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Weak crossover in Spanish relative clauses

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Abstract: We investigate the status of weak crossover violations (WCO) in Spanish restrictive relative clauses. Claims in the literature lead to the expectation that Spanish does not show sensitivity to WCO in this context; however, ours is the first systematic investigation of the phenomenon in the language. We find that Spanish restrictive relative clauses do exhibit WCO violations: when the relative clause is headed by *que*, participants rate crossover configurations lower than configurations without crossover; when the relative clause is introduced by *a quien*, the status of WCO violations is less clear. We consider two explanations for our results in *a quien* clauses: potential structural differences between *que* and *a quien*, and the possibility for an appositive parse for some of our *a quien* configurations. Our results set the stage for further cross-linguistic investigations of crossover phenomena.

Keywords: (weak) crossover; Spanish; restrictive relative clauses; experimental syntax

1 Introduction

The study of referential relationships in natural language has played a central role in theoretical linguistics, bringing together explorations in syntax, semantics, pragmatics, and, more recently, extending into computational approaches. Among the most intriguing phenomena in reference tracking are crossover effects, a set of constraints that govern the relationship between pronouns and their antecedents. The name ‘crossover,’ first proposed by Postal (1971), has its origins in the basic rule according to which a pronoun cannot corefer with or be bound by a noun phrase that moves across (that is, crosses over) that pronoun in the sentence structure. *Strong crossover* (SCO) occurs when a pronoun c-commands its intended antecedent. For example, (1) would be perfectly fine if *who* and *he* described different referents, but it is ungrammatical under a bound reading:

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- (1) Who_i _i thinks he_i will invite Kim? No crossover
- (2) *Who_i does he_i think _i will invite Kim? SCO

Notice that in (2) the pronoun c-commands the base position of the displaced constituent and a bound interpretation is impossible (using the traditional terminology, we will refer to the base position of the displaced element as a trace, but nothing hinges on this terminological choice).

Aside from SCO, researchers have long noted cases of *weak crossover* (WCO), where the pronoun does not c-command the trace and binding between the pronoun and its antecedent is dispreferred but marginally possible (Wasow 1972 and much subsequent work).¹ For example:

- (3) Who_i _i loves [his_i mother] ? No crossover
- (4) ?Who_i does [his_i mother] love _i? WCO

The strong/weak crossover distinction reflects a fundamental property of how reference works in natural language. Informally, when a pronoun has too much structural prominence over its intended antecedent (as in SCO), the grammar completely blocks binding, while less prominent relationships (as in WCO) result in a milder deviance. When the effect is weaker, factors other than prominence appear to influence the outcome, although researchers do not yet fully understand the full spectrum of contributing factors (see Safir 2017 for an overview). What does seem clear, however, is that the forces shaping crossover judgments have a bearing on other linguistic phenomena, in particular binding theory and the nature/scope of quantifiers. Leaving SCO aside, the existence of WCO cross-linguistically has been subject to significant debate (consider, for example, Postal 1993; Bresnan 1998; Ruys 2000). Furthermore, the degree of WCO violations has also been the subject of debate within individual languages, and environments where WCO effects are expected but result in even weaker violations that go unnoticed by speakers have received the name *weakest crossover* (Lasnik and Stowell 1991).

As Safir (2017: 14) aptly notes in relation to the theoretical and empirical landscape of WCO:

¹ Researchers have also explored accounts of crossover that dispense with the notion of c-command as a contributing factor. For example, working within a dynamic semantics framework and relying crucially on continuations, Barker and Shan (2015) propose that crossover violations arise when a quantifier phrase (QP) binds a pronoun that precedes the QP in the evaluation order of the sentence. To anticipate the discussion below, our results are generally compatible with c-command-based accounts, as well as with accounts that rely on quantification such as Barker and Shan's.

The details of the distribution of WCO effects are not only of interest in and of themselves, but because assumptions about how they are derived can play a role in the analysis of the structures in which they occur. Considerations of this kind enter into discussions of the structure of relative clauses, for example.

It is precisely the phenomenon of WCO in restrictive relative clauses that serves as the main focus of our paper. There have long been two camps in the literature on this topic: (i) those who claim that restrictive relative clauses lack WCO effects (Chomsky 1976, 1977, 1981; Wasow 1972) and (ii) those who recognize such effects (Higginbotham 1980; Lasnik and Stowell 1991; Postal 1993; Safir 1984, 2017). However, most of the work on WCO in restrictive relative clauses has focused on English, and the empirical generalizations are even less clear in other languages. Back to the quote from Safir above, we believe that clarifying the empirical facts of WCO in restrictive relative clauses in a range of individual languages is important, since such an understanding would guide researchers toward a better establishment of the structure of relative clauses themselves, a question on which the literature varies notoriously (Bianchi 1995, 2002a, 2002b; Cinque 2020; Hulsey and Sauerland 2006; Krivochen 2022, among others). Our contribution toward this empirical and theoretical clarification concerns the status of WCO in Spanish restrictive relative clauses, a topic that has received little systematic attention; to the (limited) extent that Spanish WCO has been discussed, authors have noted its absence in restrictive relative clauses, an issue we will expand on in the next section.

The structure of the paper is as follows. In Section 2, we present the basics of restrictive relative clauses in Spanish and survey the relatively small literature on WCO effects in these clauses. Section 3 presents the design and results of a behavioral experiment that we conducted to investigate the existence of WCO effects in Spanish relative clauses. We discuss our results in Section 4. To preview the results, WCO is found under one relativization strategy (using the relativizer *que*) but its status in another (using *a quien*) is less clear at first; we consider the implications of this asymmetry. Finally, Section 5 summarizes and suggests pathways for future elaborations.

2 Setting the stage: restrictive relative clauses in Spanish

We begin with a quick overview of relativization in Spanish and then focus on existing claims regarding WCO in Spanish restrictive relative clauses.

2.1 Spanish relative clauses: general observations

Just like many other languages, Spanish shows an asymmetry between appositive relative clauses, which add information about an already-identified referent, and restrictive relative clauses, whose function is to specify a referent (see RAE-ASALE 2009: §44.11). Consider the following contrast between an appositive (5) and restrictive relative clause (6), illustrated by subject relativization:²

- (5) Los estudiantes de intercambio, que / quienes hablan
 the.PL students of exchange QUE QUIEN.PL speak.3PL.PRS
 italiano, están en la clase.
 Italian be.3PL.PRS in the.F.SG classroom
 “The exchange students, who speak Italian, are in the classroom.”
- (6) Los estudiantes de intercambio que / *quienes hablan
 the.PL students of exchange QUE QUIEN.PL speak.3PL.PRS
 italiano están en la clase.
 Italian be.3PL.PRS in the.F.SG classroom
 “The exchange students who speak Italian are in the classroom.”

Appositive relative clauses are known to lack crossover effects (Bianchi 2002a, 2002b; Safir 1986, 2017), and we will not consider them further until the discussion section.³ Relatedly, we will not consider (semi)free relatives (RAE-ASALE 2009: §44.1g), as they do not create an environment for WCO. In the rest of this section, we will focus exclusively on externally headed restrictive relative clauses.

We start with the relativization of subjects, with a special emphasis on active transitive clauses, the configuration where we will be testing WCO effects. Such subject relatives are introduced by the element *que*, irrespective of the human/nonhuman status of the relativized noun, which we will refer to as the *target*. Note that we keep consistent all of our glosses in English and use “that” as the element introducing relative clauses, without making any commitment that the example under assessment is structurally parallel to the English gloss; in other words, no conclusions should be drawn about our structural analysis from the English translations.

² Abbreviations are as follows: CL = clitic; DO = direct object; DOM = differential object marker; F = feminine; FUT = future; IMP = imperfect past; IO = indirect object; M = masculine; N = neutral; PL = plural; PRS = present; PST = past; SG = singular; SUBJ = subjunctive.

³ We refer the reader to RAE-ASALE (2009: §44.4–44.9) and Álvarez García (2021) for in-depth discussions of other asymmetries between appositive and restrictive relative clauses.

(7) *Subject relativization; human noun target*

- a. La doctora **que** saludó a Pedro es excepcional.
 the.F.SG doctor QUE greet.3SG.PST DOM Pedro is exceptional
 “The doctor that greeted Pedro is exceptional.”
- b. La doctora **que** salió del hospital es excepcional.
 the.F.SG doctor QUE exit.3SG.PST of.the hospital is exceptional
 “The doctor that exited the hospital is exceptional.”

(8) *Subject relativization; inanimate noun target*

- a. El huracán **que** destruyó la ciudad fue inesperado.
 the.M.SG hurricane QUE destroy.3SG.PST the city was unexpected
 “The hurricane that destroyed the city was unexpected.”
- b. El huracán **que** llegó a la ciudad fue inesperado.
 the.M.SG hurricane QUE arrive.3SG.PST in the city was unexpected
 “The hurricane that arrived in the city was unexpected.”

No other option is possible. Attempting to introduce the relative clause via *quien* (9) or *D(ef) + que* (10) is ill-formed, regardless of the human/nonhuman status of the target.

(9) *Subject relativization; quien unavailable*

- a. *La doctora **quien** saludó a Pedro es excepcional.
 the.F.SG doctor QUIEN greet.3SG.PST DOM Pedro is exceptional
Intended: “The doctor that greeted Pedro is exceptional.”
- b. *El huracán **quien** destruyó la ciudad fue inesperado.
 the.M.SG hurricane QUIEN destroy.3SG.PST the city was unexpected
Intended: “The hurricane that destroyed the city was unexpected.”

(10) *Subject relativization; D(ef) + que unavailable*

- a. *La doctora **la que** salió es excepcional.
 the.F.SG doctor the.F.SG QUE go.out.3SG.PST is exceptional
Intended: “The doctor that went out is exceptional.”
- b. *El huracán **el que** llegó a la ciudad fue inesperado.
 the.M.SG hurricane the.M.SG QUE arrive.3SG.PST in the city was unexpected
Intended: “The hurricane that arrived in the city was unexpected.”

In sum, restrictive relative clauses targeting a subject can only be introduced by *que*, regardless of the human/nonhuman status of the head noun.

Let us now consider the relativization of a direct object, the structural configuration in which we can assess WCO effects. Crucial for our purposes is that, in contrast to subject relativization, several encoding options are available for the relativization of

objects. The availability of these multiple strategies depends on the human/nonhuman status of the target. Consider first the relativization of a human target such as *la doctora* “the (female) doctor” in the following examples. It is possible for the relative clause to be introduced by *que* (11a), *a quien* (11b), or *a + D(ef) + que* (11c) (see Zagona 2002: 56–60). The marker *a* observed in (11) is the so-called “a personal,” that is, the differential object marker (DOM) whose appearance is conditioned by animacy, definiteness, and specificity. Spanish DOM has been widely discussed in the literature (Torrego 1998; Zagona 2002; Leonetti 2008, 2012; López 2012, a.o.):

(11) *Object relativization; human noun target*

- a. La doctora **que** conociste es excepcional.
the.F.SG doctor QUE meet.2SG.PST is exceptional
“The doctor that you met is exceptional.”
- b. La doctora **a quien** conociste es excepcional.
the.F.SG doctor DOM QUIEN meet.2SG.PST is exceptional
“The doctor that you met is exceptional.”
- c. La doctora **a la que** conociste es excepcional.
the.F.SG doctor DOM the.F.SG QUE meet.2SG.PST is exceptional
“The doctor that you met is exceptional.”

Turning now to inanimate targets, only the *que* strategy in (12a) is available (the same holds for nonhuman animate nouns such as those denoting animals, but we omit the data).⁴

(12) *Object relativization; inanimate noun target*

- a. La novela **que** compraste es pésima.
the.F.SG novel QUE buy.2SG.PST is awful
“The novel that you bought is awful.”
- b. *La novela **a quien** compraste es pésima.
the.F.SG novel DOM QUIEN buy.2SG.PST is awful
Intended: “The novel that you bought is awful.”
- c. *La novela **a la que** compraste es pésima.
the.F.SG novel DOM the.F.SG QUE buy.2SG.PST is awful
Intended: “The novel that you bought is awful.”

⁴ There is a fourth strategy involving the item *cual(es)* “which” that we will set aside (see Brucart 1992, 1999). Whereas the three relativization strategies described in the main text are basically interchangeable for simple object relativization, this additional option with *cual(es)* is more restricted in its use – for author Ranero, it is comparatively degraded in our baseline examples, even though it is well-formed and semantically distinct in more complex cases. We point the reader to RAE-ASALE (2009: §44.3) and Brucart (1999: 498) for discussion of the broader uses of *cual(es)* in relativization.

An important characteristic of Spanish object relative clauses has to do with the flexible order of the verb and subject inside the relative clause. Consider two ordering possibilities for each of the relativization strategies illustrated in (11), one involving the order subject-verb (13), and the other verb-subject (14):

(13) *Object relativization; subject-verb ordering*

- a. La doctora que Juan conoció es excepcional.
the.F.SG doctor QUE Juan meet.3SG.PST is exceptional
“The doctor that Juan met is exceptional.”
- b. La doctora a quien Juan conoció es excepcional.
the.F.SG doctor DOM QUIEN Juan meet.3SG.PST is exceptional
“The doctor that Juan met is exceptional.”
- c. La doctora a la que Juan conoció es excepcional.
the.F.SG doctor DOM the.F.SG QUE Juan meet.3SG.PST is exceptional
“The doctor that Juan met is exceptional.”

(14) *Object relativization; verb-subject ordering*

- a. La doctora que conoció Juan es excepcional.
the.F.SG doctor QUE meet.3SG.PST Juan is exceptional
“The doctor that Juan met is exceptional.”
- b. La doctora a quien conoció Juan es excepcional.
the.F.SG doctor DOM QUIEN meet.3SG.PST Juan is exceptional
“The doctor that Juan met is exceptional.”
- c. La doctora a la que conoció Juan es excepcional.
the.F.SG doctor DOM the.F.SG QUE meet.3SG.PST Juan is exceptional
“The doctor that Juan met is exceptional.”

Information-structural factors determine the most felicitous order given a specific context (see Brucart 1999: 400). Gutiérrez-Bravo (2003) reports that the verb-subject order is felicitous as an answer to a broad question such as *What happened?*, whereas the subject-verb order is not. In other words, the postverbal position inside the relative clause is reserved for new elements, whereas the preverbal position is used for elements that have been introduced previously. Consider the following examples that illustrate this generalization. Given a prior discourse where a referent is introduced (here, “the teacher” in the preamble (15)), a preverbal subject inside the relative clause is felicitous (15a), whereas a postverbal subject is not felicitous (15b).⁵

⁵ Presotto and Torregrossa (2024: fn. 17) states that the preverbal position inside relatives conveys new information, whereas the postverbal position conveys old information and cites Gutiérrez-Bravo (2003). However, it is clear from assessing the cited work that this description is backward; see also Goodall (2001), Gallego (2010) for more details on subject placement in the language.

- (15) Sé que la maestra ha editado muchos
 know.1SG.PRS that the.F.SG teacher have.3SG.PRS edited many
 libros, pero yo estoy buscando...
 books but I be.1SG.PRS looking.for
 “I know the teacher has edited many books, but I am looking for...”
- a. el libro que la maestra escribió.
 the.M.SG book QUE the.F.SG teacher write.3SG.PST
 “...the book that the teacher wrote.”
- b. #el libro que escribió la maestra.
 the.M.SG book QUE write.3SG.PST the.F.SG teacher
Intended: “...the book that the teacher wrote.”

The placement of the subject inside the relative clause in relation to the verb is important for the purposes of our experiment, which, as discussed below, includes a discourse context for each experimental item. Given the discourse leading to the experimental stimuli, all of our examples exhibited subject-verb order so that they would be felicitous.

There is one final observation regarding the availability of two orderings for the subject and verb inside the relative clause. Recall that *que* relativization is the only strategy that is available for both subject (7) and object relatives (11) – in fact, it is required for the former. In relation to the real-time processing of a relative clause, this fact entails that, upon encountering the relativizer *que*, a Spanish speaker will begin to consider two competing parses: namely, either a subject is being relativized or an object is. The word order between subject and verb within the relative clause immediately resolves any ambiguity when we encounter the DP following *que*, since this DP lacks the DOM exponent *a*. The points of temporary ambiguity at which two readings are being considered is notated in red font below, whereas blue indicates the disambiguation point at which the object relativization reading becomes the only one that is available.

- (16) La doctora **que** Pedro **vio** es excepcional.
 the.F.SG doctor QUE Pedro see.pst.3SG is exceptional
 “The doctor that Pedro saw is exceptional.”

In contrast, when the ordering within the relative clause is **verb-subject**, the two readings are still in play when the verb is encountered. It is only once the post-verbal DP (which lacks the DOM exponent) is encountered that the object relativization reading wins out.

- (17) La doctora **que** **vio** Pedro es excepcional.
 the.F.SG doctor QUE see.pst.3SG Pedro is exceptional
 “The doctor that Pedro saw is exceptional.”

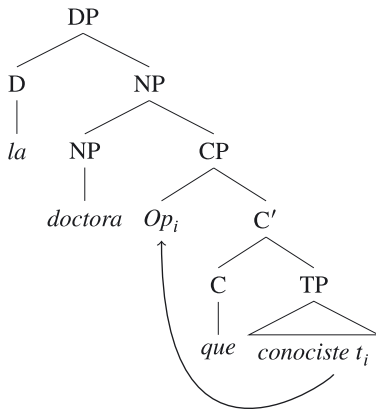
In a nutshell, there is a longer period of temporary syntactic ambiguity with *que* relative clauses if the ordering is **verb-subject**, as in (17), relative to the subject-verb ordering in (16). This longer temporary ambiguity might lead to a (more) pronounced

garden-path effect. In contrast, no garden path arises for relative clauses introduced by *a quien*, since these relative clauses unambiguously target an object. As we will see in Section 3, all of our test items involved subject-verb order as a means to minimize temporary syntactic ambiguity.

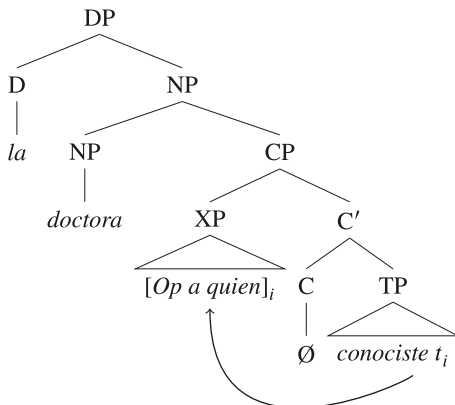
It is worthwhile at this juncture to briefly illustrate the major analyses of the syntax of restrictive relative clauses through the lens of the Spanish data that we will use to assess WCO. We will address here the head-external and head-raising (head-internal) analyses (see Bianchi 2002a, 2002b; Hulsey and Sauerland 2006; Salzmann 2017; De Vries 2018).

Let us start with the head-external analysis (Chomsky 1977; Jackendoff 1977). Observe an object relative clause “the doctor that you met” with *que* (18) and *a quien* (19), the two relativization strategies we will compare:

(18) Head-external analysis; *que*

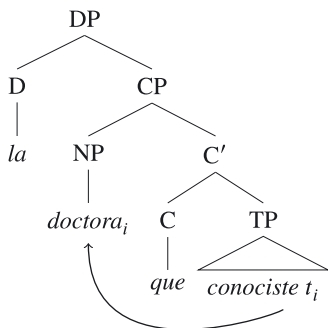


(19) Head-external analysis; *a quien*

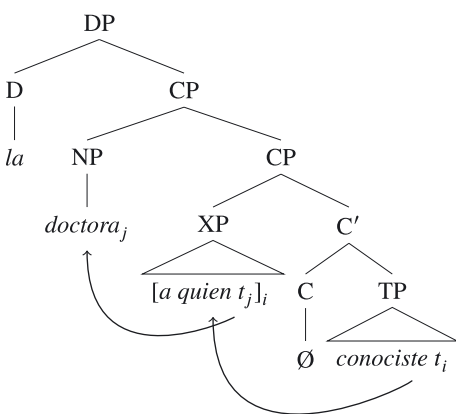


The analysis illustrated above is usually contrasted with the head-raising approach (Carlson 1977; Kayne 1994; Schachter 1973; Vergnaud 1974). Under this alternative, the head noun originates within the relative clause:

(20) Head-raising analysis; *que*



(21) Head-raising analysis; *a quien*

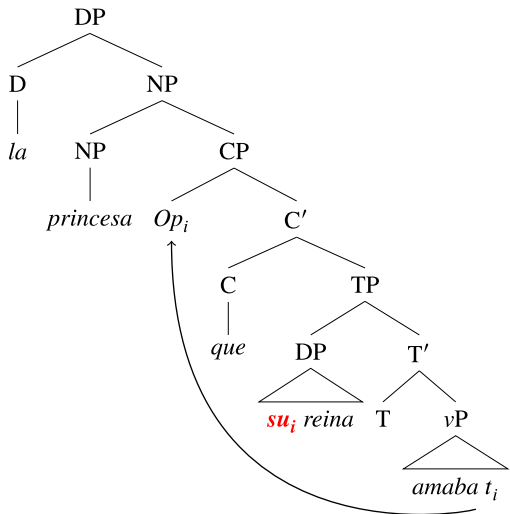


In addition to these two options, researchers have also proposed the matching analysis, which posits that the head noun is represented twice in the structure: once in its surface position (i.e., the matrix clause) and once within the relative clause (Hulsey and Sauerland 2006; Salzmann 2006; Sauerland 2004). Finally, Cinque (2020) builds on previous work to pursue the idea that matching and raising approaches are not mutually exclusive but, rather, structural variants that emerge from one and the same “double-headed” underlying structure (which we do not represent here).

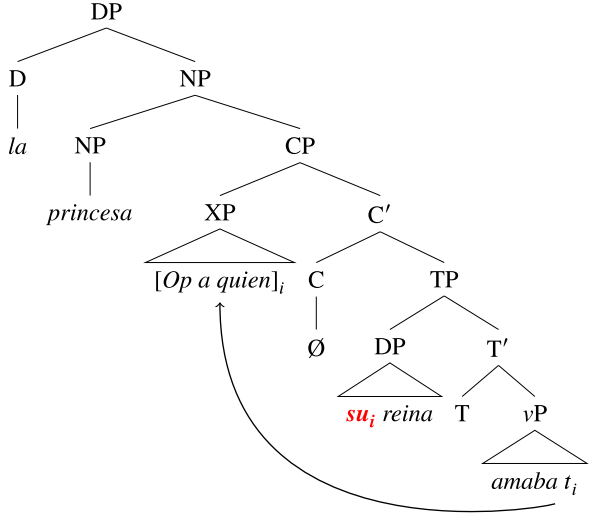
Regardless of the syntactic analysis, we appear to have a configuration that ought to give rise to WCO, namely those cases where the movement dependency

internal to the relative clause crosses a non-c-commanding pronoun. We use the head-external analysis in (22) to illustrate this configuration.

- (22) a. *la princesa que su reina amaba*
“the princess that her queen loved”



- b. *la princesa a quien su reina amaba*
“the princess that her queen loved”



Equipped with this background regarding relativization in the language, which leads to the expectation of WCO violations, we now turn to the literature on WCO in Spanish restrictive relative clauses.

2.2 Do Spanish relative clauses exhibit WCO effects?

Systematic and controlled discussion of WCO effects in Spanish relative clauses is scant. For example, in relation to a fragment example that involves indirect object relativization (23), Bosque and Gutiérrez-Rexach (2009: 584) note: “*The effects of weak crossover are less robust than those of strong crossover. In fact, weak crossover gives rise to grammatical strings in relative structures...*” (translation ours).⁶

- (23) caseros a los que nunca pagan sus inquilinos
 landlords to the.PL QUE never pay.3PL.PRS their tenants
 “landlords who their tenants never pay”

Given the authors of the cited book, we assume that the dialect represented by the relevant example is Peninsular Spanish; see Bosque and Gutiérrez-Rexach (2009: 46) for their discussion on the kind of data used (e.g., acceptability judgments). Other dialects (such as Guatemalan Spanish, spoken by author Ranero) would require that the relativized nominal be doubled by the indirect object clitic *le* as in (24), independently of the presence of a manipulation that is meant to induce WCO.⁷

- (24) caseros a los que les paga (un quetzal) Marta
 landlords to the.PL QUE CL.IO.PL pay.3SG.PRS one quetzal Marta
 “landlords who Marta pays (one quetzal)”

Note, however, that the fragment above would only be felicitous if the postverbal subject inside the relative clause constitutes a new discourse element. Thus, we would want to ensure that the judgment was given in the appropriate context (recall our discussion of word order in Section 2.1). Regardless of this detail, if we took (23) and its accompanying passage as representative of the entire empirical landscape in Spanish, one could classify the language as one that does not display WCO in relative clauses.

A subset of the data discussed in Agüero Bautista (2014: 8) is also used to demonstrate that Spanish relative clauses lack WCO effects. Consider the example in (25), which displays the *a quien* strategy for object relativization.

⁶ Note that the *a* in this example is a preposition introducing an indirect object, which is distinct from the DOM marker observed in other examples.

⁷ See Zagona (2002: 141-144) and Ordóñez (2012) for some discussion of indirect objects and variation in clitic doubling; see Brucart (1999: 404) for relativization specifically.

- (25) Ningún niño_i a **quien**_i su_i madre haya maltratado _{-i}
 no boy DOM QUIEN his mother have.PRS.SUBJ mistreated
 será aceptado sin examen psicológico.
 be.3SG.FUT accepted without exam psychological
 “No boy who his mother has mistreated will be accepted without a
 psychological exam.”

However, Agüero Bautista (2014) goes on to argue that WCO arises in the same structural context if the possession strategy inside the relative clause is manipulated. WCO is thus taken to explain why (26) is ill-formed – presumably, the issue arises because, instead of using the possessive form *su* as in (25), the construction uses a *DP of pronoun* structure (akin to English “of him/her”).

- (26) ?*Ningún niño_i a **quien**_i la madre de él_i haya
 no boy DOM QUIEN the.F.SG mother of him have.PRS.SUBJ
 maltratado _{-i} será aceptado sin examen psicológico.
 mistreated be.3SG.FUT accepted without exam psychological
Intended: “No boy who his mother has mistreated will be accepted without a
 psychological exam.”

We disagree with this interpretation of the data and the concomitant explanation of the lack of WCO effects in (25) as (presumably) contrasted with (26). WCO aside, there are independent reasons why the possessive structure *DP of pronoun* is degraded in this context. Choices in the expression of possession vary with respect to focus and contrast. When a pronoun is explicitly used to express the possessor in a complex DP (in contrast to the possessive *su*), this pronoun receives the focused or contrastive reading. Such a focused/contrastive status of the overt pronoun makes it hard or impossible to interpret it as referring to the same entity as another element in the sentence; in other words, contrast drives the disjoint reading. This observation about how overt pronouns affect information structure has been noted by researchers like Zagona (2002).

Crucially, this effect occurs regardless of whether the configuration could induce WCO or not. Consider the following dialogue without WCO as an illustration.

- (27) A: A qué familiar de Juan_i viste?
 DOM which family.member of Juan saw.2PST
 “Which family member of Juan’s did you see?”
 B: A su_i madre.
 DOM his mother
 “His mother.”

B': A la madre de él_{??ij*}_j.
 DOM the.F.SG mother of him
Intended: "His mother."

Note that the question forces a coreferential reading, one which is incompatible with the answer offered by B'. What seems to be triggering the deviance, then, both in our example (27B') and in (26), is that the relevant possession strategy induces *contrast* on the overt pronoun, rendering the bound reading impossible. Another example showing the same effect appears in (28b):

- (28) a. Cada niña_i llevaba una foto de su_i mamá.
 each girl carried a picture of her mother
 "Each girl_i carried a picture of her_i mother."
 b. Cada niña_i llevaba una foto de la mamá de ella_{*ij}.
 each girl carried a picture of the.F.SG mother of her
Intended: "Each girl_i carried a picture of her_i mother."
Available: "Each girl_i carried a picture of her_j mother."

A final illustration involving subject relativization is observed below in (29b). Notice that the same contrast persists, even though this is an environment (again) where WCO could not arise.

- (29) a. Ninguna niña_i que odia a su_i mamá es feliz.
 no.F girl QUE hate.3PST.SG DOM her mother is happy
 "No girl_i who hates her_i mother is happy."
 b. Ninguna niña_i que odia a la mamá de ella_{*ij} es feliz.
 no.F girl QUE hate.3PST.SG DOM the.F.SG mother of her is happy
Intended: "No girl_i who hates her_i mother is happy."
Available: "No girl_i who hates her_j mother is happy."

We thus maintain that Agüero Bautista seems to provide evidence against the existence of WCO in Spanish relative clauses via examples like (25); however, his argument that manipulating the possession strategy gives rise to WCO does not go through. Moreover, the comparison between (26), which is degraded due to double confounds of possession and contrast, and (25), where we expect to find a WCO effect, might mask any degradedness in (25). To foreshadow our experimental findings below, examples like (25) received ratings on par with other WCO configurations, thus attesting to WCO in this context.

Another study that briefly discusses the WCO configurations under relativization is Fernández Soriano (1995), although in structural contexts that are distinct from those we

assess in our experimental study. In (30), we see two examples of possessive relativization that are surface-similar to our data, given by Fernández Soriano, and that are judged well-formed. Only *que*-relativization is available in these configurations.

- (30) a. el niño ese que su padre es médico y su
 the.M.SG boy that.M.SG QUE his father is doctor and his
 madre arquitecta
 mother architect
 “that boy whose father is a doctor and whose mother is an architect”
 b. la chica que me preguntaste si su novio era ingeniero
 the.F.SG girl QUE CL.IO.1SG ask.2SG.PST if her boyfriend was engineer
 “the girl who you asked me if her boyfriend was an engineer”

First, note that these examples are not object relatives, however, and (30b) involves long-distance relativization (the main type of data that Fernández Soriano focuses on). A plausible baseline comparison for (30a) would be a parallel example using the relative pronoun *cuyo/a* “whose” (31a). However, Picallo and Rigau (1999: 1002) remark that the use of this relativization strategy is limited in many dialects (e.g., it has “practically disappeared” in Mexican Spanish; see also Elvira 2023: 180). Picallo and Rigau provide (31b) (a similar example to (30a)) in order to illustrate possessive relativization in “colloquial” speech (i.e., *quesuismo*, see (32a) below), as well as a third possibility employing the verb *tener* “to have” inside the relative clause (31c).

- (31) *Possessive relativization* (adapted from Picallo and Rigau 1999: 1003)
 a. Hablé con aquel chico cuyo hermano es albañil.
 speak.1SG.PST with that.M.SG boy whose brother is builder
 b. Hablé con aquel chico que su hermano es albañil.
 speak.1SG.PST with that.M.SG boy QUE his brother is builder
 c. Hablé con aquel chico que tiene un hermano albañil.
 speak.1SG.PST with that.M.SG boy QUE have.3SG.PRS a brother builder
 “I spoke to that boy whose brother is a builder.”

Crucially, there is a fundamental structural distinction between Fernández Soriano’s examples in (30) and our target relative clauses: Fernández Soriano’s data pattern like correlatives, in which the apparent head noun has no structural representation within the embedded clause. Thus, they more closely resemble English *such that*-relative clauses (consider *the boy such that his father is a doctor*). Research has independently demonstrated that correlative constructions do not exhibit crossover effects (e.g., Postal 1993; Bhatt 2003), and the Spanish data support that idea.

We have mentioned several studies maintaining that WCO effects are not observed in Spanish relative clauses.⁸ We are not aware of any studies that have taken an opposing view. As a result, there does not seem to exist a debate in the literature regarding the status of WCO configurations in Spanish relative clauses, in contrast to the conflicting viewpoints that one can easily find regarding English relatives.

Significantly, WCO receives little or no attention in the relevant literature. For instance, WCO effects are not discussed at all in the extensive chapter focusing on relativization in the 1999 *Gramática Descriptiva de la lengua Española* (Brucart 1999). They are not mentioned in other works either: Eguren (2017) (which analyzes relative clauses and possessives), the collected essays on Spanish relativization in Rivero (1991) (which includes reprints of that author's earlier work such as Rivero 1982), and the overview articles in Francom (2012), Brucart (2016), Elvira (2023).

Similarly, the discussion of relativization in RAE-ASALE (2009: §44.1-§44.10) does not explicitly mention strong/weak crossover effects (Spanish *cruce fuerte/débil*), even in the sections devoted to possession inside relative clauses (§44.8g-e). In the grammar's section on relativization, a single corpus example is provided that might qualify as a configuration where the effect of WCO could be expected, (32a), but it displays two characteristics that make it unlike the data we are interested in here. First, it involves the relativization of an indirect object (recall (23)). Second, the configuration exhibits a clitic inside the relative clause under the scope of the possessed nominal, and this clitic doubles the target of relativization (see bolded elements). It is also of note that this kind of example is described as dispreferred on prescriptive grounds by RAE-ASALE (2009), which names the phenomenon *quesuismo*. The prescriptively preferred version would use the possessive *cuyo* "whose", which we construct and provide as a comparison in (32b).

(32) *Indirect object relativization; possible crossover configuration*

- a. Reaccionó como lo típico de **cualquier** **marido** que
 react.3SG.PST like the.N typical of any husband that
 su mujer **le** dice que está enamorada de
 his wife CL.IO.3SG say.3SG.PRS that be.3SG.PRS in.love of
 otro hombre.
 another man
 "He reacted as is typical of any husband whose wife tells him that she
 loves another man." (adapted from RAE-ASALE 2009:§44.9o)

⁸ It bears mentioning that an absence of WCO effects has been discussed systematically for *other* structural configurations in Spanish (see di Tullio et al. 2019 and references therein).

- b. Reaccionó como lo típico de **cualquier marido** cuya
 react.3SG.PST like the.N typical of any husband whose
 mujer **le** dice que está enamorada de
 wife CL.IO.3SG say.3SG.PRS that be.3SG.PRS in.love of
 otro hombre.
 another man
 “He reacted as is typical of any husband whose wife tells him that she
 loves another man.”

To summarize, some prior literature has offered the viewpoint that there is no WCO in Spanish restrictive relative clauses, but this generalization has been made through a limited dataset that does not systematically compare relativization strategies (Bosque and Gutiérrez-Rexach 2009). Others have claimed that baseline configurations do not give rise to WCO, but the effect surfaces under specific manipulations related to possession (Agüero Bautista 2014). However, we assessed the data used to argue for that asymmetry and showed that they were confounded and ruled out independently of any WCO configuration. Finally, detailed studies of relativization do not mention crossover effects at all (e.g., RAE-ASALE 2009).

With this background in mind, we now turn to our experimental investigation, which seeks to clarify the status of WCO in Spanish restrictive relative clauses.

3 The present study

To systematically investigate the status of WCO in restrictive relative clauses in Spanish, we conducted a rating study in which participants read sentences in contexts and evaluated the naturalness of the sentences; the study is a replication of the English WCO experiment of Howitt et al. (*to appear*). To control for potential dialectal differences, we focused on Mexican Spanish.

3.1 Participants

We recruited 103 participants located in Mexico (48 female, 53 male, 2 did not say; mean age: 30) via the Prolific.com crowd-sourcing service; 99 identified as native speakers of Spanish.⁹ Of those, 39 passed the attention checks described below; we include their data in the analysis.

⁹ We relied on Prolific.com's location services to recruit participants located in Mexico. Although it is possible that some of these participants speak a variety of Spanish that is not Mexican Spanish, the vast majority of Spanish speakers in Mexico speak Mexican Spanish.

3.2 Materials and design

We created a total of 24 items, with eight conditions per item. Where possible, items were a direct translation of the materials from Howitt et al. (*to appear*). We manipulated three factors: WCO (presence vs. absence of a configuration that should yield WCO), determiner (definite vs. quantifier), and relativization strategy (*a quien* vs. *que*). All data involved direct object relativization (see Section 2.2 for discussion of other types of relativization). An example item appears in Table 1.¹⁰

Recall that there are three main relativization strategies for direct objects (11). We chose to compare *que* (11a) and *a quien* clauses (11b), instead of incorporating *a+D(ef)+que* clauses (11c), for two reasons. First, the determiner adds an additional layer of complexity that would complicate the interpretation of any results. Second, the number of elements involved in that relativization strategy is conditioned by the grammatical gender of the (singular) head noun – i.e., **two** elements with masculine nouns (e.g., *cada príncipe al que/*a el que*...“each prince that...”) versus **three** elements with feminine nouns (e.g., *cada princesa a la que*...“each princess that...”). Given that the head nouns in our items were a mixture of grammatically masculine, feminine, and neutral nouns (i.e., nouns that are compatible with either determiner such as *el/la asistente* “the assistant”), we chose to avoid the inconsistency introduced by *a+D(ef)+que* clauses.

There are also several reasons why we used direct object relativization in our study instead of indirect object relativization. For starters, doing so allows for a straightforward comparison to Howitt et al.’s (*to appear*) results on English, which

Table 1: Example experimental item.

Sentence	WCO	Determiner	Relativizer
Cada princesa a quien su reina amaba fue incluida en el retrato real.	WCO	quantifier	<i>a quien</i>
Cada princesa que su reina amaba fue incluida en el retrato real.	WCO	quantifier	<i>que</i>
La princesa a quien su reina amaba fue incluida en el retrato real.	WCO	definite	<i>a quien</i>
La princesa que su reina amaba fue incluida en el retrato real.	WCO	definite	<i>que</i>
Cada princesa a quien la reina amaba fue incluida en el retrato real.	no WCO	quantifier	<i>a quien</i>
Cada princesa que la reina amaba fue incluida en el retrato real.	no WCO	quantifier	<i>que</i>
La princesa a quien la reina amaba fue incluida en el retrato real.	no WCO	definite	<i>a quien</i>
La princesa que la reina amaba fue incluida en el retrato real.	no WCO	definite	<i>que</i>

10 A full list of our items and their corresponding contexts is available at https://osf.io/kybu8/?view_only=b960782766354c18b9dd2980929be9db.

showed a clear WCO effect in restrictive relative clauses. Since we are interested in laying the groundwork for broader cross-linguistic studies on the status of WCO in relative clauses, we sought to minimize any differences in experimental design. Furthermore, the pair of relativization strategies that can be compared systematically via indirect object relativization is not ideal. We can assess the status of WCO with *quien* relativization (33b), but we cannot assess the status of bare *que* relativization (33a), which is ill-formed. Instead, we would need to assess the strategy that uses a determiner (33c), the additional structural component mentioned before.

(33) *Indirect object relativization; human noun target*

- a. *Regresaron los payasos (a) **que** Esteban (les)
 return.3PL.PST the.PL clowns to QUE Esteban CL.IO.3PL
 give.3SG.PST a present
 dio un regalo.
Intended: “The clowns that Stephen gave a present to returned.”
- b. Regresaron los payasos a **quienes** Esteban *(les) dio
 return.3PL.PST the.PL clowns to QUIEN.PL Esteban CL.IO.3PL give.3SG.PST
 un regalo.
 a present
 “The clowns that Stephen gave a present to returned.”
- c. Regresaron los payasos a los **que** Esteban *(les)
 return.3PL.PST the.PL clowns to DET.M.PL QUE Esteban CL.IO.3PL
 dio un regalo.
 give.3SG.PST a present
 “The clowns that Stephen gave a present to returned.”

Note how the data above illustrate that some Spanish dialects require that a relativized indirect object be doubled by a clitic in base position inside the relative clause. These doubling facts complicate the interpretation of any result related to WCO configurations, since several analytical possibilities exist to derive the dependency between the doubled clitic and its associate. Furthermore, it is conceivable that our participants could vary with respect to clitic-doubling of indirect objects, which would have introduced a serious confound (see our Section 5 for the possibility of the resumption or doubling of *direct* objects in certain dialects, an issue left for future work). Finally, assessing indirect object relativization necessarily requires that the role of the *direct* object be considered carefully in designing the test items. This introduces an additional variable that could obscure any results related to the presence or absence of WCO effects.

Let us return, then, to our target sentences. They were presented in a story context meant to deliver a bound/coreferential interpretation that would yield WCO

Progreso: ☐

Las princesas son las hijas de ciertas reinas. Una princesa era amada por su reina, y otra no.

¿Qué tan natural suena la siguiente oración en el contexto de la historia?

La princesa a quien su reina amaba fue incluida en el retrato real.

nada natural
natural

Figure 1: Example experimental trial with the item in Table 1; this trial features a WCO, definite determiner, a *quien* relativizer condition.

violations. Participants evaluated the naturalness of the target sentences in the context of the story using a slider with endpoints labeled *nada natural* “not natural at all” (coded as 0) and *natural* “natural” (coded as 1). Participants were told that all of the sentences were true in an attempt to discourage truth-value judgments and highlight that the task was to evaluate naturalness. An example trial for the item in Table 1 appears in Figure 1.

After reading the instructions and completing two practice trials, participants completed a total of 30 trials in random order: 24 test trials (one from each item; three from each of the eight conditions) together with six fillers/attention checks. The task took an average of 14 minutes to complete. The fillers were designed to elicit a clear response, either as natural or unnatural. For natural fillers, we expected a slider response of 0.5 or greater; for unnatural fillers, we expected a slider response of less than 0.5. Our fillers are available in the appendix linked in footnote 10. Only the 39 participants who provided the expected response on at least five of the six fillers passed our attention check.

3.3 Results

Figure 2 plots average naturalness ratings grouped by experimental condition. We fit a linear mixed-effects regression predicting rating by WCO, determiner, and relativizer, together with their interactions; the model included random intercepts by participant and by item. We find an effect of determiner ($\beta = -0.07$, $t = -2.31$, $p < 0.05$), such that quantifiers receive lower ratings than definites, as well as an interaction between WCO and relativizer ($\beta = -0.12$, $t = -3.03$, $p < 0.01$), such that the effect of WCO is significant only when the relativizer is *que*. No other effects reached significance.

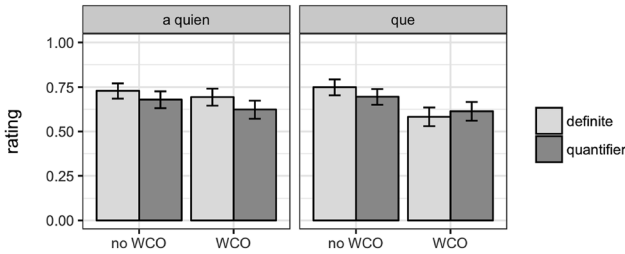


Figure 2: Average slider rating grouped by condition. Error bars represent bootstrapped 95 % confidence intervals.

4 General discussion

Our results indicate that Spanish restrictive relative clauses are indeed subject to crossover violations, but clear WCO effects are observed only when the relativizer *que* is used. The status of crossover violations for relative clauses introduced by *a quien* is less clear. These results indicate that at least a subset of Spanish relative clauses manifest WCO effects, and speakers recognize those effects in our task. The result is significant in and of itself, as it adds Spanish to the list of languages with WCO in restrictive relative clauses.

Given that 50+ years of research has yet to settle on the definitive theory of WCO, we refrain from taking a stand here on the specific source of WCO effects in Spanish restrictive relative clauses. Crucial for our purposes is the observation that the structural configuration in Spanish parallels that of English restrictive relative clauses, where WCO effects have been observed (Higginbotham 1980; Howitt et al. *to appear*; Lasnik and Stowell 1991; Postal 1993; Safir 1984, 2017). In both cases, we have a dependency relationship (i.e., a movement chain) intervened by a non-c-commanded pronoun coindexed with the trace, illustrated for Spanish in (22) above with a head-external analysis. And so we expect to find WCO violations in Spanish as we do in English.

The results with *que* confirm this prediction. The puzzle lies in the absence of clear WCO effects in *a quien* clauses. In what follows, we explore two possible explanations for our *a quien* data. Under the first, there are indeed WCO violations in *a quien* relative clauses, but the possibility for appositive parses of some of our *a quien* conditions masks the presence of WCO. Under the second explanation, there are differences between *que* and *a quien* relative clauses, such that WCO-violating configurations arise only with *que*.

4.1 Appositive parse

As mentioned in Section 2 above, appositive relative clauses are known to lack crossover effects (e.g., Safir 1986, 2017; Bianchi 2002a, 2002b). One could posit that we did not detect a WCO effect in *a quien* relative clauses because participants judged such clauses as *appositive*, rather than restrictive.

The logic of this explanation is as follows. It is independently known that *que* cannot introduce appositive object relative clauses, as evidenced by the contrast in (34) (Zagona 2002: 58).¹¹

(34) *Appositive object relativization; que unavailable*

- a. *Esos hombres, *que* conocí ayer...
 those men *QUE* meet.1SG.PST yesterday
 Intended: “Those men, who I met yesterday...”
- b. Esos hombres, *a* quienes conocí ayer...
 those men DOM *QUIEN*.PL meet.1SG.PST yesterday
 “Those men, who I met yesterday...”

In other words, Spanish speakers are aware that an appositive reading is impossible in *que* object relative clauses. Therefore, when an object relative clause is introduced by *a quien*, as in (34b) and as in half of our experimental trials, participants may take the presence of *a quien* as a sign that the appositive interpretation is warranted on the basis of paradigmatic contrast: two grammatical constructions serve similar but not identical functions, and so one expects to find some differences between them. If *a quien* object relative clauses are interpreted as appositive (again, in contrast to *que* object relative clauses), the nonoccurrence of WCO violations for *a quien* relative clauses is explained. In other words, since the appositive parse is unavailable in general for *que* object relative clauses, it should be the case that the WCO effect shines through in that condition, unencumbered.

However, there is more to the story when it comes to appositive parses of *a quien* relative clauses. In the condition involving a quantifier, an appositive relative clause is ill-formed – its degraded status can also be observed in the English translation (35c).¹²

¹¹ Zagona states that examples like (34a) are ill-formed for “some speakers” and notates it (*). It is unclear which dialects Zagona is alluding to that would accept such an example; the data we provide reflect the judgment of author Ranero. RAE-ASALE (2009: \$44.2s) does mention that a bare *que* in a direct object appositive can be occasionally found in “colloquial” speech.

¹² We are grateful to Juan Uriagereka for pointing this out to us.

(35) *Appositive object relativization; QP independently ill-formed*

- a. Sonia, a quien su reina amaba, fue incluida
 Sonia DOM QUIEN her queen love.3SG.IMP be.3SG.PST included
 en el retrato real.
 in the.M.SG portrait royal
 “Sonia, who her queen loved, was included in the royal portrait.”
- b. La princesa, a quien su reina amaba, fue
 the princess DOM QUIEN her queen love.3SG.IMP be.3SG.PST
 incluida en el retrato real.
 included in the.M.SG portrait royal
 “The princess, who her queen loved, was included in the royal portrait.”
- c. ??Cada princesa, a quien su reina amaba, fue
 each princess DOM QUIEN her queen love.3SG.IMP be.3SG.PST
 incluida en el retrato real.
 included in the.M.SG portrait royal
Intended: “Each princess, who her queen loved, was included in the royal portrait.”

As a result of this restriction, an appositive parse is not possible for our *a quien* conditions with a quantificational determiner (i.e., *cada* in our experimental items). We, therefore, expect that any rescuing effect attributable to an appositive parse should not be possible in conditions with a quantifier. And indeed, ratings for WCO-violating *a quien* relative clauses with a quantifier are on a par with ratings for the WCO-violating *que* relative clauses (Figure 2; 0.62/1 for *a quien* vs. 0.58 and 0.61 for *que*). It is the WCO-violating *a quien* relative clauses with a definite that receive higher ratings than expected (0.69), and, crucially, it is this specific condition that allows for the appositive rescue strategy. We, therefore, consider it likely that the absence of clear WCO effects for *a quien* in our results arises as a result of the appositive parse that is available to *a quien* with a definite head noun.

4.2 Weakest crossover

Speakers show varying degrees of tolerance for \bar{A} -binding violations, even though all such violations stem from the same fundamental issue: disruption of c-command relationships in \bar{A} -binding contexts. Some constructions remain acceptable despite involving both (i) an operator that locally \bar{A} -binds a pronoun and a trace and (ii) a pronoun contained within an NP that c-commands the trace – in other words, the classic WCO configuration exemplified in (22) for both *que* and *a quien*. WCO

configurations that do not give rise to WCO violations are known as *weakest crossover* contexts; such contexts offer the possibility of broadening our understanding of binding configurations. Weakest crossover has been identified in *tough*-movement, topicalization, and parasitic gap constructions (Lasnik and Stowell 1991). If we interpret our results with *a quien* as the absence of WCO violations, then *a quien* restrictive relative clauses are candidates for weakest crossover as well.

According to Lasnik and Stowell (1991), weakest crossover arises as a result of the logical status of the operator in \bar{A} position, which licenses a new kind of empty category, a null epithet, that gets treated as an R-expression not subject to the principles giving rise to WCO violations. Quantificational operators must bind variables, and variables give rise to WCO; nonquantificational operators are associated with null epithets immune from WCO. In an attempt to explain the absence of WCO with *a quien*, one could hypothesize that *a quien* itself serves as the relative-clause operator (or has a silent operator enclosed in it, as proposed in Arregi 1998), and that this operator is nonquantificational, thereby licensing a null epithet in place of the variable trace that is subject to WCO with *que*.

Setting aside the thorny issue of identifying a difference in the quantificational status of (the operators associated with) *que* and *a quien* on the basis of Lasnik and Stowell's characterization, Safir (2017) points out a major drawback of the account, namely the absence of independent evidence for their new kind of empty category. Without such evidence, positing the new category offers little by way of explanation. There are alternatives to Lasnik and Stowell's story that do not worry about quantificational status or positing a new type of empty category. For example, Ruys (2004) rejects characterizing WCO in terms of an \bar{A} -binding violation and instead focuses on A-binding requirements (see also Sauerland 1998); in cases of weakest crossover, the would-be offending pronoun has an appropriate A-binder. For present purposes, the trouble lies in finding a difference between *que* and *a quien* structures such that the latter, but not the former, features an appropriate A-binder. However, as we discuss in the following subsection, perhaps this search is not necessary.

4.3 Taking stock

To summarize, we have considered two possibilities for explaining the contrast between *que* and *a quien* observed in our data. Under the first, both *que* and *a quien* give rise to WCO violations, but only *a quien* can take advantage of an appositive rescuing strategy. Under the second possibility, only *que* (but not *a quien*) gives rise to WCO violations. Should we pursue the second possibility and attempt to explain away WCO for *a quien*, we saw that we have options with which to do so. But these options carry their own costs, and they compel us to ask further questions about the

structure of Spanish relative clauses. More importantly, it is not clear whether our results warrant explaining away WCO for *a quien*. As we mentioned above, ratings for the WCO-violating *a quien* relative clauses with a quantifier (i.e., the *a quien* condition not compatible with an appositive parse) are on a par with the WCO-violating *que* conditions. If anything needs explaining, it is the absence of low ratings for WCO-violating *a quien* relative clauses with a definite – precisely the configuration compatible with an appositive parse.

On balance, it appears that the appositive rescuing strategy provides a better account of our data.

5 Outlook

We have considered weak crossover contexts in Spanish restrictive relative clauses introduced by *que* and *a quien*. Our experimental results show that Spanish speakers indeed notice crossover violations, although an alternative appositive parse available in one of our *a quien* conditions may obviate the WCO violation for that condition.

As far as we know, ours is the first systematic study of WCO effects in relative clauses in Spanish. Specific research on WCO in relative clauses across Romance languages is far from extensive, and data on individual languages vary in depth and breadth. For example, in their recent overviews of relative clauses in Romance, Stark (2016), Poletto and Sanfelici (2017), and Cecchetto and Donati (2023) do not even raise the question of WCO effects. Zooming in on individual Romance languages, Uriagereka (1991) suggests that WCO exists in Galician, but only with bare possessive NPs, not when the determiner *o* is present; Miotto and Lobo (2016) examine relative clauses in Portuguese and contend that these clauses show WCO, which can be remedied if a resumptive pronoun appears in the gap position; and considering French, Postal (1993) claims that relative clauses do not display WCO effects at all, unlike in English. However, many of these conclusions are based on limited introspective data; as our results show, such data may not be sufficient to confidently determine the extent of the relevant effects (see Ortega-Santos 2020 on large-scale syntactic experiments in Spanish). We hope that the study presented here will pave the way for more systematic investigations on crossover effects across Romance and beyond.

In addition to the opportunities for research beyond Spanish, we conclude by identifying a promising avenue for future research concerning the relative clauses examined here. It has been noted before that WCO appears to be ameliorated by resumption in certain structural configurations (e.g., focus fronting). For example, di Tullio et al. (2019) discuss the following contrast in Rioplatense Spanish, where the

utterance is well-formed only if the fronted, focused object is doubled by a resumptive pronoun:

- (36) a. *?A MARÍA_i criticó su_i padre.
 DOM María criticize.3SG.PST her father
 b. A MARÍA_i **la** criticó su_i padre.
 DOM María CL.DO.3SG.F criticize.3SG.PST her father
 “Her father criticized MARÍA.”

Future research could test whether the WCO effect we observed disappears when a resumptive pronoun doubles the head noun in relative clauses. Specifically, one could assess whether a contrast exists between our current *que* items – which showed a clear WCO effect – and minimally different variants containing resumptive pronouns, exemplified in (37). Based on existing literature, we expect that WCO would be ameliorated with resumption, at least in Spanish varieties that allow such resumption.¹³

(37) *Resumption condition for future work; judgments omitted*

- a. La princesa que su reina amaba fue incluida
 the.sg.F princess QUE her queen love.3SG.IMP be.3SG.PST included
 en el retrato real.
 in the.M.SG portrait royal
 “The princess who her queen loved was included in the royal portrait.”
 b. La princesa que su reina **la** amaba fue
 the.sg.F princess QUE her queen CL.DO.3SG.F love.3SG.IMP be.3SG.PST
 incluida en el retrato real.
 included in the.M.SG portrait royal
 “The princess who her queen loved **her** was included in the royal portrait.”

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¹³ It would be crucial that this follow-up experiment target dialects that allow for the co-occurrence of a direct object and a corresponding clitic. For variation across Spanish in this respect, see RAE-ASALE (2009: §16.14q-s), Belloro (2012), Fischer et al. (2019), Ranson (2023); for a brief mention of resumption in relative clauses, see RAE-ASALE (2009: §44.1w). We thank our two anonymous reviewers for pointing out how resumption and its potential interaction with WCO could provide an additional window into the structure of relative clauses.

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References

- Agüero Bautista, Calixto. 2014. Weak crossover and the syntax-phonology interface. In Herman Leung, Zachary O'Hagan, Sarah Bakst, Auburn Lutzross, Jonathan Manker, Nicholas Rolle & Katie Sardinha (eds.), *Proceedings of the 40th annual meeting of the Berkeley Linguistic Society*, 1–19. Berkeley: Berkeley Linguistic Society.
- Álvarez García, Esther. 2021. Clasificación de las oraciones de relativo: límites, soluciones y nueva propuesta. *Nueva Revista de Filología Hispánica (NRFH)* LXIX(2). 499–540.
- Arregi, Karlos. 1998. *Spanish el que relative clauses and the Doubly Filled COMP Filter*. Unpublished manuscript. Massachusetts Institute of Technology.
- Barker, Chris & Chung-chieh Shan. 2015. *Continuations and natural language*. Oxford: Oxford University Press.
- Belloro, Valeria A. 2012. Pronombres clíticos, dislocaciones y doblados en tres dialectos del español. *Nueva Revista de Filología Hispánica* 60(2). 391–424.
- Bhatt, Rajesh. 2003. Locality in correlatives. *Natural Language and Linguistic Theory* 21. 485–541.
- Bianchi, Valentina. 1995. *Consequences of antisymmetry for the syntax of headed relative clauses*. Scuola Normale Superiore Dissertation.
- Bianchi, Valentina. 2002a. Headed relative clauses in generative syntax. Part I. *Glott International* 6(7). 197–204.
- Bianchi, Valentina. 2002b. Headed relative clauses in generative syntax. Part II. *Glott International* 6(8). 1–13.
- Bosque, Ignacio & Javier Gutiérrez-Rexach. 2009. *Fundamentos de sintaxis formal*. Madrid: Ediciones Akal.
- Bresnan, Joan. 1998. Morphology competes with syntax: Explaining typological variation in weak crossover effects. In Pilar Barbosa, Daniel Fox, Paul Hagstrom, Martha McGinnis & David Pesetsky (eds.), *Is the best good enough? Optimality and competition in syntax*, 59–92. Cambridge, MA: MIT Press.
- Brucart, José María. 1992. Some asymmetries in the functioning of relative pronouns in Spanish. *Catalan Working Papers in Linguistics* 2. 113–143.
- Brucart, José María. 1999. La estructura del sintagma nominal: las oraciones de relativo. In Ignacio Bosque & Violeta Demonte (eds.), *Gramática Descriptiva de la Lengua Española*, 395–521. Madrid: Espasa.
- Brucart, José María. 2016. Las oraciones de relativo. In Javier Gutiérrez-Rexach (ed.), *Enciclopedia de lingüística hispánica*, 722–736. London: Routledge.

- Carlson, Greg. 1977. Amount relatives. *Language* 53. 520–542.
- Cecchetto, Carlo & Caterina Donati. 2023. *Relative clauses in Romance*. Oxford Research Encyclopedia of Linguistics.
- Chomsky, Noam. 1976. Conditions of rules of grammar. *Linguistic Analysis* 2. 303–351.
- Chomsky, Noam. 1977. On wh-movement. In P. Culicover, T. Wasow & A. Akmajian (eds.), *Formal syntax*, 71–132. New York: Academic Press.
- Chomsky, Noam. 1981. *Lectures on government and binding*. Dordrecht: Foris.
- Cinque, Guglielmo. 2020. *The syntax of relative clauses: A unified analysis*. Cambridge: Cambridge University Press.
- De Vries, Mark. 2018. *Relative clauses in syntax*. Oxford Research Encyclopedia of Linguistics.
- di Tullio, Angela, Andrés Saab & Pablo Zdrojewski. 2019. Clitic doubling in a doubling world: The case of Argentinean Spanish reconsidered. In Ángel Gallego (ed.), *The syntactic variation of Spanish dialects*, 215–244. Oxford: Oxford University Press.
- Eguren, Luis. 2017. Possessives and relative clauses in Spanish. *Probus* 29(1). 41–72.
- Elvira, Javier. 2023. Las oraciones de relativo. In Guillermo Rojo, Violeta Vázquez Rojas & Rena Torres Cacoullos (eds.), *Sintaxis del Español: The Routledge Handbook of Spanish Syntax*, 173–186. London-Oxford: Routledge.
- Fernández Soriano, Olga. 1995. Pronombres reasuntivos y doblado de clíticos. In Patxi Goenaga Mendizabal (ed.), *De Grammatica*, 109–130. Bilbao: Universidad del País Vasco.
- Fischer, Susann, Mario Navarro & Jorge Vega Vilanova. 2019. The clitic doubling parameter: Development and distribution of a cyclic change. In Miriam Bouzouita, Anne Breitbarth, Lieven Danckaert & Elisabeth Wittenhausen (eds.), *Cycles in language change*, 52–70. Oxford: Oxford University Press.
- Francom, Jerid. 2012. Wh-movement: Interrogatives, exclamative, and relatives. In José Ignacio Hualde, Antxon Olarrea & Erin O'Rourke (eds.), *The handbook of Hispanic linguistics*, 533–556. Malden, MA: Wiley Blackwell.
- Gallego, Ángel. 2010. *Phase theory*. Amsterdam: John Benjamins.
- Goodall, Grant. 2001. On preverbal subjects in Spanish. In Diana Cresti, Teresa Satterfield & Christina Tortora (eds.), *Current issues in linguistic theory: Selected papers from the 29th linguistic symposium on Romance languages*, 92–106. Amsterdam: John Benjamins.
- Gutiérrez-Bravo, Rodrigo. 2003. Subject inversion in Spanish relative clauses. *Romance Languages and Linguistic Theory*. 115–128.
- Higginbotham, James. 1980. Pronouns and bound variables. *Linguistic Inquiry* 11. 679–708.
- Howitt, Katherine, Gregory Scontras & Maria Polinsky. to appear. English restrictive relative clauses are subject to crossover violations. *Linguistic Inquiry*.
- Hulsey, Sarah & Uli Sauerland. 2006. Sorting out relative clauses. *Natural Language Semantics* 14(2). 111–137.
- Jackendoff, Ray. 1977. *X'-Syntax: A study of phrase structure*. Cambridge, MA: The MIT Press.
- Kayne, Richard. 1994. *The antisymmetry of syntax*. Cambridge, MA: MIT Press.
- Krivochen, Diego Gabriel. 2022. Sobre la sintaxis de las oraciones de relativo: un análisis de adjunción con estructura compartida. *Borealis – An International Journal of Hispanic Linguistics* 11(3). 305–377.
- Lasnik, Howard & Tim Stowell. 1991. Weakest crossover. *Linguistic Inquiry* 22. 687–720.
- Leonetti, Manuel. 2008. Specificity in clitic doubling and in differential object marking. *Probus* 20. 33–66.
- Leonetti, Manuel. 2012. Indefiniteness and specificity. In José Ignacio Hualde, Antxon Olarrea & Erin O'Rourke (eds.), *The handbook of Hispanic linguistics*, 285–305. Malden, MA: Wiley Blackwell.
- López, Luis. 2012. *Indefinite objects: Scrambling, choice functions, and differential marking*. Cambridge, MA: MIT Press.

- Mioto, Carlos & Maria Lobo. 2016. Wh-movement: Interrogatives, relatives, and clefts. In W. Leo Wetzels, João Costa & Sergio Menuzzi (eds.), *The handbook of Portuguese linguistics*, 275–293. Chichester, West Sussex: Wiley Blackwell.
- Ordóñez, Francisco. 2012. Clitics in Spanish. In José Ignacio Hualde, Antxon Olarrea & Erin O'Rourke (eds.), *The handbook of Hispanic linguistics*, 423–451. Malden, MA: Wiley Blackwell.
- Ortega-Santos, Iván. 2020. La fiabilidad de los juicios de aceptabilidad en los estudios de sintaxis del español. *Cuadernos de la ALFAL* 12(2). 567–589.
- Picallo, M. Carme & Gemma Rigau. 1999. El posesivo y las relaciones posesivas. In Ignacio Bosque & Violeta Demonte (eds.), *Gramática Descriptiva de la Lengua Española*, 973–1023. Madrid: Espasa.
- Poletto, Cecilia & Emanuela Sanfelici. 2017. Relative clauses. In Andreas Dufter & Elisabeth Stark (eds.), *Manual of Romance morphosyntax and syntax*, 804–836. Amsterdam: De Gruyter.
- Postal, Paul. 1971. *Cross-over phenomena*. New York: Holt, Rinehart and Winston.
- Postal, Paul. 1993. Remarks on weak crossover effects. *Linguistic Inquiry* 24. 539–556.
- Presotto, Giacomo & Jacopo Torregrossa. 2024. Intervention and amelioration effects in the acquisition of Spanish object relative clauses: The role of word order and DOM. *Glossa: A Journal of General Linguistics* 9(1). <https://doi.org/10.16995/glossa.11254>.
- RAE-ASALE. 2009. *Nueva gramática de la lengua española*. Madrid: Espasa.
- Ranson, Diana L. 2023. Los pronombres personales. In Guillermo Rojo, Violeta Vázquez Rojas & Rena Torres Cacoullos (eds.), *Sintaxis del Español: The Routledge Handbook of Spanish Syntax*, 414–426. London-Oxford: Routledge.
- Rivero, María Luisa. 1982. Las relativas restrictivas con *que*. *Nueva Revista de Filología Hispánica* 31. 335–397.
- Rivero, María Luisa. 1991. *Las construcciones de relativo*. Madrid: Taurus.
- Ruys, Eddy G. 2000. Weak crossover as a scope phenomenon. *Linguistic Inquiry* 31. 513–539.
- Ruys, Eddy G. 2004. A note on weakest crossover. *Linguistic Inquiry* 35. 124–140.
- Safir, Ken. 1984. Multiple variable binding. *Linguistic Inquiry* 15. 603–638.
- Safir, Ken. 1986. Relative clauses in a theory of binding and levels. *Linguistic Inquiry* 17. 663–689.
- Safir, Ken. 2017. Weak crossover. In Martin Everaert & Henk van Riemsdijk (eds.), *The Wiley Blackwell companion to syntax*, 2nd edn. Hoboken, NJ: John Wiley & Sons.
- Salzmann, Martin. 2006. *Resumptive prolepsis: A study in indirect A'-dependencies* (LOT dissertation series 136). Utrecht: LOT.
- Salzmann, Martin. 2017. *Reconstruction and resumption in indirect A'-dependencies*. Berlin: Mouton de Gruyter.
- Sauerland, Uli. 1998. *The meaning of chains*. MIT Ph.D. Dissertation.
- Sauerland, Uli. 2004. The interpretation of traces. *Natural Language Semantics* 12. 63–127.
- Schachter, Paul. 1973. Focus and relativization. *Language* 49. 19–46.
- Stark, Elisabeth. 2016. Relative clauses. In Adam Ledgeway & Martin Maiden (eds.), *The Oxford guide to Romance languages*, 1029–1040. Oxford: Oxford University Press.
- Torrego, Esther. 1998. *The dependencies of objects*. Cambridge, MA: The MIT Press.
- Uriagereka, Juan. 1991. A note on determiners, obviation, and opacity. In Joseba A. Lakarra & Íñigo Ruiz Arzalluz (eds.), *Memoriae L. Mitxelena magistri sacrum*, 947–958. Donostia: Universidad del País Vasco.
- Vergnaud, Jean-Roger. 1974. *French relative clauses*. MIT Ph.D. Dissertation.
- Wasow, Thomas. 1972. *Anaphoric relations in English*. MIT Ph.D. Dissertation.
- Zagona, Karen. 2002. *The syntax of Spanish*. Cambridge: Cambridge University Press.