(Hyper)raising in Serbian: Experimental evidence and theoretical considerations

Abstract

Serbian has previously been argued to prohibit subject raising into the matrix clause with SEEM-type predicates such as *delovati* 'seem, appear.' This restriction has been attributed to the ban on hyperraising: Because finite complements of SEEM-type predicates in Serbian are propositional CP domains, subject raising into the matrix clause is prohibited by the general locality restrictions on A-movement. Contrary to this view, this article documents a hyperraising-to-subject construction with the verb *delovati* in corpora of contemporary Serbian. Two rating experiments provide additional evidence for the existence of hyperraising in Serbian and suggest that this raising construction is structurally distinct from other configurations that involve mandatory cross-clausal dependencies, namely copy raising and prolepsis.
Key words: cross-clausal A-dependencies, hyperraising, copy raising, prolepsis, Serbian

1 Introduction

The typology and structural properties of configurations involving mandatory cross-clausal dependencies have been a topic of considerable debate in syntactic theory (Den Dikken, 2017; Salzmann, 2017; Lohninger et al., 2022). However, work on cross-clausal dependencies in Serbian has not kept pace with cross-linguistic research in this domain. Existing discussions are limited to cursory remarks on prolepsis (Browne, 1996; Bošković, 2009) and copy raising (Ilić, 2015). Accordingly, Serbian data have not figured prominently in theoretical debates on cross-clausal dependencies. This article aims to fill the existing gap in the literature. I explore the syntax of cross-clausal dependencies in Serbian, focusing primarily on the syntactic behavior of the raising verb *delovati* 'seem.'

The main discovery is that Serbian allows hyperraising, that is, A-movement from a finite embedded clause into the matrix clause (Ura, 1994; Tanaka, 2002; Ferreira, 2004; Carstens, 2011; Deal, 2017; Fong, 2019; Halpert, 2016, 2019; Wurmbrand, 2019; Zyman, 2017, 2023; Mikkelsen and Thrane, 2024). The raising verb *delovati* 'seem' optionally allows subject movement from a finite complement clause, though, as I demonstrate, only a subset of Serbian speakers permit this raising pattern. The behavior of *delovati* is illustrated by the triplet in (1). First, the verb takes only finite complements, as indicated by the ungrammaticality of (1a). In (1b), the embedded subject remains *in situ* and the matrix verb displays the default third-person singular agreement. The key datum is (1c), the raising counterpart of (1b): The embedded subject raises into the matrix clause, triggering φ-feature agreement on the matrix verb. Although such a raising construction has been explicitly argued to be impossible in Serbian (Radišić, 2006; Ilić, 2015), this article presents evidence for its existence from corpus data and two rating experiments.

(1) a. *Oni deluju znati sve.
3PL.NOM seem.PRS.3PL know.INF all
'They seem to know everything.'

b. Deluje da oni znaju sve.
seem.PRS.3SG that 3PL.NOM know.PRS.3PL all
'It seems that they know everything.'

c. Oni$_i$ deluju da _$_i$ znaju sve.
3PL.NOM seem.PRS.3PL that know.PRS.3PL all
'They seem to know everything'

The identification of (hyper)raising-to-subject in Serbian contributes to syntactic theory by adding Serbian to the cohort of languages that allow hyperraising. This finding is particularly noteworthy from an areal perspective: Relatively few European languages, and Slavic languages in particular, appear to allow hyperraising to subject (though see §5.4 on apparently similar constructions with SEEM-type predicates and finite complements in the languages of the Balkans).

The article likewise situates Serbian (hyper)raising in the broader typology of cross-clausal dependencies, with two main results. First, the raising construction in (1c) is structurally distinct from other types of cross-clausal dependencies in the language, namely prolepsis and copy raising. The main difference, as shown by the experimental results, is that (hyper)raising obeys the Highest Argument Restriction (2) (also known as embedded A-minimality; Zyman, 2017; Lohninger et al., 2022), whereas the other two constructions do not. Other tests further support this structural contrast.

(2) Highest Argument Restriction
The matrix argument must correspond a gap in the highest argument position of the embedded clause.

Sensitivity to (2) crucially distinguishes (hyper)raising from non-movement, binding-like dependencies such as prolepsis and copy raising, where the matrix argument is base-generated in the matrix clause. In non-movement configurations, the tail of the dependency may therefore occupy lower positions in the embedded clause, as (3)–(4) show using cross-linguistic data (the experimental results bear this out for Serbian; see §§3–4).

(3) der Mann$_i$, von dem ich denke, dass Marie jedes Buch liest, das er$_i$ schreibt
the man of who 1SG think that Mary every book reads which 3SG.M writes
lit. 'the man who I think Mary reads every book that he writes' [German; Salzmann, 2006, 206; ex. 513a]

(4) He$_i$ seems like she terrifies him$_i$. [English; Heycock, 1994, 290]

Second, Serbian hyperraising clauses constitute propositional CPs rather than reduced clausal domains. This finding is important because it further substantiates the view that A-movement out of finite clauses must be divorced from clause size (Wurmbrand, 2019, 2024). Hyperraising poses a challenge to the standard theories of movement and locality (Den Dikken, 2017; Zyman, 2023, among others). Per Chomsky (2001)'s Phase Theory, CPs are phases. Due to this phasal status, argument extraction out of a CP phase contravenes the Phase Impenetrability Condition (Chomsky, 2000), which dictates that once a phase is complete, its content is inaccessible to operations in a higher phase, modulo the phase head and material located at phase edge.

The only way out of a CP phase is through its edge, spec-CP. However, raising to spec-CP as an intermediate step in hyperraising gives rise to an illicit A-over-$\bar{\text{A}}$ configuration: The embedded subject first undergoes $\bar{\text{A}}$-movement to spec-CP only to subsequently move into an A-position in the matrix clause.

It is therefore conceivable that finite complement clauses that can be A-moved out of are struc-

turally reduced in some way, lacking the CP projection and thus not being phases. Serbian data directly argue against this scenario. Serbian finite clauses introduced by the subordinator *da* 'that' come in several shapes and sizes, with a series of structural properties that correlate with reduced clausal architectures (Stjepanović, 2004; Todorović and Wurmbrand, 2020; Wurmbrand et al., 2020). CP-hood diagnostics unequivocally show that finite *da*-complements of *delovati* 'seem,' which allow (hyper)raising, constitute full CPs: They are opaque for NPI licensing, disallow clitic climbing, and show no tense restrictions.

Finally, I briefly consider the potential diachronic trajectories of the Serbian (hyper)raising construction. The experimental results reveal a demographic effect, whereby the speakers who accept (hyper)raising tend to be younger than the speakers who reject the construction. I speculate that this demographic effect may reflect an ongoing change, with (hyper)raising potentially being in the process of becoming more widely acceptable.

The article proceeds as follows. §2 provides background on cross-clausal dependencies in Serbian and presents corpus evidence for a previously undocumented raising construction. §§3–4 present the results of two rating experiments on Serbian hyperraising. §5 discusses the experimental findings and situates them in the broader theoretical context. §6 concludes.

2 Cross-clausal dependencies in Serbian

This section examines Serbian constructions that involve mandatory cross-clausal dependencies. I focus on an apparent movement configuration that, despite being reported as categorically unavailable in the language, is attested in all corpora of contemporary Serbian. This construction, I argue, looks like hyperraising-to-subject, that is, A-movement from a finite complement clause into the matrix clause.

2.1 Prolepsis and copy raising

The syntax of cross-clausal dependencies in Serbian has previously received only limited attention. Existing work reports two such configurations, whose structural properties place them in Lohninger et al. (2022)'s Type 1 constructions, that is, non-movement, binding-like dependencies. These include prolepsis and copy raising.

Serbian prolepsis is illustrated in (5). The proleptic object in the matrix clause must correspond to a gap (5a) or an overt pronoun (5b) in the embedded clause. The proleptic NP is introduced by the preposition *za* 'for,' which takes accusative complements (see Browne, 1996; Bošković, 2009).

(5) a. Rekli su za njega$_i$ da $\__i$ zna francuski.
said.M.PL AUX.3PL for 3SG.M.ACC that know.PRS.3SG French
'They said of him that he speaks French.' [Bošković (2009); ex. 36]

b. Govore za Ivana$_i$ da ga$_i$ Marija vidi.
say.PRS.3PL for Ivan that 3.SG.M.ACC Marija see.PRS.3SG
'They say of Ivan that Marija sees him.' [Browne (1996); ex. 4a]

Ilić (2015) documents and discusses what appears to be a copy raising construction in Serbian (see Rogers, 1971, 1972; Moore, 1998; Potsdam and Runner, 2001; Landau, 2011 for copy raising in general). This construction, illustrated in (6), exhibits all defining properties of copy raising:

The matrix clause features the raising verb *delovati* 'seem' and a referential, non-expletive subject, which agrees in φ-features with the matrix predicate. The finite *da*-complement of *delovati* is introduced by the relator particle *kao* 'like.' The complement clause mandatorily contains a pronominal "copy", an overt pronoun or a pro, that corresponds to the matrix subject. The data in (6)–(7) are from srWac1.2, a large online corpus of the Serbian Internet (Ljubešić and Klubička, 2014).

(6) a. Oni$_i$ deluju kao da $\__i$ imaju unutrašnji radar
3PL.NOM seem.PRS.3PL like that have.PRS.3PL internal radar
'They seem like they have an internal radar.'

b. [O]ni$_i$ deluju kao da su $\__i$ pali s Marsa
3PL.NOM seem.PRS.3PL like that AUX.3PL fallen from Mars
'They seem like they have fallen from Mars.'

In addition to *delovati*, perception verbs may function as matrix predicates in copy raising. These involve *zvučati* 'sound' (7a), *izgledati* 'look like' (7b), and other semantically related predicates.

(7) a. [Z]vaničnici$_i$ zvuče kao da $\__i$ uvežbavaju svoje uloge za neki film
officials sound.PRS.3PL like that practice.PRS.3PL their roles for some film
katastrofe.
catastrophy.GEN
'The officials sound like they are practicing their roles in a horror movie.'

b. {Kutije cigareta}$_i$ treba da izgledaju kao da je u njima$_i$
packs cigarette.GEN.PL should that look.PRS.3PL like that be.3SG in 3PL.F.DAT
opasna droga.
dangerous drug
'Packs of cigarettes should look like as if there were a dangerous drug in them.'

Particularly instructive are examples (5b)–(6b), which show that, much like their counterparts in (3)–(4), Serbian prolepsis and copy raising are not subject to the Highest Argument Restriction. This conclusion is further corroborated by two experiments with native Serbian speakers (see §§3–4). In these two constructions, the pronoun corresponding to a matrix argument need not occupy the subject position of the embedded clause.

2.2 Subject raising

In a comprehensive survey of subject control and raising phenomena in Serbian, Radišić (2006) examines the syntactic behavior of raising verbs such as 'seem' and 'appear' in the language. The author observes that Serbian SEEM-type verbs disallow subject raising into the matrix clause. This is illustrated in (8) by the verb *izgledati* 'appear, look like'.

(8) a. Izgleda da deca čitaju knjigu.
look.PRS.3SG that children read.PRS.3PL book
'It appears that the children are reading the book.' [Radišić (2006), ex. (8a)]

b. *Deca izgledaju da čitaju knjigu.
children look.PRS.3PL that read.PRS.3PL book
'The children appear to be reading the book.' [Radišić (2006); ex. (8b)]

In (8a), the matrix clause lacks an overt subject. The matrix verb consequently displays the default 3SG form. The embedded subject *deca* 'children' is in its base position. In (8b), subject raising into the matrix clause results in ungrammaticality.

Serbian SEEM-type verbs differ from their English counterparts in that they only take propositional complements. In South Slavic, propositional complement clauses are invariably finite, never alternating with infinitival complements (Wurmbrand et al., 2020). This is shown in (9) for *izgledati*.

(9) *Deca izgledaju čitati knjigu.
children look.PRS.3PL read.INF book
'The children appear to be reading the book.'

In a more recent take on cross-clausal dependencies in Serbian, Ilić (2015) argues that other SEEM-type verbs in the language, including *činiti se* 'appear' (10) and *delovati* 'seem, appear' (11), follow the same pattern as *izgledati*. These predicates take only finite *da*-complements, not infinitival complements, as indicated by the ungrammaticality of (10c)–(11c). Per Ilić (2015), subject raising out of finite *da*-complements is strictly prohibited (10b)–(11b).

(10) a. Čini se da je Petar u vezi sa Marijom.
appear.PRS.3SG REFL that be.PRS.3SG Petar in relationship with Marija
'It appears that Petar is in a relationship with Marija.' [Ilić, 2015, 70; ex. 1]

b. *Petar se čini da je u vezi sa Marijom.
Petar REFL appear.PRS.3SG that be.PRS.3SG in relationship with Marija
'Petar appears to be in a relationship with Marija.' [Ilić, 2015, 70; ex. 2]

c. *Petar se čini biti u vezi sa Marijom.
Petar REFL seem.PRS.3SG be.INF in relationship with Marija
'Petar seems to be in a relationship with Marija.'

(11) a. Deluje da ti ne spavaš.
seem.PRS.3SG that 2SG.NOM NEG sleep.PRS.2SG
'It seems that you are not sleeping.'

b. *Ti deluješ da ne spavaš.
2SG.NOM seem.PRS.2SG that NEG sleep.PRS.2SG
'You seem to not be sleeping.' [Ilić, 2015, 70; ex. 3]

c. *Ti deluješ ne spavati.
2SG.NOM seem.PRS.2SG NEG sleep.INF
'You seem not to be sleeping'

The raising facts surrounding *izgledati* and *činiti se* are largely uncontroversial. However, as I demonstrate in what follows, the syntactic behavior of *delovati* is less clear, warranting further scrutiny.

2.3 CP-hood as inhibitor of A-movement

Drawing on the pattern illustrated in (8)–(9), Radišić (2006) establishes a correlation between the complementation profile of Serbian raising verbs and the putative absence of subject raising in the language. The author holds that Serbian features the same ban on A-movement across a finite

clause boundary found in English and many other languages, that is, the ban on hyperraising, which accounts for the reported ungrammaticality of (8b), (10b), and (11b).

On this view, Serbian and English share the same locality restrictions on A-movement. The superficial difference between the raising profiles of the two languages stems from the selectional properties of their raising verbs. In English, raising verbs such as *seem* and *appear* take both finite and infinitival complements. Raising into the matrix clause is prohibited in the former, but mandatory in the latter complementation pattern. By contrast, Serbian raising verbs take only finite complements (Wurmbrand et al., 2020). Parallel to English, A-movement from a finite embedded clause into the higher clause is not possible in Serbian. In other words, Serbian does not permit subject raising because its raising verbs do not take infinitival complements.

Radišić (2006) argues that finite complements of SEEM-type verbs in Serbian constitute full CP domains, thus having a phasal status. Independently established clause size diagnostics (Todorović and Wurmbrand, 2020) bear this out (see §5.4). The presence of a CP phase boundary inhibits argument movement into the matrix clause. Radišić (2006)'s account thus attributes the absence of subject raising in Serbian to the size of finite *da*-complements of raising verbs.

More generally, the clause size account predicts that cross-clausal A-dependencies should only be possible in embedding contexts that involve smaller, structurally reduced complements, including infinitives and finite clauses lacking a CP projection. By restricting A-movement to non-phasal, CP-less domains, this approach straightforwardly addresses the locality problems associated with A-movement out of CP phases. However, this view is not devoid of issues. Cross-linguistically, matrix predicates that allow cross-clausal A-dependencies tend to be the predicates that usually do not allow restructuring (e.g. SAY-type predicates; Wurmbrand, 2024). That is, the predicates that take the structurally largest finite complements are those that show the highest propensity for cross-clausal A-dependencies. This typological generalization runs afoul of the predictions of the clause reduction-based account of cross-clausal dependencies.

2.4 Apparent subject raising in Serbian corpora

The syntactic behavior of the raising verb *delovati* is more complex than the previous studies suggest. To verify the raising facts reported in Radišić (2006) and Ilić (2015), I conducted a corpus survey using large online corpora of contemporary Serbian available on the Sketch Engine (Kilgarriff et al., 2004), including: srWaC 1.2, Timestamped JSI web corpus of Serbian (Bušta et al., 2017) and MaCoCu Serbian Web v1 (Banón et al., 2022). All corpora are lemmatized and morphologically annotated.

The subject raising construction analogous to (11b), which Ilić (2015) deems ungrammatical, is abundantly attested in the corpora. The raising verb *delovati* agrees in φ-features, namely person and number (and gender, where applicable), with the nominative-marked matrix subject. The complement clause mandatorily contains a gap in the subject position which corresponds to the matrix subject. Given that Serbian is a pro-drop language, the matrix subject is not always overtly present, but its presence is indicated by the φ-agreement on the matrix verb, as in (14c). A selection of raising sentences found in the corpora is presented in (12).

(12) (Hyper)raising in Serbian

a. SAD deluj[u] da ne znaju koji su im ciljevi
USA seem.PRS.[3PL] that NEG know.PRS.3PL which be.PRS.3PL 3PL.F.DAT goals

u Siriji.
in Syria
'The USA seems not to know what their goals are in Syria.' [Timestamped JSI web corpus]

b. Naši momci deluj[u] da su shvatili značaj ozbiljnog
our guys seem.PRS.[3PL] that AUX.3PL realized importance serious.GEN
rada i pripreme.
work.GEN and preparation.GEN
'Our guys seem to have realized the importance of hard work and preparation.' [MaCoCu Serbian Web]

c. Ovakve ličnosti deluj[u] da su stručnjaci za komunikaciju.
such individuals seem.PRS.[3PL] that be.PRS.3PL experts for communication
'These individuals seem to be communication experts.' [srWaC 1.2]

The pattern closely resembles what the literature characterizes as a prototypical case of hyperraising, that is, argument movement from a finite embedded clause into the matrix clause (Ferreira, 2004; Nunes, 2008; Halpert, 2019). Crucially, subject raising in this configuration is fully optional. The apparently raised NPs may surface in the embedded subject position, in which case the matrix predicate displays the default 3SG form (13).

(13) No raising: Subject NP surfaces in its base position

a. Deluje da SAD ne znaju koji su im ciljevi
seem.PRS.3SG that USA NEG know.PRS.3PL which be.PRS.3PL 3PL.F.DAT goals
u Siriji
in Syria
'It seems that the USA does not know what their goals are in Syria.'

b. Deluje da su naši momci shvatili značaj ozbiljnog rada
seem.PRS.3SG that AUX.3PL our guys realized importance serious work.GEN
i pripreme.
and preparation.GEN
'It seems that our guys had realized the importance of serious work and preparation.'

c. Deluje da su ovakve ličnosti stručnjaci za komunikaciju.
seem.PRS.3SG that be.PRS.3PL such personalities experts for communication
'It seems that such personalities are communication experts.'

One possible explanation for the discrepancy between the grammaticality judgments reported in Ilić (2015) and the corpus data in (12) is the construction's sensitivity to the person features of the raised subject. Ilić's raising example in (11b) involves a second-person subject, whereas all sentences in (12) have third-person subjects. Indeed, in some hyperraising languages, like Brazilian Portuguese, cross-clausal movement of non-third-person subjects has been reported to be degraded (Ferreira, 2009, 24). Judging from the available corpus evidence, however, (hyper)raising of non-third-person subjects is not prohibited in Serbian (14).

(14) Subject raising with non-third person subjects

a. [J]a ponekad deluje[m] da sam neko ko
1SG.NOM sometimes seem.PRS.[1SG] that be.PRS.1SG someone who

nema mnogo problema.
NEG.have.PRS.3SG many problems
'Sometimes, I seem to be someone who does not have a lot of problems.' [Timestamped JSI web corpus]

b. Ti deluje š da bi mogao da radiš
2SG.NOM seem.PRS. 2SG that would be.able.to.PST.PTCP.M.SG that do.PRS.2SG
i nešto bolje od ovoga.
even something better from this
'You seem to be able to do even something better than this.' [MaCoCu Serbian Web]

c. ne deluje mo da ih čuvamo i u našim srcima.
NEG seem.PRS. 1PL that 3PL.N.ACC keep.PRS.1PL also in our hearts
'we do not seem to carry them in our hearts.' [srWaC 1.2]

d. Vi i Spira mi deluje te da spadate medju takve.
2PL.NOM and Spira 1SG.DAT seem.PRS. 2PL that belong.PRS.2PL among those
'You and Spira seem to me to belong to those people.' [MaCoCu Serbian Web]

The more likely source of the discrepancy between previous work on (hyper)raising in Serbian and the corpus data reported here is cross-speaker variation. In particular, the judgments reported in earlier work appear to reflect the intuitions of speakers who reject subject raising with *delovati*. As the corpus evidence shows, there are clearly speakers who allow this construction type, including cases with both third- and non-third-person subjects (12)–(14).

Finally, there is independent evidence that the apparently raised NPs in (12)–(14) occupy an A-position rather than an $\bar{\text{A}}$-position. This is supported by agreement and binding facts. First, these NPs trigger φ-feature agreement on the matrix predicate, which is a hallmark of grammatical subjecthood in Serbian.

Moreover, apparently raised NPs behave like grammatical subjects with respect to binding. In (15), the (hyper)raised NP binds an anaphor in the matrix clause. Similarly, raising removes underlying Condition C violations (16): The experiencer pronoun *njemu* '3SG.M.DAT' c-commands its antecedent *Markovi* in (16a), but in (16b) the NP *Markovi roditelji* moves to a higher position, in which the R-expression is no longer c-commanded by the pronoun. (The data in (15)–(16) are generously provided by Miloje Despić.)

(15) a. *Deluje sebi$_i$ da (oni$_i$) znaju sve odgovore.
seem.PRS.3SG REFL.DAT that 3PL.M.NOM know.PRS.3PL all answers
'It seems to themselves that they know all the answers.'

b. (Oni$_i$) deluju sebi$_i$ da $\__i$ znaju sve odgovore.
3PL.M.NOM seem.PRS.3PL REFL.DAT that know.PRS.3PL all answers
'They seem to themselves to know all the answers.'

(16) a. *Njemu$_i$ deluje da Markovi$_i$ roditelji znaju sve odgovore.
3SG.M.DAT seem.PRS.3SG that Marko's parents know.PRS.3PL all answers
'It seems to him that Marko's parents know all the answers.'

b. Markovi$_i$ roditelji deluju njemu$_i$ da $\__i$ znaju sve odgovore.
Marko's parents seem.PRS.3PL 3SG.M.DAT that know.PRS.3PL all answers
'Marko's parents seem to him to know all the answers.'

Taking stock, the subject-hood diagnostics suggest that the apparently raised NPs occupy the subject position of the matrix clause. This conclusion, however, does not by itself adjudicate between the movement and base-generation analyses of the construction. On the former account, the matrix subject reaches its surface position via movement from the embedded clause, while on the latter, the matrix subject is base-generated in the matrix clause (much like in e.g. copy raising; Potsdam and Runner, 2001; Asudeh, 2002; Landau, 2011; Den Dikken, 2017). The existence of non-raising construction types like prolepsis and copy raising in Serbian makes it possible to directly compare the structural properties of those non-movement dependencies with what I consider (hyper)raising.

I test the two competing analyses experimentally. Using rating experiments with native Serbian speakers, I compare (hyper)raising with the non-movement configurations in a controlled environment which isolates the effect of construction type. The purpose is twofold. First, the experiments show to what extent (hyper)raising is acceptable to Serbian speakers. This is particularly important in light of the discrepancy between the acceptability judgments reported in previous work (Radišić, 2006; Ilić, 2015) and the new corpus data adduced in this study. Second, the experiments shed light on the structural properties of Serbian (hyper)raising, copy raising, and prolepsis, by probing their sensitivity to the Highest Argument Restriction.

3 Experiment 1

Experiment 1 compares hyperraising to copy raising. Whereas previous work has argued that hyperraising is categorically unavailable in Serbian, examples of hyperraising are well attested in the corpora. Given this discrepancy, the goals of this experiment are twofold: to determine whether and to what extent hyperraising is possible in Serbian; and, for speakers who allow this type of raising, to establish what its structural properties are and how it differs from copy raising. Copy raising provides an ideal basis for comparison for two reasons: Its behavior in Serbian is comparatively better understood (Ilić, 2015), and it is superficially minimally distinct from hyperraising, which makes it possible to construct minimal pairs. Previous work that directly compares hyperraising and copy raising within the same language is sparse (relevant work involves Carstens and Diercks, 2013; Johnson and Diercks, 2025) and has yielded mixed results.

3.1 Experimental design

The experiment involved an online rating task consisting of 18 stimulus sentences. One-third (six) of the stimuli are target sentences relevant to the study (see §A in the Appendix). The remaining two-thirds (12 sentences) are fillers. Most filler sentences are ill-formed or contentious constructions reported in earlier studies on Serbian syntax (Stjepanović, 2004; Ilić, 2015).

Target sentences are designed to fit a 2×3 factorial design. Two factors are manipulated: construction type (hyperraising and copy raising) and the position of the tail of the dependency in the embedded clause. The tail of the dependency is varied across three positions, yielding three conditions: baseline, island-violating, and A-minimality-violating.

The baseline condition features a subject-to-subject dependency: The tail of the dependency occupies the highest argument position of the embedded clause. In the non-baseline conditions, the tail of the dependency occupies a lower position in the embedded clause, with other NPs intervening between the matrix subject and its coreferent pronoun or gap. Both non-baseline conditions

test the constructions' sensitivity to the position of the tail of the dependency: Does it have to occupy the highest argument position in the embedded clause, or can it occupy a lower position? The island-violating stimuli have the tail of the dependency within a complex NP island (Ross, 1967) in the embedded clause. In the A-minimality-violating condition, the matrix subject corresponds to a coreferent pronoun in the object position of the complement clause.

3.2 Participants

Participants (N = 836) were recruited via social media platforms (Facebook and Instagram) and snowball sampling. The data from one participant, who self-reported not speaking Serbian natively after completing the experimental task, were excluded, which left data from 835 participants for subsequent statistical analysis.

The participants' median age was 37 years, with an age range spanning from 18 to 80 years (q1=27, q3=48). The majority of participants (720 or 86.23% of the final cohort) were born in Serbia. Most of the remaining 115 participants were born in Serbia's neighboring countries (Montenegro and Bosnia and Herzegovina). A total of 717 participants (85.87%) resided in Serbia at the time of participation, while the remaining 118 participants (14.13%) had a residence in a foreign country.

3.3 Procedure

The experiment was conducted online in April and May 2024 using Qualtrics survey software. The study was reviewed and approved by the author's university's Institutional Review Board. A consent form was presented on the first page of the experimental interface, and all participants provided informed consent before participating in the study.

After signing the consent form, participants were screened for eligibility. To take part in the experiment, participants were required to be native Serbian speakers and at least 18 years of age. Participants provided their age during screening, and those under 18 were unable to proceed to the survey.

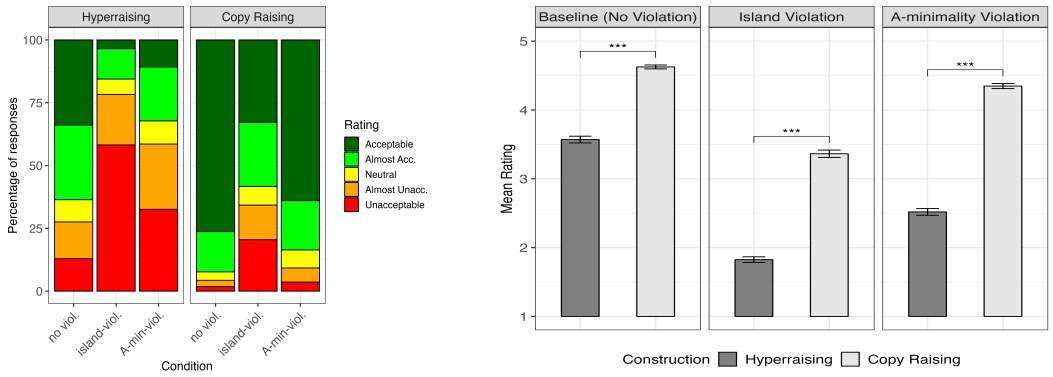
Following the initial screening, eligible participants proceeded to the experimental task. Participants were instructed to rate the acceptability of Serbian sentences on a five-point Likert scale ranging from "unacceptable" to "acceptable". All stimulus sentences were presented in isolation, without contextual information. The stimuli were displayed one at a time and presented in Standard Serbian using the Latin script. The order of stimuli was uniquely randomized for each participant. The average completion time was 5 minutes and 58 seconds, excluding significant outliers that likely reflected extended pauses, as the experimental task did not need to be completed in a single sitting.

At the end of the experiment, participants were asked to state the perceived goal of the survey. Responding to this exit question was optional; 445 participants (53.3%) provided a response. Only 15 participants (1.7% of the total participant cohort and 3.3% of those who responded) correctly identified the goal as being related to the verb *delovati*.

3.4 Results

Data cleanup and statistical analysis were conducted in the R statistical programming environment (R Core Team, 2021).[1]

To get a sense of the overall trends across the entire participant cohort, I begin by reporting results aggregated across all participants. Figure 1 plots the distribution of grammaticality judgments for the six target sentences (left) and their mean ratings with significance levels for within-condition comparisons (right). All pairwise differences are significant at $p < 0.001$ (Wilcoxon rank-sum paired test).



(a) (b)

Figure 1: Experimental results for all participants: (**a**) Distribution of responses for the six target stimuli (vertical axis) by Condition (horizontal axis) and Construction (faceting panels). (**b**) Mean ratings by Construction (fill color) and Condition (faceting panels). Error bars represent the standard error of the mean.

Two principal findings emerge from the data. First, construction type is a clear effect: Copy raising is rated as more acceptable than hyperraising across all conditions. Second, there is a main effect of condition, with an overall acceptability decline in non-baseline conditions relative to the baseline. Furthermore, the acceptability decline in non-baseline conditions appears to be steeper in hyperraising, although the interpretation of the construction × condition interactions should be made with caution given that the baseline ratings for the two constructions are not at the same levels.

A conspicuous difference between copy raising and hyperraising is that only the former construction appears to be available to virtually all Serbian speakers. Whereas both constructions are penalized in non-baseline conditions, hyperraising receives a non-negligible penalty even in the baseline condition (cf. the leftmost bars of the left panels in the plots in Figure 1). Still, baseline hyperraising is accepted by more than half of participants in Experiment 1.

That a subset of Serbian speakers uniformly reject hyperraising is relevant to the interpretation of the experimental results and their statistical analysis. The constructions' sensitivity to the Highest Argument Restriction cannot be meaningfully assessed in speakers who reject either construction (more likely—hyperraising) across the board. Mixing data from such speakers with data

[1]The replication data and R scripts for both experiments are available in an anonymous OSF repository: https://osf.io/c7xsf/overview?view_only=4c2dd3c8d64f4298be90e363285d251d.

from speakers who allow both constructions in some contexts produces misleading results. The consistently low ratings from speakers who reject hyperraising pull down the overall acceptability of this construction. This aggregation inflates the apparent main effect of construction type and suppresses potential construction × condition interactions.

To address this issue, I divide participants into two subpopulations: raisers and non-raisers, whose data are analyzed separately in the subsequent statistical analysis. The subgrouping is based on participants' ratings of the baseline sentences. I use the cutoff point of "almost acceptable" to determine inclusion. Participants who rated *both* baseline sentences as "acceptable" or "almost acceptable" are classified as raisers (62% of the overall participant cohort, N = 519). Participants who rated *either or both* baseline sentences as "neutral" or below are classified as non-raisers (N=316, or 37.8% of the total cohort). To highlight cross-speaker variation in the acceptability of hyperraising, Figure 2 shows the distribution of responses separately for raisers and non-raisers.

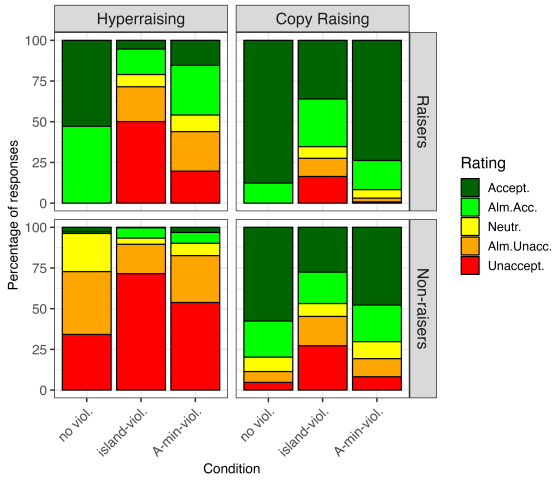


Figure 2: Percentage of responses (vertical axis) by Condition (horizontal axis), faceted by Construction (columns) and Raiser Status (rows).

Once the acceptability judgments are analyzed separately for raisers and non-raisers, we see a clear difference between the two groups in their treatment of hyperraising, but not of copy raising. Copy raising exhibits virtually identical response patterns in the two groups (top and bottom right quadrants in Figure 2): The construction is judged acceptable in baseline and A-minimality-violating conditions, with a modest penalty in the island-violating condition, likely reflecting processing difficulty (see §5.2.1). Hyperraising patterns differently in the two groups: Raisers accept it in the baseline condition but penalize it in non-baseline conditions (top left quadrant), suggesting that for speakers who permit hyperraising, the construction is highly sensitive to the position of the tail of the dependency. For non-raisers, by contrast, hyperraising effectively remains at floor level in all conditions (bottom left quadrant).

To statistically evaluate the experimental results, I conduct a mixed-effects ordinal regression analysis using the `ordinal` R package (Christensen, 2023). Because the main goal of the analysis is to assess the effect of the Highest Argument Restriction in hyperraising versus copy raising, the model is fit to the data from the raiser group, that is, the participants who independently accept both constructions.

The dependent variable is rating, an ordinal factor with five levels. The fixed effects include construction, condition, and their interaction. Interaction terms between construction and condition provide the estimates of acceptability change in non-baseline conditions in hyperraising versus copy raising. Construction has two levels: copy raising (reference category) and hyperraising. Condition has three levels: baseline, island-violating, and A-minimality-violating. Since the A-minimality-violating condition would otherwise be set as the reference level by default, I manually set the baseline condition as the reference category. The model also includes random intercepts for participants. The results are shown in Table 1.

Random effects	*Variance*	*Standard Deviation*		
Participant (N = 519)				
(Intercept)	0.85	0.92		
Fixed effects	β	*Standard Error*	*Wald z*	*p*
Construction (baseline: Copy Raising)				
Hyperraising	-1.86	0.17	-11.24	0.000 ***
Condition (baseline: Baseline)				
Island-Violating	-3.35	0.17	-19.36	0.000 ***
A-Minimality-Violating	-1.13	0.17	-6.47	0.000 ***
Construction × Condition interaction				
Island-Violating:Hyperraising	-0.60	0.21	-2.92	0.004 **
A-Min.-Violating:Hyperraising	-1.39	0.21	-6.47	0.000 ***

Table 1: Mixed-effects ordinal regression output (Experiment 1). Model formula: `rating ~ construction * condition + (1 | participant)`.

The mixed-effects ordinal regression shows robust main effects of both construction and condition. Relative to copy raising, hyperraising has significantly lower acceptability ratings. Likewise, both non-baseline conditions, namely island-violating and A-minimality-violating, show negative effects on acceptability relative to the baseline condition.

Crucially, the construction × condition interactions are negative and statistically significant, suggesting that the penalty associated with the Highest Argument Restriction violations is more severe in hyperraising than in copy raising. This indicates that hyperraising is more strongly affected by island and A-minimality violations than copy raising. In other words, the magnitude of the acceptability decline from the baseline to the non-baseline conditions is significantly greater for hyperraising than for copy raising.

Summing up so far: Experiment 1 supports the existence of subject-to-subject hyperraising, but only for a subset of Serbian speakers. The judgments vary across the speaker population, with some speakers rejecting this raising construction across the board (in line with Radišić, 2006; Ilić, 2015). Furthermore, for speakers who permit hyperraising, the construction is structurally distinct from copy raising: Hyperraising is robustly affected by the Highest Argument Restriction, whereas copy raising shows only marginal sensitivity to this constraint, which is likely attributable to extraneous factors (see §5.2).

4 Experiment 2

Experiment 2 is set up exactly like Experiment 1, with prolepsis replacing copy raising as the reference construction against which hyperraising is compared.

4.1 Experimental design

Experiment 2 uses the same 2×3 factorial design as Experiment 1. The experiment includes 18 stimulus sentences, of which 12 (two-thirds) are fillers. The factors manipulated in the 6 target items, which are listed in §B in the Appendix, are construction type and the position of the coreferent pronoun or gap in the embedded clause.

Unlike Experiment 1, Experiment 2 does not keep the matrix verb constant across constructions. Because proleptic objects with *delovati* were found to be degraded in pilot studies, prolepsis stimuli in Experiment 2 have *znati* 'know' as the matrix verb. As a consequence, there is a salient superficial difference between the construction types in Experiment 2, in contrast to Experiment 1, where the only factor distinguishing hyperraising from copy raising was the presence of the relator particle *kao* in the latter construction.

As in Experiment 1, the position of the tail of the dependency is manipulated to test the constructions' sensitivity to the Highest Argument Restriction. In the baseline condition, the matrix subject or proleptic object corresponds to a gap in the subject position of the complement clause. In the non-baseline conditions, the tail of the dependency is located in a lower position in the embedded clause: in a complex NP island (island-violating condition) or in the object position (A-minimality-violating condition).

4.2 Participants

The call for participation was advertised on Facebook and Instagram. A total of 52 native Serbian speakers (median age: 29, range: 18–64, q1=25, q3=38) participated in the experiment. Note that Experiment 2 has a smaller participant cohort than Experiment 1, since it was designed as a follow-up study rather than a primary experiment. The vast majority of participants (50, or 96.3%) resided in Serbia at the time of participation, while the remaining 2 participants (3.7%) lived abroad but were born in Serbia.

4.3 Procedure

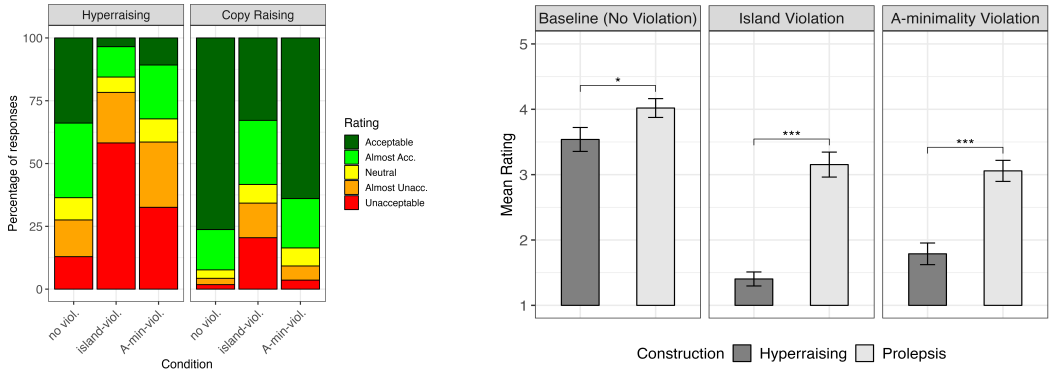
The online rating survey was administered via Qualtrics in June and July 2024. The first page of the experimental interface presented a consent form, which had been reviewed and approved by the author's university's Institutional Review Board. To proceed to the experiment, participants had to read and sign the consent form. Requirements for participation were the same as in Experiment 1.

Participants were asked to rate the acceptability of 18 Serbian sentences on a five-point Likert scale. Stimuli were presented one at a time. The order of presentation was randomized. On average, participants took 5 minutes to complete the experimental task.

At the end of the survey, an optional exit question about the goal of the experiment was presented to participants: 28 participants (53.8%) responded, with only 1 (1.89% of the total cohort, 3.45% of the participants who responded) correctly identifying the purpose of the survey.

4.4 Results

As in Experiment 1, I begin by presenting aggregated results for all participants combined, and subsequently divide them into subpopulations based on their ratings of the baseline sentences. Figure 3 plots response percentages (left) and the mean ratings (right) of the six target sentences.



(a) (b)

Figure 3: Results of Experiment 2: (**a**) Distribution of responses; (**b**) Mean ratings for the target sentences.

Overall, the results are similar to Experiment 1. Construction type emerges as a robust effect: Prolepsis is consistently rated as more acceptable than hyperraising across all conditions. Condition also plays a clear role, as both constructions exhibit an acceptability decline in the non-baseline conditions. This decline is demonstrably steeper in hyperraising. Unlike Experiment 1, the baselines are much closer to each other in Experiment 2.

As before, participants are divided into two subpopulations based on their ratings of the baseline stimuli. The raiser group (N = 25, 48.1%) includes participants who rated both baseline sentences as "almost acceptable" or higher, whereas non-raisers (N = 27, 51.9%) rated at least one of the baseline sentences as "neutral" or below. This grouping ensures that the effect of the Highest Argument Restriction is evaluated only in speakers who accept both constructions in the baseline condition.

The percentage of participants who accept baseline hyperraising is somewhat higher than the percentage of raisers (as defined above). In Experiment 2, 31 participants (60%) rated the baseline hyperraising sentence as "almost acceptable" or higher. Some of these participants nonetheless fall into the "non-raiser" group because their ratings for baseline prolepsis were lower than "almost acceptable." The distribution of responses for the six target sentences for raisers vs. non-raisers is shown in Figure 4.[2]

The experimental results for the raiser group are statistically evaluated using mixed-effects ordinal regression. The dependent variable is rating, modeled as a function of construction, condition, and their interaction. To keep the signs of the regression coefficients consistent with Experiment 1, the reference level for construction is set to prolepsis, that is, the "non-hyperraising"

[2]The same is true in Experiment 1, where 519 raisers (or 62%) were identified, but the number of participants rating baseline hyperraising as "almost acceptable" or higher is 531 (or 64%).

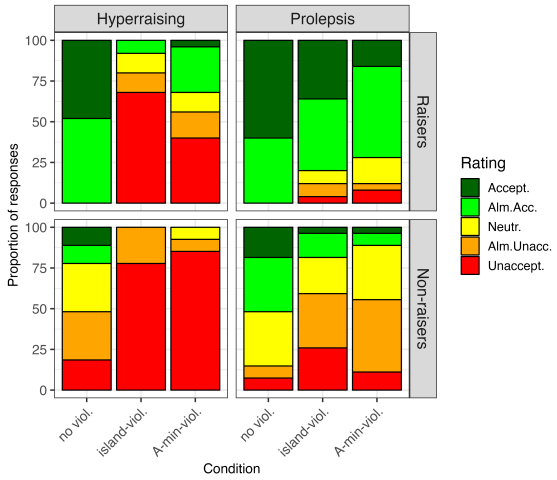


Figure 4: Distribution of responses, separately for raisers and non-raisers.

construction. Random intercepts for participants are included to account for individual variability. Table 2 shows the regression output.

Random effects	*Variance*	*Standard Deviation*		
Participant (N = 25)				
(Intercept)	1.71	1.31		
Fixed effects	β	*Standard Error*	*Wald z*	*p*
Construction (baseline: Prolepsis)				
Hyperraising	-0.56	0.63	-0.90	0.37
Condition (baseline: Baseline)				
Island-Violating	-1.79	0.65	-2.75	0.006 **
A-Minimality-Violating	-2.86	0.68	-4.23	0.000 ***
Construction*Condition interaction				
Hyperraising:Island-Violating	-4.57	0.98	-4.68	0.000 ***
Hyperraising:A-Min.-Violating	-1.75	0.86	-2.04	0.04 *

Table 2: Mixed-effects logistic regression model output (Experiment 2). The model formula is the same as in Experiment 1.

Unlike in Experiment 1, construction type has no significant effect on rating in the raiser group.[3] Condition remains significant as a main effect: Both non-baseline conditions are associated with acceptability decline (A-minimality violations more robustly so than island violations). The interaction effects between construction and condition are also significant, although the hyperraising × A-minimality-violating interaction is borderline. The negative interaction terms suggest that, analogous to Experiment 1, hyperraising shows greater sensitivity to the Highest Argument

[3]The difference between construction types in the baseline condition is marginally significant in the overall participant cohort (Figure 3b; left panel). Again, this effect is largely driven by non-raisers, who strongly penalize hyperraising even in the baseline condition.

Restriction than prolepsis, the reference construction.

The results of Experiment 2 are therefore largely consistent with Experiment 1, aside from the absence of the main effect of construction type in Experiment 2. For speakers who accept both constructions, hyperraising and prolepsis are structurally different, in that hyperraising is more sensitive to the position of the coreferent gap or pronoun than the other construction.

To recapitulate, the results of Experiment 2 further corroborate the main conclusion from Experiment 1: Hyperraising is possible for a subset of Serbian speakers, and for those speakers, this construction differs syntactically from non-movement configurations.

5 Discussion

This section provides a closer assessment of the experimental findings and situates them in the broader theoretical context. I begin by interpreting the main findings of the study in §5.1. I then turn to potential confounds (§5.2) and methodological limitations of the experimental design (§5.3). The section concludes with a discussion of two outstanding issues: the size of finite *da*-clauses that allow hyperraising (§5.4) and the demographic differences between raisers and non-raisers (§5.5).

5.1 Interpretation of experimental results

The experimental findings bear directly on the two chief questions of this study: (i) whether hyperraising is available in Serbian, and (ii) how it relates structurally to other constructions involving mandatory cross-clausal dependencies.

First, the results indicate that hyperraising is indeed available in Serbian, but only for a subset of speakers. In both experiments, hyperraising was judged acceptable in the baseline condition by a substantial share of participants. Strikingly, despite differences in cohort size and participant population, the percentage of speakers who accept baseline hyperraising was nearly identical across experiments (64% in Experiment 1 and 60% in Experiment 2). These findings complement the corpus data in (12)–(14) and help reconcile the apparent discrepancy between the acceptability judgments reported in the previous literature (Radišić, 2006; Ilić, 2015) and the empirical findings of this study. The most plausible explanation is cross-speaker variation: Some speakers categorically reject hyperraising, but others accept the construction on condition that it features a simple subject-to-subject dependency.

Second, for speakers who accept hyperraising, the construction is structurally distinct from other similar constructions in the language. In both experiments, hyperraising shows a steep decline in acceptability in non-baseline conditions, that is, when the gap corresponding to the matrix subject appears in a lower position in the embedded clause. Copy raising and prolepsis show considerably weaker degradation under the same manipulations. This divergent behavior indicates that hyperraising is crucially sensitive to the Highest Argument Restriction. In non-movement configurations, the position of the coreferent element can be manipulated more freely, subject only to the general cognitive constraints on sentence processing and memory load (§5.2.1).

That hyperraising and copy raising are structurally different in Serbian has important theoretical implications. A growing body of work argues that copy raising, despite its name, does not involve cross-clausal movement (Potsdam and Runner, 2001; Asudeh, 2002; Landau, 2011; Den Dikken,

2017). The Serbian data support this view. An added benefit is that the coexistence of the two constructions in Serbian allows for a controlled within-language comparison using minimally differing stimuli. To my knowledge, only a handful of studies have directly contrasted these constructions within a single language (Carstens and Diercks, 2013; Johnson and Diercks, 2025). The existence of both constructions in Serbian therefore offers a testing ground for movement-based versus base-generation analyses. The present results further support a non-movement analysis of copy raising and prolepsis.

In sum, the experiments demonstrate that hyperraising is part of the grammar of a subset of Serbian speakers and that, for those speakers, it differs structurally from copy raising and prolepsis.

5.2 Confounding factors

Although copy raising is less negatively affected by island violations than hyperraising, some raisers reject island-violating copy raising altogether. This is evidenced by the non-negligible share of "unacceptable" and "almost unacceptable" ratings of the island-violating copy raising sentence (middle bar in the bottom left quadrant in Figure 2).

Strictly speaking, the base-generation account of copy raising predicts no sensitivity to the position of the tail of the dependency for this construction. The limited cross-speaker variation observed in island-violating copy raising can be attributed to two confounding factors: processing difficulty (§5.2.1) and potential confusion with hyperraising (§5.2.2). Despite these potential confounds, the experimental results strongly suggest that hyperraising is structurally distinct from copy raising and prolepsis, as evidenced by its sensitivity to the Highest Argument Restriction.

5.2.1 Processing difficulty

The processing difficulty associated with long-distance dependencies may have affected, to some extent, the acceptability of non-baseline stimuli in both experiments (see e.g. Hofmeister and Sag, 2010; Hofmeister et al., 2013; Sprouse et al., 2012, 2016 for the effect of processing difficulty in syntactic experimentation). Whereas baseline items involve a simple, subject-to-subject dependency, both non-baseline conditions involve more complex long-distance dependencies between the matrix subject and the coreferent gap or pronoun in the embedded clause. This is especially true of the island-violating stimuli in Experiment 1. Given the increased dependency length in non-baseline stimuli, it is conceivable that all non-baseline sentences, especially island-violating ones, incur a general penalty associated with distance-related processing difficulties, independent of construction type. Crucially, hyperraising incurs an additional penalty that cannot be reduced to general processing difficulty, suggesting construction-specific sensitivity to the Highest Argument Restriction.

5.2.2 Confusion effects

Another factor that may have contributed to the limited acceptability decline in island-violating copy raising is the superficial similarity between hyperraising and copy raising in Serbian. The only factor distinguishing the two is the presence of the relator particle *kao* 'like' in copy raising, as illustrated by the minimal pair in (17).

(17) a. Oni$_i$ deluju da $\__i$ znaju sve.
3PL.NOM seem.PRS.3PL that know.PRS.3PL all
'They seem to know everything.' [hyperraising]

b. Oni$_i$ deluju kao da $\__i$ znaju sve.
3PL.NOM seem.PRS.3PL like that know.PRS.3PL all
'They seem to know everything.' [copy raising]

Given this minimal distinction, it is conceivable that, in an unsupervised online setting, some speakers may conflate the two constructions. Confusion effects could manifest in either direction: participants may overlook the particle *kao* and misidentify copy raising as hyperraising, or effectively insert *kao* into a hyperraising sentence, misidentifying it as copy raising. The former type of error could account for the acceptability decline in non-baseline copy raising. Conversely, misinterpreting hyperraising as copy raising could explain the marginal, and somewhat unexpected, acceptability of non-baseline hyperraising sentences for some speakers (see the upper left panels in Figures 2 and 4).

Experiment 2 provides further support for the conjecture that some unexpected results in Experiment 1 reflect confusion effects. In Experiment 2, hyperraising is compared with prolepsis, which is more clearly distinct from hyperraising on the surface. As a result, the stimulus pairs within each condition are not easily confusable. In the absence of surface similarity, the two constructions are more robustly distinguished in the raiser population. The results accord with theoretical expectations: Non-baseline hyperraising is accepted only marginally (approaching floor levels), whereas prolepsis receives near-ceiling ratings even in the non-baseline conditions (top two panels in Figure 4).

5.3 Limitations of current experimental setup

The present experimental work should be regarded as preliminary. The study confirms that a subset of Serbian speakers permits hyperraising and provides initial evidence for a structural difference between hyperraising and its non-movement counterparts. Despite efforts to minimize potential confounds, several limitations of the experimental design should be acknowledged.

First, further research is needed to better understand the mechanism that enables embedded subjects to surface in the matrix clause. The experiments probe only one structural property of Serbian cross-clausal dependencies, namely their sensitivity to the Highest Argument Restriction (2). The lack of sensitivity to the Highest Argument Restriction in copy raising and prolepsis constitutes evidence against a movement analysis of these constructions (Zyman, 2017, 2023; Lohninger et al., 2022). To show more conclusively that hyperraising involves cross-clausal movement, additional syntactic diagnostics should be employed.

In this regard, it is worth noting that preliminary elicitation data suggest that further diagnostics are consistent with the present results. For example, speakers who accept both hyperraising and copy raising allow an overt pronoun in the tail of the dependency in copy raising (18a), but not in hyperraising (18b).

(18) Hyperraising prohibits overt pronoun in the extraction site

a. Milan deluje kao da je on to učinio.
Milan seemPRS.3SG like that is 3SG.M.NOM that done

'Milan seems like he did it.'

b. Milan deluje da je *on to učinio.
Milan seemPRS.3SG that is 3SG.M.NOM that done
'Milan seems to have done it.'

However, this pattern needs to be confirmed with a larger sample of speakers and a wider range of diagnostic criteria distinguishing movement from non-movement configurations.

Another potential limitation of the experimental design concerns item sampling. The experiments included only one item per condition, in order to prioritize ease of completion and reduce participant fatigue or confusion in an online setting. Although this choice minimizes task complexity, it raises the possibility that the observed effects are item-specific rather than general. However, it is highly unlikely that individual items meaningfully skewed the experimental results. The items were carefully constructed: Each within-condition comparison included a (near-)minimal pair, isolating the effect of construction type. A follow-up study with multiple stimuli for each condition × construction pair will help determine whether the effects observed here generalize across different embedding contexts.

5.4 Clause size and (hyper)raising

As discussed in §2, Radišić (2006) establishes a correlation between clause size and cross-clausal movement, attributing the putative ban on subject raising to SEEM-type predicates taking finite CP complements in Serbian. Finite CPs, being phases, disallow argument movement into the matrix clause. Having shown that subject-to-subject movement is available for some Serbian speakers, I now address the other aspect of this correlation, i.e. clause size. Could it be that cross-clausal movement is possible because the finite *da*-complements of *delovati* are smaller than full CPs? The independently established CP-hood diagnostics for Serbian (Progovac, 1993a; Stjepanović, 2004; Wurmbrand et al., 2020; Todorović and Wurmbrand, 2020) unequivocally argue against this view.

In Serbian, finite *da*-clauses come in three sizes. Matrix predicates like *tvrditi* 'claim' (CLAIM-type predicates hereafter) take propositional *da*-complements, which constitute full CP domains. A number of syntactic properties distinguish propositional *da*-clauses from reduced clausal domains. For example, propositional CPs do not alternate with infinitival complements (Wurmbrand et al., 2020), as shown in (19a), and disallow *ni*-NPI licensing by the matrix negation (Progovac, 1994), as in (19b).[4]

(19) Propositional *da*-clauses

a. Milan tvrdi da zna sve.
Milan claim.PRS.3SG that know.PRS.3SG all
'Milan claims that he knows everything.'

b. *Milan tvrdi znati sve.
Milan claim.PRS.3SG know.INF all
'Milan claims that he knows everything.'

[4]Serbian has two types of NPIs: *i*-NPIs and *ni*-NPIs, which are in complementary distribution: *i*-NPIs cannot co-occur with a clausemate negation, whereas *ni*-NPIs must be licensed by a clausemate negation (Progovac, 1993b, 1994).

c. Milan ne tvrdi da Marija poznaje {*nikoga/ikoga}.
Milan NEG claim.PRS.3SG that Marija knows *nobody.ACC/anybody.ACC
'Milan does not claim that Marija knows nobody.' [Progovac, 1994: 41, ex. (111)]

Verbs like *želeti* 'want' (WANT-type predicates) take tenseless, subjunctival *da*-complements (20a). These constitute bare vPs, lacking both CP and TP projections. Subjunctival *da*-clauses can be readily substituted with infinitival complements, as in (20b), at least in the dialects that preserve the infinitive, and permit *ni*-NPI licensing by the matrix negation, as in (20c).

(20) Subjunctival *da*-complements

a. Milan želi da zna sve.
Milan want.PRS.3SG that know.PRS.3SG all
'Milan wants to know everything.'

b. Milan želi znati sve.
Milan want.PRS.3SG know.INF all
'Milan wants to know everything.'

c. Ne želim da vidim {nikoga/*ikoga}.
not want.PRS.1SG that see.PRS.1SG nobody.ACC/*anybody.ACC
'I do not want to see anybody.' [Progovac, 1993b: 117, ex. (3)]

Future irrealis *da*-clauses are structurally intermediate between CLAIM- and WANT-type predicates. They are the finite complements of TRY-type verbs like *pokušati* 'try,' illustrated in (21a). Like subjunctival complements, complements of TRY-type predicates allow substitution with the infinitive (21b), but like propositional CPs, embedded *ni*-NPIs in this embedding context cannot be licensed by a matrix negation (21c).

(21) Future irrealis *da*-complements

a. Marija je pokušala da ode na odmor.
Marija AUX.3SG tried that go.PRS.3SG o vacation
'Marija tried to go on vacation.'

b. Marija je pokušala otići na odmor.
Marija AUX.3SG tried go.INF on vacation
'Marija tried to go on vacation.'

c. Marija nije odlučila da poseti {*nikoga/ikoga}.
Marija NEG.AUX.3SG decided that visit.PRS.3SG *nobody.ACC/anybody.ACC
'Marija did not decide to visit anybody.'

Any account that correlates cross-clausal argument movement with reduced clausal architecture predicts that the finite complements of *delovati* should pattern with either WANT- or TRY-type complements, not with CLAIM-type complements. The CP-hood diagnostics suggest that finite *da*-complements of *delovati* constitute propositional CPs, patterning with CLAIM-type predicates. Substitution with infinitival complements is not possible, as already shown by example (1a), repeated here as (22a). Moreover, embedded *ni*-NPIs cannot be licensed by a matrix negation on *delovati*, as (22b) shows.[5]

[5]Additional clause size diagnostics include: tense restrictions (Todorović and Wurmbrand, 2020; Wurmbrand et al., 2020), clitic climbing (Progovac, 1993b; Stjepanović, 2004; Jurkiewicz-Rohrbacher et al., 2017; Todorović and Wurmbrand,

(22) Finite complements of *delovati* are propositional CPs

a. *Oni deluju znati sve.
3PL.NOM seem.PRS.3PL know.INF all
'They seem to know everything.'

b. Oni ne deluju da znaju {*ništa/išta}
textsc3pl.nom NEG seem.PRS.3PL that know.PRS.3PL *nothing/anything
'They do not seem to know anything.'

The Serbian data therefore indicate that cross-clausal A-dependencies must be divorced from reduced clausal architecture, further corroborating Wurmbrand (2019, 2024)'s typological observation that cross-clausal A-dependencies usually occur with matrix predicates that show no reconstruction effects.

Additionally, the identification of a subject raising pattern with a SEEM-type predicate in Serbian is interesting from a typological and areal perspective. Raising out of finite complements appears to be an areal feature observed in languages of the Balkan Sprachbund, of which some Serbian dialects are members (Ivić, 2009). For example, Greek *fenete* 'seem' displays a raising behavior akin to Serbian *delovati* (1c), as shown in (23).

(23) I fitites fenonde na ðjavazun poli.
the students seem.3PL PRT read.3PL a.lot
'The students seem to read a lot.' [Greek; Roussou, 2001, 77; ex. (10b)]

The main difference between the raising patterns in Greek and Serbian is that in the former, subject raising occurs with subjunctival, *na*-type complements, while the latter permits subject raising out of propositional complements (the equivalent of the *oti*-type complement clauses in Greek). Future work must further situate the Serbian raising construction identified here in the landscape of raising constructions in other languages of the Balkans.

5.5 Age effect and ongoing syntactic change in Serbian?

A closer examination of the demographic data points to an age effect. In Experiment 1, raisers (median age = 37) were on average younger than non-raisers (median age = 41.5). The difference is modest, but statistically robust (see Figure 5): A Wilcoxon rank-sum test found a significant age difference between the two groups (W = 3,382,794, $p < 0.001$). The analysis uses data from Experiment 1 because it includes a much larger participant cohort than Experiment 2.

2020), availability of multiple *wh*-extraction (Bošković, 2002; Stjepanović, 2004), and superiority effects in cases where multiple *wh*-extraction is possible (Stjepanović, 2004). Much like (22), these additional tests indicate that the finite complements of *delovati* pattern with CLAIM-type complements.

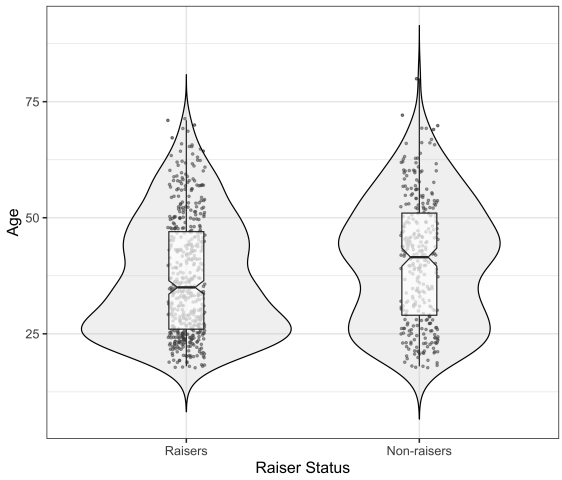


Figure 5: Age distribution by raiser status (Experiment 1).

One possible interpretation of this age difference is that it reflects an ongoing syntactic change in Serbian, where hyperraising is gradually becoming more acceptable. This could explain why younger speakers are more likely to accept the construction, with the share of raisers decreasing with age. Importantly, the construction is not confined to younger speakers, since a non-negligible number of older participants also accept it, albeit less frequently.

If this demographic pattern reflects a change in progress, I hypothesize that hyperraising will continue to expand, potentially reducing the current degree of inter-speaker variation. That said, this interpretation remains speculative. A closer examination of diachronic corpus data is required, along with a systematic sociolinguistic investigation of other demographic effects on the acceptability of hyperraising.

6 Conclusion

This article documents a hyperraising-to-subject construction in Serbian, which has been argued to be ungrammatical (Radišić, 2006; Ilić, 2015). Embedded nominative-marked subject NPs may optionally raise into the matrix clause with the raising verb *delovati* 'seem.' Evidence for hyperraising is provided by corpus data and acceptability judgments from two rating experiments. The study also identifies syntactic variation in Serbian, with hyperraising being accepted by only a subset of speakers. This variation may explain the discrepancy between the judgments reported by Ilić (2015) and the results of this study.

Serbian hyperraising was experimentally compared with two non-movement configurations previously reported in the language: copy raising and prolepsis. The results indicate that hyperraising is structurally different from these constructions in that it obeys the Highest Argument Restriction, i.e. embedded A-minimality, whereas copy raising and prolepsis are exempt from it. Copy raising patterns with prolepsis in this regard, which further supports non-movement accounts of copy raising (Potsdam and Runner, 2001; Asudeh, 2002; Landau, 2011; Den Dikken, 2017).

Further, using independently established clause size diagnostics for Serbian (Stjepanović, 1998; Todorović and Wurmbrand, 2020; Wurmbrand et al., 2020), I demonstrate that finite *da*-clauses that

allow hyperraising are propositional CPs. This challenges the proposed link between clause reduction and cross-clausal A-dependencies, lending further empirical support to Wurmbrand (2019, 2024)'s typological findings.

Finally, the study identifies a demographic difference between speakers who accept raising and those who do not: The proportion of raisers is significantly higher in younger generations, although considerable variation is observed within each age group. This age effect may be indicative of an ongoing syntactic change in Serbian, with hyperraising being in the process of expansion.

References

Asudeh, A. (2002). Richard III. In Andronis, M., Debenport, E., Pycha, A., and Yoshimura, K., editors, *Proceedings from the Main Session of the Thirty-eighth Meeting of the Chicago Linguistic Society*, volume 1, pages 31–46, Chicago, IL. Chicago Linguistic Society.

Banón, M., Espla-Gomis, M., Forcada, M. L., García-Romero, C., Kuzman, T., Ljubešić, N., van Noord, R., Sempere, L. P., Ramírez-Sánchez, G., Rupnik, P., et al. (2022). Macocu: Massive collection and curation of monolingual and bilingual data: focus on under-resourced languages. In *23rd Annual Conference of the European Association for Machine Translation, EAMT 2022*, pages 303–304. European Association for Machine Translation.

Bošković, Ž. (2002). On multiple wh-fronting. *Linguistic inquiry*, 33(3):351–383.

Bošković, Ž. (2009). On relativization strategies and resumptive pronouns. In Zybatow, G., Junghanns, U., Lenertová, D., and Biskup, P., editors, *Studies in Formal Slavic Phonology, Morphology, Syntax, Semantics and Information Structure: Proceedings of FDSL 7, Leipzig 2007*, pages 79–92, Berlin. Peter Lang.

Browne, W. (1996). Difficulties in testing wh-movement. *Suvremena lingvistika*, 41–42:81–86.

Bušta, J., Herman, O., Jakubíček, M., Krek, S., and Novak, B. (2017). JSI newsfeed corpus. In *The 9th International Corpus Linguistics Conference*. University of Birmingham.

Carstens, V. (2011). Hyperactivity and hyperagreement in Bantu. *Lingua*, 121(5):721–741.

Carstens, V. and Diercks, M. (2013). Parameterizing case and activity: Hyper-raising in Bantu. In Kan, S., Moore-Cantwell, C., and Staubs, R., editors, *NELS 40: Proceedings of the 40th Annual Meeting of the North East Linguistic Society*, pages 99–115, Amherst, MA. GLSA.

Chomsky, N. (2000). Minimalist inquiries. In Martin, R., Michaels, D., Uriagereka, J., and Keyser, S. J., editors, *Step by step. Essays on Minimalist Syntax in Honor of Howard Lasnik*, pages 89–155. MIT Press, Cambridge, MA.

Chomsky, N. (2001). Derivation by phase. In Kenstowicz, M., editor, *Ken Hale: A Life in Language*, pages 1–52. MIT Press, Cambridge, MA.

Christensen, R. H. B. (2023). *ordinal—Regression Models for Ordinal Data*. R package version 2023.12-4, https://CRAN.R-project.org/package=ordinal.

Deal, A. R. (2017). Covert hyperraising to object. In Lamont, A. and Tetzloff, K., editors, *Proceedings of the 47th Annual Meeting of the North East Linguistic Society (NELS 47)*, pages 257–270, Amherst, MA. GLSA.

Den Dikken, M. (2017). Predication in the syntax of hyperraising and copy raising. *Acta Linguistica Academica*, 64(1):3–43.

Ferreira, M. (2004). Hyperraising and null subjects in Brazilian Portuguese. In Castro, A., Ferreira, M., Hacquard, V., and Salanova, A. P., editors, *Collected papers on Romance syntax. (MIT Working Papers in Linguistics 47)*, pages 57–85. MITWPL, Cambridge, MA.

Ferreira, M. (2009). Null subjects and finite control in Brazilian Portuguese. In Nunes, J., editor, *Minimalist Essays on Brazilian Portuguese Syntax*, pages 17–49. John Benjamins.

Fong, S. (2019). Proper movement through Spec-CP: An argument from hyperraising in Mongolian. *Glossa: a journal of general linguistics*, 4(1).

Halpert, C. (2016). Raising parameters. In Kim, K. M., Umbal, P., Block, T., Chan, Q., Cheng, T., Finney, K., Katz, M., Nickel-Thompson, S., and Shorten, L., editors, *Proceedings of the 33rd West Coast Conference on Formal Linguistics*, pages 186–195, Somerville, MA. Cascadilla Press.

Halpert, C. (2019). Raising, unphased. *Natural Language & Linguistic Theory*, 37(1):123–165.

Heycock, C. (1994). *Layers of predication: The non-lexical syntax of clauses*. (Outstanding dissertations in linguistics). Garland, New York & London.

Hofmeister, P., Casasanto, L. S., and Sag, I. A. (2013). Islands in the grammar? Standards of evidence. In Sprouse, J. and Hornstein, N., editors, *Experimental syntax and island effects*. Cambridge University Press, Cambridge.

Hofmeister, P. and Sag, I. A. (2010). Cognitive constraints and island effects. *Language*, 86(2):366.

Ilić, N. (2015). Raising and copy raising in English and Serbian. *Journal for Languages and Literatures of the Faculty of Philosophy in Novi Sad*, 5:69–80.

Ivić, P. (2009). *Srpski dijalekti i njihova klasifikacija*. Zoran Stojanvić, Sremski Karlovci & Novi Sad.

Johnson, K. and Diercks, M. (2025). Hyperraising and copy-raising in Tiriki. To appear in Proceedings of ACAL 54.

Jurkiewicz-Rohrbacher, E., Hansen, B., and Kolaković, Z. (2017). Clitic climbing, finiteness and the raising-control distinction. a corpus–based study. *Journal of Linguistics/Jazykovedný časopis*, 68(2):179–190.

Kilgarriff, A., Rychlý, P., Smrž, P., and Tugwell, D. (2004). The Sketch Engine. *Proceedings of the 11th EURALEX International Congress*, pages 105–116.

Landau, I. (2011). Predication vs. aboutness in copy raising. *Natural Language & Linguistic Theory*, 29:779–813.

Ljubešić, N. and Klubička, F. (2014). {bs, hr, sr} WaC - web corpora of Bosnian, Croatian and Serbian. In Bildhauer, F. and Schäfer, R., editors, *Proceedings of the 9th Web as Corpus Workshop (WaC-9)*, pages 29–35, Gothenburg, Sweden. Association for Computational Linguistics.

Lohninger, M., Kovač, I., and Wurmbrand, S. (2022). From prolepsis to hyperraising. *Philosophies*, 7(2):32.

Mikkelsen, L. and Thrane, E. (2024). Hyperraising in Kalaallisut. In Serova, K. and Snigaroff, M. K., editors, *CLS 59: Proceedings of the Fifty-ninth Annual Meeting of the Chicago Linguistic Society*, pages 297–318.

Moore, J. (1998). Turkish copy-raising and A-chain locality. *Natural Language & Linguistic Theory*, 16(1):149–189.

Nunes, J. (2008). Inherent case as a licensing condition for A-movement: The case of hyperraising constructions in Brazilian Portuguese. *Journal of Portuguese Linguistics*, 7(2):83–108. https://doi.org/10.5334/jpl.129.

Potsdam, E. and Runner, J. (2001). Richard returns: Copy raising and its implications. In Andronis, M., Ball, C., Elston, H., and Neuvel, S., editors, *Proceedings from the Main Session of the Thirty-seventh Meeting of the Chicago Linguistic Society*, volume 1, pages 453–468, Chicago, IL. Chicago Linguistic Society.

Progovac, L. (1993a). Locality and subjunctive-like complements in Serbo-Croatian. *Journal of Slavic linguistics*, 1:116–144.

Progovac, L. (1993b). Subjunctive: the (mis)behavior of anaphora and negative polarity. *The Linguistic Review*, 10:37–59.

Progovac, L. (1994). *Negative and positive polarity*. Cambridge University Press.

R Core Team (2021). *R: A Language and Environment for Statistical Computing*. R Foundation for Statistical Computing, Vienna, Austria.

Radišić, M. (2006). Subject raising and obligatory subject control in Serbian. In *Proceedings of the 2006 annual conference of the Canadian Linguistic Association*.

Rogers, A. (1971). Three kinds of physical perception verbs. In *Papers from the Seventh Regional Meeting of the Chicago Linguistic Society*, pages 206–222, Chicago, IL. Chicago Linguistic Society.

Rogers, A. (1972). Another look at flip perception verbs. In Peranteau, P. M. and Levi, J. N., editors, *Chicago Linguistic Society. Papers From the Eighth Regional Meeting*, pages 303–315.

Ross, J. (1967). *Constraints on variables in syntax*. PhD thesis, MIT.

Roussou, A. (2001). Control and raising in and out of subjunctive complements. In Rivero, M. L. and Ralli, A., editors, *Comparative Syntax of the Balkan Languages*. Oxford University Press, Oxford.

Salzmann, M. (2006). *Resumptive prolepsis: A study in indirect A'-dependencies*. PhD thesis, Leiden University.

Salzmann, M. (2017). Prolepsis. *The Wiley Blackwell Companion to Syntax, Second Edition*, pages 1–42.

Sprouse, J., Caponigro, I., Greco, C., and Cecchetto, C. (2016). Experimental syntax and the variation of island effects in english and italian. *Natural Language & Linguistic Theory*, 34:307–344.

Sprouse, J., Wagers, M., and Phillips, C. (2012). A test of the relation between working-memory capacity and syntactic island effects. *Language*, pages 82–123.

Stjepanović, S. (1998). On the placement of Serbo-Croatian clitics: Evidence from VP-ellipsis. *Linguistic inquiry*, pages 527–537.

Stjepanović, S. (2004). Clitic climbing and restructuring with "finite clause" and infinitive complements. *Journal of Slavic linguistics*, 12:173–212.

Tanaka, H. (2002). Raising to object out of CP. *Linguistic Inquiry*, 33(4):637–652.

Todorović, N. and Wurmbrand, S. (2020). Finiteness across domains. In Radeva-Bork, T. and Kosta, P., editors, *Current Developments in Slavic Linguistics. Twenty Years After (based on selected papers from FDSL 11)*, pages 47–66. Peter Lang.

Ura, H. (1994). Varieties of raising and the feature-based bare phrase structure theory. *MIT Working Papers in Linguistics*, 7.

Wurmbrand, S. (2019). Cross-clausal A-dependencies. In Ronai, E., Stigliano, L., and Sun, Y., editors, *Proceedings of the Fifty-Fourth Annual Meeting of the Chicago Linguistic Society (CLS 54)*, pages 585–604, Chicago, IL. Chicago Linguistic Society.

Wurmbrand, S. (2024). The size of clausal complements. *Annual Review of Linguistics*, 10(1):59–83.

Wurmbrand, S., Kovač, I., Lohninger, M., Pajančič, C., and Todorović, N. (2020). Finiteness in South Slavic complement clauses: Evidence for an implicational finiteness universal. *Linguistica*, 60(1):119–137.

Zyman, E. (2017). P'urhepecha hyperraising to object: An argument for purely altruistic movement. *Proceedings of the Linguistic Society of America*, 53(2):1–15.

Zyman, E. (2023). Raising out of finite clauses (hyperraising). *Annual Review of Linguistics*, 9:29–48.

A Experiment 1 stimuli (target items)

Baseline hyperraising

(24) Oni$_i$ deluju da $\__i$ znaju sve odgovore.
3PL.NOM seem.PRS.3PL that know.PRS.3PL all answers
'They seem to know all the answers.'

Baseline copy raising

(25) Oni$_i$ deluju kao da $\__i$ znaju sve odgovore.
3PL.NOM seem.PRS.3PL like that know.PRS.3PL all answers
'They seem like they know all the answers.'

Island-violating hyperraising

(26) Oni$_i$ deluju da su tvrdnje da su $\__i$ ukrali novac istinite.
3PL.NOM seem.PRS.3PL that be.PRS.3PL claims that AUX.3PL stolen money true
'It seems that the claims that they stole the money are true.'

Island-violating copy raising

(27) Oni$_i$ deluju kao da su tvrdnje da su $\__i$ ukrali novac
3PL.NOM seem.PRS.3PL like that be.PRS.3PL claims that AUX.3PL stolen money
istinite.
true
'They seems like the claims that they stole the money are true.'

A-minimality-violating hyperraising

(28) Oni$_i$ deluju da smo ih$_i$ naljutili.
3PL.NOM seem.PRS.3PL that AUX.1PL 3PL.ACC angered
'It seems that we angered them.'

A-minimality-violating copy raising

(29) Oni$_i$ deluju kao da smo ih$_i$ naljutili.
3PL.NOM seem.PRS.3PL like that AUX.1PL 3PL.ACC angered
'It seems that we angered them.'

B Experiment 2 stimuli (target items)

Baseline hyperraising

(30) Oni$_i$ deluju da su $\__i$ umorni.
3PL.NOM seem.PRS.3PL that be.PRS.3PL tired
'They seem to be tred.'

Baseline prolepsis

(31) Znam za njih$_i$ da su $\__i$ umorni.
know.PRS.1SG for 3PL.ACC that be.PRS.3PL tired
'I know of them that they are tired.'

Island-violating hyperraising

(32) Oni$_i$ deluju da postoje glasine da će se $\__i$ odseliti.
3PL.NOM seem.PRS.3PL that exist.PRS.3PL rumors that will REFL move.INF
'It seems that there are rumors that they will move.'

Island-violating prolepsis

(33) Znam za njih$_i$ da postoje glasine da će se $\__i$ odseliti.
know.PRS.1SG for 3PL.ACC that exist.PRS.3PL rumors that will REFL move.INF
'I know of them that there are rumors that they will move.'

A-minimality-violating hyperraising

(34) Oni$_i$ deluju da ste im$_i$ prodali kuću.
3PL.NOM seem.PRS.3PL that AUX.2PL 3PL.DAT sold house.ACC
'It seems that you sold the house to them.'

A-minimality-violating prolepsis

(35) Znam za njih$_i$ da ste im$_i$ prodali kuću.
know.PRS.1SG for 3PL.ACC that AUX.2PL 3PL.DAT sold house.ACC
'I know of them that you sold the house to them.'