# The empirical puzzle of English question word coordinations
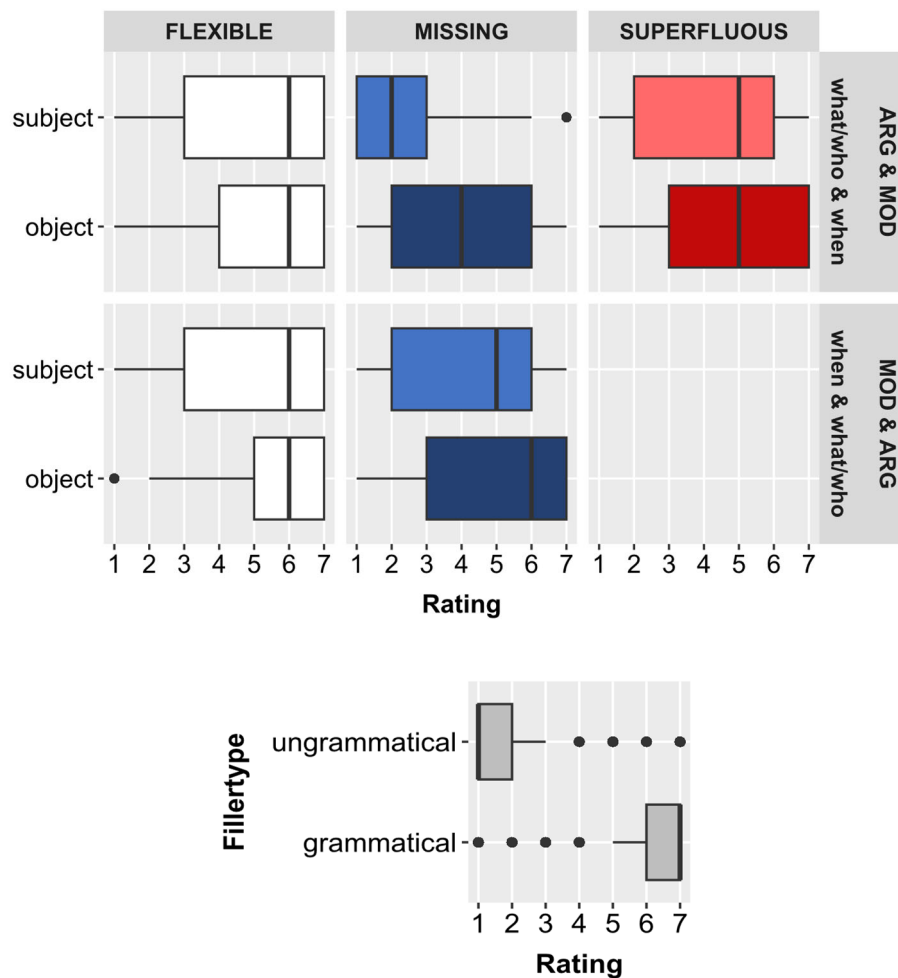
English question word coordinations (QWCs) of *wh*-arguments and *wh*-adjuncts  like (i) have received very diverse analyses [2][5][6][8][9][10][11]. Strikingly, the diversity also results from different assumptions about which types of QWCs are grammatical. (i) is generally considered grammatical. It contains an optionally transitive verb so either of the *wh*-phrases can individually be construed with the 'body' of the clause: *{what, when} do they eat*. I call QWCs like (i) *flexible* due to the flexible argument structure. In non-flexible QWCs, there either is an argument *missing*, (ii), or there is a *superfluous* argument, (iii) (superfluous subject). Experimental investigations of QWCs with missing objects suggest an influence of the order of the *wh*-phrases: if the *wh*-argument is adjacent to the clause, acceptability is higher [10][7]. QWCs with missing subjects and with superfluous subjects/objects are judged ungrammatical in the literature but they occur in corpora [10][8], although superfluous subject QWCs only occur in argument-before-adjunct order (iii) [10].

(i)    *What and when did they eat?*
(ii)   *What and when did they devour?*
(iii)  *Who or why would you even need this thing*?

The theoretical accounts deal differently with this empirical situation: some consider the 'ungrammatical' corpus occurrences errors [2][9], others provide an analysis for them because native speakers produce them.

I present data from a combined corpus-experimental study testing naturally occurring QWCs (corpus) in an acceptability/makes-sense experiment. I extracted all argument-adjunct QWCs from the *ententen21 corpus* (UK-domains). Of the twelve patterns that technically are possible (TYPE (flexible/missing/superfluous)  × ARGUMENT (subject/object) × ORDER), ten occurred: there were no adjunct-before-argument QWCs with superfluous arguments, confirming [10]. For the experiment, I selected ten hits per pattern that came with sufficient context plus 40 fillers. 50 UK-English speakers judged whether the QWC (presented with context), sounded natural and made sense (7-point scale). Flexible QWCs received significantly higher ratings than non-flexible QWCs. Of the non-flexible QWCs, only argument-before-adjunct QWCs with a missing subject showed straight unacceptability. All others showed great variability with medians in the middle or slightly towards the acceptable scale end. Item analysis reveals that non-flexible QWCs improve when the (non)-*wh*-argument is semantically less specified (*who and when <u>individuals</u> entered… >> what and how to check <u>the play equipment</u>…*). I argue that non-flexible QWCs are production errors that arise due to *good enough language production* [4]. Depending on semantic-pragmatic factors and linear ordering, they can be 'repaired' in comprehension, cp. [1][3]. Flexible QWCs are analyzed as elliptic biclausal structures.

[1] Arregui, C. Clifton, L. Frazier & K. Moulton. 2006. Processing elided VPs with flawed antecedents. *Journal of Memory & Language* 55, 232-246.

[2] Citko, B., & Gračanin-Yuksek, M. 2013. Towards a new typology of coordinated *wh*-questions. *Journal of Linguistics*, 49(1), 1-32.

[3] Ferreira, F., K.G.D. Bailey, V. Ferraro. 2022. Good-enough representations in language comprehension. *Current Directions in Psychological Science,* 11 (1), 11-15.

[4] Goldberg, A., & Ferreira, F. (2022). Good enough language production. *Trends in Cognitive Sciences,* 26(4), 300-311

[5] Gračanin-Yuksek, M. 2007. *About sharing.* Ph.D. dissertation, MIT.

[6] Larson, B. 2013. *The syntax of non-syntactic dependencies*. Ph.D. thesis, University of Maryland.

[7] Lewis, S., B. Larson & D. 2012. What and when can you fill a gap with something? Poster presented at 25th Annual CUNY Conference.

[8] Park, Y-G. & J.-G. Kim 2023 Coordinated *wh*-questions in English: An HPSG Approach. Paper presented at *The 30th conference on Head-Driven Phrase Structure Grammar.* UMass Amherst.

[9] Potter, D. & M. Frazier. 2021. English *wh&wh* constructions: conjoin and move. *Proceedings of the 38th West Coast Conference on Formal Linguistics*. ed. Rachel Soo et al., 355-365. Somerville, MA: Cascadilla Proceedings Project.

[10] Whitman, N. 2002. *Category neutrality: A type-logical investigation.* Ph.D. dissertation, The Ohio State University

[11] Whitman, N. 2004. Semantics and pragmatics of English verbal dependent coordination. *Language* 80, 403–434.