Executive control functions in autism spectrum disorders

Published: 11-08-2006
Last updated: 14-05-2024

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Ethical review	Approved WMO
Status	Pending
Health condition type	Developmental disorders NEC
Study type	Observational non invasive

Summary

ID

NL-OMON29914

Source
ToetsingOnline

Brief title
Executive control in ASD

Condition

- Developmental disorders NEC

Synonym
autism, PDD

Research involving
Human

Sponsors and support

Primary sponsor: Katholieke Universiteit Nijmegen
Source(s) of monetary or material Support: Ministerie van OC&W

Intervention

Keyword: autism, executive control, task interruptions, task switching

Outcome measures

Primary outcome

Primary parameters:

Experiment 1:

Task transition, which can call for a task switch or a task resumption

Experiment 2:

The interval between the cue presentation and the first target in a run of trials, which can be long (900 ms) or short (300 ms)

Experiment 3:

The interval between the last response in a run of trials and the upcoming cue; this interval can be long (900 ms) or short (300 ms)

For all experiments, reaction times and error rates were registered.

Secondary outcome

Secondary parameters:

For all experiments:

Two tasks are used: a color matching and a shape matching task. Also, the sequence of trials in a run is one of the secondary parameters here: A run of trials consists of Trial 1,2,3,4 up to 8.

Additional secondary parameters for Experiment 2 and 3:

Task transition, which can call for a task switch or a task resumption

Study description

Background summary

Recently, some studies on autism suggested that ASD were associated with problems in executive functions, such as planning and mental flexibility (Hill, 2004a, 2004b). One of the paradigms offered in the field of cognitive psychology as a tool for exploring the control processes and isolating specific cognitive processes is the task-switching paradigm. Within this paradigm, participants are asked to execute two (or more) tasks alternately. Typically, healthy participants are able to execute a switch between tasks without too much effort. The rationale behind the task-switching paradigm is that this ability to switch between tasks can be seen as an obvious expression of cognitive, voluntary control.
The (in) ability to initiate a different (switch) or the same (interruption) task falls into the category of (poor) mental flexibility. The aim of this study would be to investigate whether adolescents with autism show any deviation in task switching and task interruptions as compared to two control groups: a group of healthy adolescents and a group of adolescents with dyslexia. We expect to find a deviation in task switching and task interruption performance. If the data support our hypothesis then the following step would be to look from which specific part of task execution the deviating pattern arises.
Considering the observation of insistence on sameness and resistance to change in individuals with ASD, we would like to explore the processes involved in task persistence (task-set decay) and task initiation (preparation effects) in our target group. Task performance of healthy individuals seems to improve by increasing the interval given to the previous task rule to decay before the initiation of the next task (Poljac, Koch, & Bekkering, 2006). Furthermore, literature on task switching shows that healthy individuals are able to prepare the next task better if ample time is given for the advance preparation (e.g., Poljac, De Hann, Van Galen, 2006). We expect to find impaired performance in both preparation and deactivation of tasks.

Study objective

The primary objective of this study is to specify the executive control processes that contribute to mental inflexibility in persons with autism. The specific part of mental flexibility we are interested in includes processes

involved in task switching and task interruptions.

Study design

This study includes three experiments. Each experiment involves 15 participants from each of the three groups defined above. The experiments contain a computer task, in which reaction times and error rates are registred.

Study burden and risks

The burden is a computer task, which lasts around 60 minutes (maximally).

There are no riscs involved in this task.

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)
Children (2-11 years)
Elderly (65 years and older)

Inclusion criteria

Participants with ASD should meet DSM-IV criteria for autistic disorder, Asperger disorder, or PDD NOS on the basis of both extensive clinical evaluations and a structured diagnostic interview (ADI-R).
Participants with dyslexia should meet DSM-IV criteria for dyslexia. This latter group will be matched as closely as possible person-to-person with the patient group on age, sex, and IQ.
Healthy volunteers with a negative history of neurological and psychiatric disorders as assessed using the General Health Questionnaire (GHQ). This group will also be matched as closely as possible person-to-person with both patient groups on age, sex, and IQ.

Exclusion criteria

Participants will be excluded if they have:
- sensory impairments
- neurological impairments
- experienced any neurological trauma
- used neuroleptics

Study design

Design

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

Recruitment

NL

Recruitment status:	Pending
Start date (anticipated):	05-01-2006

Enrollment:	135
Type:	Anticipated

Ethics review

Approved WMO Application type:	First submission
Review commission:	CMO regio Arnhem-Nijmegen (Nijmegen)

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	NL11381.091.06