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1 “ ”

Cherry 1953

Cherry, 1953

Cherry

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Brungart, 2001; Brungart, Simpson, Ericson & Scott, 2001; Freyman et al., 1999, 2001; Kidd et al., 2002; Li et al., 2004

Cherry 1953

Zurek 1993

Freyman et al., 1999; Kidd, Arbogast, Mason & Gallun, 2005; Zurek, Freyman & Balakrishnan, 2004

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1~10ms

attributes

Li, Qi, He, Alain & Schneider, 2005

the “precedence” effect

Li & Yue, 2002

Freyman 1999

4~9dB

Arbogast et al., 2005; Freyman et al., 1999, 2001; Li et al., 2004; Wu et al., 2005

Li et al., 2004; Wu et al., 2005

Rudmann, McCarley & Kramer, 2003; Wang et al., 2008

Helfer & Freyman, 2005 Helfer Freyman 2005

3dB

9dB

Helfer et al., 2005; Rudmann et al., 2003

Wang et al., 2008

4

Cherry 1953

5

Kidd 2005

Brungart 2001

Huang et al., 2008

Freyman et al., 2004; Yang et al., 2007, 2008

Freyman 2004

1

1

2

3

Freyman

Xu et al., 2008; Yang et al., 2007, 2008

Noble Perret 2002

Freyman 2004

Xu et al., 2008

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Effects of Perceptual Cues on Releasing Speech From Informational Masking

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Abstract: In a noisy “cocktail-party” environment, target speech is masked by different sounds. The masking includes at least two different components: energetic masking and informational masking. Energetic masking occurs when peripheral neural activities elicited by the target signal are overwhelmed by those elicited by the mask signal, leading to a substantially degraded neural representation of the target signal. Informational masking occurs when the target and the masker are similar in some dimensions, such as when they are both speech signals. The similarity leads to a competition for the limited central cognitive processing resources between the target and the masker signal. Thus, the amount of informational masking is not only affected by the bottom-up processes but also modulated by the top-down processes. The effects, which occur at the perceptual level, of the perceived spatial separation, the visual cues such as lip reading and speech-synchronized light flash, and the familiarity with the characteristics of the target signal on releasing target speech from informational masking are summarized. Future research will focus on the interactive effects among these cues and the perceptual processing mechanisms of using different cues to release speech from informational masking.

Key words: “cocktail-party” problem; perceptual cues; selective attention; energetic masking; informational masking