

# Multisensory and temporal processing in adolescents with Autism Spectrum Disorders; a comparative study between healthy and autistic adolescents

Published: 09-03-2009

Last updated: 17-08-2024

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<b>Ethical review</b>	Approved WMO
<b>Status</b>	Recruitment stopped
<b>Health condition type</b>	Developmental disorders NEC
<b>Study type</b>	Observational non invasive

## Summary

### ID

NL-OMON33128

### Source

ToetsingOnline

### Brief title

Multisensory and temporal processing in adolescents with ASD

### Condition

- Developmental disorders NEC

### Synonym

autism, pervasive development disorder

### Research involving

Human

### Sponsors and support

**Primary sponsor:** Universiteit van Tilburg

**Source(s) of monetary or material Support:** Ministerie van OC&W

## Intervention

**Keyword:** autism, multisensory processing, temporal processing

## Outcome measures

### Primary outcome

Experiment 1: The main parameter in Experiment 1 is a measure of sensitivity to audiovisual synchrony, the JND. The JND in experiment 1 reflects the smallest time difference (in milliseconds) between sound and vision that participants are able to detect.

Experiment 2: The main parameter in Experiment 2 is the JND for visual temporal order. Here, the JND reflects the smallest time difference (in milliseconds) between two flashes that participants need to perceive correct visual temporal order.

### Secondary outcome

not applicable

## Study description

### Background summary

The perception of the world around us largely determines how we attend to and behave in the world. To correctly respond to the situations around us, it is important to have the right information about the situation. The development of normal perception is rooted on basic abilities like the capacity to integrate information from multiple sources of information. Multisensory integration entails that information from different modalities which is combined into a coherent percept. If this integration is disrupted, it could lead to deviant behavior in communication and social interaction, which are main

characteristics of autism. Many theories about autism postulate that sensory abnormalities are core symptoms of autism with downstream effects on the development of the perceptual system. We would like to study whether multisensory processing of autistics differs from healthy persons. In this study we specifically focus on temporal processing, because limited, recent studies postulate that autistics have temporal problems in (multi)sensory processing.

## **Study objective**

The primary objective is to investigate how autistic adolescents integrate multisensory information within the temporal domain. The following assessments will be made:

Experiment 1: Perception of audiovisual temporal synchrony (an audiovisual Temporal Order Judgment task (AVTOJ))

Experiment 2: temporal ventriloquism (a visual Temporal Order Judgment task (VTOJ))

## **Study design**

Design Exp 1. In the AVTOJ task, stimuli are artificial, natural (biological) or social, resulting in three conditions. There are 10 SOAs per condition, ranging from -800 to +800 (with steps of 100 and 50ms). These 30 unique trials are randomly presented 16 times in four blocks of 120 trials each.

Design Exp 2. The VTOJ task has five conditions (silent control, and clicks at audiovisual delays of ~100 ms, ~200 ms, ~300 ms and ~500 ms). The visual flashes are presented at 10 SOAs ranging from -600 ms to +600 ms with steps of 100, 50 and 25 ms. This results in 50 unique trials, each randomly presented 16 times in five blocks of 160 trials each.

## **Study burden and risks**

As far as we can consider there are no risks related to this study. Therefore we do not foresee any difficulties that could lead to any medical, mental or physical problems. There is a mental load, but this is minimized by conducting the experiments on two different days and each experiment can be stopped for a break.

Participation in this study implies that one contributes to the development of (fundamental) knowledge about multisensory processing within the temporal domain as a possible underlying deficit in social interaction and communication in children (and people in general) with autism. For the future, the outcome of this study could have practical and clinical implications for the treatment of autism.

This study is group-related, because it could not be conducted without the participation of adolescents with autism (all belonging to one group). We would like to acquire more knowledge on differences in (multi)sensory processing between autistic and healthy children and the suggested multisensory deficits in autistics, present at childhood age. Therefore, we include autistic adolescents in our study to examine whether multisensory temporal deficits are indeed a core problem and whether these deficits are manifest at that age.

## Contacts

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## Trial sites

### Listed location countries

Netherlands

## Eligibility criteria

### **Age**

Adolescents (12-15 years)  
Adolescents (16-17 years)  
Adults (18-64 years)  
Elderly (65 years and older)

### Inclusion criteria

- Presence of an autism disorder according to the DSM-IV criteria for autism, diagnosed by a

professional clinical team, (possible added with an score of the Autism Diagnostic Observation Scale (ADOS) which is administered by certified raters)

- Age between 14 and 21 years
- Normal hearing and normal or corrected to normal vision
- Written consent by parent or caregiver and/or adolescent

## Exclusion criteria

- Evidence of a serious medical, neurological or psychiatric illness (apart from autism), seizure disorders, trauma or a use of medications affecting the nervous system
- use of anti-psychotic medication; Individuals in the control group are excluded if there are concerns about:
  - learning disabilities
  - mental retardation
  - language delays
  - head trauma
  - psychiatric conditions

## Study design

### Design

Study type:	Observational non invasive
Intervention model:	Other
Allocation:	Non-randomized controlled trial
Masking:	Open (masking not used)

**Primary purpose:** Other

### Recruitment

NL	
Recruitment status:	Recruitment stopped
Start date (anticipated):	07-07-2009
Enrollment:	18
Type:	Actual

## Ethics review

Approved WMO  
Date: 09-03-2009  
Application type: First submission  
Review commission: METC Brabant (Tilburg)

## Study registrations

### Followed up by the following (possibly more current) registration

No registrations found.

### Other (possibly less up-to-date) registrations in this register

No registrations found.

### In other registers

Register	ID
CCMO	NL26440.008.09