

INTRODUCTION

- **Cocktail Party** : situation where speech sounds have to be segregated from concurrent noise.
- Two complementary types of masking :
 - **Energetic masking** : time and frequency overlap, at peripheral level.
 - **Informational masking** : information carried is of comparable nature
- Segregation facilitated by **spatial location**: When the target and competing noise originate from the same location, noise affects intelligibility. When target and noise are separated, intelligibility of the target increases.
 - **Binaural unmasking** : improvement of intelligibility of a target when noise is added in contralateral ear, in comparison with a monaural situation (Kidd et al., 2005; Johnstone & Litovski, 2006).
 - Binaural cues help differentiating the two competing flows.
 - More efficient in the case of informational masking (Hawley et al., 2007).
- The **purpose of our study** was to separate different levels of information participating to the informational unmasking caused by speech and determine their sensitivity to binaural unmasking.

METHODS

Participants and procedures

- 76 right handed French speakers, aged 18-35 years, with no hearing or language disorder

Task

- Subjects listened to mono or bisyllabic words presented in noise. They had to handwrite the word they heard.

Stimuli

126 monosyllabic and 126 bisyllabic words embedded in three types of noises:

- **Cocktail noise (Cock)** : made up of 4 mixed voices
- **Fluctuating speech-shaped noise (SN)** : with spectro-temporal characteristics comparable with the cocktail
- **Broadband Noise (BBN)** : with spectral characteristics comparable with the cocktail

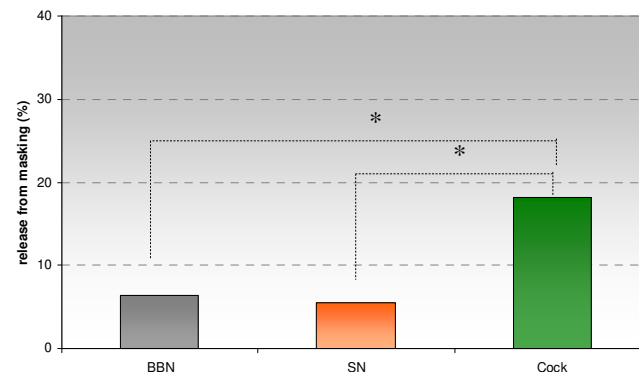
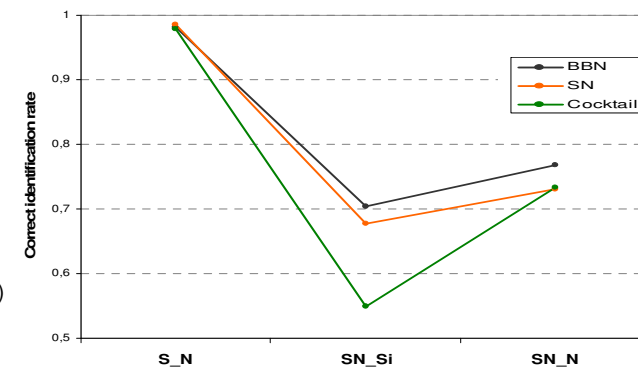
Condition	Target ear	Contralateral ear	Noise
S_N	Speech	Noise	BBN SN Cocktail
SN_Si	Speech/noise	Silence	BBN SN Cocktail
SN_N	Speech/noise	Noise	BBN SN Cocktail

Table 1. Conditions used in this experiment

RESULTS

4-way repeated-measures ANOVA, with target ear (Ear) and word length (Length) as inter-subject factors, and noise (Noise) and presentation configuration (Configuration) as intra-subject factors.

- Effect of **Noise** ($p < .001$):
BBN >> *SN* >> *Cock*
- Effect of **Configuration** ($p < .001$)
S/N >> *SN/N* >> *SN/Si*
- Effect of **Length** ($p < .001$)
Bisyllabic >> *Monosyllabic*
- Interaction **Noise * Condition** ($p < .001$)



- **Size of binaural unmasking** ($SN_N - SN_{Si}$) more important in Cocktail Noise in comparison with BBN and SN

CONCLUSIONS

- High-level linguistic cues like lexical and phonological informations are predominant inside informational masking whereas low-level cues like spectral or envelope information cause minor informational masking.
- Size of binaural unmasking effect more important in the case of high-level informational masking => due to lower performances in the monaural situation.

➢ **Binaural unmasking is a robust mechanism which resists to important interference due to acoustic, phonologic and lexical informations**