

# Speech production and literacy in students with intellectual disabilities and communication difficulties

Akademisk avhandling

Som för avläggande av medicine doktorsexamen vid Sahlgrenska akademien, Göteborgs universitet kommer att offentligens försvaras i Hörsal Arvid Carlsson, Medicinaregatan 3, den 1 mars 2024, klockan 9.00.

Av Jenny Samuelsson

Fakultetsopponent:

Professor Karen Erickson, Department of Health Sciences, University of North Carolina at Chapel Hill, USA

## Avhandlingen baseras på följande delarbeten

- I. Samuelsson, J., Åsberg Johnels, J., Thunberg, G., Palmqvist, L., Heimann, M., Reichenberg, M., Holmer, E. (2023). The relationship between early literacy skills and speech-sound production in students with intellectual disability and communication difficulties: a cross-sectional study. *International Journal of Developmental Disabilities*, 1-11.
- II. Samuelsson, J., Holmer, E., Johnels, J. Å., Palmqvist, L., Heimann, M., Reichenberg, M., Thunberg, G. (2023). My point of view: Students with intellectual and communicative disabilities express their views on speech and reading using Talking Mats. *British Journal of Learning Disabilities*, 1, 1-13.
- III. Samuelsson, J., Johnels, J. Å., Holmer, E., Palmqvist, L., Heimann, M., Reichenberg, M., Lundälv, M., Thunberg, G. 'To have a plan': Teachers' perceptions of working with a literacy instruction combining phonics and comprehension applications for students with intellectual disability and communication difficulties. Submitted for publication.
- IV. Samuelsson, J., Thunberg, G., Johnels, J. Å., Palmqvist, L., Heimann, M., Reichenberg, M., Lundälv, M., Holmer, E. The potential impact of literacy intervention on speech sound production in students with intellectual disability and communication difficulties. Submitted for publication.

**SAHLGRENKA AKADEMIN**  
INSTITUTIONEN FÖR NEUROVETENSKAP OCH FYSIOLOGI



# Speech production and literacy in students with intellectual disabilities and communication difficulties

Jenny Samuelsson

Enheten för logopedi, Institutionen för Neurovetenskap och fysiologi, Sahlgrenska akademien, Göteborgs universitet, Sverige, 2024.

## Abstract

Many individuals with intellectual disabilities have difficulties with spoken communication and literacy learning leading to vulnerability. It has been suggested that interventions to promote reading in this group not only influence literacy acquisition but may also have an impact on speech and language development. The overall aim of this thesis was to examine the associations between speech production and literacy skills in students with intellectual disabilities and communication difficulties and to investigate the potential impact of a literacy intervention on speech production from the perspectives of both teachers and students with intellectual disabilities and communication difficulties themselves and by comparing test data before and after intervention. A literacy intervention was conducted with 137 students, aged 7-21. All students had intellectual disabilities, communication difficulties, and were unable to phonetically decode words or comprehend more than 20 words. The literacy intervention compared three different teaching strategies using digital applications, (phonics, comprehension-based and a combination of both strategies) with teaching-as-usual. Study I *Associations* analysed test data before intervention and found that early literacy skills accounted for 26% of the variance in speech sound production. Study II *Students' views* presented the students' positive and negative views on speech and reading activities using the visual framework Talking Mats and found that these ratings correlated with test results. Study III *Teachers' views* presented thematically analysed interviews with teachers in the combined intervention group showing that the teachers reported improvements in both literacy skills and communication for some of the students and emphasized the importance of providing structured and focused literacy instruction for these students. Study IV *Intervention* statistically investigated the effect of literacy intervention on speech sound production indicating that literacy intervention may have secondary effects. In conclusion, this thesis shows that there is an association between speech sound production and early literacy skills and suggests that literacy intervention may have secondary effects on speech production in students with ID and communication difficulties, although future research is needed to confirm this. **Keywords:** Intellectual disability, augmentative and alternative communication, speech sound production, early literacy skills, literacy, literacy intervention.

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