

Psychoacoustic and neurophysiologic investigations of auditory continuity

Citation for published version (APA):

Riecke, L. (2009). *Psychoacoustic and neurophysiologic investigations of auditory continuity*. Datawyse / Universitaire Pers Maastricht.

Document status and date:

Published: 01/01/2009

Document Version:

Publisher's PDF, also known as Version of record

Please check the document version of this publication:

- A submitted manuscript is the version of the article upon submission and before peer-review. There can be important differences between the submitted version and the official published version of record. People interested in the research are advised to contact the author for the final version of the publication, or visit the DOI to the publisher's website.
- The final author version and the galley proof are versions of the publication after peer review.
- The final published version features the final layout of the paper including the volume, issue and page numbers.

[Link to publication](#)

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal.

If the publication is distributed under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license above, please follow below link for the End User Agreement:

www.umlib.nl/taverne-license

Take down policy

If you believe that this document breaches copyright please contact us at:

repository@maastrichtuniversity.nl

providing details and we will investigate your claim.

Propositions of the thesis

Psychoacoustic and neurophysiologic investigations of auditory continuity

1. Understanding of lower-order aspects of hearing is essential for studying more complex aspects. Highly controlled synthetic stimuli mimicking schematic auditory scenes are ideally suited for establishing such basis.
2. Natural environments produce stimuli that are acoustically redundant. In order to produce intact and familiar percepts, the auditory system has to selectively compress, smooth, and delay the sensory input.
3. Restoration of fragmented sounds depends on the presence of acoustical energy in a critical time-frequency window. The dimensions of this window are determined by the fragmented sound.
4. Representations in the primary auditory cortex are abstract: They encode perceptual rather than acoustical properties of auditory stimuli.
5. Perceptual analysis of acoustic edges depends on top-down modulations in auditory cortex that are mediated by neural oscillations in the theta band.
6. Auditory restoration does not 'fill in' neural activity in the auditory cortex.
7. The validity of empirical evidence depends on whether the data meet the assumptions of the statistical tests that are applied, especially for small datasets. Therefore, neuroscientific studies should generally verify these assumptions or use larger samples.
8. Artificial hearing devices would perform better in noisy environments if they were built of adaptive spectral-temporal filters that pass transient noise components for subsequent restoration purposes.
9. A conversation in a noisy scene, as for example on the train, runs more smoothly when the agents do not listen to loud music on their MP3 players shortly before.
10. Implementation of restoration mechanisms in electric guitar pickup systems could compensate for inaccurate string holdings and thereby ensure full and sustained chord experiences.