

***Transparency, Ethics, and Evolving Norms in Science Communication:  
Addressing the Challenge of Overselling Research***

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In the contemporary scientific landscape, the pressure to publish impactful results rapidly has led to a pervasive issue: overselling research. This involves exaggerating claims, using vague or promotional language, downplaying limitations, or presenting preliminary results as breakthroughs. Such practices risk damaging scientific credibility, misleading peers and the public, and skewing funding and career advancement dynamics.

Transparency and ethical responsibility are fundamental to restoring trust and integrity in science communication. Clear disclosure of methods, limitations, and conflicts of interest is essential. Overselling undermines "system trust"—the collective confidence that published work is accurate and honest.

A key driver of overselling is the use of performative language: words or phrases like “major improvement,” “groundbreaking,” or “ultra-sensitive” that often lack quantitative support. These can inflate expectations and obscure nuanced interpretation, disproportionately affecting early-career researchers, reviewers, and the broader community.

To address this, the workshop proposes developing an inline tool designed to:

- Flag promotional, vague, or unsupported language in scientific texts..
- Provide alternative phrasings that emphasize clarity, precision, and transparency.
- Support multilingual publishing and leverage large language models (LLMs) to ascertain deeper context and produce detailed suggestions.
- Distinguish itself from plagiarism checkers by focusing on *how* claims are communicated, not just content originality.

A proof-of-concept Chrome extension, termed HypeLess, has been developed to highlight a variety of hype phrases, subjective wording, and tortured terms, as well as novelty claims (<https://doi.org/10.5281/zenodo.16813943>). For an application example see Figure 1. The tool analyzes webpages in real time, supporting both articles on academic journal websites and writing platforms (e.g., Overleaf, Google Docs). We aim to foster a culture of honesty, clarity, and fairness in scientific dissemination, countering incentives to hype research for funding or prestige. Funding agencies and journals are also encouraged to apply the tool in their review process, rewarding realistic communication rather than hype.

bemoaned an increase in ‘drama words’ such as *new and **exciting** evidence and **remarkable** eff*  
 had turned science into a ‘**theatrical business**’.  
 and social sciences unaffected by this, as write  
 observed to explicitly highlight the significance  
 studies and applied linguistics.

All this, of course, is the result of an explosion c  
 by intensive audit regimes, where individuals ar  
 length of their resumes, as much as the quality  
 financial rewards and career prospects have co  
 dominate the lives of academics across the pla  
 pressure, more explicit incentives and fiercer co  
 The rise of hyperbole in medical journals has be  
**Vinkers, Tijdink and Otte**, who found a nine-fold  
 ‘positive-sounding words’ such as *novel, amazi*  
**unprecedented** in PubMed journals between 19

**HypeLess** ☐

**extremely** (1)  
Subjective exaggeration, avoid overstating.

**impressive** (1)  
Subjective evaluation, avoid opinion.

**remarkable** (1)  
Subjective evaluation.

**unprecedented** (1)  
Often overused; novelty should be clear from context.

**novel** (2)  
Novelty should be inferred from context.

**first** (1)  
Claims of priority can be contentious.

**unique** (1)  
Subjective absolute, avoid.

**best** (3)  
Absolute superlative; usually subjective.

**leading** (1)  
Subjective, relative to what? Be specific.

**exciting** (1)  
Subjective, avoid in scientific writing.

**Figure 1:** Screenshot of a website analyzed by HypeLess. Potentially problematic terms are highlighted in yellow within the main text. A collapsible sidebar (toggleable via the icon in the top right corner, and re-opened by clicking a yellow circle in the bottom right corner) displays additional information about each flagged term, including its frequency count. Clicking a sidebar entry scrolls the page to the corresponding term; clicking it again cycles through its occurrences in the text. (Reference: Ken Hyland, *Crucial! New! Essential! – The rise of hype in research and impact assessment*, May 16th, 2023, <https://blogs.lse.ac.uk/impactofsocialsciences/2023/05/16/crucial-new-essential-the-rise-of-hype-in-research-and-impact-assessment/>).

## **Supplemental Information - *Transparency, Ethics, and Evolving Norms in Science Communication: Addressing the Challenge of Overselling Research***

The proof-of-concept tool has been made available via Zenodo:

Bame, X., Hoti, G., Mbachu, A.K., Nikolaou, V., Nirenberg, S., A., Krmpotic, K., Kuttner, C., Shankar, S. (2025). HypeLess - a Chrome extension for addressing the challenge of overselling research. 74th Lindau Nobel Laureate Meeting (LINO25). Zenodo. <https://doi.org/10.5281/zenodo.16813943>

The authors note that several tools already exist to support academic writing, including Writefull, Trinka AI, Paperpal and SciWriter. However, most focus on grammar, clarity, or formality, not the ethical dimensions of inflated or subjective claims. None provide an integrated, field-aware solution for identifying qualitative–quantitative imbalance, performance language or bias in tone. It is this gap that the proposed tool would fill.

In addition to the browser extension prototype that highlights problematic language in real-time, a sample prompt designed for use with LLMs is provided:

### **Sample Prompt:**

*I'd like you to act as a scientific writing assistant that improves transparency and integrity in academic language.*

*Please analyze the following research text. Identify and highlight:*

1. **Performative or hype language** (e.g., “novel”, “groundbreaking”, “robustly”, “ultra-sensitive”)
2. **Ambiguous or vague claims that lack specific data** (e.g., “highly effective”, “significant impact”)
3. **Qualitative overstatements not supported by quantitative evidence**
4. **Lack of limitations or uncertainty in the phrasing**
5. **Bias indicators** (e.g., only positive results emphasized)

*For each issue, provide:*

- *The problematic phrase*
- *A short explanation*
- *A suggested alternative wording that is more cautious, clear, or specific*

*Also consider the needs of non-native English speakers — suggest accessible alternatives when possible.*

*Text to analyze:*