



Sur le

Number 14
Fall 2022

spectre

The Montreal Cognitive Neuroscience Autism Research Group

05



To each their own
Developmental
trajectories
in autism

07



Attachment
and autism:
what do we know?

09



Autism
voices

12



Repetitive
behaviours and
intense interests
(Part II)



02

Does fluid reasoning develop differently in school-aged autistic children?



page **02**
 Does fluid reasoning
 develop differently
 in school-aged
 autistic children?



CHAIRE DE RECHERCHE MARCEL ET ROLANDE GOSSELIN
 EN NEUROSCIENCES COGNITIVES FONDAMENTALES
 ET APPLIQUÉES DU SPECTRE AUTISTIQUE



 **05**

To each their
 own
 Developmental
 trajectories in
 autism



 **07**

Attachment
 and autism:
 what do
 we know?



 **09**

Autism
 voices



 **12**

Repetitive
 behaviours and
 intense interests
 (Part II)



Official magazine of the The Montreal Cognitive Neuroscience Autism Research Group

The Montreal Cognitive Neuroscience Autism Research Group focuses on brain function, auditory and visual perception, exceptional skills and interventions in autism.

The translation is a courtesy of the Chaire de recherche Marcel et Rolande Gosselin en neurosciences cognitives fondamentales et appliquées du spectre autistique

This project is also supported by the Research CIUSSS-NIM

The graphics and design is a courtesy of the Fondation les petits trésors

Editorial board

Chief editor:

Valérie Courchesne

Assistant editor:

Janie Degré-Pelletier

Text editing and Translation:

Julie Cumin

Editorial board:

Anh Bonenfant
Jade Desrosiers
Sophia Draaoui
Karine Dubois-Comtois
Claudine Jacques
Catherina Lacelle
Rackeb Tesfaye
William Trottier-Dumont

Graphics / Design:

Alibi Acapella Inc.


Sur le spectre: Team work!

It is once again our pleasure to present this 14th issue of Sur le spectre. I am extremely grateful for the support of our loyal readers. It is because of you that the project is able to continue and it is you who make Sur le spectre a reference in the field of science communication. Of course, this would not be possible without the generous contribution of all the students, clinicians and researchers who volunteer to write and review articles.

This 14th issue also marks the renewal of our partnership with the Fondation Les petits trésors. The foundation has supported the project since its inception over 7 years ago. It is also thanks to their support that we were able to produce the [video on the genetics of autism](#), which we invite you to watch on our Youtube channel. The video won 3rd prize in the Éclair de Psy contest and allowed Janie Degré-Pelletier, assistant editor of the magazine, to win a Dialogue grant from the Fonds de Recherche en Santé du Québec to produce more videos. [Subscribe to our Youtube channel](#) to be notified when the next videos will be published.

For this issue I would also like to personally thank Janie Degré-Pelletier, who act as chief editor for Volume 13 during my parental leave and who is currently carrying the production of the next Sur le spectre videos on her shoulders. I would also like to thank Julie Cumin who joined the team again and who translated and revised the texts for this issue. Then, thanks to Alibi Acapella, the graphic design firm that makes the magazine so aesthetic and pleasant to read since its third volume. And once again, we can count on the support of the Marcel and Rolande Gosselin Research Chair in Basic and Applied Cognitive Neuroscience of the Autism Spectrum at the Université de Montréal as well from the CIUSSS-NIM Research Centre.

In this issue you will find a lay version of an article on repetitive behaviours and intense interests, which was published at about the same time as the article we published on this subject in the last issue. This article will therefore complement the one in the last issue by bringing you insights from a completely different cohort of participants. You will also find a summary of the results of a meta-analysis on maternal sensitivity and attachment in autism. Then, an interview about the *Autism Voices* project, a lay version of an exceptionally large article on the development of more than 17,000 autistic children and finally the lay version of a recent article on reasoning in autistic children, complete this 14th issue.

Enjoy your reading! 



Valérie Courchesne
Ph.D.

Chief editor

Sur le spectre
magazine a
reference
in the field
of science.



Overall, the combined analysis showed no performance difference in complex problem-solving between typically developing and autistic participants.

Does fluid reasoning develop differently in school-aged autistic children?

By SOPHIA DRAAOU

What is fluid reasoning?

Fluid reasoning is a cognitive skill allowing people to problem-solve. In linking different sources of information, people are able to find logical solutions to problems. In typically developing children, fluid reasoning mainly develops during the primary school years, reaching full maturity during adolescence. It is an essential skill for learning (notable in science and mathematics) but also for communication (ex. Understanding expressions and humour).

Fluid reasoning can be assessed in a number of ways. The main method used to measure this skills is to ask the person to solve matrix-type problems. Matrices are a series of figures which one must complete with the missing item amongst a selection. These problems can have different levels of complexity: the number of relationships to establish between objects can vary (0, 1 or 2 relationships) and certain items may be present to induce errors, meaning an item that has some link to the figures, but not the correct relationship (ex. We ask a child to find the witch's mode of transportation, the

Matrix problem examples with different levels of complexity and presence/absence of misleading items

	No misleading items	With misleading items
Semantic problems		
Visuospatial problems		

Number of relationships to consider when problem-solving

	0	1	2
Semantic problems			
Visuospatial problems			

These results indicate that developmental trajectories of fluid reasoning are similar in autistic and typically developing children and that both groups present better performances in semantic rather than visuospatial problems.

Brain areas related to visual perception seem to be more involved in reasoning processes for autistic children, as this has been observed in autistic adults.

correct answer would be a broomstick, but a cauldron may also be included as a possible answer of items generally related to witches). These problems can include varying content, they may be visuospatial in nature, or semantic, numerical or verbal. The example problem given of the witch is a semantic problem in that it asks the child to recall previous knowledge, and a language problem because it presumes knowledge of certain terms like “witch” and “mode of transport”.

Research has shown that autistic adults display typical or superior performances in fluid reasoning when compared to typically developed adults. What about autistic children ?

A study published in the Journal of Autism and Developmental Disorders explores this question. Eliane Denis and her colleagues **compared fluid reasoning development in school-aged autistic children to the development of this same skill in typically developing children of the same age**. More specifically, the researchers aimed to measure the impact of a problem’s content (semantic or visuospatial) but also the effect of a problem’s complexity and presence of error-inducing items, on performance on a reasoning task. The team recruited 43 autistic children and 41 typically developing children, aged between 6 and 13, with similar intellectual capacities. The researchers then presented each participant with 240 matrix-type problems on a computer.

Main study results

Final results suggest that typically developing children gave more correct answers than autistic children. However, autistic children solved complex problems faster than typically developing children.

The researchers therefore analysed their results by combining these two variables, meaning they considered both accuracy and response time. Overall, the combined analysis showed no performance difference in complex problem-solving between typically developing and autistic participants.


Furthermore, they found that performances in the two groups varied similarly with age. In both autistic and typically developing children, **performances on complex problems and problems containing misleading items improved with age**. In other words, the older a child is, the more accurate their response and faster their response time.

Finally, both groups **had better performances** in **1) Semantic rather than visuospatial problems, 2) Simple problems** compared to complex problems and **3) problems without misleading items**.

What are the main takeaways?

These results indicate that developmental trajectories of fluid reasoning are similar in autistic and typically developing children and that both groups **present better performances in semantic rather than visuospatial problems**. This is a surprising result, because it is often reported that autistic people do not perform as well on semantic tasks.

It is however important to note that semantic tasks are often presented verbally and require a verbal response from the child. For example, cognitive tests could ask how a bus and a car are similar. In the present study, researchers presented each problem in an exclusively visual manner. This method is in line with autistic people’s preference for visual information processing. Presenting content in a visual manner therefore benefits autistic people not only for visuospatial information, but also for semantic-type problems.

Lastly, though fluid reasoning performances were similar in autistic and typically developing participants, they could result from different reasoning strategies. For example, brain areas related to visual perception seem to be more involved in reasoning processes for autistic children, as this has been observed in autistic adults. It could be that these different reasoning strategies appear in early child development. The researchers will be furthering these results by investigating underlying brain processes during fluid reasoning in autistic children. Using brain imaging techniques, they will be able to observe which brain areas are involved in reasoning in this developing clinical population. Stay tuned for more study results ! 

Original article:

Danis E, Nader AM, Degré-Pelletier J, Soulières I. Semantic and Visuospatial Fluid Reasoning in School-Aged Autistic Children. J Autism Dev Disord. 2022 Sep 22. doi: 10.1007/s10803-022-05746-1.



To each their own

Developmental trajectories in autism

By **JADE DESROSIERS** and **ANH BONENFANT**

In typically developing children, developmental trajectories across different domains are very well defined. This is not the case in autism. During early childhood, typically developing children go through periods of accelerated development, according to an established timeline. Whether it be social, language, physical or cognitive skills, we usually observe these acquisitions in the same order and at approximately the same age in all children. In autistic children, some of these steps are delayed.¹ These delays, such as a lack of verbal language development or lack of response to their name being called, are usually what lead parents to seek medical advice. A great deal of variability, or heterogeneity, exists across the developmental trajectories of children who go on to receive an autism diagnosis. Researchers took a closer look at this variability and sought to characterise it, to better understand heterogeneity in autism.

What was their study?

This study was conducted by Susan Kuo and her US colleague in *JAMA pediatrics*, a prestigious research journal. Kuo's research merged the results of 17 098 autistic children across four large research cohorts. The research team's goal was to describe the ages at which autistic children reached certain developmental milestones, such as : smiling, sitting, crawling, walking,

spoon feeding, first words, first sentences, and potty training. The authors then tried to explain the differences, otherwise known as variability, in when children reached these steps.

Genetics or environment?

The authors firstly demonstrated that autistic children presented with developmental delays when compared to their siblings who did not have autism or an intellectual disability. This does not mean that every autistic child observed individually will present with a delay compared to their sibling on each of the 8 milestones studied. However, the average age at which the autistic group reached each milestone was significantly higher than the average age at which their siblings with no diagnosis reached the same step (sibling development was comparable to results found in the general population). Delays observed in autistic children are therefore highly linked to diagnosis, as opposed to family environment or family genetic predispositions. The authors then tried to identify the characteristics which could explain different developmental trajectories *within* the autistic population.

How can we explain difference in developmental trajectories?

A concomitant diagnosis of intellectual disability and genetic conditions can impact developmental delays.

A concomitant diagnosis of intellectual disability and genetic conditions can impact developmental delays.

1 The term « delay » refers to a significant difference between the age at which a milestone is reached and the age at which this is usually observed in typically developing children. We could also say that this took longer.

2 These genetic conditions are often associated with intellectual disabilities.



Study results in autism research are highly dependent on diagnostic practices and who gets included in samples.

Original article:

Kuo, S. S., van der Merwe, C., Fu, J. M., Carey, C. E., Talkowski, M. E., Bishop, S. L., & Robinson, E. B. (2022). Developmental variability in autism across 17 000 autistic individuals and 4000 siblings without an autism diagnosis: comparisons by cohort, intellectual disability, genetic etiology, and age at diagnosis. *JAMA pediatrics*, 176(9), 915–923. doi:10.1001/jamapediatrics.2022.2423

For autistic children with a genetic condition, expected developmental delays closely mirrored those of autistic children with an intellectual disability, since these conditions are usually associated with lower IQ.² The only exception was in the development of the smiling reflex, which tended to emerge at the same time in autistic children with or without an associated genetic condition.

The authors also found a link between age of diagnosis of autism and the presence and significance of developmental delays. Developmental delays were most significant in children diagnosed before age 5, followed by children diagnosed between the ages of 5 and 9, followed by children diagnosed at age 10 or older. This link does not mean that early diagnosis causes developmental delays, but rather that these two variables vary together. It would instead seem plausible that significant developmental delays would lead to early diagnosis. Indeed, children diagnosed before age 5 were more likely to have a double diagnosis of autism and intellectual disability. In comparison, children diagnosed after 5 were more likely to have only a diagnosis of autism.

Lastly, the authors compared the four cohorts (Autism Genetics Research Exchange, Autism Simplex Collection, Simons Simplex Collection et Simons Foundation Powering Autism Research Collection) which together provide data on 17,098 children. Interestingly, they found differences in the development of autistic children across cohorts. The older the cohort the children belonged to, the greater the variability of ages at which milestones had been reached. Children from older cohorts displayed greater delays in speaking their first

words, first sentences and potty training than children from more recent cohorts. This finding could result from broadening diagnostic criteria over the years, as more autistic people with no intellectual disability and no speech delays (formerly Asperger's syndrome) have come to be included in the spectrum. Thus, children from more recent cohorts display less developmental milestone delays.

What are the main study takeaways?

Kuo and her collaborators point out that no matter the sample size, study results in autism research are highly dependent on diagnostic practices and who gets included in samples. Secondly, the presence or absence of an associated condition (ex: genetic syndrome or intellectual disability) has a significant impact on the age at which children reach developmental milestones. In sum, the large heterogeneity observed in autism research cohorts confirms the importance of using well-defined samples before making any conclusions in autism research. 🌱



Attachment and autism: what do we know?

By WILLIAM TROTTIER-DUMONT

Why study attachment in autism?

Attachment is defined as the unique relationship a child develops with their caregiver. It is considered a foundation for children's ability to regulate their behaviour, and is therefore associated with the development of social, emotional, cognitive and language skills. Parental behaviours towards the child, particularly when the child is upset, predict how children will demonstrate attachment towards the parent. We refer to an attachment as secure when a child feels safe with their caregiver and knows they can rely on them.

Given that autism is associated with differences in social interactions and relationships, many researchers have hypothesised that these differences could be an obstacle to developing an attachment bond. Researchers have therefore investigated factors influencing the development of attachment in autistic children.

One factor which has been heavily researched in the attachment development literature is Maternal Sensitivity (MS). A secure mother-child attachment is more likely to develop when the mother is sensitive to her

child, meaning she understands her child's needs and displays warm, consistent and predictable behaviour towards her child.

In this study, the authors therefore looked into what we already know about MS and attachment in autistic children. They undertook a systematic review of the scientific literature on this topic, as well as a meta-analysis¹.

Their first goal was to determine the strength of the relationship between MS and attachment security in young autistic children (aged 1 to 7). Their second goal was to determine whether other variables also had an impact on this relationship, such as intellectual ability, autistic signs or child temperament.

How was the study carried out?

To undertake a meta-analysis, researchers must first collect absolutely all studies conducted on the topic of interest. To ensure that this important first step is carried out systematically, the authors decide on a few key words and apply them to different scientific paper

It is considered a foundation for children's ability to regulate their behaviour, and is therefore associated with the development of social, emotional, cognitive and language skills.

¹ A meta-analysis is a scientific method that allows to group together the studies on a subject, in a way it is a study of studies!



One hypothesis to explain this link could be that it is possible that many mothers, following their child's autism diagnosis, decide to stay home or work part-time, thereby spending more time with their child.

databases. Table 1 lists selected key words used in this study, databases searched, and inclusion criteria for studies that were eventually selected as relevant. Initial database searches turned up 151 papers (published articles and non-published theses). Following careful triage based on the inclusion criteria, only 7 articles were ultimately selected!

What do these studies tell us?

From the 7 studies selected, the researchers were able to calculate the strength of the relationship between MS and attachment security in autistic children. They found a moderate relationship size, which is higher than what is usually found in neurotypical children. The strength of the relationship found varied greatly across studies included in the meta-analysis, from a null to a large effect size. It would have been relevant to undertake variable analyses on these results, to better understand which other variables could impact the strength of this relationship. Unfortunately, there were too few studies included to analyse the effects of variables such as the level of autism symptoms, intellectual ability, and child temperament.

Despite these limitations, meta-analysis results indicate that the relationship between MS and attachment in autistic children is twice as high as in their neurotypical counterparts. These results suggest that MS plays a more important or different role in creating an attachment relationship, though this does not mean it is the only variable implicated. One hypothesis to explain this link

could be that it is possible that many mothers, following their child's autism diagnosis, decide to stay home or work part-time, thereby spending more time with their child. It may be interesting to consider time spent with the child as a variable to explain these results. At this stage, this is simply a hypothesis which could go on to be tested in further studies. It is also important to exercise caution when interpreting these results. Since few studies met the inclusion criteria for selection, it could be that adding a few more studies could modify the results of the meta-analysis.

At the methodological level, we can also question our understanding of "sensitivity" when it comes to the mothers of autistic children. Indeed, it may be that sensitivity to an autistic child's needs looks very different than for neurotypical children. If this is true, meaning that mothers of autistic and neurotypical children both display MS but in different ways, the assessment tools used to measure sensitivity in mothers of neurotypical children may not be appropriate for use in mothers of autistic children. Other measures may prove more adapted, such as mother-child interaction measures.

In conclusion, a robust assessment of MS and attachment provides us with a singular description of the relationship between a mother and her autistic child. However, further research is needed to understand the effects of other variables on the link between MS and attachment in autistic children. Too few studies exist on this topic, highlighting the need for more research on Maternal Sensitivity and attachment in autistic children. 🌻

Tableau 1

Inclusion criteria for selecting studies for analysis

Key words	(autism* OR ASD) AND attachment AND («maternal sensitivity» OR «parental sensitivity» OR «caregiv* sensitivity» OR «parenting behavior» OR responsiveness)
Databases	Web of Science PsychInfo Medline (Ovid) ProQuest Dissertations Theses Global
Inclusion criteria	1. Sample includes autistic children aged 1 to 7 2. Use a tool assessing maternal sensitivity, emotional or maternal availability, or maternal response, or mother-child interaction 3. Use a tool assessing childhood attachment 4. Test the association between the two measures or provide information allowing the
Autre	No time restrictions in terms of year of publication for the studies (database research conducted in August 2020)

Original article:

Cossette-Côté, F., Bussi eres, E. L., & Dubois-Comtois, K. (2021). The association between maternal sensitivity/availability and attachment in children with autism Spectrum disorder : A systematic review and Meta-analysis. *Current Psychology*. <https://doi.org/10.1007/s12144-021-02227-z>

Autism voices

By VALÉRIE COURCHESNE and RACKEB TESFAYE

Over the past six years, researchers involved in the largest study on Autism in Canada collaborated with families and autistic youth to develop the *Autism Voices Project*. Two of the lead researchers based at McGill University, Valerie Courchesne and Rackeb Tesfaye, spoke to us about the evolution of Autism Voices and their findings.

What is Autism Voices?

The project captures the lived experiences of autistic youth aged 11-18 with various language and cognitive abilities. The main goals were to create new methods that enabled youth to communicate their lived experiences and to use these methods to interview autistic youth about their perspectives on their future in different environments (e.g., home, school and community).

Why did the project start?

According to the United Nations' Convention on the Rights of the Child, it is a human right for all children regardless of their abilities to have input in all matters that impact them. Unfortunately, when we looked at the literature we found that autistic youth were rarely

invited to give their perspectives about their own lives. This was especially evident for youth who did not use verbal language or used it minimally. We wanted to fill this gap, by capturing the diverse perspectives of autistic youth on matters that impact them.

What challenges did you encounter while developing the project?

The major hurdle was this had never been done before. We had to create and adapt tools that would fit the diverse communication styles of youth we worked with. This meant creating universal questions that all youth could understand and providing them with various ways to respond. It also meant as researchers and clinicians we had to acknowledge that our default mode of communication prevented us from engaging with certain youth, so we needed to shift our own perspectives.

What helped you overcome the challenges you faced?

It took a lot of time, patience and collaboration. Over the years we had to trial and error different approaches.

It also meant as researchers and clinicians we had to acknowledge that our default mode of communication prevented us from engaging with certain youth, so we needed to shift our own perspectives.



All youth were engaged during the interviews, they were trying to communicate with the interviewer

Original papers:

Tesfaye, R*, Courchesne, V*, Miranda, P., Nicholas, D., Mitchell, W., Singh, I., Zwaigenbaum, L., & Elsabbagh, M. (accepté) Autism Voices: Perspectives of the Needs, Challenges, and Hopes for the Future of Autistic Youth. *Autism*. 2022. *co-first authors

Courchesne, V., Tesfaye, R., Singh, I., Zwaigenbaum, L., Miranda, P., Nicolas, D. Mitchell, W., Elsabbagh, M. (2021). *Autism Voices: a novel method to access first-person perspective of autistic youth*. *Autism*, 1-14.

Tesfaye, R., Courchesne, V., Yusuf, A., Savion-Lemieux, T., Shikako-Thomas, K., Singh, I., Szatmari, P. and Elsabbagh, M. (2019) *Assuming Ability: Synthesis of Methods Capturing First Person Perspectives of Children and Youth with Disabilities*. *Autism*, 23(8), 1882-1896.

This meant talking to families and youth multiple times to tailor the interviews. We also worked with communication experts and ethical experts who gave us input so that the methods would be as inclusive as possible. This was a big undertaking and to do the process justice we needed to take our time and have a lot of humility.

Can you tell us about the methods you used to capture the voices of autistic youth?

First, the idea for developing Autism Voices comes from a previous project that was done with children with Attention Deficit and Hyperactivity Disorder (ADHD) called ADHD Voices. We worked with Ilina Singh, the lead researcher on this project, as well as with parents of autistic youth, who have a wealth of expertise about their child's daily communication styles and preferences, to develop the Autism Voices method. We also built on previous work using known autistic strengths to measure intelligence in minimally verbal autistic children (i.e. strength-based assessment) and we used principles of universal design, meaning that all initial questions were suited for all ability levels. For example, we used picture cards to ask questions and visually demonstrate the structure of the interview for all participants, regardless of their intellectual and language level. To answer, participants could choose their preferred communication method; writing, texting, verbal answer, pointing, etc. and the interviews were applied flexibly to adapt to each participant.

What were some of the key findings that emerged from youth interviews?

Regardless of verbal abilities, all youth identified a few of the things they wanted or did not want in their future. This included **where they wanted to live**, what **professions they wanted to pursue** and the **interests** (e.g., music, movies) they wanted to continue developing. This was a particularly salient finding, because it emphasizes the need for autistic youth to be active participants in the planning of their own futures and that their interests need to be included.

Youth also expressed that **school was a primary area of stress** for them. Many of them described their school environments as unwelcoming or detrimental to their well-being. On the other hand, these autistic youth also indicated that they liked school, because it allowed them to **interact with peers** and **make friends**, which they didn't have many opportunities to do outside of school.

Overall, we found that better support systems in society are needed to ensure autistic youth can feel safe and reach their desired outcomes in life. This includes working with educators to create more inclusive environments, challenging public perceptions of autism, providing more tailored mental health care access and ultimately listening to autistic youth to inform these changes.


What surprised you during this project?

That it worked! The information obtained from non or minimally speaking participants in such a short period of time and with relatively basic adaptations indicates that many of them could express themselves with more formalized support. All youth were engaged during the interviews, they were trying to communicate with the interviewer and youth who were able to verbally communicate expressed that they enjoyed sharing their experience and being listened to.

For us, this further highlights the need for more opportunities like this for autistics, not only in research, but also within the community.

What impact do you think this project will have for the autism community?

We hope that by centering youth voices it allows them to have ownership in their lives and increases their feeling of empowerment. In addition to benefiting youth, this project can impact research and policies as well. The lived experience shared by autistic youth can help guide

academic research and make protocols more inclusive, their input can also inform the delivery of health services and current policies concerning them. 



PARTICIPANTS RECHERCHÉS

Utiliser l'expertise en autisme pour caractériser les émotions des enfants autistes

Les laboratoires de Claudine Jacques, Ph.D., professeure de psychologie et de psychoéducation à l'UQO, et d'Isabelle Soulières, Ph.D., professeure de neuropsychologie à l'UQAM, sont présentement à la recherche de participants pour une étude en ligne sur les expressions émotionnelles des enfants autistes d'âge préscolaire.

Profil des participants recherchés :

- **Professionnels de la santé spécialisés en autisme** (au moins la moitié de la clientèle depuis 2 ans minimum) : psychologues, neuropsychologues, orthophonistes, psychoéducateurs, travailleurs sociaux, médecins, etc.

Nature de la participation : tâches informatisées, courte entrevue et questionnaires réalisés sur les plateformes Zoom et Qualtrics

Durée : une rencontre de 120 minutes

Pré-requis :

- Posséder un ordinateur et une connexion à l'Internet
- Résider au Québec

Compensation : 30\$

Pour plus d'information ou pour participer : contactez Camille Letendre, candidate au doctorat en psychologie à l'UQAM

letendre.camille@courrier.uqam.ca

UQAM
UQO

Centre intégré
universitaire de santé
et de services sociaux
du Nord-de-
l'île-de-Montréal

Québec 



Repetitive behaviours and intense interests (Part II)

By CATHERINA LACELLE

In the previous issue, we included an article on the evolution of repetitive behaviours and intense interests (RBIs) in autism during childhood. At the time of publication, Mirko Uljarevic and his colleagues authored a very large-scale study on this topic, which we have decided to summarise as a Part II to our article in the [previous issue](#). Contrary to the methods used by the authors of the article in Part I (who singled out RBIs for study), the researchers of this study chose to group repetitive behaviours and intense interests into 3 factors often used in the scientific literature. They are described below:

Repetitive motor behaviours, which include finger, hand and body movements, and the repetitive use of objects to create certain sounds or to visually explore the environment. **Insistence on sameness**, which refers to all behaviours linked to difficulties with changes in routines or surroundings. **Intense interests**² refer to specific and/or very significant interest in objects or topics. The authors then added two further categories: **self-injurious behaviours** and **compulsions**, or obsessions which lead to repetitive behaviours, both of which are also frequently found in the literature.

Despite a lack of longitudinal studies (research on the same group of children over several years) certain tendencies have emerged in the scientific literature on how RBIs evolve over time. For example, repetitive motor behaviours seem to be more present in early childhood, subsequently decreasing with age. The other two factors are rarely observed in autistic children aged between 12 and 15 months, but seem to then increase rapidly during childhood, stabilising in late childhood/early adolescence.

How was this study designed?

The researchers used a large cohort to better understand the factors associated with changes in RBIs. More specifically, they used a cohort of **17,581 autistic children and adolescents** to determine how age, sex and severity of autism socio-communicative symptoms were linked to the increase and decrease of RBIs. This information was collected using parent-report questionnaires available online through the **SPARK** autism research cohort.



Article from the previous issue.

SPARK
Simons Foundation
Powering Autism
Research for
Knowledge project

1 We use the more inclusive term "intense interests" but the study used the term "restricted interests"

A few results

Sex differences

The authors found that, in **boys**, **repetitive motor behaviours** and **intense interests** were more significant, whilst **self-injurious** behaviours and **compulsions** were more significant in **girls**. Insistence on sameness did not differ depending on sex.

Age-related changes

The results on how RBIs evolve over time were in line with the literature. Thus, **repetitive motor behaviours** tend to decrease with age no matter the child's sex.

For **intense interests** and **insistence on sameness**, results also confirmed previous research. These

behaviours seem to follow an inverted U curve, meaning that they increase gradually in childhood, reaching a maximum level between 8 and 10 years old, before gradually decreasing.

Link with severity of socio-communicative symptoms

Lastly, autism symptom severity in the sociocommunicative domain was linked to more RBIs across all categories, but this effect was quite weak. Therefore, increased symptomatology in one domain (sociocommunicative) was "slightly" associated with higher probability of also having more symptoms in the RBI domain.


Repetitive motor behaviours tend to decrease with age no matter the child's sex.

Original article:
Article original:

Uljarević, M., Frazier, T. W., Jo, B., Billingham, W. D., Cooper, M. N., Youngstrom, E. A., Scahill, L., & Hardan, A. Y. (2022). Big Data Approach to Characterize Restricted and Repetitive Behaviors in Autism. *Journal of the American Academy of Child & Adolescent Psychiatry*, 61(3), 446-457. <https://doi.org/10.1016/j.jaac.2021.08.006>

Conclusion

In conclusion, RBIs represent a wide range of very different behaviours, which each vary differently depending on age, sex, and intensity of social and communicative difficulties. These different factors also interact, making it very complex for researchers to study these behaviours. This study highlights the importance of combining several

data collection methods (objective and subjective) to better understand the role of RBIs in development. Together, the two studies summarised demonstrate the importance of studying RBIs separately and not just as a whole, and point out how misunderstood these behaviours remain within autistic development. 

2022-2023 annual campaign



I contribute



<https://www.jedonneenligne.org/fondationlespetitstresors/DG/>

Glimmer of hope

Like a thousand candles
can be lit from a single flame,

hope can be shared endlessly.



Contributing to one of our four missions means...



Continuing research

Research chair in sleep disorders

Research chair in autism



Offering respite

Trésors en vacances provincial program

Respite homes throughout Quebec



Providing better clinical care

Health professionals

Equipment



Raising awareness

Demystifying, informing, educating

Together, let's rekindle that glimmer of hope that shines in the eyes of every child!