

The role of spatiotemporal and spectral cues in segregating short sound events: evidence from auditory Ternus display

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Abstract

Sound segregation is a process of auditory perception that allows us to identify individual sounds in a complex mixture. Previous studies have shown that spatiotemporal and spectral cues play important roles in sound segregation. In this study, we used an auditory Ternus display to investigate the relative contribution of spatiotemporal and spectral cues in segregating short sound events. The results showed that the participants could segregate the target sound from the background in a Ternus display. The performance was better when the target sound was presented at the center position than at the peripheral positions. The performance was better when the target sound had a higher frequency than the background sound. These results suggest that both spatiotemporal and spectral cues are important for sound segregation.

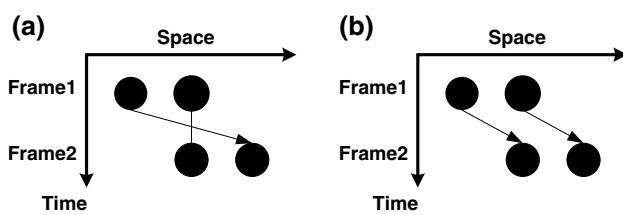
Keywords

Introduction



E**K****K****E**

Experiment 1

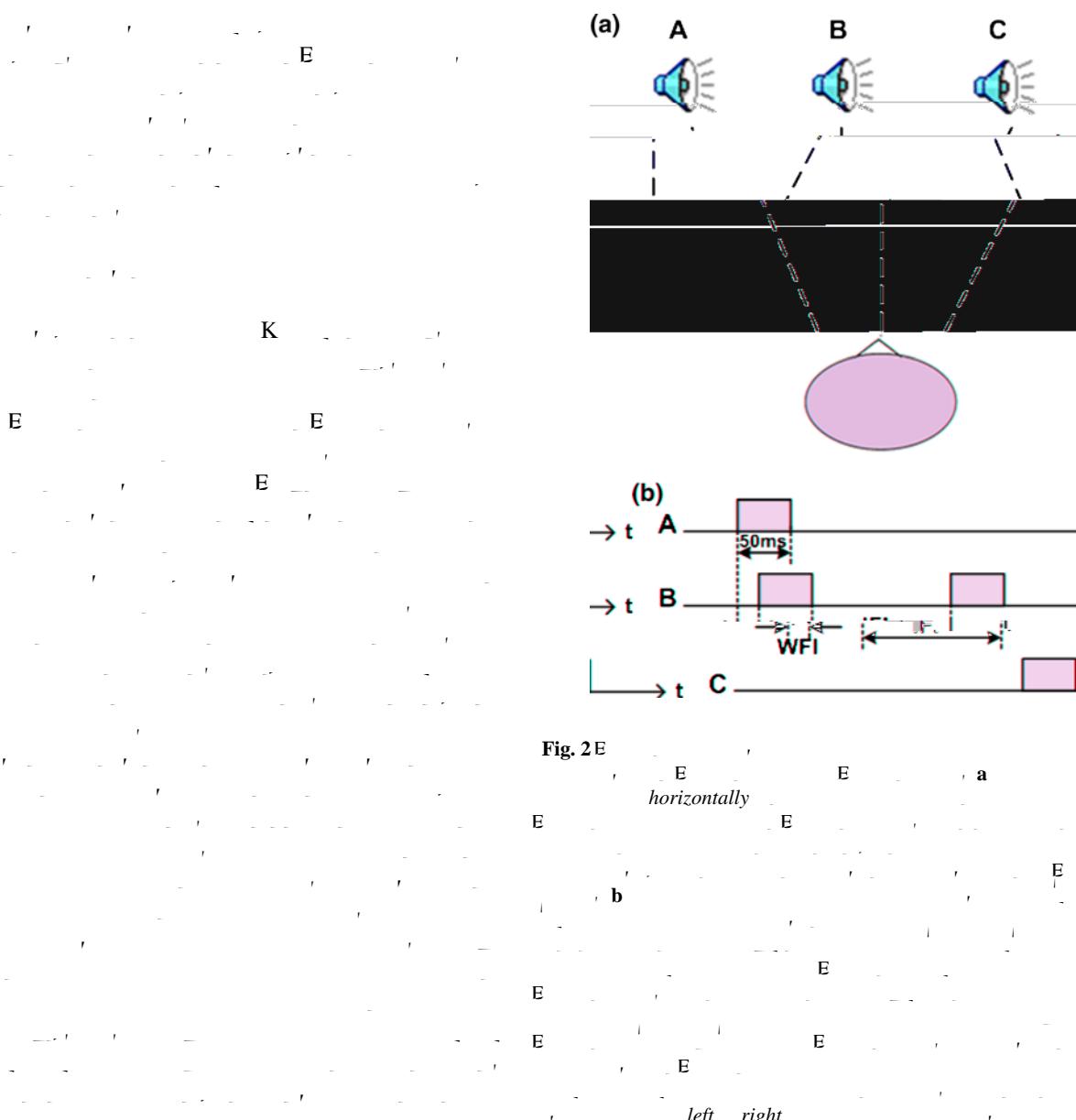
**Fig. 1**

middle disk

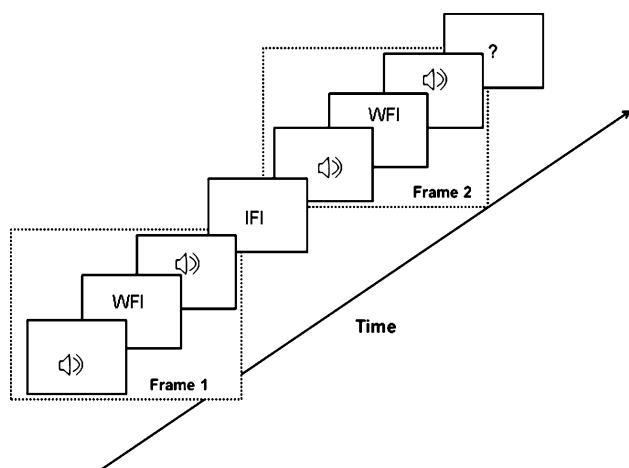
outer disk

b

Methods

**Fig. 2E**

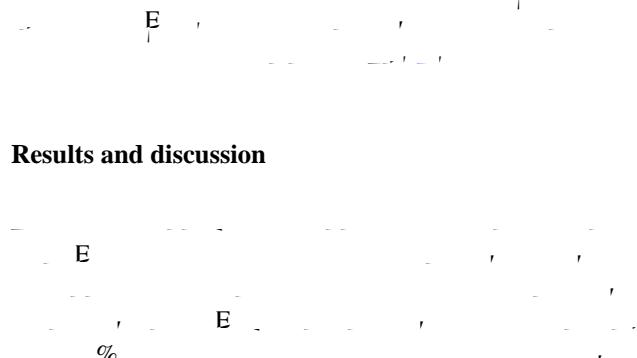
E

**Fig. 3**

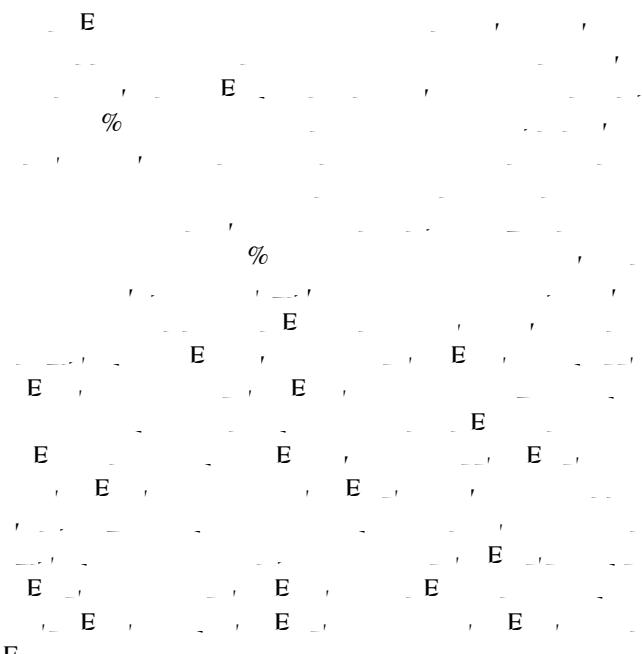
E E

E E

left right

**Fig. 4**

Results and discussion

**Fig. 5**

E E E E
E E E E
E E E E
E E E E
E E E E
E E E E
black bars
dark gray bars
light gray bars

$$F = \dots, p = \dots \quad E$$

$$F = \dots, p = \dots \quad E$$

Figure 10.10 A schematic diagram of the experimental setup for the measurement of the energy loss fine structure (EXELFS) signal. The sample is placed in a vacuum chamber. The incident electron beam (E_{in}) passes through the sample and is detected by a Faraday cup (FC). The scattered electrons (E_s) are collected by a spherical mirror (SM) and detected by a Faraday cup (FC). The magnetic field (B) is applied along the direction of the incident beam. The magnetic field is generated by a solenoid (S) wound around a cylindrical iron core (C). The magnetic field is measured by a Hall probe (HP) located at the center of the solenoid. The magnetic field is varied sinusoidally with a frequency of 1 Hz. The EXELFS signal is detected by a lock-in amplifier (LIA) synchronized with the magnetic field variation.

$$\frac{F_{\perp}}{F_{\parallel}} = \frac{p}{E} = \frac{E}{E}$$

$$\frac{p}{E} < \frac{E}{E} \quad \frac{F_{\perp}}{F_{\parallel}} = \frac{p}{E}$$

$$p < E \quad F_{\perp} = p = E$$

$$\frac{p}{E} = \frac{E}{E} \quad \frac{F_{\perp}}{F_{\parallel}} = \frac{p}{E} = \frac{E}{E}$$

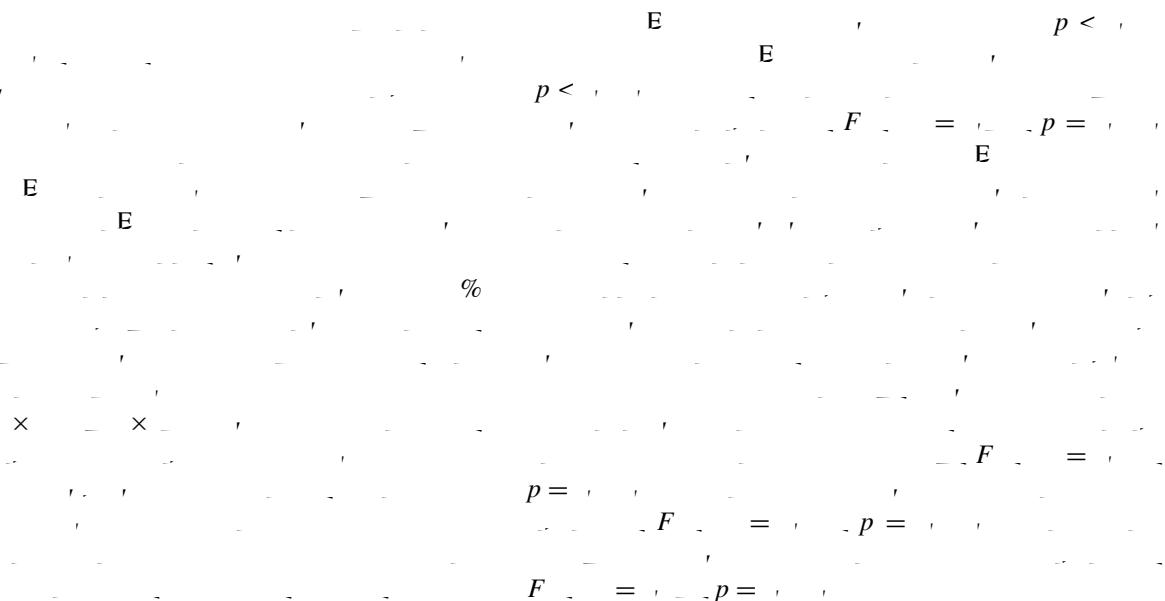
$$\frac{p}{E} > \frac{E}{E} \quad \frac{F_{\perp}}{F_{\parallel}} = \frac{p}{E} = \frac{E}{E}$$

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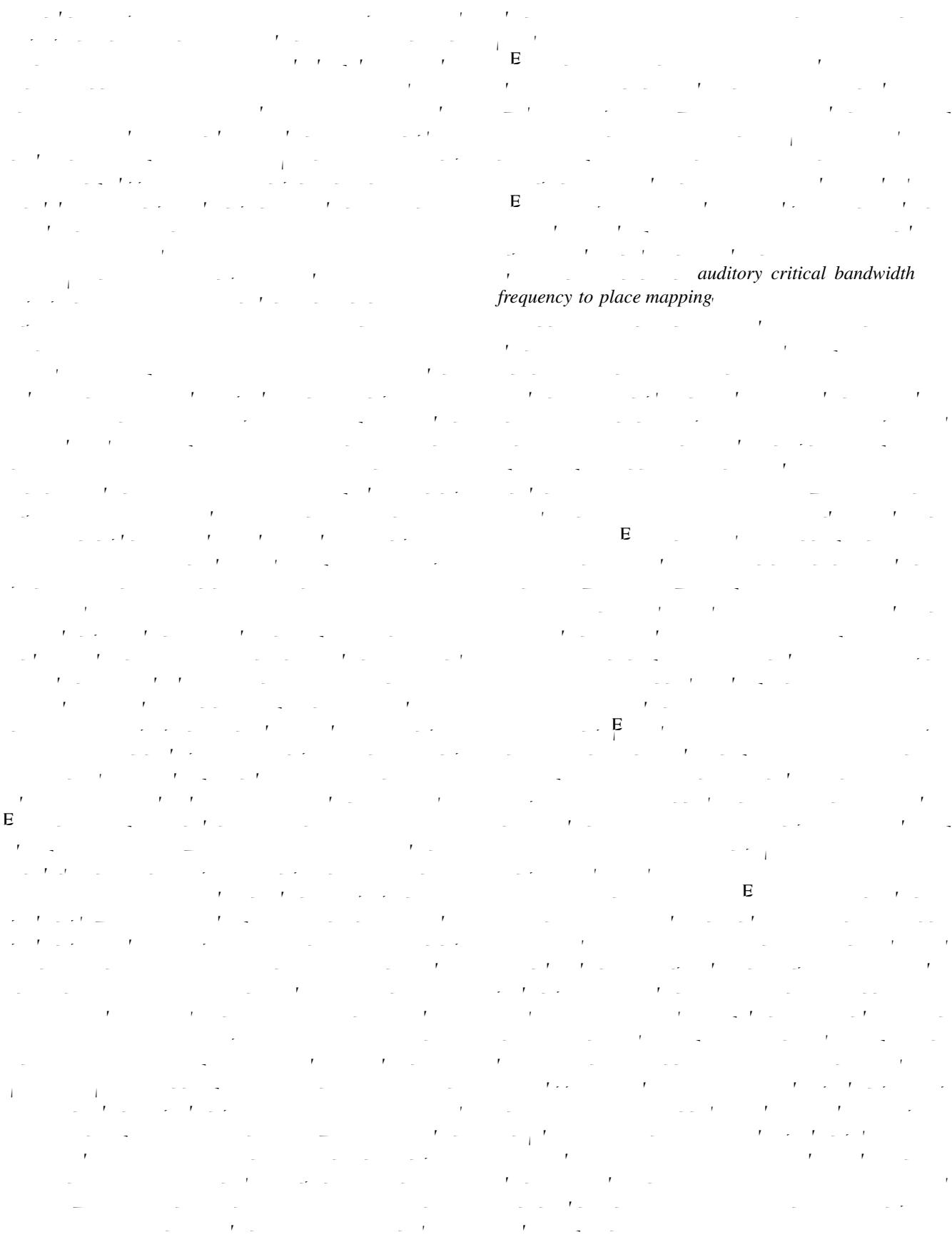


Cross-experimental analysis

Results and discussion

General discussion

F_{obs} = , $p <$, %
 % $p <$, %
 % $p <$, %



*auditory critical bandwidth
frequency to place mapping*

K

