

# CATEGORICAL PERCEPTION OF SPEECH IN NEUROTYPICAL CHILDREN AND CHILDREN WITH AUTISM SPECTRUM DISORDER

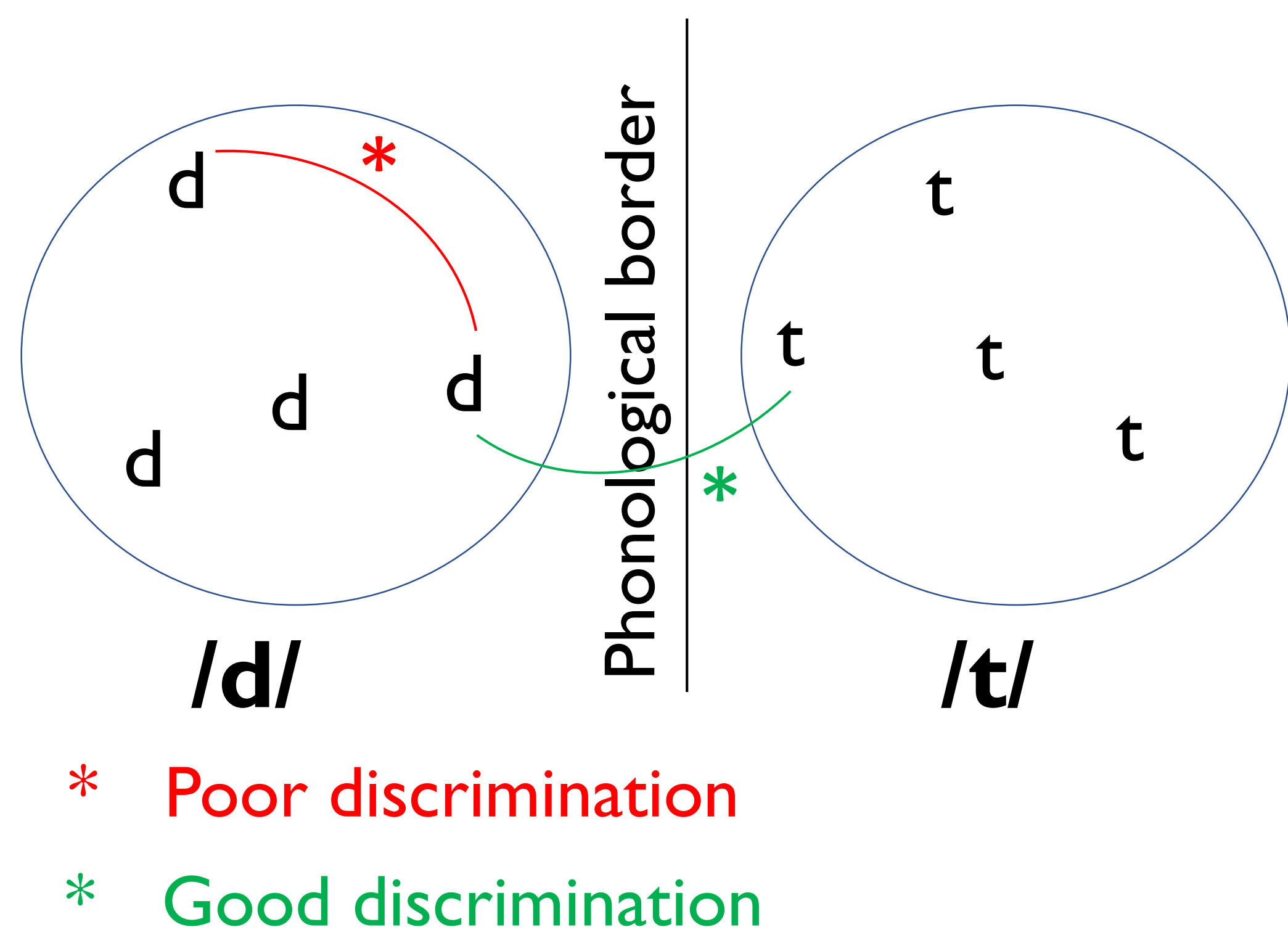
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## Background

### Typical development

By 12 months, neurotypical (NT) children perceive the sounds of their native language categorically



### Autism Spectrum Disorder (ASD)

- Delays in language acquisition
- Enhanced perception of acoustic differences in non-speech sounds



Do children with ASD perceive the sounds of their language less categorically than NT peers due to enhanced perception of acoustic differences in speech sounds?

## Objectives

- Investigate whether children with ASD exhibit the same phonological categories as NT peers
- Investigate whether children with ASD have enhanced perception of allophones
- Investigate whether level of language has an effect on categorical perception of phonemes in ASD

## Methods

### Participants

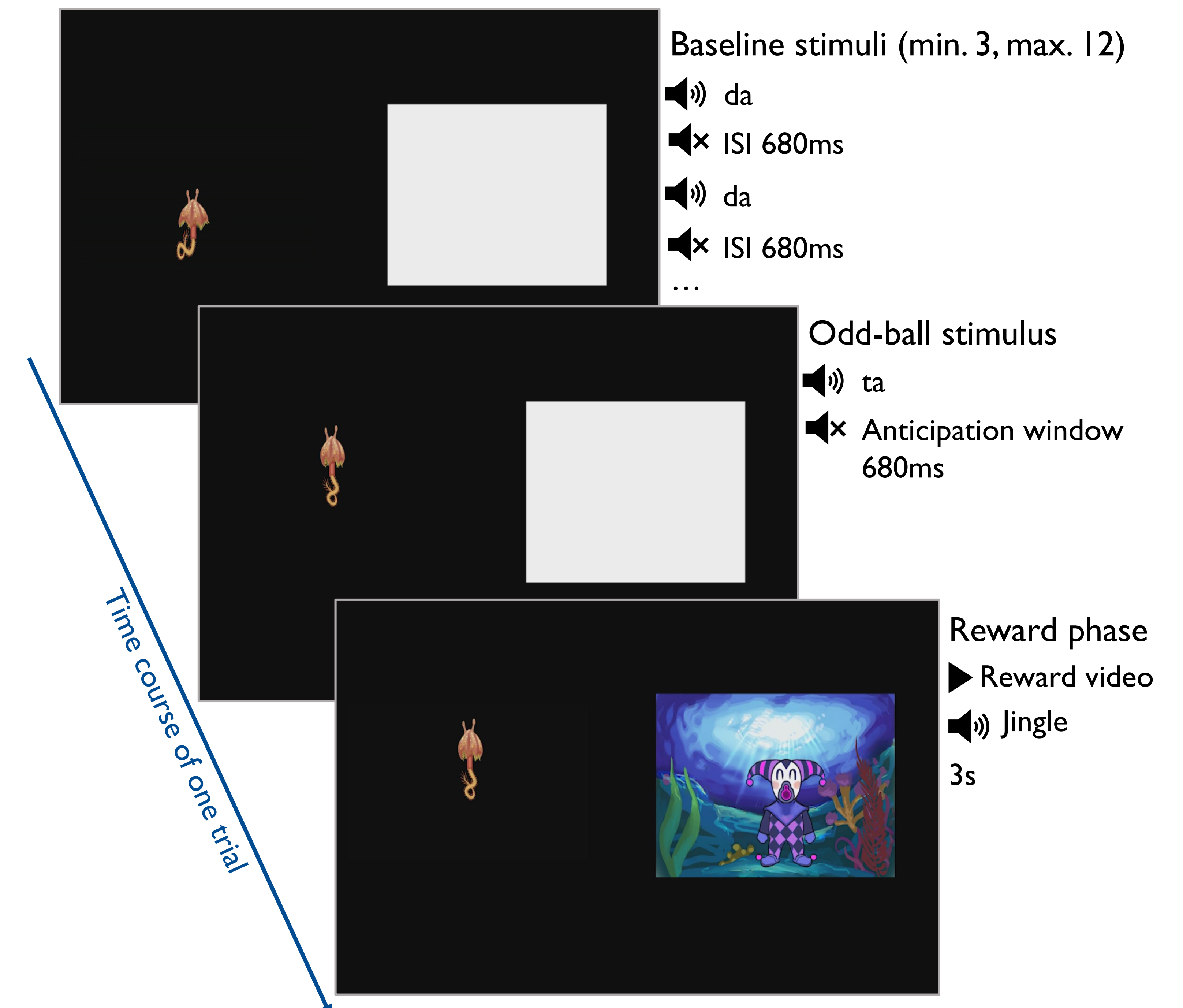
- 3- to 5-year-old French-speaking verbal and non-verbal children with ASD (N = 26)
- Age-matched French-speaking NT children (N = 48)

### Language measures

- Peabody Picture Vocabulary Test
- Mac-Arthur Bates Communicative Development Inventories

## Categorical perception task

Eye-tracking task (Tobii x2-60) – Adaptation of **Anticipatory Eye Movement Paradigm**



### Stimuli

/da – ta/ continuum ; phonological contrast = value of VOT (from -70 to +70)

- Manipulated from natural syllables uttered by a French-speaking female speaker
- Normalized for pitch, intensity and vowel duration

### Training phase - 6 trials

Train participants to make an anticipatory eye movement towards the white square after hearing an odd-ball stimulus

### Test phase - 19 trials

Evaluate discrimination of **allophones** of baseline stimulus, syllables belonging to the opposite category (**different**), syllables at the phonological border (**VOT0**) and syllables **identical** to the baseline stimulus by analysing anticipatory eye movements after stimulus presentation

## Results

Main effect of stimulus type on the proportion of fixations in the anticipation zone post stimulus offset ( $\chi^2(3) = 17.88, p < 0.001$ )

**Identical > VOT0**  
**Identical > Different**

All other comparisons are non-significant

**No sign of anticipation** of the reward in ASD and NT

➔ Categorical perception could not be measured

### Potential explanations to these results

- Age of the participants
- Non-compliance to the task (boredom)
- Too few training trials