

Higher order quantification outside questions: the case of free relatives

1. Introduction. *Wh*-phrases have been argued to range over generalized quantifiers (GQs) on the basis of the interpretation of questions containing modals, collective predicates, and number inflected *wh*-phrases (Spector, 2007, 2008; Xiang, 2021; Elliott et al., 2022; Alonso-Ovalle and Rouillard, 2019, forthcoming). We contend that free relatives (FRs) provide further evidence for the hypothesis that *wh*-phrases range over GQs. Under a widespread analysis (Jacobson, 1995), FRs convey maximality. FRs can also have existential readings (Caponigro, 2023, for an overview). We present a case, parallel to the question data presented in Spector 2008, that challenges either analysis and suggests that FRs range over GQs, then we defend this analysis against treating FRs as amount relatives. We illustrate with Spanish, with a rich inventory of productive FRs and *wh*-phrases that arguably range over GQs in questions (AO&R, 2019, forthcoming).

2. Background. FRs can be interpreted as definites. For concreteness, we assume that, under that interpretation, the FR in (1) is parsed as in (2), where covert *the* presupposes maximality ((5), $\max_{\subseteq}(X)$ is the set of maximally inclusive elements in set X , a singleton if X contains a maximally inclusive element, \emptyset otherwise; we remain agnostic as to whether type-shifting should replace *the*.) When FRs have non-maximal interpretations (see refs. in Caponigro, forth.), we assume they are parsed with a covert existential ((3),(6)).

(1) Ana habló [FR con quien habló Bea] (4) $[\text{who}]^w = \lambda x. \text{people}_w(x)$
 Ana talked-to with whom talked-to Bea (5) $[\text{the}]^w = \lambda X: \max_{\subseteq}(X) \neq \emptyset. \text{the } x \in \max_{\subseteq}(X)$

(2) *the who* λ_1 [B. talked to t_1] (3) \exists who λ_1 [B. talked to t_1] (6) $[\exists] = \lambda P \lambda Q. \exists x [P(x) \wedge Q(x)]$

3. The puzzle. The sentence in (8) can be felicitously used to describe the scenario in (7). With the definite parse in (9), the FR is predicted to presuppose that (10) contains a maximal element, i.e. that there is exactly one particular person or one particular group of people that Ana was required to talk to. Since this presupposition is *not* satisfied in (7), (8) is predicted to be a presupposition failure, contrary to intuitions.

(7) *Scenario 1.* To get a new printer for her office, Ana had to talk to one of her supervisors, Bea and Carla. Either one would suffice: she didn't *need* to talk to Bea and she didn't *need* to talk to Carla. In the end, she talked to Bea and got her new printer.

(8) Ana habló [FR con quien tenía que hablar.] (9) *the who* λ_{t_1} [Ana had to talk to t_1]
 Ana talked-to with whom she-had to talk (10) $\{x: \forall w' [\text{permitted}_{w_0}(w') \rightarrow \text{talk}_{w'}(a, x)]\}$

Quien-FRs are known to have existential, non-maximal, interpretations (Plann, 1980), which are transparent in cases like (11), with the FR in the object position of existential *have*: (11) conveys that Ana had *somebody* to talk to. With the existential parse for the FR in (12), (8) is predicted to convey the truth conditions in (13), that there is some element in the set in (10) that Ana talked to. Since (10) is empty, the sentence is predicted to be false under this parse, also contrary to intuitions.

(11) Ana tenía [FR con quien hablar] (12) \exists who λ_{t_1} [Ana had to talk to t_1]
 Ana had with whom talk:INF (13) $\exists x [x \in (10) \wedge \text{talked}_{w_0}(a, x)]$

4. Analysis. We assume that FRs can range over GQs and take covert *the* to index (generalized) entailment-based maximality (von Stechow et al., 2014), as in (14). The FR in (8) gets the parse in (15). We take *quién* to range over disjunctions and conjunctions 'formed out' of actual individuals. With those individuals restricted to Bea and Carla, for illustration, we get the set in (19). The set of GQs in this set that are also in the sister constituent of *quien* is the singleton containing the underlined GQ in (19). the_{\subseteq} applies to that singleton and yields its member, which the property of having been talked to by Ana applies to (20). The resulting truth conditions convey that Ana talked to Bea or Carla. These truth conditions are satisfied in Scenario 1.

(14) $[\text{the}_{\subseteq}]^w = \lambda X: \max_{\subseteq}(X) \neq \emptyset. \text{the } x \in \max_{\subseteq}(X)$ (17) $\{\lambda P_{\text{et}}. \exists x \in X [P(x)]: X \neq \emptyset \wedge X \subseteq \{y: \text{people}_w(y)\}\}$
 (15) the_{\subseteq} who $\lambda_{1_{\text{et},t}}$ [had [$t_{\text{et},t}$ λ_2 Ana talk to t_2]] (18) $\{\lambda P_{\text{et}}. \forall x \in X [P(x)]: X \neq \emptyset \wedge X \subseteq \{y: \text{people}_w(y)\}\}$
 (16) $[\text{who}]^w = \lambda Q_{\text{et},t}. Q \in ((17) \cup (18))$ (19) $\{\lambda P_{\text{et}}. P(b), \lambda P_{\text{et}}. P(c), \lambda P_{\text{et}}. P(b \oplus c), \underline{\lambda P_{\text{et}}. P(b) \vee P(c)}\}$
 (20) LF: $[\text{the}_{\subseteq}$ who $\lambda_{1_{\text{et},t}}$ [has [$t_{\text{et},t}$ λ_2 Ana talks to t_2]]] λt_2 Ana talked to t_2

4. Against alternatives. One could seek parallels for (8) in the domain of relative clauses (RCs), rather

than questions. Mendia (2017) shows that Spanish headed RCs can have amount interpretations (21). The same is true of light-headed headless relatives (LHHRs) ((21) minus the part inside parenthesis). (8) could illustrate an amount interpretation, under which the sentence would truthfully convey that Ana talked to an individual whose cardinality is either in (23) or (24) (1 in either case.) To exclude this, we observe that (8) is also true in Scenario 2, even when we expect (8) to be a presupposition failure—if the cardinality is determined with respect to the set in (23) = \emptyset , or false (if determined with respect to (24) (= {1}).

(21) Ana habló (con las personas) con las que tenía que hablar.

Ana talked (with the person:pl) with the that she-had to talk
‘Ana talked to the number of people she had to talk to.’

(22) *Scenario 2.* To get a new printer for her office, Ana had to talk to her supervisor, Bea, or to the team of accountants, Carlos and David, together. Either option would suffice. None is required. In the end, she talked to Carlos and David and got her new printer.

(23) $\{n: \forall w' [\text{permit}_{w_0}(w') \rightarrow |\{x: \text{talk}_{w'}(a, x)\}| = n]\}$ (24) $\{n: \forall w' [\text{permit}_{w_0}(w') \rightarrow |\{x: \text{talk}_{w'}(a, x)\}| \geq n]\}$

More generally, contrasts like the one between (25) (with a LHHR, which can have an amount interpretation, since it can provide a (partial) answer to a *how many*-question) and (26) (with a *quien* FR, which can't) show that amount interpretations of *quien* FRs don't seem available.

(25) Metió en su coche a los que cabían.
put in his car OBJ the.PL that fit

(26) Metió en su coche a quien cabía.
put in his car obj who.SG fit

Still, Mendia (2017) argues that in English pure amount interpretations of amount relatives (exemplified above with cases referencing cardinalities) are just one case of a more general interpretation: amount relatives denote (sub)kinds; those, he argues, can be determined by considering entities that share the same cardinality, in pure amount interpretations, but also in other ways. Could it be that (8) illustrates a kind interpretation of the FR under which (8) conveys that Ana didn't talk to an individual instantiating *the* type of individual that she had to talk to (a supervisor, in this case)? Scenario 2, where more than one type of individual is salient (supervisors vs. accountants) casts doubts. More generally, Caponigro (forthcoming) observes for Italian that *chi*-FRs seem to lack kind interpretations. The observation carries over to *quien* FRs, as illustrated in (27) and (28), with variants of Caponigro's examples.

(27)?Quien habla diez lenguas es raro.

who speaks ten languages is rare

(Intended, not possible): ‘The kind of person who speaks ten languages is a rare kind.’

(28)?Quien tiene el pelo moreno es común en el sur de España.

who has the hair dark is common in the south of Spain

(Intended, not possible): ‘The kind of people who has dark hair is a common kind in Southern Spain.’

Finally, *quien* FRs depart from amount relatives in other respects. Carlson (1977) observes that heads of amount relatives can be related to the ‘logical subject’ of the existential construction, even when they couldn't fill that gap (29). The same is true of LHHRs, but not of *quien* FRs (30).

(29) a.*There was the water (in the sink) in the bathtub.

b. There wasn't the water in the sink that there was in the bathtub. (att. to L. Selkirk)

(30) No había en el salón {los que / *quien(es)} había en la oficina.

not was in the living room {the:pl that / who(pl)} were in the office.

5. Conclusion. The interpretation of FRs contributes to the growing evidence that *wh*-phrases can range over GQs. Chierchia and Caponigro (2013) argue for the derivation of FR from underlying questions on the basis of shared interpretations. Future work needs to consider the data in sect. 3 under this hypothesis.

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