

## Improvement of Autism Diagnostic Observation Schedule Scores after Comprehensive Intensive Early Interventions in a Clinical Setting

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**Abstract :** In Sweden, like in most developed countries, there is a substantial increase of children diagnosed with autism and other conditions within the autism spectrum (ASD). The rapid increase of ASD rates stresses the importance of developing care programs to provide support and comprehensive interventions for affected families. The current observational study was conducted in order to evaluate an ongoing Comprehensive Intensive Early Intervention (CIEI) program for children with autism in southern Sweden. The change in autism symptoms among children participating in CIEI (intervention group, n=67) was compared with children who received traditional habilitation services only (comparison group, n=27). Children of parents who accepted the offered CIEI-program, constituted the intervention group, whereas children, whose parents (for some reason) were not interested in the offered CIEI-program, constituted the comparison group. The CIEI-program was individualized to each child by experienced applied behavior analysis (ABA) specialists with different backgrounds as psychologists, speech pathologists or special education teachers, in cooperation with parents and preschool staff. Due to the individualization, the intervention could vary in intensity and techniques. The intensity was calculated to 15-25 hours each week at home and the preschool altogether. Each child was assigned one 'trainer', who was often employed as a preschool teacher but could have another educational background. An agreement between supervisor- parents and preschool staff was reached to confirm the intensity and content of the CIEI- program over an approximately two-year intervention period. Symptom changes were measured as evaluation-ADOS-2-scores, total- and severity-scores, minus the corresponding baseline-scores, divided by the time between baseline and evaluation. The difference between the study-groups regarding change of ADOS-2-scores was estimated using ANCOVA. In the current study, children in the CIEI-group improved their ADOS-2-total scores between baseline and evaluation (-0.8 scores per year; 95%CI: -1.2 to -0.4), whereas no such improvement was detected in the comparison group (+0.1 scores per year; 95%CI: -0.7 to +0.9). The change difference (change in the CIEI-group vs. change in the comparison group) was statistically significant, both crude and after adjusting for possible confounders (-1.1; 95%CI -1.9 to -0.4). Children in the CIEI-group also significantly improved their ADOS-calibrated severity scores, but not significantly differently so from the comparison group. The results from the current study indicate that the CIEI program significantly improves social and communicative skills among children with autism and that children with developmental delay could benefit to a similar degree as other children. The results support earlier studies reporting on the improvement of autism symptoms after early intensive interventions. The results from observational studies are difficult to interpret, but it is nevertheless of uttermost importance to evaluate costly autism intervention programs. Such results may be of immediate importance to healthcare organizations when allocating the already strained resources to different patient groups. Albeit the obvious limitation of the current naturalistic study, the results support previous positive studies and indicate that children with autism benefit from participating in early comprehensive, intensive programs and that investments in these programs may be highly justifiable.

**Keywords :** autism symptoms, ADOS-scores, evaluation, intervention program

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