



Research Snapshot No. 13

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**Determining associations between intervention amount and outcomes for young autistic children: A meta-analysis.**

Michael Sandbank, PhD and colleagues 2024

***What you need to know (background):***

Health professionals routinely recommend “intensive interventions” (i.e. 20-40 hours per week) for autistic children. The most commonly recommended intervention approach for young autistic children in the US is Early Intensive Behavioural Intervention (EIBI) which is derived from the principles of Applied Behavioural Analysis. While it is often implied that higher intervention amounts lead to greater improvements, primary research backing recommendations such as these is sparse and plagued by methodological flaws (e.g., small sample size, confounding variables, quasi-experimental designs lacking randomisation).

The authors highlight the potential for intensive interventions to result in harm due to the negative impact on a child’s ability to participate in other important activities and thereby naturalistic opportunities for social interaction and inclusion. They identify the need for an updated meta-analysis inclusive of recent studies and a broader variety of intervention approaches, focussing specifically on intervention amount.

***What is this research about?***

This meta-analysis examined whether different metrics of intervention amount are associated with intervention effects on any developmental domain for young autistic children. Three dimensions of intervention amount: 1) intensity – number of hours per day, 2) duration – number of days overall and 3) cumulative intensity – total number of hours, were considered.

This analysis focussed on four broad intervention approaches with the most available evidence. These were NDBIs (Naturalistic Developmental Behavioural Interventions), behavioural interventions, technology-based interventions, and developmental interventions.

***What did the researchers do?***

The study consisted of a meta-analysis involving statistical analysis of the combined results from multiple studies on a specific topic. The researchers began with a prior meta-analysis of all controlled group studies that tested the effects of any nonpharmacological intervention on any outcome for young autistic children up to 8 years old. The present analysis was restricted to 9 commonly reported outcomes including social communication, social-emotional, play, language, cognitive, motor, restricted & repetitive behaviours, adaptive function and diagnostic characteristics. This study followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines, a framework that ensures transparency and consistency of reporting.

To extract and organise relevant information from the studies, characteristics of participants and interventions were coded along with identifying information and the various risks of bias. Outcomes were also coded for domain (developmental area) and characterised as either proximal (closer) to the intervention target or distal, meaning further away or more indirect.

Once coded, the researchers undertook complex statistical analyses including regression analyses to look at effect size in relation to outcomes for the 3 metrics of intervention amount, while controlling for variables such as age, proximity of outcome, and quality of the study. In short, they used advanced methods to make sure their analysis was accurate and reliable, giving more importance to bigger studies and testing the results carefully.

***What did the researchers find?***

A total of 144 studies including 9038 children (mean age of 49.3 months) were analysed. The meta-analysis found no significant, positive association between any of the intervention amount metrics (intensity, duration, cumulative intensity) and intervention effect size, regardless of intervention approach or outcome type.

The authors point out that this research has not proven that such associations are null. That is, there is an association between intervention and effect, however, a greater amount does not lead to greater outcomes.

One statistically significant association was identified, indicating that longer duration interventions were associated with reductions in effectiveness for technology-based interventions. The authors cautioned against focussing specifically on this finding as the statistical analysis was not straightforward nor strong.

Some limitations were identified. For example, some studies did not report on amounts of caregiver-mediated interventions and therefore could not be included. Other studies reported both clinician- and caregiver-delivered interventions as equivalent to each other, even though there are potential differences in efficacy.

***How can you use this research?***

This analysis provides sound evidence that greater amounts of intervention are not associated with statistically significant positive effects for young autistic children. That is, more intervention does not guarantee better outcomes. This evidence is important for early childhood intervention professionals when weighing up the potential benefits of intervention amount against the possible negative impacts.

The authors suggest that researchers investigating the effect of intervention amount on outcomes should take care to detail all aspects of intervention amount across both clinicians and caregivers. Questions also remain about how certain participant characteristics, like age, might influence intervention effects when the amount of intervention is considered.

***Where to from here:***

* The Australian Autism CRC guidelines can be found at <https://www.autismcrc.com.au/best-practice/supporting-children>
* Podcast from the Journal of the American Medical Association (JAMA) on "Intervention Amount and Outcomes for Young Autistic Children." <https://edhub.ama-assn.org/jn-learning/audio-player/18890311?utm_source=silverchair&utm_medium=email&utm_campaign=article_alert-jama&utm_content=olf&utm_term=021725&adv=000002739273>

Other related articles

* Sandbank, M.et al. (2023). Autism Intervention Meta-Analysis of Early Childhood Studies (Project AIM) 2: updated systematic review and secondary analysis. ***BMJ*.2023**;383: e076733. doi:10.1136/bmj-2023-076733
* Letter to the Editor (Comment and Response). (2025). Frazier, T.W, Chetcuti, L., Uljarevic, M. Evidence That Intervention Dosage is Associated With Better Outcomes in Autism. ***JAMA Pediatrics,179***(1):101-102. doi:10.1001/ jamapediatrics. 2024.4710

***About the researchers:***

The authors of this paper are based in the US across various tertiary institutions. Drs Sandbank and Pustejovsky had full access to all the data in the study and take responsibility for integrity of the data and accuracy of the data analysis. Dr Sandbank is from the Department of Health Sciences, University of North Carolina, Chapel Hill. Dr Pustejovsky is from the Department of Educational Psychology, University of Wisconsin-Madison.

***Citation:***

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Feldman, J.I; Crowley LaPoint, S; Woynaroski, T (June 24, 2024). Determining associations between intervention amount and outcomes for young autistic children: A meta-analysis. ***JAMA Pediatrics 178(****8)*:763-773.

**This Research Snapshot was prepared by Paula Buttigieg, PRECI Board Director and Occupational Therapist.**

***'In the spirit of reconciliation PRECI acknowledges the Traditional Custodians of country throughout Australia and their connections to land, sea and community. We pay our respect to their Elders past and present and extend that respect to all Aboriginal and Torres Strait Islander peoples today.***