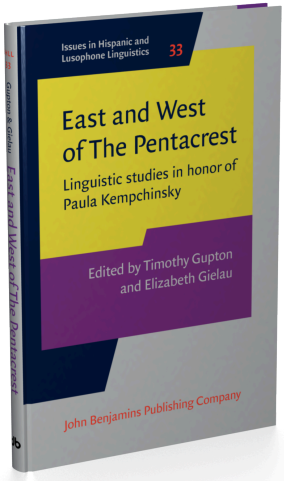
Issues in Hispanic and Lusophone Linguistics
33

CHAPTER 3

Why does D-linking reduce the need for inversion in Spanish *wh*-questions?

Grant Goodall | University of CaliforniaSan Diego

https://doi.org/10.1075/ihll.33.03goo



Pages 69–82 of
East and West of The Pentacrest: Linguistic studies in honor of Paula Kempchinsky
Edited by Timothy Gupton and Elizabeth Gielau
[**Issues in Hispanic and Lusophone Linguistics**, 33]
2021. viii, 217 pp.

CHAPTER 3

Why does D-linking reduce the need for inversion in Spanish *wh*-questions?

Grant Goodall
University of California, San Diego

Spanish *wh*-questions without inversion are much more acceptable when the *wh*-phrase is D-linked. Standard semantic and syntactic analyses of D-linking, developed for the more well-known case of D-linking in weak islands, make incorrect predictions regarding the Spanish case, while analyses based on working memory fare better. In these analyses, the effect obtains because at the time when the gap is posited, the processor is able to retrieve a D-linked filler more easily, and this results in increased acceptability. This type of analysis makes correct predictions about D-linking in Spanish *wh*-questions, and the Spanish facts provide new evidence that such an approach to D-linking based on working memory is correct. The analysis adopted leaves open the question of the proper analysis of inversion itself. Even if D-linking results from properties of working memory, the inversion phenomenon could still be the result of a grammatical constraint.

Keywords: Spanish, *wh*-questions, D-linking, inversion, weak islands, working memory

One of the most noted properties of Spanish is that in *wh*-questions, preverbal subjects are generally not allowed, as seen in (1a), despite the fact that this seems to be the default position for subjects otherwise, as seen in (1b).[1]

(1) a. **¿Qué el niño compró?*
what the child bought
'What did the child buy?'

1. I am grateful to the two anonymous reviewers of this paper, the members of the Experimental Syntax Lab at UC San Diego, and participants at the CUNY Conference on Human Sentence Processing for their many valuable comments on this work. I also express my deep gratitude to Paula Kempchinsky, whose intellectual curiosity, insightful analyses, witty commentary and friendly outlook have made working in Spanish syntax even more of a delight than it would otherwise have been.

https://doi.org/10.1075/ihll.33.03goo

b. *El niño compró un libro.*
the child bought a book
'The child bought a book.'

A question with the intended meaning of (1a) is possible only if the subject is either postverbal or not overtly expressed (which is possible, given that Spanish allows null subjects). These possibilities, both of which are available in the language independently, are illustrated in (2).

(2) a. *¿Qué compró el niño?*
what bought the child
'What did the child buy?'
b. *¿Qué compró?*
what bought
'What did he/she buy?'

In both of these cases, known commonly as "inversion," the verb is adjacent to the *wh*-phrase.[2] Torrego (1984) first brought these facts to the attention of theoretical syntacticians, but she also noted that the effect is not uniform across all types of *wh*-phrases. In particular, she pointed out that adjunct *wh*-phrases such as those in (3) do not require inversion.

(3) a. *¿En qué medida la constitución ha contribuido a eso?*
in what measure the constitution has contributed to that
'In what way has the Constitution contributed to that?'
b. *¿Por qué Juan quiere salir antes que los demás?*
why want leave before than the others
'Why does John want to leave before the others?'

Later researchers noticed that the distinction between those *wh*-phrases that disallow preverbal subjects and those that do not has less to do with the argument/adjunct distinction (Goodall, 1993) and more to do with the lexical complexity of the *wh*-phrase. That is, complex *wh*-phrases seem to be more tolerant of preverbal subjects than are bare *wh*-words, as seen in the contrast in (4) (Ordóñez & Treviño, 1999).

(4) a. * ***¿Qué*** *Octavio Paz nos sugiere que debemos leer?*
what 1PL.IO suggest that should read
'What does Octavio Paz suggest that we should read?'
b. ***¿Qué tipo de literatura*** *Octavio Paz nos sugiere que debemos leer?*
what type of literature 1PL.IO suggest that should read
'What type of literature does Octavio Paz suggest that we should read?'

2. Similar inversion effects obtain with contrastive focus in Spanish and many other Romance languages. See Gupton (2021) for discussion.

(4a) shows the effect that we would expect, where the preverbal subject results in severe degradation, while (4b) shows the marked improvement that occurs when a bare *wh*-phrase is replaced by one that is more lexically elaborated.

This contrast in (4) is intriguing because it is reminiscent of a phenomenon known as D-linking that is observed in weak islands. (5) shows a typical example of a weak island (in this case, a *wh*-island), in which the *wh*-phrase *what* has been extracted out of the island environment, resulting in unacceptability.

(5) *__What__ do you wonder [who bought __]?

When a more lexically complex *wh*-phrase is used, as in (6), acceptability increases noticeably, to such an extent that sentences like these are often considered to be fully acceptable.

(6) **Which car** do you wonder [who bought __]?

Following terminology introduced in Pesetsky (1987), *wh*-phrases like *which car* in (6) are said to be "discourse-linked (i.e., "D-linked"), because their lexical elaboration encourages an answer chosen from referents already existing in the discourse, whereas bare *wh*-phrases typically do not have this property.

1. The D-linking phenomenon

The D-linking phenomenon, and in particular, the fact that D-linking seems to ameliorate certain types of island violations, has been the subject of extensive investigation. With regard to grammatical explanations of the effect, there have been two main types of analysis. In one type (e.g., Szabolcsi & Zwarts, 1993, 1997), the D-linking effect in islands is primarily due to semantic factors. Certain island domains contain operators that require a Boolean operation (e.g. intersection), which in turn requires sets made up of discrete individuals. A D-linked *wh*-phrase facilitates an interpretation in which the set questioned consists of individuals, thus allowing for a coherent semantic interpretation of the sentence. With bare *wh*-words like *what*, on the other hand, an interpretation involving a set of individuals is unlikely (though possible under certain circumstances, as Szabolcsi and Zwarts discuss), so the sentence is perceived as ill-formed. In this type of analysis, then, the contrast between (5) and (6) results from the interaction between the embedded operator and the extracted *wh*-phrase, and the extent to which this latter phrase allows for an individuated interpretation.

In another type of grammatical analysis, the source of the unacceptability of island violations such as (5) is syntactic. In Rizzi (2001, 2004), for instance, the *wh*-dependency between *what* and its gap in (5) violates Relativized Minimality,

which disallows such dependencies when there is an intervening *wh*-phrase that also c-commands the gap site. Fronted topics are known to be immune to Relativized Minimality effects, and D-linked *wh*-phrases bear certain crucial similarities to fronted topics: they contain lexical material beyond the *wh*-word itself, and they are dependent on previously mentioned elements in the discourse. Under this analysis, then, the contrast between (5) and (6) results from D-linked *wh*-phrases being able to be interpreted as topics, which allows them to circumvent the Relativized Minimality requirement.

Given the existence of grammatical analyses of the above two types, and given the apparent similarity between the classical D-linking effect in (6) (relative to (5)) and the contrast for Spanish seen in (4), it is very tempting to attempt to apply analyses such as these to the Spanish case. Doing so is much less straightforward than it might seem, however. First, it is not clear that the presence of a preverbal subject in a *wh*-question, as in (1a) or (4a), presents a violation of the type that D-linking would ameliorate in either of the above analyses. In the semantic analysis, for instance, the D-linking effect obtains because an operator requiring a Boolean operation has scope over the embedded clause, but in the Spanish *wh*-questions under consideration here, there is no obvious candidate for such an operator. Preverbal subjects in Spanish are often analyzed as occupying an A'-position (e.g., Alexiadou & Anagnostopoulou, 1998; Barbosa, 1995; Contreras, 1991; Ordóñez & Treviño, 1999), but there is no known evidence that they trigger a Boolean operation requiring sets consisting of discrete individuals, as would be necessary if the effect in (4) were to be assimilated to the D-linking effect in weak islands. In the syntactic analysis, on the other hand, the D-linking effect stems from the ability of topics to circumvent Relativized Minimality, but here as well, the analysis does not transfer easily to the Spanish case. Even if we say that preverbal subjects in Spanish trigger minimality effects, the lexical nature of D-linked *wh*-phrases would seem to make them more similar to lexical subjects, which should then lead to more of a Relativized Minimality violation, not less.

Second, there is a fundamental difference between weak islands and Spanish *wh*-questions with preverbal subjects with regard to selectivity of extraction. By definition, weak islands allow argument extraction more easily than they do adjunct extraction. This may be seen in the textbook examples in (7).

(7) a. ? **What** do you wonder [whether he bought __ yesterday]?
b. * **Where** do you wonder [whether he bought a newspaper __ yesterday]?
c. * **When** do you wonder [whether he bought a newspaper at the store __]?

All of the sentences in (7) contain an embedded interrogative clause, a typical weak island environment, but extraction of argument *what*, as in (7a), is better than extraction of adjuncts like *where* or *when*, as in (7b)–(c). This contrast is standardly

taken to be one facet of the general D-linking effect seen above: *what* lends itself to an individuated interpretation more readily than *where* or *when*, so it is better able to circumvent the island effect (Rizzi, 2004). In Spanish *wh*-questions, on the other hand, the contrast in *wh*-words goes in the opposite direction. As illustrated in (8), extraction of an argument such as *qué* 'what' is most resistant to extraction across a preverbal subject, while adjuncts like *dónde* 'where' and *cuándo* 'when' show some degree of amelioration (Bakovic, 1998; Goodall, 2004, 2010)).

(8) a. * ***¿Qué*** *Juan compró __ ayer?*
what bought yesterday
'What did Juan buy yesterday?'
b. ?* ***¿Dónde*** *Juan compró un periódico __ ayer?*
where bought a newspaper yesterday
'Where did Juan buy a newspaper yesterday?'
c. ?* ***¿Cuándo*** *Juan compró un periódico __ en el centro?*
when bought a newspaper in the downtown
'When did Juan buy a newspaper downtown?'

This contrast between the effect of the *wh*-word in weak islands in (7) and in Spanish inversion in (8) is puzzling. Although the analyses of D-linking that we have seen so far predict the effects in (7), where argument extraction is better than adjunct extraction, they do not offer a straightforward explanation of the effects in (8), where the improvement goes in the opposite direction.

2. Towards a solution

At this point, we are in a quandary. On the one hand, there are very striking parallels between weak islands and Spanish *wh*-questions with preverbal subjects, in that in both cases, adding lexical complexity to the *wh*-phrase leads to a very substantial improvement in acceptability, but on the other hand, the two most prominent types of analysis in the grammatical literature do not offer much promise in dealing with the Spanish case. Preverbal subjects do not present the sort of violation that one would expect D-linking to ameliorate under these analyses, and in any event, the argument/adjunct contrasts that they predict are just the opposite of what we actually find.

To begin to resolve this quandary, we turn to analyses which attribute the D-linking effect to differences that D-linked and bare *wh*-phrases trigger in working memory, rather than in the grammar itself. Such analyses are based on three primary assumptions. First, *wh*-dependencies (often referred to as "filler-gap dependencies" in the processing literature) pose special difficulties for the processor, as has

been by now well established. Some of the empirical support for this idea comes from the fact that speakers give signs of additional processing effort (e.g., increased time in self-paced reading) at the gap site in comparison to the equivalent position in baseline sentences without a *wh*-dependency (e.g. Fodor, 1978; Kluender & Kutas, 1993; Stowe, 1986). Second, gap sites are processed differently depending on whether the *wh*-phrase is D-linked or bare. There is now considerable evidence that gaps require less processing effort when the *wh*-phrase is D-linked than when it is bare (e.g., Diaconescu & Goodluck, 2004; Frazier & Clifton, 2002; Hofmeister, 2007a, 2007b, 2011; Hofmeister & Sag, 2010; Kluender, 1998), and moreover, this result is in accord with current ideas about how *wh*-dependencies are processed in working memory. At the gap site, the *wh*-filler must be retrieved and D-linked phrases will be easier to retrieve because their greater lexical elaboration leads both to higher levels of activation when they are first processed and to their being less similar to (and thus less subject to interference from) competing potential fillers. Third, the amount of processing effort required for a given *wh*-dependency can have a dramatic effect on acceptability when measured in a formal experiment. Cowart (1997) shows, for instance, that long-distance extraction is much less acceptable than extraction within a single clause, even when both cases are fully grammatical. Findings such as this are now commonplace in formal studies of acceptability.

Putting these three components together gives us the basic D-linking effect: Processing *wh*-dependencies is inherently difficult, but a D-linked *wh*-phrase makes it easier, and this lightened processing load is reflected in increased acceptability relative to an equivalent structure with a bare *wh*-phrase. As with the semantic and the syntactic analyses of D-linking, this analysis makes use of assumptions that have some independent motivation. It also makes a prediction that the others do not, however. Specifically, it leads us to expect that D-linking will result in an increase in acceptability with all *wh*-dependencies. That is, all non-trivial *wh*-dependencies impose a strain on working memory, so if D-linking decreases that strain (and increases acceptability as a result), then we should see a generalized D-linking effect in both island and non-island environments.[3] In the semantic and syntactic analyses, on the other hand, D-linking provides a way to circumvent grammatical constraints, so in the absence of any such constraints (i.e., in non-island environments), we have no reason to expect a D-linking effect.

3. I leave open here the question of how D-linking affects acceptability in the absence of a non-trivial dependency. There is some evidence that D-linking actually causes degradation in such cases (see Hofmeister & Visishth, 2014; Villata et al., 2016) and perhaps in others too (see Goodluck et al., 2017). This effect is not found in the study by Stiller (2014) discussed below, but clearly more work remains to be done in this area (see Villata et al., 2016 for important discussion).

Goodall (2015) tests this directly and finds that the prediction of the working memory account is confirmed. In an acceptability experiment testing extraction out of a weak island, a strong island, and a non-island (a *that*-clause), a significant increase in acceptability is found for D-linking in all three cases, just as the working memory analysis would predict.

Let us now return to the two areas seen above that presented difficulties for attempts to assimilate the D-linking effect in Spanish inversion to the better-known case of the D-linking effect in weak islands. The first problem that we saw was that it is not clear that preverbal subjects in *wh*-questions provide the type of violation that we expect to be circumvented by a D-linked *wh*-phrase. This was a significant challenge for the semantic and syntactic analyses discussed earlier, but it falls into place naturally in the working memory analysis. As we have seen, D-linking facilitates processing of the *wh*-dependency, thus increasing acceptability, so the effect should obtain whether we are in a weak island environment or not. Amelioration with D-linking is thus predicted for *wh*-questions with preverbal subjects in Spanish, just as it was in the case of extraction out of *that*-clauses in English mentioned above.

The second problem was that bare *wh*-phrases in this environment in Spanish do not behave as existing semantic and syntactic analyses of D-linking would predict. That is, these analyses predict that argument *wh*-words, such as *what* and *who*, are more easily extractable than adjunct *wh*-words, because the former are more easily interpreted as asking about individuated entities than the latter. For weak islands, this prediction is correct, as we saw in (7), but with preverbal subjects in Spanish, the facts come out the opposite way, as in (8). As surprising as this contrast may seem at first, it makes sense if D-linking is primarily a working memory effect. One of the central concepts in current models of memory within sentence processing is that when the processor posits a gap and attempts to retrieve the filler, it is susceptible to similarity-based interference, with similarity of syntactic status being one of the relevant factors (Gordon et al., 2001; Lewis et al., 2006). It is thus reasonable to expect, under this view, that an attempt to retrieve a DP argument *wh*-word will be very susceptible to interference from another DP argument, the intervening subject. Attempting to retrieve a non-DP adjunct *wh*-word, on the other hand, should be much less susceptible to interference from the subject, so the fact that adjuncts are easier to extract than arguments is as expected.[4]

As we have now seen, then, viewing D-linking as primarily an effect of memory allows us to extend the analysis of the D-linking effect observed in weak islands to that seen in inversion in Spanish *wh*-questions, while still taking account of the

4. The fact that weak islands behave differently could of course be due to a number of factors. Most obviously, weak islands have an intervening operator which could induce either memory or grammatical effects not present in the case of simple *wh*-questions in Spanish.

ways in which this latter construction differs. This account of D-linking has relied on the idea that lexically more elaborated fillers are easier to retrieve in memory, which facilitates processing of the dependency and increases acceptability. We have also seen that the preverbal subject can interfere with this retrieval, yielding the fact that extraction of DP argument *wh*-words appears to be less tolerant of an intervening subject than extraction of adjunct *wh*-words.

The working memory analysis thus allows us to understand better why D-linking affects the need for inversion in Spanish *wh*-questions and why it behaves slightly differently in this context than it does in the more well-known case of weak islands. Looking at this in the other direction, though, we can see that inversion provides interesting evidence in favor of this approach to D-linking. One piece of evidence involves a fact that we have already seen: There is a D-linking effect in Spanish *wh*-questions with preverbal subjects even though this is not an environment with the crucial characteristics of a weak island. As discussed above, such an outcome is not predicted by standard semantic or syntactic analyses of D-linking, but it is predicted by the working memory analysis, which predicts a generalized D-linking effect regardless of whether the gap is within a weak island or not. Spanish *wh*-questions thus become a second test case, in addition to the English *that*-clauses analyzed in Goodall (2015), where such a D-linking effect has been demonstrated.

Another piece of evidence that Spanish inversion provides in favor of the memory analysis of D-linking involves something we have not yet seen: the difference between vacuous and non-vacuous dependencies. In the analysis under consideration here, the D-linking effect arises because at the point when the processor posits a gap, it is able to retrieve the *wh*-filler more easily when that filler is lexically elaborated. This way of analyzing the phenomenon, however, makes an interesting prediction that we have not considered so far: If the filler does not need to be retrieved, or if the retrieval process is trivial, then we should not see a D-linking effect. This means that in cases where the *wh*-dependency is resolved immediately, such as when the *wh*-phrase is adjacent to the subcategorizing verb (and the retrieval process would thus be trivial), there should be no D-linking effect. That is, we expect a contrast between the sentence pair in (9), where D-linking as in (b) should have a clear effect on acceptability, and the pair in (10), where it should not.

(9) a. * ***¿Qué*** *la profesora vio en el cine?*
what the teacher saw at the theater
'What did the teacher see at the theater?'

b. ***¿Qué película*** *la profesora vio en el cine?*
what movie the teacher saw at the theater
'What movie did the teacher see at the theater?

(10) a. ***¿Qué*** *vio la profesora en el cine?*
what saw the teacher at the theater
'What did the teacher see at the theater?'
b. ***¿Qué película*** *vio la profesora en el cine?*
what movie saw the teacher at the theater
'What movie did the teacher see at the theater?

The difference is that in (9), if we assume that the gap is posited at the point of the verb, there is a non-trivial dependency that must be resolved, and the intervening subject DP plausibly interferes with this, so D-linking makes this difficult task easier. In (10), however, the *wh*-dependency is trivial, in that the filler to be retrieved is the immediately preceding word and there is nothing that interferes. The retrieval process here is thus already simple and straightforward even without D-linking, so we do not expect D-linking to facilitate this process or affect acceptability.

Alex Stiller and I tested this prediction in an acceptability experiment in which 45 participants (all native speakers of Spanish residing in a Spanish-speaking country) rated sentences like those in (9) and (10) using a 7-point scale (Goodall, 2017; Stiller, 2014; Stiller & Goodall, 2016). Participants saw three tokens of each of these four conditions (i.e., a *wh*-S-V order with and without D-linking, as in (9), and a *wh*-V-S order with and without D-linking, as in (10)), in addition to 36 filler items. All experimental items were counterbalanced using a Latin square and were randomized. The results are presented in Figure 1.

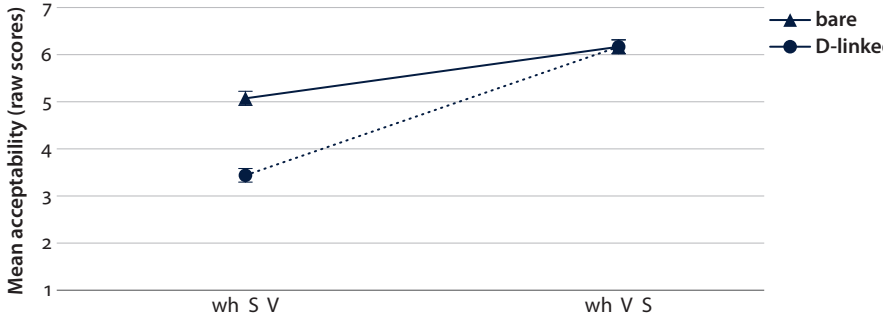


Figure 1. Acceptability of Spanish *wh*-questions with bare and D-linked *wh*-phrases and preverbal and postverbal subjects

There are main effects for D-linking (bare vs. D-linked *wh*-phrase) ($p < 0.001$) and subject position (preverbal or postverbal) ($p < 0.001$), and a significant interaction between the two ($p < 0.001$). Crucially, there is a clear effect of D-linking when there is a preverbal subject ($p < 0.001$), but no such effect with a postverbal subject (p-values from an ANOVA analysis presented in Stiller, 2014). This confirms the

prediction that we saw above. D-linking has a very striking effect when there is a non-trivial *wh*-dependency, as in (9), but has no detectable effect when the dependency is trivial, as in (10).

3. Implications for the analysis of inversion

We have now seen a substantial amount of evidence both for the working memory account of D-linking in general and for the more specific claim that this mechanism underlies the D-linking effect in Spanish *wh*-questions with preverbal subjects. Given that this analysis claims that D-linking makes it easier to retrieve the *wh*-filler, thus resulting in increased acceptability, it is tempting to conclude that the otherwise sharp unacceptability of *wh*-questions with preverbal subjects is entirely attributable to the difficulty of retrieving a *wh*-filler that is not D-linked. This conclusion is not warranted, however, and it remains possible that the unacceptability of these sentences stems at least partly from some type of grammatical violation. One reason to want to keep this possibility open is that even when the *wh*-phrase is D-linked, there is evidence that the sentences are less than fully acceptable. In Goodall (2004), I showed that sentences such as (9b) are still significantly less acceptable than sentences like (10b), and the results above from Stiller (2014) suggest the same thing. Given this, there are two possible conclusions. Either the facilitative effect of D-linking is not sufficient to fully overcome the difficulty of retrieving the filler in these cases, or it is (mostly) sufficient, but there is a grammatical violation that remains. The evidence that we have available here does not allow us to choose between these two possible conclusions.

The situation here is similar to what has been observed about D-linking and island effects. Even if we are certain that D-linking is entirely an effect of memory and retrieval of the filler, and that this is what is responsible for the amelioration of island violations when the *wh*-phrase is D-linked, this still does not allow us to conclude that the island effect itself is simply an effect of working memory. In fact, in Goodall (2015), I present evidence in favor of a working memory account of D-linking, but against a working memory account of the island itself. The evidence regarding D-linking comes from the fact that the D-linking effect occurs both in islands and in (non-island) *that*-clauses, as mentioned above, and the evidence regarding islands themselves comes from the fact that the size of the D-linking effect does not differ between islands and non-islands, contrary to what one would reasonably expect if islands themselves were reducible to memory effects. This general conclusion about D-linking and islands, though clearly provisional and not the final word on the topic, is nonetheless a valuable lesson as we consider the role

of D-linking in Spanish inversion. Even if the D-linking effect itself is attributable to the way that filler retrieval operates, it may be that the prohibition of preverbal subjects in *wh*-questions involves something beyond that.

4. Conclusion

The fact that preverbal subjects are generally disallowed in *wh*-questions in Spanish has long been an intriguing puzzle, and the fact that the prohibition seems to be loosened when the *wh*-phrase is D-linked has only increased the intrigue. Here I have suggested that the standard semantic and syntactic analyses of D-linking as a phenomenon, developed to account for the behavior of weak islands, are not sufficient in dealing with this Spanish case. An analysis in terms of working memory and retrieval of the filler at the gap site is more adequate, and the facts of Spanish *wh*-questions present interesting new evidence in favor of this type of analysis. It is important to note, however, that although D-linking has the effect of loosening the restriction on preverbal subjects in *wh*-questions, it does not eliminate it, and it remains possible that this is because there is a core grammatical constraint that still causes some degradation even when D-linking causes significant amelioration.

References

Alexiadou, A., & Anagnostopoulou, E. (1998). Parameterizing Agr: Word order, V-movement, and EPP-checking. *Natural Language and Linguistic Theory*, 16, 491–539. https://doi.org/10.1023/A:1006090432389

Bakovic, E. (1998). Optimality and inversion in Spanish. In P. Barbosa, D. Fox, P. Hagstrom, M. McGinnis, & P. Pesetsky, *Is the best good enough?* (pp. 35–58). The MIT Press.

Barbosa, P. (1995). Null subjects (Unpublished doctoral dissertation). MIT.

Contreras, H. (1991). On the position of subjects. *Syntax and Semantics*, 25, 63–79.

Cowart, W. (1997). *Experimental syntax: Applying objective methods to sentence judgments*. Sage.

Diaconescu, R. C., & Goodluck, H. (2004). The pronoun attraction effect for D(iscourse)-linked phrases: Evidence from speakers of a null subject language. *Journal of Psycholinguistic Research*, 33(4), 303–319. https://doi.org/10.1023/B:JOPR.0000035103.19149.dc

Fodor, J. (1978). Parsing strategies and constraints on transformations. *Linguistic Inquiry*, 9(3), 427–473.

Frazier, L., & Clifton , Jr., C. (2002). Processing 'D-linked' phrases. *Journal of Psycholinguistic Research*, 31, 633–660. https://doi.org/10.1023/A:1021269122049

Goodall, G. (1993). SPEC of IP and SPEC of CP in Spanish *wh*-questions. In W. Ashby, M. Mithun, G. Perissinotto, & E. Raposo (Eds), *Linguistic perspectives on the Romance languages* (pp. 199–209). John Benjamins. https://doi.org/10.1075/cilt.103.21goo

Goodall, G. (2004). On the syntax and processing of *wh*-questions in Spanish. In *Proceedings of the 23rd West Coast Conference on Formal Linguistics* (pp. 101–114). Cascadilla Press.

Goodall, G. (2010). Experimenting with *wh*-movement in Spanish. In K. Arregi (Ed.), *Romance linguistics 2008: Interactions in Romance* (pp. 233–248). John Benjamins. https://doi.org/10.1075/cilt.313.22goo

Goodall, G. (2015). The D-linking effect on extraction from islands and non-islands. *Frontiers in Psychology*, 5, 1493. https://doi.org/10.3389/fpsyg.2014.01493

Goodall, G. (2017). Referentiality and resumption in *wh*-dependencies. In J. Ostrove, R. Kramer, & J. Sabbagh (Eds), *Asking the right questions: Essays in honor of Sandra Chung* (pp. 65–80). Retrieved on 19 November 2020 from http://escholarship.org/uc/item/8255v8sc

Goodluck, H., Tsiwah, F., & Saah, K. (2017). Island constraints are not the result of sentence processing. *Proceedings of the Linguistic Society of America*, 2, 15–1. https://doi.org/10.3765/plsa.v2i0.4068

Gordon, P., Hendrick, R. & Johnson, M. (2001). Memory interference during language processing. *Journal of Experimental Psychology: Learning, Memory. Cognition*, 27, 1411–1423.

Gupton, T. (2021). Aligning syntax and prosody in Galician: Against a prosodic isomorphism account. In T. Gupton & E. Gielau (Eds.), *East and West of The Pentacrest: Linguistic Studies in Honor of Paula Kempchinsky*. John Benjamins. (This volume) https://doi.org/10.1075/ihll.33.02gup

Hofmeister, P. (2007a). Representational complexity and memory retrieval in language comprehension (Unpublished doctoral dissertation). Stanford University.

Hofmeister, P. (2007b). Retrievability and gradience in filler-gap dependencies. In M. Elliott, J. Kirby, O. Sawada, E. Staraki, & S. Yoon, *Proceedings of 43rd Regional Meeting of the Chicago Linguistics Society* (Vol. 43, pp. 217–32). Chicago Linguistic Society.

Hofmeister, P. (2011). Representational complexity and memory retrieval in language comprehension. *Language and Cognitive Processes*, 26, 376–405. https://doi.org/10.1080/01690965.2010.492642

Hofmeister, P., & Sag, I. (2010). Cognitive constraints and island effects. *Language*, 86, 366–415. https://doi.org/10.1353/lan.0.0223

Hofmeister, P., & Vasishth, S. (2014). Distinctiveness and encoding effects in online sentence comprehension. *Frontiers in Psychology*, 5, 1237. https://doi.org/10.3389/fpsyg.2014.01237

Kluender, R. (1998). On the distinction between strong and weak islands: A processing perspective. In P. Culicover & L. McNally (Eds.), *Syntax and semantics 29: The limits of syntax* (pp. 241–280). Academic Press.

Kluender, R., & Kutas, M. (1993). Subjacency as a processing phenomenon. *Language and Cognitive Processes*, 8, 573–633. https://doi.org/10.1080/01690969308407588

Lewis, R., Vasishth, S., & Van Dyke, J. (2006). Computational principles of working memory in sentence comprehension. *Trends in Cognitive Sciences*, 10, 447–454. https://doi.org/10.1016/j.tics.2006.08.007

Ordóñez, F., & Treviño, E. (1999). Left dislocated subjects and the pro-drop parameter: A case study of Spanish. *Lingua*, 107.39–68. https://doi.org/10.1016/S0024-3841(98)00020-5

Pesetsky, D. (1987). Wh-in-Situ: Movement and unselective binding. In E. Reuland & A. ter Meulen (Eds.), *The representation of (in)definiteness* (pp. 98–129). The MIT Press.

Rizzi, L. (2001). Relativized minimality effects. In M. Baltin & C. Collins (Eds.), *The handbook of contemporary syntactic theory* (pp. 89–110). Blackwell. https://doi.org/10.1002/9780470756416.ch4

Rizzi, L. (2004). Locality and left periphery. In A. Belletti (Eds.), *Structures and beyond: The cartography of syntactic structures* 3, (pp. 223–251). Oxford University Press.

Stiller, A. (2014). *The acceptability of inverted and non-inverted wh-constructions in Spanish*. Comprehensive research paper, Department of Linguistics, University of California San Diego.

Stiller, A., & Goodall, G. (2016). D-linking and working memory: New evidence from Spanish. Poster presented at 29th CUNY Conference on Human Sentence Processing, University of Florida, April 2016.

Stowe, L. (1986). Parsing WH-constructions: Evidence for on-line gap location. *Language and Cognitive Processes*, 1(3), 227–245. https://doi.org/10.1080/01690968608407062

Szabolcsi, A., & Zwarts, F. (1993). Weak islands and an algebraic semantics of scope taking. *Natural Language Semantics*, 1, 235–284. https://doi.org/10.1007/BF00263545

Szabolcsi, A., & Zwarts, F. (1997). Weak islands and an algebraic semantics of scope taking. In A. Szabolcsi, *Ways of scope taking* (pp. 217–262). Dordrecht: Kluwer. https://doi.org/10.1007/978-94-011-5814-5_7

Torrego, E. (1984). On inversion in Spanish and some of its effects. *Linguistic Inquiry*, 15, 103–129.

Villata, S., Rizzi, L., & Franck, J. (2016). Intervention effects and relativized minimality: New experimental evidence from graded judgments. *Lingua*, 179, 76–96. https://doi.org/10.1016/j.lingua.2016.03.004