ERP indexes of number attraction and word order during correct verb agreement production

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A B S T R A C T

Successful subject-verb agreement production requires retrieving the verbal forms that agree with the features of the subject head noun and not of other nouns in the sentence. We investigate, for the first time, the electro-physiological indexes of number attraction and word order during agreement production. Twenty-four Basque native speakers were tested while producing auxiliary verbs during sentence completion of transitive sentence preambles involving singular subjects and singular or plural objects in canonical (SOV) and non-canonical (OSV) structures. ERP results yielded a larger production P2 (pP2) amplitude for mismatching than matching objects in SOV sentences, and larger negativity for OSV than SOV in number matching condition. We explain these results in terms of distinct contributions of number and word order during correct agreement production, with the pP2 indexing morphosyntactic retrieval difficulty of agreement-inflection, and the frontal negativity reflecting word order effects during monitoring the correctness of the selected verbal form.

1. Introduction

Morphosyntactic processes that involve computations of subject-verb number agreement are a core aspect of everyday language (see Acuña-Fariña, 2009; Fleischer, Rieken, & Widmer, 2015 for reviews). To investigate this syntactic phenomenon, most psycholinguistic production studies have used error-elicitation tasks manipulating the number and/or position of a subject and a local noun or object (e.g., Bock & Miller, 1991; Bock & Eberhard, 1993; see Vigliocco & Hartsuiker, 2002, for a review). These studies have demonstrated that plural nouns (attractors) that are not the subject head (e.g., local nouns within the subject noun phrase (NP) or objects) can interfere in the agreement process resulting in subject-verb agreement “attraction” errors (e.g., “The key to the cabinets are…; Bock & Miller, 1991). Explanations of the origin of this effect have mainly considered the difference between the morphological number of the subject noun and that of the-closest-to-the-verb noun (e.g., Bock & Miller, 1991; Haskell & MacDonald, 2003).

According to the Marking and Morphing model (Eberhard, Cutting, & Bock, 2005), agreement occurs in two stages: During Marking, the number of the subject NP is determined based on the notional number of its referent. Later, during the structural integration that binds lexical and structural forms, the number morphology of the agreeing verb (or pronoun) is selected through Morphing. Non-semantically based attraction effects occur during Morphing, when the number mismatching information of a non-subject head noun merges with the number of the subject head and the outcome of this morphing process is copied to the agreeing verb. The likelihood of the number features of a noun to percolate to the verb instead of those of the subject head is modulated by morphosyntactic markedness: plural nouns are more likely to pass their number to a verb than unmarked singular nouns (Bock & Eberhard, 1993; Eberhard, 1997), and hierarchical factors: the closer the attractor noun is hierarchically to the head the stronger the attraction effect (e.g., Franck, Vigliocco, & Nicol, 2002; Gillespie & Pearmutter, 2011).

Proximity of the attractor to the verb and word order factors also modulate attraction as shown by Haskell and MacDonald (2005), who investigated the role of linear proximity of the attractor in relation to the verb by employing disjunctive structures. They demonstrated that the verb tended to acquire the singular or plural number properties of its closest noun, both when the noun preceded (Can you tell me whether the horses or the clock is/are red?) and followed the verb (Is/are the horses or the clock red?). That is, speakers tended to agree with clock in the former structure and with horses in the latter. This was interpreted as evidence for a single-stage approach to agreement processing (Pickering, Branigan, & McLean, 2002), whereby linear order
information is available when agreement is computed.

Subject-verb agreement errors can be also elicited by object nouns, as suggested by Santesteban, Pickering, and Branigan (2013), who tested the effects of linear proximity and word order on attraction in Basque, a free word-order, head-final language, where the verb agrees in number both with the subject and the object. Subject and object agreement is morphologically unmarked for singular but distinctive for plural morfemes (e.g., -te for 3rd person plural subjects and -it for 3rd person plural objects: e.g., S\textsubscript{SG}-O\textsubscript{SG} = du; S\textsubscript{PL}-O\textsubscript{SG} = dute; S\textsubscript{SG}-O\textsubscript{PL} = ditu; S\textsubscript{PL}-O\textsubscript{PL} = ditu\textsubscript{te}). During sentence completion with singular or plural subjects and objects, with canonical SOV or non-canonical OSV order, participants produced more errors in plural subject-verb and object-verb agreement when the two arguments mismatched than matched in number. This shown that non-subject arguments can elicit subject-verb attraction effects (see also, Feiz & Cowles, 2019; Hartsuiker, Antón-Méndez, & Van Zee, 2001). Overall, participants produced more errors in OSV than SOV order, but this order effect interacted with agreement-type, with more subject-verb than object-verb agreement errors in SOV sentences, and more object-verb than subject-verb agreement errors in OSV sentences. These findings revealed both proximity (more errors were elicited by linearly intervening than non-intervening attractors) and word order effects (more errors in OSV than in SOV), indicating that agreement is computed over ordered syntactic representations. The Marking and Morphing model straightforwardly accounts for subject-verb errors elicited by nouns inside the subject NP, but does not account for proximity effects and errors elicited by objects.

Cue-based retrieval models (Badecker & Kumiñiak, 2007) explain these effects in terms of interference, assuming that all activated nouns interfere during the retrieval from memory of the agreement controller. All active nouns bearing subjection cues similar to those of the agreement controller (i.e., animacy, case marking, being a sentence-initial argument, etc.) can be erroneously selected due to similarity-based interference. Assuming that agreement is encoded over syntactically ordered structures, nouns linearly closer to the verb than the controller can elicit errors due to their higher activation. Similarly, since sentence-initial arguments usually receive subjection cues, erroneous cue-retrieval probability increases in non-canonical OSV sentences.

The findings reviewed above indicate that verbal agreement is affected by both linear proximity and word order, yet the methodology of error elicitation does not allow sketching the time course during which agreement encoding might be affected by word order. Identifying the way syntactic processes and computations take place in real time cannot only inform models of sentence comprehension and production and their interrelationship, but also allow the use of this knowledge cross-linguistically to build a picture of commonalities and differences among languages with different morphosyntactic properties.

The few behavioural studies that have examined the effects of attraction on correct number agreement have shown that response times increase when there is a mismatch in number between an attractor and a head noun, both in two-response-choice tasks (Staub, 2009, 2010) and in fragment completion (Haskell & MacDonald, 2003). These studies have attributed the slowdown of correct responses to the same factors that are responsible for the occurrence of errors: difficulty in processing number mismatch and syntactic depth, or in processing conceptual and grammatical information. However, to date, we are blind to the timing at which these difficulties arise during correct agreement computation. Although models are not explicit about it, the Marking and Morphing model suggests that agreement encoding begins before word order is defined, while the cue-based retrieval model assumes that elements linearly closer to the verb will be more active and suitable to attract errors, suggesting that agreement occurs over ordered syntactic representations. The present ERP study sought to further investigate whether and when word order affects attraction.

In identifying relevant ERP components, one might anticipate the involvement of the production P2 (pP2) that is found to respond to
2. Methods

2.1. Participants

Twenty-four native speakers of Basque (mean age = 21 (SD = 2); 11 males), undergraduate students at the University of the Basque Country.

2.2. Materials and procedure

Experimental materials consisted of 144 preambles (72 were adapted from Santesteban et al., 2013), involving transitive verbs. Each preamble contained a third person singular animate subject and a third person singular or plural animate object NP with a demonstrative, a quantifier or a numeral and a noun. Four experimental conditions were created by crossing two factors: Object-Number ( Singular vs. Plural) and Word-Order (SOV vs. OSV) (expected correct response in brackets; see Appendix for a full list of sentences):

1. Margolari hark pirata bat marrastu...(du) (Singular Object – SOV order)
2. Pirata bat margolari hark marrastu...(du) (Singular Object – OSV order)
   “That painter has drawn a pirate”.
3. Margolari hark pirata hauke marrastu...(ditu) (Plural Object - SOV order)
4. Pirata hauke margolari hark marrastu...(ditu) (Plural Object – OSV order)
   “That painter has drawn these pirates”.

Additionally, we created 240 filler sentences: 120 involved intransitive verbs (72 contained singular and 48 plural subjects). The remaining 120 fillers involved transitive verbs (48 plural subjects and singular objects, 48 plural subjects and objects, and 24 singular subjects and objects). Four lists were created containing 384 sentences each: 144 experimental (36 per condition) and 240 fillers. Each participant was presented with one of these lists (each item presented once per list). Six additional sentences were used as practice trials.

Participants sat comfortably in a quiet room and were asked to read silently preambles displayed word-by-word for 350 ms (ISI = 250 ms) in the middle of a 17-inch PC screen. After the 350 ms presentation of the verb, a question mark was presented prompting participants to complete the sentence by producing the corresponding auxiliary verb (du or ditu, for sentences with singular or plural objects, respectively). A fixation cross (+) presented for 1000 ms indicated the beginning of each trial. Materials were pseudo-randomized so that no two experimental sentences were displayed consecutively. The 384 sentences were distributed over four blocks. Each session lasted about 90 min including three breaks.

2.3. EEG recording

The electroencephalogram was recorded from 32 scalp electrodes mounted in an Acti-Cap International (Inc.; 10–20 system). All electrodes were referenced to left and right mastoids and re-referenced offline to the nasal-bone electrode. The vertical and horizontal electrooculograms were recorded from electrodes located below and at the outer canthus of the right eye. The EEG recordings were amplified with a BrainAmp DC amplifier (Brain Products, München, Germany) using a high-cut-of of 1000 Hz, a time constant of 10 s (0.016 Hz), and a sampling rate of 500 Hz. Electrode impedance was kept below 10 kΩ at all scalp and mastoid sites as well as at the eye electrodes. An off-line filter bandpass of 0.1–35 Hz (half-amplitude cut-offs, 24 dB) and 50 Hz notch filter was applied. Head movements and other artifacts were manually removed before applying ICA-based eye-blink correction.

2.4. Scoring and data analysis

Experimental sessions were digitally recorded and transcribed. Response times were registered by the Presentation 16.3 software through an AKG D44S CCS dynamic microphone. Participants’ responses were scored as correct for correctly inflected verbs; agreement errors for verbs disagreeing in number with the subject; and miscellaneous errors for any other error (e.g., no response or use of wrong auxiliary verb).

Linear mixed effects were performed for the analyses of accuracy and response latencies (including only correct responses). Accuracy (correct vs. incorrect agreement) or log-transformed response time dependent variables were fitted with linear mixed models including crossed random and fixed effects (Baayen, 2008). Object-Number (singular vs. plural), Word-Order (SOV vs. OSV), and their interactions were included in the models as sum coded fixed factors. The maximal random effect structures justified by $\chi^2$-test model comparison without high-correlation problems ($<0.7$) were used. All analyses were carried out in R (v.3.1.2; R Core Team, 2020), using the lme4 (v.1.1-21; Bates, Maechler, Bolker, & Walker, 2015) and lmerTest (v.3.1-0; Kuznetsova, Brockhoff, & Christensen, 2017).

For the electrophysiological data, ANOVAs were performed over correct responses (with SPSS 24). To avoid the inclusion of EMG due to articulatory movements, segments were constructed from 200 ms before and 400 ms after the onset of the main verb (baseline correction = -200–0), which is a general limitation of production studies. Trials associated with each condition were averaged for each participant. Given our predictions regarding the nature of the ERP components for comprehension and production, statistical analyses were performed using the 180–240 ms (p2) and 300–400 ms (negativity) time windows over midline electrodes only. Three regions of interest (ROI) were generated: Mid-Frontal (FC1, Fz, FC2), Mid-Central (CP1, Cz, CP2) and Mid-Parietal (P3, Pz, P4). The analysis included 3 within-participant factors: Object-Number ( Singular vs. Plural), Word-Order (SOV vs. OSV), and Region (Mid-Frontal vs. Mid-Central vs. Mid-Parietal). Step-down MANOVA analyses were conducted to analyze the source of significant interactions ($p < 0.05$).

Behavioural and EEG raw data and behavioural data analysis scripts are publicly available at https://doi.org/10.17605/OSF.IO/B4RX2

3. Results

3.1. Accuracy

The maximal random effect structure included a by-participant Word-Order random slope. The analysis yielded significant Object-Number ($\beta = -0.294$, SE = 0.100, $z = -2.920$, $p = 0.003$) and Word-Order effects ($\beta = 0.659$, SE = 0.181, $z = 3.643$, $p < 0.001$), with participants producing more subject-verb agreement errors in sentences containing plural than singular objects, and in sentences with SOV than OSV order (see Table A). The interaction was also significant ($\beta = -0.740$, SE = 0.101, $z = -7.319$, $p < 0.001$), with more errors in SOV sentences with singular than plural objects ($\beta = 0.403$, SE = 0.190, $z = 2.120$, $p = 0.034$), and with more errors in OSV sentences with plural than singular objects ($\beta = -1.024$, SE = 0.184, $z = -5.547$, $p < 0.001$).

3.2. Response latencies

Responses faster than 50 or slower than 2500 ms or exceeding a threshold of 2.5 SDs by condition were excluded from the analysis (6.9% of the data). The maximal random effect structure included by-participant Object-Number and Word-Order random slopes. The analyses revealed significant main effects of Object-Number ($\beta = 0.015$, SE = 0.007, $t = 2.07$, $p = 0.050$) and Word-Order ($\beta = 0.019$, SE = 0.007, $t = 2.58$, $p = 0.016$), with participants responding more
slowly in sentences with plural than with singular objects (570 vs. 550 ms, respectively) and in sentences with OSV than SOV order (572 vs. 550 ms). The interaction was not significant ($p = 0.007$, SE = 0.004, $t = 1.60$, $p = 0.109$).

3.3. ERP results

Miscellaneous/erroneous responses (7.3%) and epochs with artifacts (14.1%) were rejected, resulting in the exclusion of 21.4% (SE = 1.53) of the total trials. A mean of 27 trials per condition remained for analyses: $SOV_{SOV} = 27.7$ (5.1); $SOV_{OSV} = 28.9$ (5.7); $OSV_{SOV} = 29.3$ (5.6); $OSV_{OSV} = 27.4$ (5.3).

The analysis of the 180–240 ms time window (pP2) showed a significant Object-Number effect ($F(1, 23) = 4.410, p = 0.047$), revealing larger positivity for sentences with plural than singular objects (2.89 $\mu V$ vs. 2.34 $\mu V$) (see Fig. A). There was also an Object-Number by Word-Order by Region interaction ($F(2, 46) = 9.38; p = 0.004$). Further analyses did not show Word-Order effects in any region. However, Object-Number pP2 effects were found in SOV sentences over mid-central ($F(1, 23) = 5.85, p = 0.024$) and mid-parietal ($F(1, 23) = 7.93, p = 0.01$) regions, with larger positivity for sentences with plural than singular objects (mid-central: 3.37 $\mu V$ vs. 2.16 $\mu V$; mid-parietal: 2.68 $\mu V$ vs. 1.32 $\mu V$).

The analysis of the 300–400 ms time window revealed a marginal Word-Order effect ($F(1, 23) = 3.69, p = 0.067$), with OSV sentences eliciting larger negativity than SOV sentences ($-0.15$ $\mu V$ vs. 0.38 $\mu V$). There was also an Object-Number by Word-Order by Region interaction ($F(2, 46) = 8.81, p = 0.003$), with a Word-Order effect (larger negativity for OSV than SOV sentences) only in sentences with singular objects over mid-frontal electrodes ($F(1, 23) = 5.20, p = 0.032$), and a marginal Object-Number effect (a tendency for larger positivity in sentences with plural than singular objects) in SOV sentences in the mid-parietal region ($F(1, 23) = 4.21, p = 0.051$).

4. Discussion

The present study showed a slowdown in sentence completion latencies when object and subject mismatched in number, replicating behavioural agreement attraction effects (Staub, 2009, 2010). Auxiliary verb production was also slower in non-canonical OSV than in canonical SOV structures, reflecting extra demands imposed on the processor. In line with previous findings, the non-canonical OSV condition yielded more errors with plural than with singular objects. However, contrary to our expectations and the findings of Santesteban et al. (2013), in SOV sentences the opposite pattern emerged: participants were less accurate when producing the auxiliary verb preceded by a singular than by a plural object. We tentatively attribute this result to the potential ambiguity of the two determiners used in the materials (honek ‘this’, horrek ‘that’) which, in the Biscayan (oral) variety of Basque, could have a plural reading and some participants might have interpreted the first constituent (S) as plural instead of as singular. This might also reflect a speed-accuracy tradeoff, with more errors produced in the condition with faster response latencies (SOV, singular object). However, such a tradeoff does not account for the full pattern of results, because speakers did not make fewer errors in the condition with slower responses (OSV, plural object). Since our focus of interest is on correct agreement, we do not further discuss these accuracy patterns.

Regarding the ERP correlates of subject-verb agreement production an early positive component was shown between 180 and 240 ms and a negative one between 300 and 400 ms. The former object-number related positivity is assumed to reflect retrieval difficulty of correct agreement-inflectional morphemes especially in contexts with mismatching activated features. The latter word order related negativity is assumed to index argument order monitoring processes of the linearization of inflectional morphemes when the appropriate auxiliary verb form is built, with larger costs of linearization in non-canonical than in canonical sentences. This negativity was only present with singular objects, in canonical SOV sentences, with singular objects eliciting larger negativities than those with non-canonical order, number mismatching objects, or both. This suggests that both argument order and agreement monitoring occur at the same time.

In order to produce a correctly inflected verb that agrees with its arguments the processor has to compute an appropriate structure and specify the features that will be mapped onto the verb. In sentence completion, the speaker has to figure out the role of each argument in a given preamble and mark the auxiliary verb with the corresponding agreement features while also maintaining this representation in memory. At an electrophysiological level, the demanding aspects of these processes and the challenges posed by number mismatching plural objects in SOV structures were resolved at an early stage as reflected by the pP2. Producing a correctly inflected verb was costlier when the (plural) object mismatched in number with the (singular) subject than when it did not. This might correspond to the Morphing stage at which the Marking and Morphing model (Eberhard et al., 2005) assumes that lexical and structural forms are integrated and number morphology is selected. It might also correspond to the stage at which cue-retrieval models assume that number cues of the head are retrieved and the verb form is selected from memory while avoiding interference from co-activated nouns bearing subjecthood cues.

Additionally, the processing cost of the non-canonical argument linearization emerged during a later stage (300–400 ms) only in sentences with singular objects, reflected in a larger frontal negativity for non-canonical OSV than for canonical SOV sentences. Assuming that comprehension and production processes are intertwined (Pickering & Garrod, 2013), this frontal negativity may index larger costs of monitoring the correctness of the selected verbal form in OSV than in SOV sentences. Since in OSV sentences the object bears subjecthood positional cues, the cost to identify and monitor the number cues of the subject matching the number features of the selected verb form increases. Hence, these findings suggest that word order affects later agreement monitoring processes during production and that these cue-retrieval monitoring processes are also triggered during grammatical processing (see Martin, Nieuwland, & Carreiras, 2012 for evidence that cue-retrieval is also triggered in grammatical sentences during the
comprehension of ellipsis).

Our findings provide further evidence on processing mechanisms of verb agreement computation (comprehension and production) in morphologically rich languages such as Basque by taking into account the interplay of both the order of arguments and their morphological characteristics (number feature). Our pattern of results is fully supported by data from other studies in Basque with word order and number agreement manipulations (Erdocia et al., 2009; Zawiszewski & Friederici, 2009), with a larger negativity for non-canonical OSV than for canonical SOV structures in the first constituent position (S vs. O), as well as in the main verb position. However, those studies did not control for morphological specifications of the intervening arguments (number), and in that sense the current study presents novel findings revealing the interaction of both morphological characteristics and word order factors during verb agreement computation.

Our findings suggest that the parser makes use of different sources of information at different stages in time, with an initial stage at which competing (number) features are selected, and a later stage at which correct attribution of inflectional features for subject and object arguments is monitored. Although our results might not provide direct support for any model, the initial stage is compatible with the morphing phase of the Marking and Morphing model (Eberhard et al., 2005). The later stage is compatible with a cue-retrieval-type monitoring process, whereby agreement encoding occurs by means of managing the activation of the dependent arguments’ cues (e.g., number) as well as the degree of association strength between those cues and the target verb, which can be modulated by subjechtverd (animacy) or word order (Lewis & Vasishth, 2005).

Taken together, our data contribute to a growing number of studies investigating the interplay of morphological and syntactic cues during verb agreement computation and indicate that both types of information are used differently at early and later stages of processing. As this is the first study to inform accounts of correct subject-verb number agreement production at an electrophysiological level, certainly more research is needed for the construction of a comprehensive view of such a routine yet so complex cognitive process.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix

Materials used in the Experiment. All sentence preambles are presented in SOV word order (e.g., Ehiztari batek basurde hori/hiru basurdeak hil...du/ditu, “A hunter (has) killed that wild boar/the three wild boars”), with singular object NPs before the slash (3rd and 4rd word; basurde hori, “that wild boar”) and plural object NPs after the slash (5th and 6th word: hiru basurdeak, “the three wild boars”). The OSV word order condition of each sentence was created by placing the object NPs before the subject NP: e.g., Basurde hori/Hiru basurdeak ehiztari batek hil..., “A hunter (has) killed that wild boar/the three wild boars”). Following each sentence preamble, participants were asked to complete the sentence with the corresponding verb auxiliary form (du or ditu, for sentences with singular or plural objects, respectively). In the present experimental context, since participants were required to produce an auxiliary verb that would end the sentence, SOV and OSV order could only have one interpretation. English translations of sentences (in perfect tense) are presented in italics. Note that the auxiliary (has) added in the translation assumes that a correct response is given. Since Basque is not gender marked, all names of professionals are transliterated as female (e.g., policewoman):

1. Ehiztari batek basurde hori/hiru basurdeak hil...
   A hunter (has) killed that wild boar/the three wild boars
   That actor (has) drawn a lady/all the ladies

2. Bizardun horrek erizain hura/erizain guztiak atxilotu...
   That bearded man (has) detained that nurse/all the nurses
   That priest (has) defended that old woman/all the old women

3. Antzezle horrek andere bat/andere guztiak marraztu...
   A carpenter (has) drawn a lady/all the ladies
   An architect (has) reported that policeman/all the policemen

4. Aziokolari horrek txakur hori/txakur guztiak galdekatu...
   That trainer (has) presented that player/all the players
   That journalist (has) reported this businessman/all the businesswomen

5. Baztan horrek etxerriak hura/etxerri guztiak aurkitu...
   A district attorney (has) interrogated this youngster/the twenty youngsters
   That lawyer (has) interrogated a driver/the twenty drivers

6. Aizkolari honek txakur hori/sei txakurrak askatuz...
   The woodcutter (has) let that dog/the six dogs loose
   The district attorney (has) put on trial this youngster/the twenty youngsters

7. Korrikalari hark aukari bat/aikari guztiak harrapatu...
   That runner (has) trapped a rival/all the rivals
   That tourist (has) beaten up a diver/the twelve divers

8. Korrikalari honek txakur hori/sei txakurrak askatuz...
   This carpenter (has) drawn a man/a man
   That printer (has) printed this book/most of the books

9. Aizkolari honek txakur hori/sei txakurrak askatuz...
   That lawyer (has) interrogated a driver/the twenty drivers
   That printer (has) drawn a pirate/the twelve pirates

10. Aizkolari honek txakur hori/sei txakurrak askatuz...
    That policeman (has) arrested a kidnapper/the twenty kidnappers

11. Politikari batek apaiz bat/apaiz guztiak askatu...
    That journalist (has) protected a caretaker/the eight caretakers
    That tourist (has) intercepted a mayor/the ten mayors

12. Aizkolari honek txakur hori/sei txakurrak askatuz...
    This secretary (has) caressed that man/the eight men
    This lawyer (has) interrogated a driver/the six drivers

13. Aurrelari batek entrenatzaile hura/entrenatzaile guztiak aurkeztu...
    That trainer (has) presented that player/all the players
    This teacher (has) protected a student/the seventeen students

14. Ertzain honek lapur hori/hogei lapurrak atxilotu...
    That striker (has) presented all the coaches
    This rider (has) arrested that thief/the twenty thieves

15. Ertzain honek lapur hori/hogei lapurrak atxilotu...
    That printer (has) printed this book/most of the books
    This printer (has) criticized this cook/most of the cooks

16. Aizkolari honek txakur hori/sei txakurrak askatuz...
    This district attorney (has) interrogated this youngster/the twenty youngsters
    This district attorney (has) interrogated all the coaches

17. Aizkolari honek txakur hori/sei txakurrak askatuz...
    This lawyer (has) interrogated a driver/the twenty drivers
    This lawyer (has) interrogated adriver/the twenty drivers

18. Aizkolari honek txakur hori/sei txakurrak askatuz...
    This journalist (has) reported this businessman/all the businesswomen
    This journalist (has) reported this businessman/all the businesswomen

19. Aizkolari honek txakur hori/sei txakurrak askatuz...
    This priest (has) defended that old woman/all the old women
    This priest (has) defended that old woman/all the old women

20. Aizkolari honek txakur hori/sei txakurrak askatuz...
    That prisoner (has) criticized this cook/most of the cooks
    That prisoner (has) criticized this cook/most of the cooks
That spectator (has) kissed this actor/some actors

54. Ikusle honek arraunlari hura/arraunlari gehienak iraindu...

53. This spectators (has) insulted a rower/most rowers

52. Langile hark arkiteko hori/hamabi arkitetoka salatu...

51. That worker (has) insulted that architect/the twelve architects

50. Basurde honek mutul hura/mutil guziak izutu...

49. This wild boar (has) scared that boy/ all boys

48. Mago horrek pailazo bat/pailazo batzuk engaiatu...

47. That magician (has) deceived a clown/some clowns

46. Bezero horrek neska bat/neska guziak besarkatu...

45. That customer (has) hugged a girl/all girls

44. Irabazle horrek arraunlari hura/arraunlari guziak agurtu...

43. That winner (has) saluted that rower/all rowers

42. Atso batek enpresari hau/enpresari guziak zirakitu...

41. An old lady (has) provoked this businesswoman/all the businesswomen

40. Arraunlari batek arrantzale hori/arraunlari guztiak goraipatu...

39. A rower (has) insulted that fisherwoman/the seven fisherwomen

38. Alkat horrek bozeramaile hura/zortzi bozeramaileak engaiatu...

37. That mayor (has) deceived that spokeswoman/the eight women

36. Enbaxadore honek turista hura/sei turistak babestu...

35. This ambassador (has) defended that tourist/the six tourists

34. Txirrindulari honek irabazle hura/irabazle guziak zoriondu...

33. This cyclist (has) congratulated that winner/all the winners

32. Akto horrek ikusle hori/ikusle guztiak ikaratu...

31. That actor (has) frightened that spectator/all the spectators

30. Moja hark ume bat/ume guziak agurtu...

29. That nun (has) saluted a child/all the children

28. Ume horrek txori bat/txori guztiak zoriondu...

27. That child (has) rescued a bird/the ten birds

26. Haur batek polizia hau/hamabi poliziak harriatu...

25. A child (has) surprised this policeman/the twelve policemen

24. Oinezko hark mendizale hura/bost mendizaleak aurikatu...

23. That pedestrian (has) found that mountaineer/the five mountaineers

22. Etorkin honek kazetari hori/hiru kazetariak salatu...

21. This immigrant (has) denounced that journalist/the three journalists

20. Gidari horrek oinezko bat/oinezko guztiak hil...

19. That driver (has) killed a pedestrian/all the pedestrians

18. Kazetari batek abeslari hura/azpiz abeslariak auziperatu...

17. A journalist (has) put on trial that singer/the seven singers

16. Mutil batek aizkolori hau/aizkolori guzietan gorbidatu...

15. A boy (has) invited this woodchopper/most woodchoppers

14. Zaindari horrek haur huna/hamari harurra garbiatu...

13. That caretaker (has) cleaned that child/the ten children

12. Bertxolari hark txistulari hau/hogi txistulariak kontratatu...

11. That troubadour (has) hired this flautist/the twenty flautists

10. Langile batek idazkari hura/idazkari batzuk baztuk lasaitu...

9. A worker (has) calmed down that secretary/some secretaries

8. Boxeolari hark entrenatzale hori/entrenatzale gehienak zauritu...

7. That boxer (has) wounded that trainer/most trainers

6. Dantzari honek mutul hura/mutil guziak izutu...

5. This swimmer (has) charmed that spectator/some spectators

4. Bozeramaile honek hautetsi bat/zortzi hautetsiak aurkeztu...

3. This woman (has) calmed down that child/the eight children

2. Herritar batek zaldi hori/hiru zaldiak lotu...

1. Musikari hark mago hura/mago guztiak auziperatu...
That wolf (has) frightened this chicken/some chickens
A student (has) criticized this teacher/the twenty teachers
A dog (has) injured this painter/hogei margolariak zauritu
This nurse (has) taken care of a patient/all the patients
A man (has) caressed this girl/most girls
A child (has) provoked a director/the seven directors
That detective (has) trapped this fugitive/some fugitives

References


