verb meaning constrains verb number selection.

3.2.3.1. Animacy and humanness

The semantics of collective nouns has been explored in studies on agreement such as Depraetere (2003, 95), in which the feature animacy is included in the prototypical definition of collectives, Dekeyser (1975, 43-56) and Levin (2001, 126-129) who both

examined the interaction between animacy and agreement. While Dekeyser (1975) did not find any strongly association in this regard, Levin (2001) described a significant correlation between agreement, on the one hand, and animacy or humanness, on the other. Humanness seems to contribute to an increased frequency of plural number in the verbal target. However, humanness is not a decisive factor. In fact, as Levin (2001, 129) states, even when animate but non-human referents are involved, plural agreement is favoured if the collective is followed by an *of*-phrase (21):

(21) Here *a family of mice are* beset not only by two vicious cats but by a one-eyed farmer given to laying down poison bait and traps (Levin 2001, 128).

In contrast, the less restrictive concept of animacy intervenes in the agreement operation inasmuch as animate controllers tend to more frequently favour plural agreement (22), an argument that Levin (2001, 128-129) attributes to Barlow (1999), who asserted that, crosslinguistically, inanimate elements are not likely to be morphologically marked as plural.

(22) The *nation were* to take the Beatles to *their* hearts (Levin 2001, 13).

Taking into account these arguments and findings, in what follows I report the results obtained for the analysis of animacy and humanness in the collective noun-based constructions examined. It must be noted that Dekeyser's (1975) and Levin's (2001) studies focus on the semantic features of the collective noun. In contrast, the discussion presented here will revolve around the semantic characterisation of the oblique nouns, thus leaving the analysis of collective head nouns for future research. Figure 4 below shows the results obtained for the patterns of verbal agreement in relation to the animacy of the oblique noun.

The results demonstrate that, whereas inanimate obliques show similar proportions for both singular and plural number, animate entities clearly favour plural agreement (more than 65% of cases), which is statistically significant in both corpora ($\chi^2(1)$, $p<0.0001$). As such, the data from the corpora examined here allow us to corroborate Levin's (2001) claims and observations made in this regard.

These observations are mirrored in the data for humanness. Figure 5 below presents the patterns of verbal agreement in relation to the human or non-human status of the oblique noun. As expected, human oblique nouns collocate much more frequently with plural verbal forms—over 70% in both corpora—than non-human nominal elements, which show a preference for singular verb patterns, especially in COCA: over 57% vs. 48% in the BNC. As was the case with animacy, the differences observed in the patterns of verbal agreement of constructions with human referents in contrast to those with non-human referents are highly significant both in the BNC and COCA ($\chi^2(1)$, $p<0.0001$), which confirms the relevance of this semantic nuance for agreement operations.

Figure 4. Verbal agreement with animate and inanimate obliques in the BNC and COCA data[7]

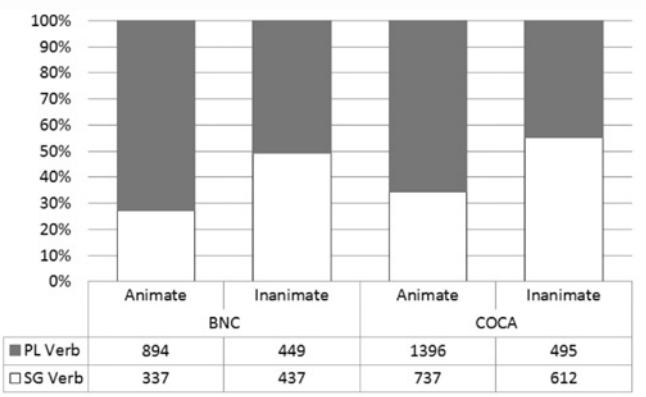
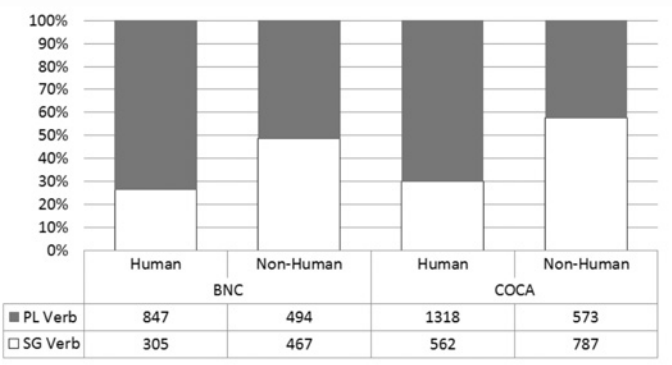


Figure 5. Verbal agreement and humanness in the BNC and COCA data



A more detailed analysis of the data indicates that the high incidence of human referents—93.58% of the total number of animate referents in the BNC and 88.14% in the case of COCA—most probably constituted a determining factor of the proportions of plural agreement attested here.

These results provide us with preliminary evidence supporting the idea that, for the collective noun-based constructions studied here, syntax is not sufficient to account for their different agreement patterns. In fact, criteria such as animacy and humanness are necessary to explain some of the tendencies discerned in the previous section and for which no syntactic explanation could be provided: (i) mismatches in syntactic

[7] In this and subsequent graphs and tables the discrepancies in the figures result from the need to discard those cases where either it was not possible to assign the oblique to any of the categories or there were two coordinated oblique nouns which belonged to different categories.

agreement such as (23), where we would expect singular verb number, and (ii) instances where the distance and/or the plural oblique noun intervening between the collective noun and the verb does not necessarily trigger plural verb number such as (24) and (25).

(23) If Honecker is convicted, the majority$_{SG}$ of the *population*$_{SG}$ *are*$_{PL}$ implicitly absolved from responsibility (BNC: CAF 1227).

(24) This batch$_{SG}$ of *cars*$_{PL}$ *was*$_{SG}$ transferred onto South Metropolitan tracks in 1906 (BNC: CBK 1744).

(25) The series$_{SG}$ of legal *actions*$_{PL}$ initiated by the Government to suppress publication of the memoirs of a former intelligence agent, Peter Wright, *indicates*$_{SG}$ the lengths to which the Government will go to ensure confidentiality (BNC: EVK 338).

Examples (24) and (25) illustrate that distance cannot be taken as the sole explanation for these particular patterns. In the case of (24), the proximity of the singular collective head noun and the verbal target could justify the conformity to syntactic agreement with the syntactic head of the collective noun-based construction (*batch*). Nevertheless, (25) evinces that, contrary to what authors such as Corbett (1979) and Levin (2001) claim (see section 3.2.2.), syntactic agreement can be maintained even across long syntactic boundaries—seventeen words in this case—and with intervening nominal elements inflected for number (*actions* and *memoirs*). The unlikeliness of finding a plausible syntactic justification for these data has lead me to contemplate semantic criteria as possible alternative explanations. Similarly, semantics will be necessary to account for formal mismatches such as (23) above. Table 5 below presents the figures for agreement, animacy and humanness with singular obliques (NN1) and with overtly-marked plural oblique nouns (NN2).[8]

Apart from showing that both varieties of English present similar figures, Table 5 also corroborates the data presented in the previous graphics as regards the number that the verb takes with animate referents. The higher figures for plural agreement correlate with a high proportion of animate (and human) referents in the oblique position. Inanimate (and non-human) referents, by contrast, favour singular verbal forms, a tendency which is only broken by category NN2 in the American corpus, which shows a higher rate of singular verbal forms with animate obliques (59.57%).

Concerning the patterns presented in examples (23) to (25) above and repeated below as (23')-(25') for the sake of clarification, semantics proves significant in obtaining a preliminary account of those instances where syntactic criteria were infelicitous. In light of the results in Table 5, the collocation of a singular collective head noun, a singular oblique and a plural verb can be explained in terms of the animate—77.05% in the

[8] This table does not include the frequencies for *people* since its results for animacy and humanness are obviously negligible for this discussion.

BNC and 63.16% in COCA—and the human—72.13% in the BNC and 52.63% in COCA—status of the referent denoted by the oblique noun, as in (23').

Table 5. Verbal agreement with oblique noun and animacy/humanness in the BNC and COCA data

	Oblique Noun	Verb	Semantics of oblique noun					
			Animate	Inanimate	To-tal	Human	Non-Human	Total
BNC	NN1	Sing.	43 (26.54%)	119 (73.46%)	162	43 (26.54%)	119 (73.46%)	162
		Pl.	47 (77.05%)	14 (22.95%)	61	44 (72.13%)	17 (27.87%)	61
	NN2	Sing.	197 (38.25%)	318 (61.75%)	515	165 (32.16%)	348 (67.84%)	513
		Pl.	597 (57.85%)	435 (42.15%)	1,032	553 (53.69%)	477 (46.31%)	1,030
COCA	NN1	Sing.	79 (25.24%)	234 (74.76%)	313	59 (18.85%)	254 (81.15%)	313
		Pl.	24 (63.16%)	14 (36.84%)	38	20 (52.63%)	18 (47.37%)	38
	NN2	Sing.	557 (59.57%)	378 (40.43%)	935	402 (42.99%)	533 (57.01%)	935
		Pl.	918 (65.62%)	481 (34.38%)	1,399	845 (60.40%)	554 (39.60%)	1,399

(23') If Honecker is convicted, the majority$_{SG}$ of the *population*$_{Anim/Human}$ *are*$_{PL}$ implicitly absolved from responsibility (BNC: CAF 1227).

As for overtly-marked plural obliques, the likelihood of collocation with a singular verb is higher when the plural oblique is neither animate nor human, especially in the BNC—61.75% and 67.84%, respectively—as in (24') and (25'). By contrast, as Table 5 illustrates, in the American corpus the collocation of NN2 with singular verbal forms correlates with a noteworthy proportion of animate oblique referents (59.57%). Interestingly, the criterion of humanness conforms perfectly to the general tendency, showing a higher rate of singular agreement collocating with non-human obliques (57.01%). Such a result indicates that a more detailed analysis of the oblique nouns and the examples from COCA is needed in order to discern the reasons underlying this unexpected result—the data seem to point towards the influence of the animacy of exclusively non-human referents like animals, a semantic type of oblique which amounts to more than 80% of the instances of non-human animate oblique nouns in the data set.

(24') This batch$_{SG}$ of *cars*$_{Inanim/Non-Human}$ *was*$_{SG}$ transferred onto South Metropolitan tracks in 1906 (BNC: CBK 1744).

(25') The series of legal *actions*$_{Inanim/Non-Human}$ initiated by the Government to suppress publication of the memoirs of a former intelligence agent, Peter Wright, *indicates*$_{SG}$ the lengths to which the Government will go to ensure confidentiality (BNC: EVK 338).

In brief, the results have demonstrated that, as far as the collective noun-based constructions examined are concerned, both syntactic and semantic factors have to be taken into account as both have been shown to play a determining role in verb agreement. In particular, the data presented in this section have yielded support for the notion that animacy and humanness contribute to the high proportions of verb agreement attested in this investigation and, thus, they have provided certain patterns of agreement with a semantic explanation which complements the syntactic study reported earlier.

3.2.3.2. Meaning of verbs

Apart from the meaning of the collective or the oblique noun, many authors have noticed the importance of the meaning of the verb and how this may constrain the patterns of verbal agreement of collective nouns. For example, the *Longman Grammar of Spoken and Written English* remarks that in the case of collective noun-based constructions plural agreement is available only if the meaning of the verb can be applicable to the individual members of the group (Biber et al. 1999, 189). Otherwise, singular agreement must be used. As way of illustration, they present example (26), where the meaning of the verbs in bold constrains the flexibility in verb agreement that is characteristic of collective nouns and, thus, only allows for singular verb number:

(26) *The committee* ***comprises/consists of /has*** (**comprise/consist of/have*) *eight members* (Biber et al. 1999, 189).

In light of these arguments, I have analysed a sample of the database from the BNC—only those verbs displaying a token frequency higher than five, about 58% of the data obtained from BNC—in order to determine to what extent verb meaning conditions the patterns of verbal agreement of the collective noun-based constructions examined. In so doing, Levin's (1993) classification of verbs was taken as a point of reference.

The results obtained did not yield statistically significant data yet. However, some preliminary tendencies can be pointed out.

Table 6. Most frequent semantic types (Levin 1993) of verbal forms in the BNC data according to their percentage of plural agreement

Plural verb number	Meaning	Most frequent semantic types (Levin 1993)
≥60%	prototypical human reference	possession (*get, give*) send/carry existence (*live, gather*) communication (*say, ask*)
<60%	less straightforward connection with human reference	change of state (*increase, rise*) appearance (*come, appear*) motion (*run*, *follow*)

The results to date seem to support the previous argument on the impact of animacy and humanness. In fact, those verbs showing a higher likelihood of plural agreement take human referents as subjects far more frequently. Following Levin's (1993) classification, the most frequent semantic types in this respect are those involving possession, existence or communication. By contrast, those verbs showing a lower proportion of plurality evince a less straightforward connection with human reference. As illustrated in Table 6, this set of verbal forms is mainly related to actions that do not (necessarily) involve a human subject and encompasses a wider range of verbs denoting meanings such as change of state. However, despite the relevance of these tendencies for the analysis of potential semantic forces, these preliminary results need further research and consideration.

4. Concluding Remarks

This study has explored the extent to which *of*-dependency influences agreement in collective noun-based constructions. The data showed that, unlike in examples without *of*-PPs, collective noun-based constructions with *of*-dependents favour plural agreement. Different syntactic and semantic determinants of the patterns of verbal agreement were also considered and discussed in connection with the results obtained.

As regards syntax, it was found out that those obliques which do not show overt plural marking such as *people* are more likely to show a stronger influence on agreement and, thus to trigger plural verb number, than those nouns bearing overt plural morphology. Syntactic distance, in terms of the number of words intervening between the oblique noun in the *of*-PP and the verb, showed that overtly-marked plurality seems to be more pervasive over long syntactic boundaries, as the rate of plural verbal forms with overtly-marked plural nouns undergoes no drastic changes with increasing distance. In contrast, the non-overtly marked plural oblique noun *people* turns out to be more sensitive to syntactic distance and thus its influence on verb number and its collocation with plural verbal forms diminish considerably across syntactic boundaries.

Semantics also proved necessary to analyse particular patterns of verbal agreement. Features such as animacy and humanness were found to be significant in that formal mismatches can be explained in relation to the fact that animate (and human) nominal elements tend to favour plural verbal agreement. In addition, in a preliminary data analysis of a subset of the data, the meaning of the verb has shown tendencies that corroborate the research carried out so far in this regard, but the results are still tentative and deserve further consideration.

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