*A Manuscript Microscope 'Sentence Audit' of:*

# Dynamics of the auditory continuity illusion

**What is the Manuscript Microscope Sentence Audit?**

The Manuscript Microscope Sentence Audit is a research paper introspection system that parses the text of your manuscript into minimal sentence components for faster, more accurate, enhanced proofreading.

**Why use a Sentence Audit to proofread your manuscript?**

- Accelerated Proofreading: Examine long technical texts in a fraction of the usual time.
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Bonus 1: Improved Productivity: Rapidly refine rough drafts to polished papers.
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Bonus 3: Improved Reputation: Become known for rigorously precise publications.

**Manuscript Source:** https://www.biorxiv.org/content/10.1101/2021.03.05.433617v1

**Manuscript Authors:** Qianyi Cao, Noah Parks & Joshua H. Goldwyn

**Audit Date:** 29/03/21 **Audit Identifier:** LE6OL28L9KFAK3O **Code Version:** 3.6

**Features of the Sentence Audit:**

The Sentence Audit combines two complementary proofreading approaches:

1. Each sentence of your text is parsed and displayed in isolation for focused inspection.
2. Each individual sentence is further parsed into Minimal Sentence Components for a deeper review of the clarity, composition and consistency of the language you used.

The Minimal Sentence Components shown are the smallest coherent elements of each sentence of your text as derived from it's conjunctions, prepositions and selected punctuation symbols (i.e. commas, semicolons, round and square brackets).

The combined approaches ensure easier, faster, more effective proofreading.

**Comments and Caveats:**

• The sentence parsing is achieved using a prototype natural language processing pipeline written in Python and may include occasional errors in sentence segmentation.

• Depending on the source of the input text, the Sentence Audit may contain occasional html artefacts that are parsed as sentences (E.g. "Download figure. Open in new tab").

• Always consult the original research paper as the true reference source for the text.

**Contact Information:**

To get a Manuscript Microscope Sentence Audit of any other research paper, simply forward any copy of the text to John.James@OxfordResearchServices.com.

All queries, feedback or suggestions are also very welcome.

**Research Paper Sections:**

The sections of the research paper input text parsed in this audit.

| Section No. | Headings | Sentences |
|---|---|---|
| Section: 1 | ABSTRACT | 12 |
| Section: 2 | 1 INTRODUCTION | 15 |
| N/A | --- --- --- --- --- --- --- | 0 |
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## The Sentence Audit Of The Research Paper

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**Title** # Dynamics of the auditory continuity illusion

## S1 [001] ABSTRACT

**S1 [002]** Illusions give intriguing insights into perceptual and neural dynamics.

Illusions give intriguing insights ...

... into perceptual ...

... and neural dynamics.

**S1 [003]** In the auditory continuity illusion, two brief tones separated by a silent gap may be heard as one continuous tone if a noise burst with appropriate characteristics fills the gap.

In the auditory continuity illusion, ...

... two brief tones separated ...

... by a silent gap may be heard ...

... as one continuous tone ...

... if a noise burst ...

... with appropriate characteristics fills the gap.

**S1 [004]** This illusion probes the conditions under which listeners link related sounds across time and maintain perceptual continuity in the face of sudden changes in sound mixtures.

This illusion probes the conditions ...

... under ...

... which listeners link related sounds ...

... across time ...

... and maintain perceptual continuity ...

... in the face ...

... of sudden changes ...

... in sound mixtures.

**S1 [005]** Conceptual explanations of this illusion have been proposed, but its neural basis is still being investigated.

Conceptual explanations ...

... of this illusion have been proposed, ...

... but its neural basis is still being investigated.

**S1 [006]** In this work we provide a dynamical systems framework, grounded in principles of neural dynamics, to explain the continuity illusion.

In this work we provide a dynamical systems framework, ...

... grounded ...

... in principles ...

... of neural dynamics, ...

... to explain the continuity illusion.

**S1 [007]** We construct an idealized firing rate model of a neural population and analyze the conditions under which firing rate responses persist during the interruption between the two tones.

We construct an idealized firing rate model ...
... of a neural population ...
... and analyze the conditions ...
... under ...
... which firing rate responses persist ...
... during the interruption ...
... between the two tones.

**S1 [008]** First, we show that sustained inputs and hysteresis dynamics (a mismatch between tone levels needed to activate and inactivate the population) can produce continuous responses.

First, ...
... we show ...
... that sustained inputs ...
... and hysteresis dynamics ...
... (a mismatch ...
... between tone levels needed ...
... to activate ...
... and inactivate the population) ...
... can produce continuous responses.

**S1 [009]** Second, we show that transient inputs and bistable dynamics (coexistence of two stable firing rate levels) can also produce continuous responses.

Second, ...
... we show ...
... that transient inputs ...
... and bistable dynamics ...
... (coexistence ...
... of two stable firing rate levels) ...
... can also produce continuous responses.

**S1 [010]** Finally, we combine these input types together to obtain neural dynamics consistent with two requirements for the continuity illusion as articulated in a well-known theory of auditory scene analysis: sustained responses occur if noise provides sufficient evidence that the tone continues and if there is no evidence of discontinuities between the tones and noise.

Finally, ...
... we combine these input types together ...
... to obtain neural dynamics consistent ...
... with two requirements ...
... for the continuity illusion ...
... as articulated ...
... in a well-known theory ...
... of auditory scene analysis: ...
... sustained responses occur ...
... if noise provides sufficient evidence ...
... that the tone continues ...
... and ...
... if there is no evidence ...

... of discontinuities ...

... between the tones ...

... and noise.

**S1 [011]** By grounding these notions in a quantitative model that incorporates elements of neural circuits (recurrent excitation, and mutual inhibition, specifically), we identify plausible mechanisms for the continuity illusion.

By grounding these notions ...

... in a quantitative model ...

... that incorporates elements ...

... of neural circuits ...

... (recurrent excitation, ...

... and mutual inhibition, ...

... specifically), ...

... we identify plausible mechanisms ...

... for the continuity illusion.

**S1 [012]** Our findings can help guide future studies of neural correlate of this illusion and inform development of more biophysically-based models of the auditory continuity illusion.

Our findings can help guide future studies ...

... of neural correlate ...

... of this illusion ...

... and inform development ...

... of more biophysically-based models ...

... of the auditory continuity illusion.

**S2 [013]** ## 1 INTRODUCTION

**S2 [014]** How do listeners in crowded and noisy environments create stable auditory streams in the face of interruptions and “background” noise?

How do listeners ...

... in crowded ...

... and noisy environments create stable auditory streams ...

... in the face ...

... of interruptions ...

... and “background” ...

... noise?

**S2 [015]** How do listeners identify the stops and starts of overlapping and interwoven sounds to correctly parse an auditory scene?

How do listeners identify the stops ...

... and starts ...

... of overlapping ...

... and interwoven sounds ...

... to correctly parse an auditory scene?

**S2 [016]** Answering these questions is fundamental to understanding auditory perception and neural processing of sounds.

Answering these questions is fundamental ...
... to understanding auditory perception ...
... and neural processing ...
... of sounds.

**S2 [017]** A perceptual illusion that sheds light on dynamic processing of multiple sounds is the auditory continuity illusion [1] (also called temporal induction [2]).

A perceptual illusion ...
... that sheds light ...
... on dynamic processing ...
... of multiple sounds is the auditory continuity illusion ...
... [1] ...
... (also called temporal induction ...
... [2]).

**S2 [018]** The continuity illusion can be elicited when noise interrupts a variety of sounds including tones, frequency glides, sentences [1, 2], and sound textures [3].

The continuity illusion can be elicited ...
... when noise interrupts a variety ...
... of sounds including tones, ...
... frequency glides, ...
... sentences ...
... [1, 2]...
... , ...
... and sound textures ...
... [3].

**S2 [019]** The common aspect of this illusion is that, when the noise is sufficiently loud and shares spectral content with the interrupted signal, listeners perceive a continuous, uninterrupted sound.

The common aspect ...
... of this illusion is that, ...
... when the noise is sufficiently loud ...
... and shares spectral content ...
... with the interrupted signal, ...
... listeners perceive a continuous, ...
... uninterrupted sound.

**S2 [020]** This illusion reveals a tendency for the auditory system to maintain perceptual continuity when confronted with sudden changes in the auditory scene and to sustain perception of sounds that are present prior to some masking or distracting sound.

This illusion reveals a tendency ...
... for the auditory system ...
... to maintain perceptual continuity ...
... when confronted ...
... with sudden changes ...
... in the auditory scene ...

**End of Sample Audit**

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This is a truncated Manuscript Microscope Sample Audit.

To get the full audit of this text (or any other research paper),
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John.James@OxfordResearchServices.com

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