

## **UC Merced**

### **Proceedings of the Annual Meeting of the Cognitive Science Society**

#### **Title**

A neurophysiological investigation of noisy channel sentences

#### **Permalink**

<https://escholarship.org/uc/item/40s3t7dd>

#### **Journal**

Proceedings of the Annual Meeting of the Cognitive Science Society, 44(44)

#### **Authors**

Dwivedi, Veena Dhar  
Nath, Pratik

#### **Publication Date**

2022

Peer reviewed

# A neurophysiological investigation of noisy channel sentences

Veena Dwivedi

Brock University, ST CATHARINES, Ontario, Canada

Pratik Nath

Brock University, St Catharines, Ontario, Canada

## Abstract

We used event-related brain potentials (ERPs) to investigate noisy channel models of sentences containing errors of deletion vs. errors of insertion. Ditransitives e.g., (i) The aunt mailed the letter to her niece by post were compared to deletion conditions (ii) #The aunt mailed the letter\_ her niece by post. Furthermore, double object constructions (iii) The aunt mailed her niece the letter by post were compared to insertion conditions (iv) The aunt mailed her niece #to the letter by post. All sentences were followed by yes/no comprehension questions. The Bayesian size principle proposes that deletion errors are more likely to occur than insertion; accordingly, perceivers should be more likely to revise sentences with deletion, resulting in P600 effects. Instead, results (N=41) revealed long-lasting negative-going waveforms for deletion errors at niece and positivity at by for insertion errors. Results are interpreted in terms of perceivers' decisions to revise via search space considerations.