Understanding Lexical-Semantic Argument Structure through Argument Omission

Anonymous Submission

1 Theoretical Motivation

Truly intransitive verbs (e.g. 1a) are incompatible with an object. Some verbs which appear intransitive (e.g. 1b) are not only compatible with an object but are actually derived from truly transitive verbs through a process called intransitivisation or 'object drop'. The atypical semantics-syntax mapping in the case of intransitivisation is a useful testing bed for theories of predicate-argument structure. Predicate-argument structure is used as a logical representation of verb meaning, but open questions remain surrounding the relevant meaning elements and the syntactic realisation of arguments (Levin and Hovav, 2005). Perhaps this is why object drop has been studied for decades, largely without consensus (Fodor and Fodor, 1980; Gillon, 2012; Glass, 2022; Groefsema, 1995; Hankamer and Sag, 1976; Katz and Postal, 1965; Lambrecht and Lemoine, 2005; Ruda, 2017; Scott, 2006 inter alia).

(1) a. John smiled *[something].

b. John read [something].

2 The Experiment

This work aims to provide the means of better understanding what causes object drop to be acceptable or unacceptable. To meet this objective, I drew on computational linguistic techniques for extracting and analysing a large-scale dataset of sentences exhibiting object drop, with a case study of Verbs of Communication (Levin, 1993).

2.1 Methodology

Using the English Web Treebank (EWT) corpus annotated under the Universal Propositions (PropBank) semantic annotation framework (Jindal et al., 2022; Palmer et al., 2005) and Universal Dependencies (UD) syntactic annotation framework (Nivre et al., 2020; Silveira et al., 2014), I automatically detected object drop in sentences. Using PropBank, object drop was identified in sentences where the semantic 'patient' argument, closely associated with syntactic 'object' (Blake, 1990), was in PropBank's inventory of possible arguments for the verb but not labeled in the sentence. Using Universal Dependencies, object drop was identified in intransitive sentences whose verb was used elsewhere in the corpus with an object. Considering both frameworks allowed me to better relate semantic and syntactic representations.

I also conducted a case study on a subset of the sentences identified with the above methods as containing object drop. I manually annotated these sentences according to various features identified in the literature as potential conditions determining the acceptability of object drop, such as the definiteness of the argument and the construction it was found in (Fillmore, 1986; Lambrecht and Lemoine, 2005; Scott, 2006). This subset focused on Verbs of Communication, a class chosen because it exhibits a wide range of these argument types and constructions. I also used this smaller dataset for manual evaluation of my automatic object drop detection.

2.2 Results and Analysis

Automatic detection of object drop was overall successful, with 84% accuracy using PropBank and 94% accuracy using UD. The main error source with PropBank was that some verbs' inventory of possible arguments incorrectly included a patient argument; however, where the inventory was correct it mostly outperformed detection with UD because it was better at identifying arguments in marked constructions such as fronting or relative clauses.

The annotated dataset from the case study contains 182 entries and revealed that Definite Null Complements (e.g. 2a) are far more common than Indefinite Null Complements (e.g. 2b), accounting for 92% of the object drop data.

(2) a. Mary left and John followed. ≈ Mary left and John followed [Mary].

b. John ate. ≈ John ate [something].

Indefinite Null Complements (INCs) typically occurred with a restricted set of verbs, while the majority of verbs which appeared with INCs also appeared with Definite Null Complements (DNCs). Furthermore, INCs were more restricted with respect to the constructions they appeared in. These constructions indicated generic statements or routine activities, similarly to the analysis in Glass, 2022. DNCs, however, were compatible with any of the construction options. There may also be verbs which block object drop entirely (e.g. *declare*). The data suggests that objects can only be omitted given sufficient linguistic or extra-linguistic context for the absent content to be salient, but that definite content may be more salient.

3 Conclusion

My study revealed that argument optionality is not arbitrarily assigned to predicates in the lexicon. Rather, context is required to determine whether a verb can be intransitivised, perhaps suggesting the need for a contextually grounded semantic representation of argument structure. While a thorough manual annotation was not feasible beyond the case study, the larger dataset and methodology open the door for further case studies about the conditions of argument omission more generally, beyond object omission in English. Such acceptability conditions can be used to further refine theories of argument structure.

References

Blake, B. J. (1990). *Relational grammar* [Open Library ID: OL2191645M]. Routledge.

Fillmore, C. J. (1986). Pragmatically Controlled Zero Anaphora [Publisher: Linguistic Society of America]. *Annual Meeting of the Berkeley Linguistics Society*, *12*, 95. https://doi.org/10.3765/bls.v12i0.1866

Fodor, J. A., & Fodor, J. D. (1980). Functional Structure, Quantifiers, and Meaning Postulates [Publisher: The MIT Press]. *Linguistic Inquiry*, *11*(4), 759–770. Retrieved June 19, 2024, from https://www.jstor.org/stable/4178191

Gillon, B. S. (2012). Implicit complements: A dilemma for model theoretic semantics. *Linguistics and Philosophy*, *35*(4), 313–359. https://doi.org/10.1007/s10988-012-9120-2

Glass, L. (2022). English verbs can omit their objects when they describe routines. *English Language & Linguistics*, *26*(1), 49–73. https://doi.org/10.1017/S1360674321000022

Groefsema, M. (1995). Understood arguments: A semantic-pragmatic approach. *Lingua*, *96*(2), 139–161. https://doi.org/10.1016/0024-3841(95)00002-H

Hankamer, J., & Sag, I. (1976). Deep and Surface Anaphora [Publisher: The MIT Press]. *Linguistic Inquiry*, *7*(3), 391–428. Retrieved June 19, 2024, from https://www.jstor.org/stable/4177933

Jindal, I., Rademaker, A., Ulewicz, M., Linh, H., Nguyen, H., Tran, K.-N., Zhu, H., & Li, Y. (2022, June). Universal Proposition Bank 2.0. In N. Calzolari, F. Béchet, P. Blache, K. Choukri, C. Cieri, T. Declerck, S. Goggi, H. Isahara, B. Maegaard, J. Mariani, H. Mazo, J. Odijk, & S. Piperidis (Eds.), *Proceedings of the Thirteenth Language Resources and Evaluation Conference* (pp. 1700–1711). European Language Resources Association. Retrieved June 19, 2024, from https://aclanthology.org/2022.lrec-1.181

Katz, J. J., & Postal, P. M. (1965). An Integrated Theory of Linguistic Descriptions [Publisher: Springer]. *Foundations of Language*, *1*(2), 133–154.

Lambrecht, K., & Lemoine, K. (2005, January). Definite null objects in (spoken) French. In M. Fried & H. C. Boas (Eds.), *Grammatical Constructions: Back to the roots*. John Benjamins Publishing Company.

Levin, B. (1993). *English verb classes and alternations: A preliminary investigation*. University of Chicago Press.

Levin, B., & Hovav, M. R. (2005, June). Argument Realization [ISBN: 9780521663311 9780521663762 9780511610479 Publisher: Cambridge University Press]. https://doi.org/10.1017/CBO9780511610479

Nivre, J., de Marneffe, M.-C., Ginter, F., Hajič, J., Manning, C. D., Pyysalo, S., Schuster, S., Tyers, F., & Zeman, D. (2020, May). Universal Dependencies v2: An Evergrowing Multilingual Treebank Collection. In N. Calzolari, F. Béchet, P. Blache, K. Choukri, C. Cieri, T. Declerck, S. Goggi, H. Isahara, B. Maegaard, J. Mariani, H. Mazo, A. Moreno, J. Odijk, & S. Piperidis (Eds.), *Proceedings of the Twelfth Language Resources and Evaluation Conference* (pp. 4034–4043). European Language Resources Association. Retrieved August 12, 2025, from https://aclanthology.org/2020.lrec-1.497/

Palmer, M., Gildea, D., & Kingsbury, P. (2005). The Proposition Bank: An Annotated Corpus of Semantic Roles. *Computational Linguistics*, *31*(1), 71–106. https://doi.org/10.1162/0891201053630264

Ruda, M. (2017, November). *On the Syntax of Missing Objects: A study with special reference to English, Polish, and Hungarian*. John Benjamins. https://doi.org/10.1075/la.244

Scott, K. (2006). When less is more: Implicit arguments and Relevance Theory. *UCL Working Papers in Linguistics*. Retrieved June 19, 2024, from https://www.academia.edu/1809670/When_less_is_more_Implicit_arguments_and_Relevance_Theory

Silveira, N., Dozat, T., de Marneffe, M.-C., Bowman, S., Connor, M., Bauer, J., & Manning, C. (2014, May). A Gold Standard Dependency Corpus for English. In N. Calzolari, K. Choukri, T. Declerck, H. Loftsson, B. Maegaard, J. Mariani, A. Moreno, J. Odijk, & S. Piperidis (Eds.), *Proceedings of the Ninth International Conference on Language Resources and Evaluation (LREC'14)* (pp. 2897–2904). European Language Resources Association (ELRA). Retrieved August 12, 2025, from https://aclanthology.org/L14-1067/