



October 24, 2025

Subject: Response to reviewers

Dear Editors and Reviewers,

Thank you for your thoughtful comments in response to our submission, “Experiments in Graph Structure and Knowledge Graph Embeddings” (Tracking Number: 806-1797), submitted as an Article in Special Issue to Neurosymbolic Artificial Intelligence.

We appreciate the discussion related to aspects of our experiments – and their approach – that directly lead to future research directions. Briefly, we summarize our responses (and thus changes made to the manuscript).

- We are thankful that no additional experiments are required. However, we have actually run the experiment across all available models in `pykeen`, although strictly with the default parameters. Generally, these have done quite poorly for FB15K-237, -238, and -239. These range from using Poincaré embeddings for hierarchy, to box embeddings for some notion of semantics. While we believe some improvement may be visible via the hyperparameter tuning, our point still stands. As part of future work, we will also report these results after further investigation.
- We have significantly extended the discussion in Section 5.2 where we provide a paragraph on the limitations of the interpretation of this work, as well as much more clearly express the key takeaway for this work (i.e., differentiating between pointing out the weaknesses of current models, rather than showing that the standard evaluation skews the performance): that indeed we do see improved performance in some models when there is some semantic information during training, but not assessed during evaluation.
- In our future work section (part of **6 Conclusion**), we have noted that additional experiments investigating even more knowledge graph embeddings based on how they handle various KG characteristics. In particular, we are interested in how graphs which are heterogeneous in their characteristics (e.g., not *all* predicates are hierarchical or transitive) are accommodated by these various KGEs.
- We have made minor changes to fix typos, punctuation, and grammar.

Changes in the manuscript have been highlighted for your convenience: deletions appear in red and are struck out, additions appear in blue, replacements appear in green (and are preceded by a deletion).

Finally, we wish to point out that Brandon Dave has been removed as the second author and placed into the acknowledgment. While Brandon contributed to the base paper as submitted to the Neurosymbolic AI conference (NeSy 2024), he resigned from his position (and altogether left academia, as far as we can



tell) on December 31, 2024, and he has not actively contributed to the ideation, development, or refinement of the work. All extensions (both in the experiments and writing) were completed by Antrea Christou.

We hope that these changes are sufficient and that the paper can be accepted in this form. We are poised to rapidly submit our camera ready version in that case.

Sincerely,

A handwritten signature in black ink, which appears to read "Cogan Shimizu". The signature is fluid and cursive, with the first and last names being more prominent.

Cogan Shimizu,
on behalf of all authors