A Manuscript Microscope 'Sentence Audit' of:

Lag structure of BOLD signals within white matter in resting-state fMRI

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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.

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- Accelerated Proofreading: Examine long technical texts in a fraction of the usual time.
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Manuscript Source: https://www.biorxiv.org/content/10.1101/2021.03.06.434206v1

Manuscript Authors: Bin Guo, Fugen Zhou, Muwei Li & John C. Gore

Audit Date: 29/03/21 **Audit Identifier:** V87117V1P8L64MZ **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	Introduction	11
N/A	--- --- --- --- --- --- ---	0
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The Sentence Audit Of The Research Paper

Title # Lag structure of BOLD signals within white matter in resting-state fMRI

S0 [001] Abstract

Abstract

S0 [002] Previous studies have demonstrated that BOLD signals in gray matter in resting-state functional MRI (RSfMRI) have variable time lags.

Previous studies have demonstrated ...
... that BOLD signals ...
... in gray matter ...
... in resting-state functional MRI ...
... (RSfMRI) ...
... have variable time lags.

S0 [003] We investigated the corresponding variations of signal latencies in white matter within 1393 subjects (both sexes included) from the Brain Genomics Superstruct Project.

We investigated the corresponding variations ...
... of signal latencies ...
... in white matter ...
... within 1393 subjects ...
... (both sexes included) ...
... from the Brain Genomics Superstruct Project.

S0 [004] We divided the dataset into ten equal groups to study both the patterns and reproducibility of latency estimates within white matter.

We divided the dataset ...
... into ten equal groups ...
... to study both the patterns ...
... and reproducibility ...
... of latency estimates ...
... within white matter.

S0 [005] We constructed time delay matrices by computing cross-correlation functions between voxel pairs.

We constructed time delay matrices ...
... by computing cross-correlation functions ...
... between voxel pairs.

S0 [006] Projections of voxel latencies were highly correlated (average Pearson correlation coefficient = 0.89) across the subgroups, confirming the reproducibility and structure of signal lags in white matter.

Projections ...
... of voxel latencies were highly correlated ...
... (average Pearson correlation coefficient = 0.89) ...

... across the subgroups, ...
... confirming the reproducibility ...
... and structure ...
... of signal lags ...
... in white matter.

S0 [007] We also applied a clustering analysis to identify functional networks within white matter.

We also applied a clustering analysis ...
... to identify functional networks ...
... within white matter.

S0 [008] Analysis of latencies within and between networks revealed a similar pattern of inter- and intra-network communication to that reported for gray matter.

Analysis ...
... of latencies ...
... within ...
... and between networks revealed a similar pattern ...
... of inter- ...
... and intra-network communication ...
... to that reported ...
... for gray matter.

S0 [009] Moreover, a unidirectional path, from inferior to superior regions, of BOLD signal propagation was revealed by higher resolution clustering.

Moreover, ...
... a unidirectional path, ...
... from inferior ...
... to superior regions, ...
... of BOLD signal propagation was revealed ...
... by higher resolution clustering.

S0 [010] The variations of lag structure within white matter are associated with different sensory states (eyes open vs eyes closed, and eyes open with fixation vs. eyes closed).

The variations ...
... of lag structure ...
... within white matter are associated ...
... with different sensory states ...
... (eyes open vs eyes closed, ...
... and eyes open ...
... with fixation vs. eyes closed).

S0 [011] These findings provide additional insight into the character and roles of white matter BOLD signals in brain functions.

These findings provide additional insight ...
... into the character ...
... and roles ...
... of white matter BOLD signals ...
... in brain functions.

S0 [012] Significance Statement

Significance Statement

S0 [013] Functional MRI (fMRI) has had major impacts on clinical and basic neuroscience, and it has been used extensively to study the functional role and spatiotemporal organization of gray matter in different states.

Functional MRI ...
... (fMRI) ...
... has had major impacts ...
... on clinical ...
... and basic neuroscience, ...
... and it has been used extensively ...
... to study the functional role ...
... and spatiotemporal organization ...
... of gray matter ...
... in different states.

S0 [014] However, functional MRI signals from white matter have usually been ignored or even identified as artifacts.

However, ...
... functional MRI signals ...
... from white matter have usually been ignored ...
... or even identified ...
... as artifacts.

S0 [015] We used fMRI data from 1393 subjects to demonstrate (1) fMRI BOLD signals in white matter are robustly detectable in a resting state and exhibit a reproducible, spatiotemporal organization, similar to gray matter; (2) functional networks within white matter can be obtained by applying clustering analysis on the white matter connectivity matrix; (3) the pattern of signal latencies within and between networks resembles the results for gray matter.

We used fMRI data ...
... from 1393 subjects ...
... to demonstrate ...
... (1) ...
... fMRI BOLD signals ...
... in white matter are robustly detectable ...
... in a resting state ...
... and exhibit a reproducible, ...
... spatiotemporal organization, ...
... similar to gray matter; ...
... (2) ...
... functional networks ...
... within white matter can be obtained ...
... by applying clustering analysis ...
... on the white matter connectivity matrix; ...
... (3) ...
... the pattern ...
... of signal latencies ...

... within ...
... and between networks resembles the results ...
... for gray matter.

S0 [016] Further studies on the Beijing EOEC dataset II also revealed that the variations of latencies within white matter alter with different sensory (visual) states.

Further studies ...
... on the Beijing EOEC dataset II also revealed ...
... that the variations ...
... of latencies ...
... within white matter alter ...
... with different sensory ...
... (visual) ...
... states.

S0 [017] Our findings demonstrate the that resting-state BOLD signals within white matter should be incorporated into comprehensive models of brain function.

Our findings demonstrate the ...
... that resting-state BOLD signals ...
... within white matter should be incorporated ...
... into comprehensive models ...
... of brain function.

S1 [018] Introduction

S1 [019] Functional magnetic resonance imaging (fMRI) studies were initially based on the detection of changes in blood oxygenation-level dependent (BOLD) signals after a task or stimulus.

Functional magnetic resonance imaging ...
... (fMRI) ...
... studies were initially based ...
... on the detection ...
... of changes ...
... in blood oxygenation-level dependent ...
... (BOLD) ...
... signals ...
... after a task ...
... or stimulus.

S1 [020] The technique was later extended to include the detection and analysis of spontaneous signal fluctuations (Fox et al. 2007).

The technique was later extended ...
... to include the detection ...
... and analysis ...
... of spontaneous signal fluctuations ...
... (Fox et al. 2007).

End of Sample Audit

This is a truncated Manuscript Microscope Sample Audit.

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