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Gaussian-noise discrimination as a tool to investigate auditory object formation

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In the present study we show that, in a same/different experiment, listeners are good at discriminating 50-ms Gaussian-noise tokens with a spectral range of 350-850 Hz. However, when an identical 200-ms noise fringe, with the same statistical properties as the 50-ms target tokens, is appended to both target tokens, listeners show very poor discrimination performance. Apparently, these identical fringes cannot be ignored and these extra non-informative fringes impair the discrimination of the target tokens. It seems that a target token and the appended fringe form one auditory object and that access to subparts of these tokens is not possible. When a perceptual cue is introduced that can lead to the segregation of the target token and noise fringe, e.g., a temporal gap between target and fringe, the ability to discriminate improves implying that the non-informative noise can be (partly) ignored when it is part of a different auditory object than the target token. This method is used as a new approach to investigate the influence of cues such as spectral range, level, interaural level difference, and interaural time delay, on the formation of auditory objects.