



# Peer Community In

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## Can discriminative learning theory explain productive generalisation in language?

A recommendation by [Chris Chambers](#)  based on peer reviews by 1 anonymous reviewer of the STAGE 2 REPORT:

Eva Viviani, Michael Ramscar, Elizabeth A. Wonnacott (2025) Go above and beyond: Does input variability affect children's ability to learn spatial adpositions in a novel language? OSF, ver. 2, peer-reviewed and recommended by Peer Community in Registered Reports.

<https://osf.io/v3ab9>

Submitted: 02 June 2025, Recommended: 16 September 2025

### Cite this recommendation as:

Chambers, C. (2025) Can discriminative learning theory explain productive generalisation in language?. *Peer Community in Registered Reports*, 101078. <https://doi.org/10.24072/pci.rr.101078>

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One of the major challenges in studies of language learning is understanding *productive generalisation* – the ability to use words and linguistic structures in novel settings that the learner has never encountered previously. According to discriminative learning theory, this skill arises from an iterative process of prediction and error-correction that gradually reduces uncertainty, allowing learners to discriminate linguistic outcomes and to identify informative, invariant cues for generalisation to novel cases. In the current study, Viviani et al. (2025) used computational modelling to propose a central hypothesis stemming from this theory that children learn the meaning and use of spatial adpositions (words such as “above” and “below” that describe relative positions) more effectively when there is more variability in the use of the nouns within the spatial sentences. They also tested a range of additional hypotheses, including that learning and generalisation to novel contexts would be enhanced when children learn from skewed distributions that are similar to those found in natural languages. The main results confirmed that children trained on the high variability condition outperformed those trained on the low variability condition in generalisation, consistent with the authors’ pilot results and the predictions of the computational model trained on the same datasets. However, in contrast to the model predictions, skewed input did not provide clear evidence of a benefit over low variability. Overall, while the findings were nuanced, the study provides rigorous new evidence that input variability can promote productive generalisation in children learning a new second language, in line with predictions from discriminative learning theory. The Stage 2 manuscript was evaluated over one round of in-depth review, after which the recommender judged that the manuscript met the Stage 2 criteria and awarded a positive recommendation.

**URL to the preregistered Stage 1 protocol:** <https://osf.io/37dxr> **Level of bias control achieved:** [Level](#)

6. Some of the data that was used in the preregistered analyses was obtained in the second of two pilot experiments. However, since no further revisions to the analysis plan were made after this pilot, the risk of bias due to prior data observation remained zero, and the manuscript therefore qualifies for Level 6.

**List of eligible PCI RR-friendly journals:**

- [Advances in Cognitive Psychology](#)
- [Cambridge Educational Research e-Journal](#)
- [Cortex](#)
- [Experimental Psychology](#)
- [Infant and Child Development](#)
- [Journal of Cognition](#)
- [Peer Community Journal](#)
- [PeerJ](#)
- [Royal Society Open Science](#)
- [Swiss Psychology Open](#)

**References:**

1. Viviani, E., Ramscar, M. & Wonnacott, E. (2025). Go above and beyond: Does input variability affect children’s ability to learn spatial adpositions in a novel language? [Stage 2] Acceptance of Version 2 by Peer Community in Registered Reports. <https://osf.io/v3ab9>

## Reviews

### Evaluation round #1

DOI or URL of the preprint: <https://osf.io/j3xrw>  
Version of the preprint: 1

### Authors’ reply, 08 September 2025

Dear Chris,

Thank you for your response regarding our Stage 2 manuscript and for the reviewer’s feedback. We are particularly grateful that you managed to secure a review from the first round of reviewers and that both you and the reviewer found the study to be rigorous and transparent. Please find the revised manuscript attached. All changes have been implemented as requested (details below), and we believe the manuscript is now ready for publication.

We have addressed all the requested revisions. The example sentences within the captions of Figures 6 and 7 now include objects shown in the figures. We have corrected all typos throughout the manuscript as the

reviewer suggested. For Table 28 (Design template, in appendix D), we have added the "Observed outcome" column summarising whether each hypothesis was supported or not. Regarding the robustness analyses, following your suggestion, we have left these in the main text given that they are key to interpreting the results, especially for the hypotheses contrasting Skew vs LV condition (hypothesis 4).

In addition to the above changes, we have removed the reference to 'pilot 2' in Figure 8's title since this has been integrated into the main analyses. This is an additional change we made that wasn't mentioned before – in fact we just noticed it and corrected it.

Thank you again for your guidance throughout this process.

Best Regards

Eva Viviani (on behalf of all authors)

[Download tracked changes file](#)

## Decision by [Chris Chambers](#) , posted 05 September 2025, validated 05 September 2025

### Minor Revision

We have now had the opportunity to consider your Stage 2 submission, and at the outset I want to thank you for your patience as we have navigated the various challenges of the summer period (including my own absence while on holiday). One of the reviewers from Stage 1 kindly returned to evaluate the Stage 2 manuscript, and I have decided based on their assessment and my own reading of your manuscript that we can proceed with a minor revision. As you will see, the reviewer is (very) positive about your completed study, as am I. I have had the privilege of evaluating hundreds of Registered Reports over the years, and I must say that yours stands out as one of the most impressive in terms of clarity, depth, rigour and transparency. You will find in the reviewer's comments some suggested revisions to improve the presentation. Concerning the reviewer's suggestion of moving the robustness analyses to the appendix, I am happy for them to remain in the main text as I think they provide an important contribution to the work so I will leave this with you to decide. In my own reading, I made just one required revision: in Table 28 (study design template), can you please add a column to the right of the table called "Observed outcome" that briefly notes, for each of the primary hypotheses, whether it was supported or unsupported. Finally, after submitting their evaluation, the reviewer emailed me and asked me to pass on this additional comment: *I wanted to add that I was very very impressed by the quality and breadth, openness, transparency and the statistical standards of the paper. I have rarely had a chance to read such a high-quality paper, so well written, so thoroughly examining the data and unexpected results, and, despite being dense so accessible and informative. "Chapeau!"* I look forward to receiving your revised submission.

### Reviewed by anonymous reviewer 1, 18 August 2025

It was my pleasure to read the Stage 2 Report titled "Go Above and Beyond: Does Input Variability Affect Children's Ability to Learn Spatial Adpositions in a Novel Language?" I would like to congratulate the authors on achieving a high sample size and finalizing the manuscript. The report faithfully follows the Stage 1 protocol, and the authors have adhered strictly to the analyses outlined in the Stage 1 report. Any deviations from this protocol are thoroughly justified in the section titled "Deviations from Stage 1." Exploratory analyses are clearly distinguished from preregistered analyses, which I found interesting and worth following up. The authors have engaged extensively with the data and addressed unexpected results in depth, as, for example, the lower performance observed in children tested in schools. The discussion is rich and comprehensive, covering the main results while also exploring differences between the Pilot and the main study and engaging with exploratory results.

Overall, this is an interesting and outcomes-rich study. The conclusions drawn are well-supported by the evidence presented. I look forward to seeing the paper published. I have only some minor comments that I would like to see addressed:

Figure captions for Figure 6 and 7 don't match the objects presented on the figures (e.g., there is no toilet or ice cream on these pictures).

965: A space is missing in "testingIn".

1426: "Had" is missing here "we would have not sufficient"

1746: "that" is twice here "interpreted bearing in mind that that our experiment"

1897: This sentence needs to be amended: "In fact, in the behaviour of the children in our study also did not support this prediction, with Bayesian evidence for the null for a benefit of skew in generalization."

1908: Remove a dot here ""setting").,"

2140: Something is missing here "they did not, or course overhear every conversation"

Given the density of the paper, I wonder whether the robustness analyses could be included in Appendices.