

# The role of animacy and number in anaphoric personal pronoun subjects. Experimental insights from child and adult Romanian.

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**Introduction** Romanian, a pro-drop language, permits the omission of pronominal subjects with verbs. In this study, we examine the influence of animacy and number on the choice between overt personal and null pronoun subjects in both child and adult Romanian (see Table 1). Our aim is to determine whether the use of overt personal versus null pronouns varies in feature composition across age groups. Previous research indicates that animacy, person, and discourse context impact antecedent mention (e.g., Correa Soares et al., 2019, 2020; Fernandes et al., 2018, for Brazilian Portuguese; Runner & Ibarra, 2016, for Spanish). Findings from Istrate et al. (2023, 2024) suggest that Romanian adults generally prefer null pronouns over overt personal pronouns, particularly for subject antecedents—a pattern aligning with Carminati et al. (2002, 2005)’s hypothesis that null pronouns are biased towards subjects, while overt personal pronouns tend to favor non-subjects.

**Current study** In this study, we extend the investigation to child language, exploring how Romanian children’s pronoun usage compares to adults’. Specifically, we focus on the role of animacy and number in antecedent mention, examining the conditions under which children and adults choose an overt personal pronoun subject versus a null pronoun subject. While previous studies looked at anaphora resolution from an experimental perspective (Avram & Teodorescu 2016, Stoicescu & Cotfas 2017) or analyzed naturalistic corpus data (Avram & Coene 2010, Teodorescu 2017), none of them investigated anaphora selection experimentally in child Romanian.

**Participants** 31 Romanian L1 adults and 19 Romanian monolingual typically developing children (Age range: 3;00-4;00, Mean age: 3; 04) took part in the study.

**Methodology and materials** Participants were introduced to a character Maria who was learning to speak Romanian and would often get confused, and they were asked to help her continue her thoughts in the most natural way possible through a forced choice task. More specifically, Maria uttered a sentence involving a 1<sup>st</sup> person null pronominal subject, a verb in the past, and a 3<sup>rd</sup> person nominal object. In the test items, participants had to choose between a sentence continuation with an overt personal pronoun subject and a sentence continuation with a null pronoun subject (both referring back to the object). The order of the two choices was randomized to avoid a potential recency effect. The materials involved 2 training items (involving no pronouns), 32 test items and 16 fillers (involving no pronouns). The 32 test items crossed Animacy (animate vs inanimate) and Number (SG vs PL) for the object antecedent in the sentence preceding the continuation. Additionally, the items were balanced for gender (half masculine- half feminine); neuter was excluded for simplicity.

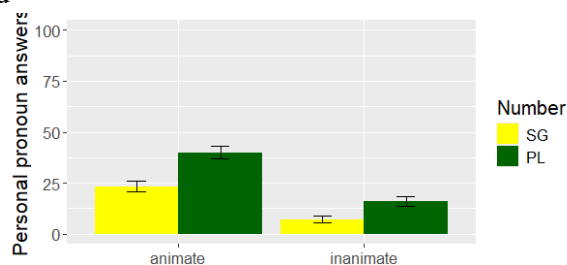
Table 1: Examples of test items crossing Animacy and Number of the object antecedent

Animacy of the antecedent	Antecedent number	Introductory sentence	Pro continuation	Personal pronoun continuation
Animate DP	SG	Am auzit <b>o bufniță</b> . have.1SG heard an owl	Era zgomotoasă. was noisy.F.SG	Ea era zgomotoasă. she was noisy.F.SG
Animate DP	PL	Am văzut <b>doi urși</b> . have.1SG seen two bears	Erau puternici. were noisy.M.PL	Ei erau puternici. they.M were noisy.M.PL
Inanimate DP	SG	Am plantat <b>un copac</b> . have.1SG planted a tree	Era înalt. was tall.M.SG	El era înalt. He was tall.M.SG
Inanimate DP	PL	Am cumpărat <b>două jucării</b> . have.1SG seen two toys	Erau verzi. were green.F.PL	Ele erau verzi. they.F were green.F.PL

**Predictions** Regarding adults, given that the pronouns they have to choose from refer to object DPs and that, according to Carminati's Position of the Antecedent hypothesis, personal pronouns tend to refer to non-subjects, we would expect perhaps overt personal pronouns to be preferred over null pronouns. However, if overt personal pronouns are animate in Romanian, we expect a preference for overt personal pronouns over null pronouns only for animate object DPs. Moreover, if only singular personal pronouns are animate in Romanian, this tendency should only show up for singular animate DPs. Importantly, *Avoid Pronoun* (Chomsky 1981), a tendency to avoid redundancy may also come into play, potentially leading adults to always prefer null pronouns over overt personal pronouns, given the possibility to retrieve the antecedent from the previous sentence with ease. A different formulation of this principle would be Ariel's (1990) Accessibility Theory: the more salient a referent is, the less explicit the subject will be. Regarding children, given general findings that children's pronominal system might still be developing at age 3, a plausible possibility is that children should manifest a different preference than adults, possibly overusing personal pronouns.

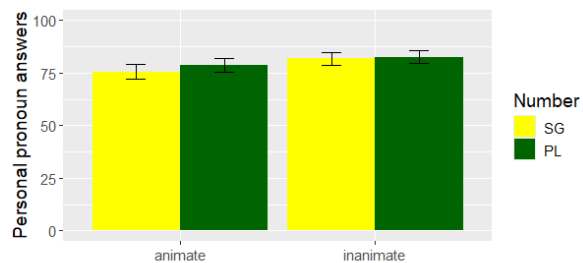
**Results Adults** Most adults showed a general preference for null pronouns over overt personal pronouns (Figure 1). However, when they did choose overt personal pronouns, it was to refer to animate entities. Moreover, the highest rate of personal pronouns chosen was obtained for plural animate entities over singular animate entities. We fit the data from adults' responses into a generalized linear-mixed (logit) model with answer as a dependent variable (coded as 1 if it involves a person pronoun and 0 otherwise), the fixed effects Animacy (Animate vs Inanimate), Number (Singular vs Plural) and the interaction between Animacy and Number and random effects for Participant and Item. The model shows highly significant effects per Animacy ( $\beta = -1.873$ ,  $SE = 0.464$ ,  $Z = -4.0352$ ,  $p < .001$ ) and Number ( $\beta = -1.216$ ,  $SE = 0.451$ ,  $Z = -2.692$ ,  $p < .001$ ), but no significant interaction between Animacy and Number. This suggests that adults tend to use overt personal pronouns more for animate entities and for plural entities. A careful look at the individual response patterns reveals that 6 participants used null pronouns regardless of animacy and number of the antecedent, but many participants showed variation. Notably, 6 participants used personal pronouns for animates at a rate higher than 50%, and 5 participants used them for plural more than half of the time.

Figure 1. Rate of overt personal pronouns for adults



**Children** Interestingly, in contrast to the adult data, the child data shows a preference for personal pronouns over null pronouns (see Figure 2). We again fit the data from children's responses into a generalized linear-mixed (logit) model with answer as a dependent variable, the fixed effects Animacy, Number and the interaction between Animacy and Number and random effects for Participant and Item. The model shows no significant effects per Animacy, Number or the interaction between Animacy and Number ( $p > .01$ ). A look at the individual response patterns reveals that only 3 children showed a preference for null pronouns overall, while the rest of the children preferred overt personal pronouns regardless of the animacy or number of the antecedent. A further comparison between children and adults reveals a highly significant interaction between Group and Animacy ( $\beta = 2.374$ ,  $SE = 0.489$ ,  $Z = 4.847$ ,  $p < .001$ ) and a marginally significant interaction between Group and Number.

Figure 2. Rate of overt personal pronouns for children



**Discussion** Our investigation reveals that adults prefer to refer to object antecedents mostly through null pronouns, in line with an *Avoid Pronouns/ Avoid redundancy* principle. Interestingly, when adults do use overt personal pronouns, they mostly refer back to animate antecedents (in line with natural antecedents) or to plural antecedents. In contrast to adults, children prefer to use overt personal pronouns over null pronouns regardless of the animacy or number of the object antecedent. Moreover, they do not drop the overt pronouns, preferring redundancy. Our findings suggest that overt anaphoric personal pronouns develop from a system indifferent to animacy and number to one where these features —especially animacy —play an important role. Moreover, Romanian 3-year-olds may be at a developmental stage where they are still learning the pragmatic conditions for pro-drop in Romanian.