Multisensory integration and attention in adolescents with Autism Spectrum Disorders (ASD)

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Ethical review	Approved WMO
Status	Recruiting
Health condition type	Psychiatric disorders NEC
Study type	Observational non invasive

Summary

ID

NL-OMON34242

Source
ToetsingOnline

Brief title
Multisensory integration and attention in adolescents with ASD

Condition

- Psychiatric 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: attention, autism, multisensory integration, temporal processing

Outcome measures

Primary outcome

Task 1. the main parameter is task 1 is visual latency; the difference between the reported and the actual time on the target clock. This parameter is calculated for each trials in each condition. To examine the "pure" effect of a sound, difference scores between the vision-only baseline and the sound conditions are calculated.

Task 2: the speed of shift attention is the main paramtere in this task. This speed is calculated by comparing Reaction times (RTs) between valid and non-valid trials. The RTs are corrected for accuracy.

Task 3: The main parameter in task 3 is the Just Noticeable Difference (JND) for visual temporal order. The JND reflects the smallest time difference (in milliseconds) between two flashes that participants need to perceive correct visual temporal order.

Task 4: main parameter is RT of the visual search. The RT refletcs the time to respond to the visual target from the search display onset. RTs are corrected for acuracy.

Secondary outcome

not applicable

Study description

Background summary

In our previous study we examined visual temporal prossing and multisensory integration (MSI) of sound and vision in adolescents with Autism Spectrum Disorder (ASD). The main result of this study was that the effect of the sound was much bigger for ASDs than for the typically developing adolescents (TDs). This enhanced temporal ventriloquist effect (performance of visual temporal order improves if sounds are presented at the right timing) demonstrates that ASDs do not suffer from a generalized deficit in MSI, as they profited more from sound than less. Compared to TDs though, ASD were impaired in judging the temporal order of two flashes if the flashes were presented in silence. These resuls can be explained by an attentional acocunt where ASDs suffer from slow attentional shifting that is improved by sound. In our next study we would like to further investiagte this idea.

Study objective

The primary objective of this sutdy is to further investigate attention and MSI in adolescents with ASD. To do so, the following tasks will be administered.
Task 1 Clock task: multisensory integration and the effect of sound on the velocity of the attentional shift
Task 2 Crossmodal cueing: crossmodal integration and the ability to engage and shift attention
Task 3 Visual TOJ: temporal ventriloquism
Task 4 Pip & Pop: effect of sound on attention (search behavior and MSI)

Study design

Design task 1: The clock task consist of 4 conditions in which sound is presented before or after the visual target; no sound, 0ms, -100ms and +100ms. There are 4 clocklocations for the target to show up. This results in 16 unique trials which are randomly presented in 3 blocks of 80 trials each.

Design taks 2: Cues are presented at 100 or 800ms before the target. This cue can be visual or auditory and is presented left or right of fixation. There are 2 targetlocations (up or down). These 16 unique trials are 10 ten times randomly presented in 2 blocks of 80 trials

Design task 3: The VTOJ task has five conditions; a no sound condition and 4 condities with audiovisual delays at 0ms, 100ms, 200ms, and 300ms. The visual flashes are presented at 8 SOAs ranging from -133 ms to +133 ms. This results in 40 unique trials, each randomly presented 16 times in four blocks of 160 trials each.

Design task 4: this task consist of 2 conditions in which 6 or 12 stimuli with or without sound are presented. These 4 unique trials are 20 times presented in 2 blocks of 40 trials.

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 attentional issues and 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 and attentional issues between autistic and healthy adolescents and the suggested 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

Public
Universiteit van Tilburg

Warandelaan 2
Postbus 90153, 5000 LE Tilburg
NL
Scientific
Universiteit van Tilburg

Warandelaan 2
Postbus 90153, 5000 LE Tilburg
NL

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 Autisme Beoordelingslijst (ABL) which is administered by certified raters)
- Age between 14 and 23 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
- color blindness;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:	Recruiting
Start date (anticipated):	01-06-2011
Enrollment:	18
Type:	Actual

Ethics review

Approved WMO

Date:	21-06-2010
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	NL32533.008.10