



“AI-TOP - An AI Tool to Predict Engagement and Meltdown Events in Students with Autism”

Project Number: 2020-1-UK01-KA201-079167



Intellectual Output 1:

Online searchable Database:

Report on the AI-TOP Online Searchable Database

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Input: All Partners

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About the AI-TOP Online Searchable Database

T1.1 Research all sources regarding autism engagement and meltdown

Best practices and app resources were collected by partners (317 entries in total). This was an ongoing task lasting to the end of the project and additional useful resources were added in batches when convenient for P4 - PhoenixKM throughout the project. PhoenixKM oversaw the addition and upload of new resources and monitored and added translations from the project partners.

T1.2 Database Requirements (All Partners)

The database requirements were established in the first months by all partners establishing the fields required to create a useful searchable database. Fields included: Title, Description, User type, Resource Type, Available Languages, Country, Type of Access, Type of Setting and Type of Challenge Addressed. Annex 1 details the form created for partners to complete to create useful entries for the database.

T1.3 Implementation of Database

The database was embedded into website using a WordPress plugin.

The database can be found by accessing <https://www.ai-autism.eu/database/>.

All discovered best practices and apps identified by the consortium partners have been uploaded to the searchable database, and translations were uploaded when supplied. This process was ongoing up to the end of the project due to the continued discovery and addition of resources by partners. The location of the database was disseminated to all relevant stakeholders early to encourage timely uptake and use of the research material. Partners have continued to reference this link in dissemination events throughout the project.

The information from the needs analysis undertaken was used to identify innovative practices and solutions in terms of the use of Artificial Intelligence (AI) to address these challenges as well as to identify best practices in alleviation of rumble or meltdown incidents occurrence once identified. Our Online Searchable Database can help teachers, support staff, parents and carers to better understand the behavioural and cognitive processes related to the emotional state of students with Autistic Spectrum Condition (ASC) in classrooms to:

- Provide personalised learning pathways and support according to the specific needs of each child with autism.
- Improve the understanding of autism both within school, and in the wider community.
- Provide a learning environment free of emotional trauma.

- Increase the likelihood that students with autism will make the academic and social progress that they should.
- Decrease incidents of challenging behaviour, leading to improved mental wellbeing of individual students, and decreasing instances of absenteeism and bullying.
- Improve access to teaching of academic, independent living, adaptive behaviours and social skills.
- Help prevent secondary consequences of their difficulties such as anxiety disorders and depression.

Target Groups

- Teachers, teaching assistants, and special education needs coordinators in mainstream education, inclusive settings, and special educational settings.
- Beneficiaries: students with ASC, and their families.
- Stakeholders: policy makers, pedagogical experts, schools, school authorities and their umbrella structures all over Europe. Service providers supporting students with ASC; Local education authorities at all levels, Associations for teachers and teacher unions.

Elements of Innovation

The Online Searchable Database provides teachers, TAs, SENCOs, Parents and Carers with a searchable compendium of innovative and leading practices, tools, and resources to support the needs of students with autism in the classroom, including approaches to provide personalisation, improve the understanding of autism and address negative perceptions especially in the wider community, provide calm learning spaces, with decreased instances of challenging behaviour leading to improved mental wellbeing of ASC students, and improved access to innovative teaching of academic, independent living, adaptive behaviours and social skills.

Expected Impact

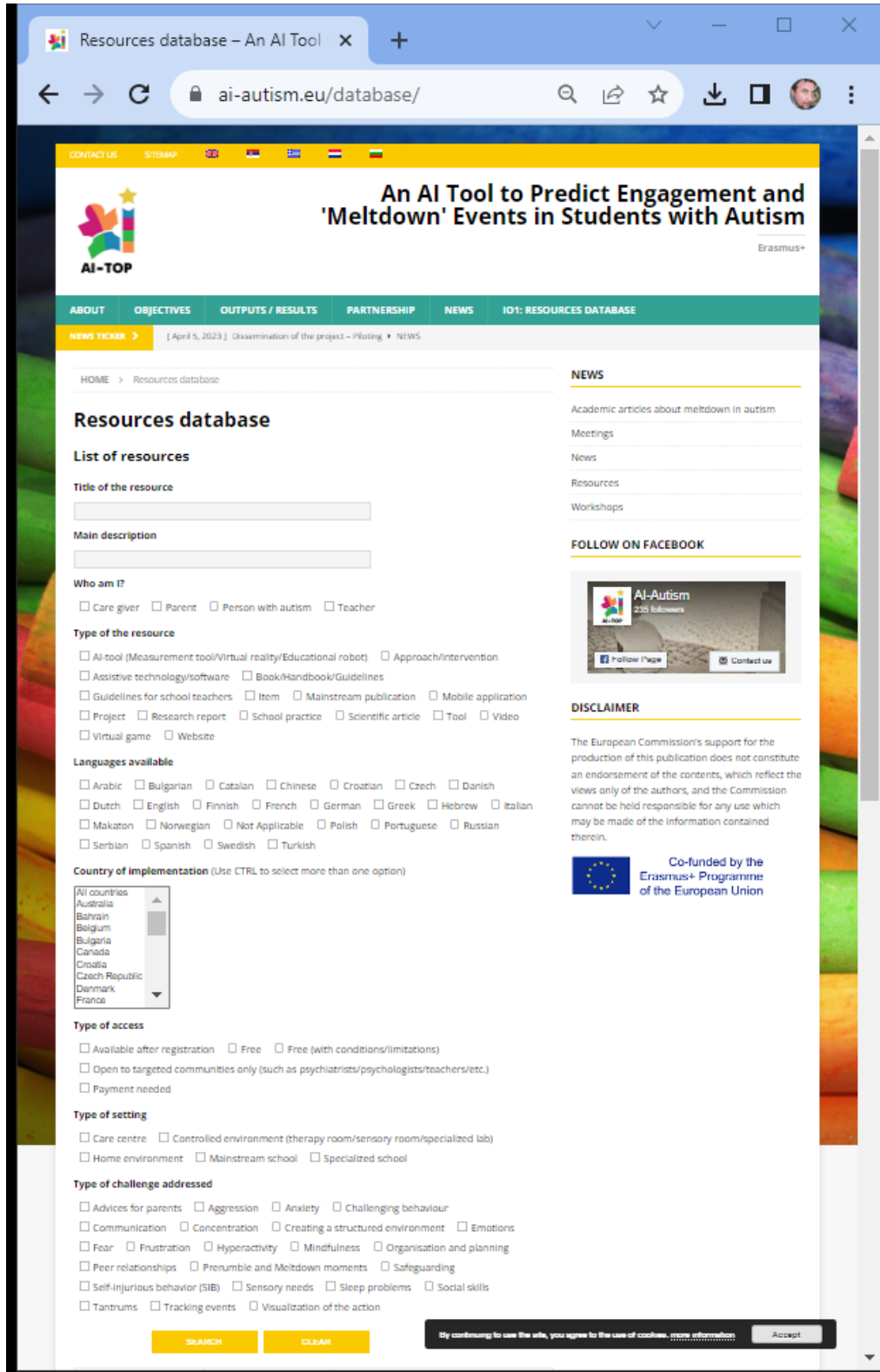
This Online Searchable Database enables teachers/TAs/SENCOs/Parents & Carers across Europe (and beyond) to find and adopt best practices in the education and behaviour management of students with ASC.

Transferability Potential

This outcome can be used and adopted by any school, or parent/carer in the wider community as it is available as a free and open educational resource. Its applicability for use in an inclusive

education setting does not preclude its use for special schools, home settings, etc., making the collection a widely transferrable resource.

Screen Captures of the AI-TOP Database Website



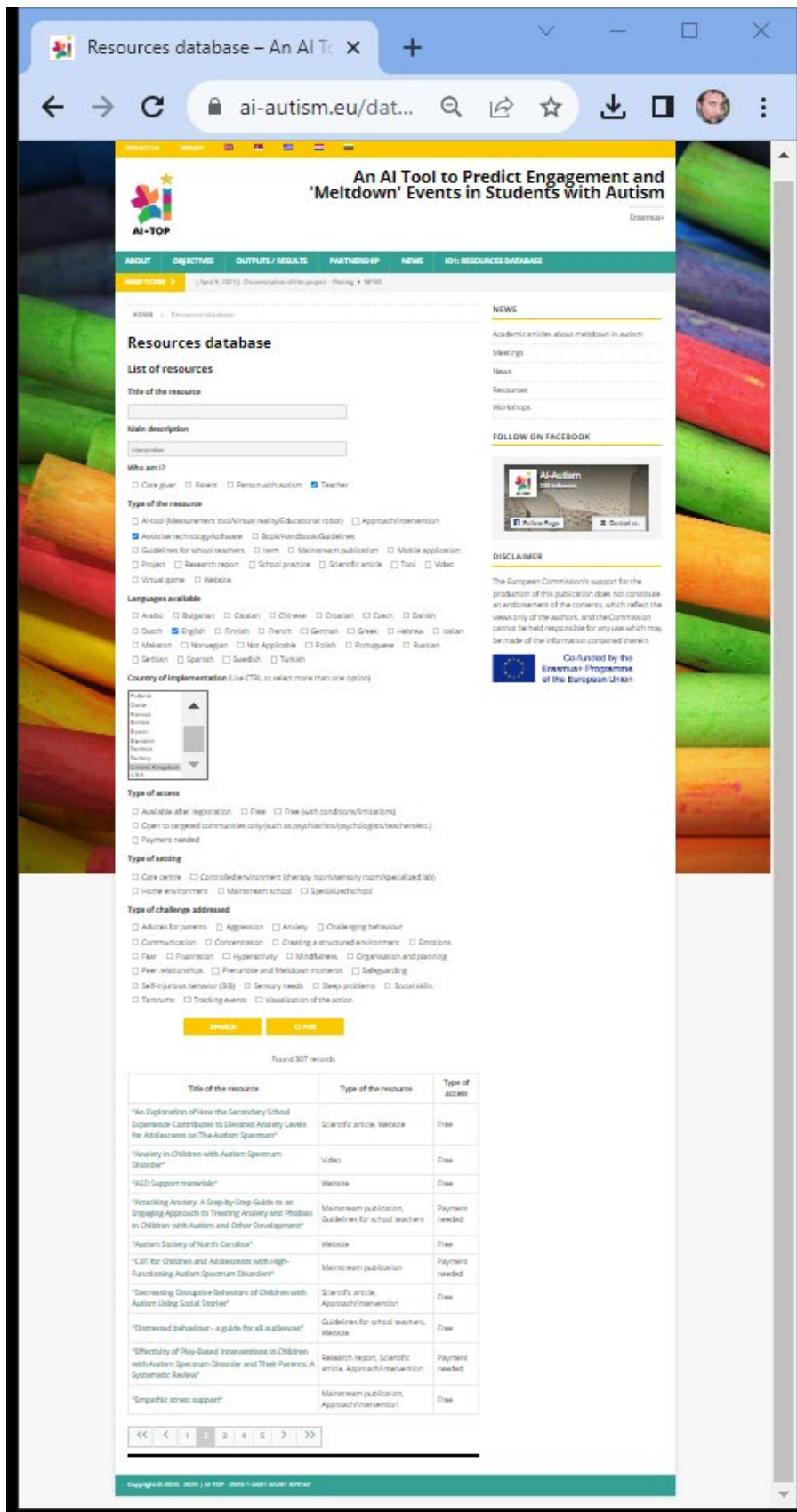
The screenshot shows the AI-TOP Database Website search interface. The browser address bar displays "ai-autism.eu/database/". The website header includes the AI-TOP logo and the title "An AI Tool to Predict Engagement and 'Meltdown' Events in Students with Autism". The navigation menu includes links for ABOUT, OBJECTIVES, OUTPUTS / RESULTS, PARTNERSHIP, NEWS, and IO1: RESOURCES DATABASE. A news ticker at the top indicates a date of April 5, 2023, and mentions the dissemination of the project - Piloting.

The main section is titled "Resources database" and contains a "List of resources" form. The form includes the following sections:

- Title of the resource:** A text input field.
- Main description:** A text input field.
- Who am I?:** A section with checkboxes for "Care giver", "Parent", "Person with autism", and "Teacher".
- Type of the resource:** A section with checkboxes for "AI-tool (Measurement tool/Virtual reality/Educational robot)", "Approach/intervention", "Assistive technology/software", "Book/Handbook/Guidelines", "Guidelines for school teachers", "Item", "Mainstream publication", "Mobile application", "Project", "Research report", "School practice", "Scientific article", "Tool", "Video", "Virtual game", and "Website".
- Languages available:** A section with checkboxes for various languages including Arabic, Bulgarian, Catalan, Chinese, Croatian, Czech, Danish, Dutch, English, Finnish, French, German, Greek, Hebrew, Italian, Makaton, Norwegian, Not Applicable, Polish, Portuguese, Russian, Serbian, Spanish, Swedish, and Turkish.
- Country of implementation:** A section with a dropdown menu for selecting countries. The dropdown list includes: All countries, Australia, Bahrain, Belgium, Bulgaria, Canada, Croatia, Czech Republic, Denmark, and France.
- Type of access:** A section with checkboxes for "Available after registration", "Free", "Free (with conditions/limitations)", "Open to targeted communities only (such as psychiatrists/psychologists/teachers/etc.)", and "Payment needed".
- Type of setting:** A section with checkboxes for "Care centre", "Controlled environment (therapy room/sensory room/specialized lab)", "Home environment", "Mainstream school", and "Specialized school".
- Type of challenge addressed:** A section with checkboxes for various challenges including "Advises for parents", "Aggression", "Anxiety", "Challenging behaviour", "Communication", "Concentration", "Creating a structured environment", "Emotions", "Fear", "Frustration", "Hyperactivity", "Mindfulness", "Organisation and planning", "Peer relationships", "Prerumble and Meltdown moments", "Safeguarding", "Self-injurious behavior (SIB)", "Sensory needs", "Sleep problems", "Social skills", "Tantrums", "Tracking events", and "Visualization of the action".

At the bottom of the form, there are "SEARCH" and "CLEAR" buttons. A disclaimer section on the right side of the page states that the European Commission's support for the production of this publication does not constitute an endorsement of the contents, which reflect the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein. The disclaimer also mentions that the publication is co-funded by the Erasmus+ Programme of the European Union.

Fig 1. A capture of the available filter options in the search on the site.



Resources database – An AI Tool to Predict Engagement and 'Meltdown' Events in Students with Autism

Resources database

List of resources

Title of the resource

Main description

Who am I?

☐ Care giver ☐ Parent ☐ Person with autism ☒ Teacher

Type of the resource

☐ AI-tool (Measurement tool/Virtual reality/Educational robot) ☐ Approach/Intervention

☒ Assistive technology/software ☐ Book/Handbook/Guidelines

☐ Guidelines for school teachers ☐ Item ☐ Mainstream publication ☐ Mobile application

☐ Project ☐ Research report ☐ School practice ☐ Scientific article ☐ Tool ☐ Video

☐ Virtual game ☐ Website

Languages available

☐ Arabic ☐ Bulgarian ☐ Catalan ☐ Chinese ☐ Croatian ☐ Czech ☐ Danish

☐ Dutch ☒ English ☐ Finnish ☐ French ☐ German ☐ Greek ☐ Hebrew ☐ Italian

☐ Maltese ☐ Norwegian ☐ Not Applicable ☐ Polish ☐ Portuguese ☐ Russian

☐ Serbian ☐ Spanish ☐ Swedish ☐ Turkish

Country of implementation (Use CTRL to select more than one option)

☐ Albania ☐ Andorra ☐ Austria ☐ Belgium ☐ Bosnia and Herzegovina ☐ Bulgaria ☐ Croatia ☐ Cyprus ☐ Czechia ☐ Denmark ☐ Estonia ☐ Finland ☐ France ☐ Germany ☐ Greece ☐ Hungary ☐ Ireland ☐ Italy ☐ Latvia ☐ Lithuania ☐ Luxembourg ☐ Malta ☐ Netherlands ☐ Norway ☐ Poland ☐ Portugal ☐ Romania ☐ Slovakia ☐ Slovenia ☐ Spain ☐ Sweden ☐ Switzerland ☐ Taiwan ☐ Turkey ☐ United Kingdom ☐ United States

Type of access

☐ Available after registration ☐ Free ☐ Free (with conditions/limitations)

☐ Open to targeted communities only (such as psychologists/psychologists/teachers/etc.)

☐ Payments needed

Type of setting

☐ Care centre ☐ Controlled environment (therapy room/sensory room/specialised lab)

☐ Home environment ☐ Mainstream school ☐ Specialised school

Type of challenge addressed

☐ Advice for parents ☐ Aggression ☐ Anxiety ☐ Challenging behaviour

☐ Communication ☐ Concentration ☐ Creating a structured environment ☐ Emotions

☐ Fear ☐ Frustration ☐ Hyperactivity ☐ Mindfulness ☐ Organisation and planning

☐ Peer relationships ☐ Prolonged and Meltdown moments ☐ Self-harm

☐ Self-injurious behaviour (SIB) ☐ Sensory needs ☐ Sleep problems ☐ Social skills

☐ Transitions ☐ Tracking events ☐ Visualisation of the action

Found 307 records

Title of the resource	Type of the resource	Type of access
"An Exploration of how the Secondary School Experience Contributes to Elevated Anxiety Levels for Adolescents on the Autism Spectrum"	Scientific article, Website	Free
"Anxiety in Children with Autism Spectrum Disorder"	Video	Free
"ASD Support materials"	Website	Free
"Attending Anxiety: A Step-by-Step Guide to an Engaging Approach to Treating Anxiety and Phobias in Children with Autism and Other Developmental Disorders"	Mainstream publication, Guidelines for school teachers	Payments needed
"Autism Society of North Carolina"	Website	Free
"CBT for Children and Adolescents with High-Functioning Autism Spectrum Disorders"	Mainstream publication	Payments needed
"Decreasing Disruptive Behaviors of Children with Autism Using Social Stories"	Scientific article, Approach/Intervention	Free
"Disrupted behaviour - a guide for all audiences"	Guidelines for school teachers, Website	Free
"Effectivity of Play-Based Interventions in Children with Autism Spectrum Disorder and Their Parents: A Systematic Review"	Research report, Scientific article, Approach/Intervention	Payments needed
"Empathic screen support"	Mainstream publication, Approach/Intervention	Free

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Fig 2. A capture of an example search showing the second page of results.

Appendix 1 – Table which was completed for each found resource.

**TEMPLATE FOR COLLECTION OF MATERIALS IN THE FIELD OF ENGAGEMENT
OF CHILDREN WITH AUTISM INCLUDING PREDICTION / COPING WITH
MELTDOWN EVENTS**

Title of the resource	...		
Who am I?	<input type="checkbox"/> Teacher <input type="checkbox"/> Parent <input type="checkbox"/> Person with autism <input type="checkbox"/> Care giver		
Type of the resource (indicate in bold)	<input type="checkbox"/> Research report <input type="checkbox"/> Scientific article <input type="checkbox"/> Mainstream publication <input type="checkbox"/> Project <input type="checkbox"/> School practice <input type="checkbox"/> Guidelines for school teachers <input type="checkbox"/> Approach/ intervention <input type="checkbox"/> Website <input type="checkbox"/> Video <input type="checkbox"/> Mobile application <input type="checkbox"/> AI-tool (Measurement tool; Virtual reality; educational robot; ...) <input type="checkbox"/> Virtual game <input type="checkbox"/> Assistive technology/ software <input type="checkbox"/> Other (please, specify)		
Languages available (indicate in bold)	<input type="checkbox"/> English <input type="checkbox"/> Bulgarian <input type="checkbox"/> Dutch <input type="checkbox"/> French <input type="checkbox"/> German <input type="checkbox"/> Serbian <input type="checkbox"/> Greek <input type="checkbox"/> Other (please, specify)		
Country of implementation: (indicate in bold)	<input type="checkbox"/> Austria <input type="checkbox"/> Belgium <input type="checkbox"/> Bulgaria <input type="checkbox"/> Croatia <input type="checkbox"/> Republic of Cyprus	<input type="checkbox"/> Hungary <input type="checkbox"/> Iceland <input type="checkbox"/> Ireland <input type="checkbox"/> Italy <input type="checkbox"/> Latvia <input type="checkbox"/> Liechtenstein <input type="checkbox"/> Lithuania	<input type="checkbox"/> Slovakia <input type="checkbox"/> Slovenia <input type="checkbox"/> Spain <input type="checkbox"/> Sweden <input type="checkbox"/> Switzerland <input type="checkbox"/> United Kingdom <input type="checkbox"/> Turkey

	<input type="checkbox"/> Czech Republic <input type="checkbox"/> Denmark <input type="checkbox"/> Estonia <input type="checkbox"/> Finland <input type="checkbox"/> France <input type="checkbox"/> Germany <input type="checkbox"/> Greece <input type="checkbox"/> Luxembourg <input type="checkbox"/> Malta <input type="checkbox"/> Netherlands <input type="checkbox"/> Norway <input type="checkbox"/> Poland <input type="checkbox"/> Portugal <input type="checkbox"/> Romania <input type="checkbox"/> Russia <input type="checkbox"/> Latin America <input type="checkbox"/> Australia <input type="checkbox"/> Canada <input type="checkbox"/> USA <input type="checkbox"/> Other:
Type of access	<input type="checkbox"/> Free <input type="checkbox"/> Available after registration <input type="checkbox"/> Payment needed <input type="checkbox"/> Open to targeted communities only (such as psychiatrists, psychologists, teachers, etc.) <input type="checkbox"/> Other type of access:
Main description:	<p><i>To include the following:</i></p> <ul style="list-style-type: none"> - <i>essential information about the resource.</i> - <i>users (schoolteachers; special educators; psychologists, psychiatrists, physiotherapists, caregivers, parents)</i> - <i>beneficiaries (children with Autism in primary education; children with Autism in secondary education; other)</i>
Resource URL	(web link to access the resource)
Type of setting	<input type="checkbox"/> mainstream school <input type="checkbox"/> specialized school <input type="checkbox"/> care centre <input type="checkbox"/> home environment <input type="checkbox"/> controlled environment (therapy room, sensory room, specialized lab, ...)
Type of challenge addressed	<input type="checkbox"/> Anxiety <input type="checkbox"/> Frustration <input type="checkbox"/> Communication <input type="checkbox"/> Sensory needs <input type="checkbox"/> Concentration <input type="checkbox"/> Challenging behaviour <input type="checkbox"/> Hyperactivity <input type="checkbox"/> Pre-rumble- & Meltdown moments <input type="checkbox"/> Other (please, specify)