

## Peer-reviewed Studies by Design to Learn using the Communication Matrix

**Rowland, C. & Schweigert P. (2003) Cognitive Skills and AAC: Where we've been, what we know and the questions we should ask. In, J. Light, D. Beukelman & J. Reichle (Eds.) *Communicative Competence for Individuals Who Use AAC* (pp. 241-275). Baltimore: Paul Brookes.**

This chapter describes early communication and its relationship to cognitive skills in children with complex communication needs and includes data from Communication Matrix assessments.

**Rowland, C. (2005). But what can they do? Assessment of communication skills in children with severe and multiple disabilities. *American Speech-Language Hearing Association DAAC Perspectives*, 14 (1), 1-5.**

This article describes an approach to the assessment of communication skills that stresses the myriad ways that children may communicate without speech and reviews appropriate assessment tools, including the Communication Matrix.

**Chen, D., Rowland, C. Stillman, R., & Mar, H. (2009). Authentic practices for assessing communication skills of young children with sensory impairments and multiple disabilities. *Early Childhood Services*, 3(4), 328-339.**

This chapter describes authentic assessment practices related to communication skills in children with sensory impairments and multiple disabilities.

**Rowland, C. (2009). The pre-symbolic communicator with ASD. In P. Mirenda & T. Iacono (Eds.) *Autism Spectrum Disorders and AAC* (pp. 51-81). Baltimore: Paul Brookes.**

This chapter describes the development of communication in pre-symbolic children with autism spectrum disorders and describes use of the Communication Matrix to assess these children.

**Rowland, C., & Fried-Oken, M. (2010). Communication Matrix: A clinical and research assessment tool targeting children with severe communication disorders. *Journal of Pediatric Rehabilitation Medicine*, 3, 319–329. doi:10.3233/PRM-2010-0144**

This article describes the Communication Matrix assessment and how it can be used for clinical and research purposes to describe and quantify communication skills for individuals with complex communication needs who are communicating with early symbolic means.

**Rowland, C., Stillman, R. & Mar, H. (2010). Current Assessment Practices for Young Children who are Deafblind. *AER Journal*, 3 (3), 63-70.**

This article describes and rates assessment instruments commonly used to assess children who are deafblind, including the Communication Matrix.

**Rowland, C. (2011). Using the Communication Matrix to Assess Expressive Skills in Early Communicators. *Communication Disorders Quarterly*, 32(3), 190–201. doi: 10.1177/1525740110394651**

This article describes the foundations, structure, properties, and use of the Communication Matrix, an assessment instrument developed specifically to address the challenges of describing the expressive communication skills of children with severe and multiple disabilities

**Rowland, C. (2011). Using the online Communication Matrix to assess early communicators who are deafblind. *Deaf-Blind Perspectives*, 18 (2) 10-13.**

This article describes the Communication Matrix and how to use it to assess early communication skills in children who are deafblind.

**Rowland, C. (2011). Invitation to Use a Free Online Assessment Tool for Early Communicators who are Deafblind. *DBI Review*, 46, January-June 2011, 51-55.**

This article introduces the online Communication Matrix assessment tool as an appropriate tool to assess children and adults with dual sensory impairments who are operating at the earliest stages of communication.

**Rowland, C. & Parker, A. (2016). Research on communication intervention for children who are deafblind. In R. Sevcik & M. Ronski (Eds.) *Communication Interventions for Individuals with Severe Disabilities*. Baltimore: Paul Brookes.**

This chapter reviews research on communication in children who are deafblind and presents data on these children extracted from the Communication Matrix database.

**Quinn, E., & Rowland, C. (2017). Exploring Expressive Communication Skills in a Cross-Sectional Sample of Children and Young Adults with Angelman Syndrome. *American Journal of Speech-Language Pathology*, 26, 1–14. doi: 10.1044/2016\_AJSLP-15-0075**

This study explores data on expressive communication skills of 300 individuals aged 0.0–21.11 years with Angelman syndrome (AS). These data provide a composite portrait of communication skills in a large sample of children and young adults with this rare disorder, specifying new detailed information about expressive communication.

**Quinn, E., Cook, A., & Rowland, C. (2019). An online community of practice to improve intervention for individuals with complex communication needs. *Augmentative and Alternative Communication*, 35, 1–6. doi: 10.1080/07434618.2019.1566400**

This paper describes communities of practice, justifies their need in AAC, and introduces the Communication Matrix Community of Practice (CMCoP)—an online community of practice for professionals and family members supporting individuals at the earliest stages of communication development.

**Quinn, E., Rowland, C., Cook, A. & Weidrick, J. (2021). Effect of the communication matrix professional development program on students' expressive communication skills. *Language, Speech, and Hearing Services in Schools*, 52 (4), 1080 – 1094. 10.1044/2021\_LSHSS-20-00154**

This study investigated the initial feasibility of the Communication Matrix Professional Development Program (CMPDP), an online program created to help educational professionals teaching students with complex communication needs.

**Cook, A., Quinn, E., & Rowland, C., (2021). Exploring expressive communication skills in a cross-sectional sample of individuals with a dual diagnosis of Autism Spectrum Disorder and Down Syndrome. *American Journal on Intellectual and Developmental Disabilities*, 126 (2) 97-113. DOI: 10.1352/1944-7558-126.2.97**

This study used the Communication Matrix to provide novel insights on prelinguistic and early symbolic behaviors in individuals with DS as compared to individuals with DS/ASD.

## **Studies using the Communication Matrix as an outcome measure**

**Blain-Moraes, S., Chesser, S., Kingsnorth, S., McKeever, P., & Biddiss, E. (2013). Biomusic: A Novel Technology for Revealing the Personhood of People with Profound Multiple Disabilities. *Augmentative and Alternative Communication*, 29(2), 159–173. doi: 10.3109/07434618.2012.760648**

This study investigates the effect of music generated in real time from physiological signals of people with complex communication needs (referred to as “biomusic”) on caregiver perceptions (parents, clinical staff) of communication intent for persons with multiple disabilities (n=3). The communication matrix was used as a measure in this study to describe and quantify communication skills prior to use of biomusic.

**Bloeming-Wolbrink, K. A., Janssen, M. J., Ruijsenaars, W. A., Menke, R., & Riksen-Walraven, J. M. (2015). Effects of changes in life circumstances on interaction and communication in adults with congenital deafblindness and an intellectual disability. *British Journal of Visual Impairment*, 33(1), 31–44. doi: 10.1177/0264619614558429**

This study investigates the effect of Project CHANGE, a program aimed at increasing communication skills in adults with congenital deaf-blindness and intellectual disability by training group-home staff in communication partner strategies individualized for each participant's needs. An adapted version of the communication matrix was used as a measure in this study to describe and quantify communication skills before and after the intervention. The communication matrix was completed by researchers from video recordings of communication interactions.

**Brady N. C., Fleming K., Swinburne Romine R., Holbrook A., Muller K., & Kasari C. (2018). Concurrent Validity and Reliability for the Communication Complexity Scale. *American Journal of Speech-Language Pathology*, 27(1), 237–246. doi: 10.1044/2017\_AJSLP-17-0106**

This study investigated the concurrent validity and reliability of the Communication Complexity Scale, a communication assessment for individuals who communicate primarily with pre-symbolic and early symbolic means. Scores from this assessment were compared with scores from the Vineland Adaptive Behavior Scales–Second Edition and the Communication Matrix.

**Brady N. C., Fleming K., Thiemann-Bourque K., Olswang L., Dowden P., Saunders M. D., & Marquis J. (2012). Development of the Communication Complexity Scale. *American Journal of Speech-Language Pathology*, 21(1), 16–28. doi: 10.1044/1058-0360(2011/10-0099)**

This study describes the development of the Communication Complexity Scale, an assessment of pre-symbolic and early symbolic communication acts completed through observation. Participants were assessed using both the Communication Complexity Scale and Communication Matrix. Scores were compared with scores of the Communication Matrix (incorporates parent report and observation) to describe usefulness of incorporating solely observational measures.

**Carolina, B., & Dorina, T. (2014). Issues in bilingualism in the context of autism spectrum disorders. Case study report. *Romanian Journal of Experimental Applied Psychology*, 5(3), 8–20.**

This study describes the communication skills of children with an autism spectrum disorder who also have dual language exposure (Romanian and English). The Communication Matrix (translated into Romanian) was used to describe and quantify communication skills for participants.

**Cascella, P. W., Bruce, S. M., & Trief, E. (2014). Communication Profiles of Two Children with Pitt-Hopkins Syndrome. *Journal of Developmental and Physical Disabilities*, 26(4), 473–478. doi: 10.1007/s10882-014-9381-5**

This study describes the communication skills of two children with Pitt Hopkins syndrome. The communication matrix was used to describe and quantify communication skills for participants.

**Dammeyer, J., & Ask Larsen, F. (2016). Communication and language profiles of children with congenital deafblindness. *British Journal of Visual Impairment*, 34(3), 214–224. doi: 10.1177/0264619616651301**

This study investigates the communication skills and language acquisition of 71 children with congenital deaf-blindness. The Communication Matrix was used to describe and quantify communication skills for participants.

**Desai, T., Chow, K., Mumford, L., Hotze, F., & Chau, T. (2014). Implementing an iPad-based alternative communication device for a student with cerebral palsy and autism in the classroom via an access technology delivery protocol. *Computers & Education*, 79, 148–158. doi: 10.1016/j.compedu.2014.07.009**

This study investigated the effect of a training intervention for teacher, educational professionals, and family members on acquisition of symbolic communication skills for a student

with cerebral palsy and autism. The communication matrix was used as an outcome measure at baseline, intervention, and post intervention phase.

**Fehr, S., Downs, J., Ho, G., de Klerk, N., Forbes, D., Christodoulou, J., Williams, S., Leonard, H. (2016). Functional abilities in children and adults with the CDKL5 disorder. *American Journal of Medical Genetics Part A*, 170(11), 2860–2869. doi: 10.1002/ajmg.a.37851**

This study investigated the communication skills in children and adults with CDKL5 Disorder. The communication matrix was used to describe and quantify communication skills for participants.

**Hațegan, C. B., & Talaș, D. (2014). Communication Matrix – An Assessment Tool Used in a Case of Autism Spectrum Disorders. *Procedia - Social and Behavioral Sciences*, 127, 169–173. doi: 10.1016/j.sbspro.2014.03.234**

This study investigated the communication skills of a toddler with an autism spectrum disorder using the Communication Matrix translated into Romanian.

**Hemmingsson, H., Ahlsten, G., Wandin, H., Rytterström, P., & Borgestig, M. (2018). Eye-Gaze Control Technology as Early Intervention for a Non-Verbal Young Child with High Spinal Cord Injury: A Case Report. *Technologies*, 6(1), 12. doi: doi.org/10.3390/technologies6010012**

This study investigated the use of eye gaze technology as an early intervention AT/AAC support for a young child with complex communication needs and high spinal cord injury. The communication matrix was used to describe and quantify communication skills for this participant.

**Muttiah, N., Drager, K. D. R., McNaughton, D., & Perera, N. (2018). Evaluating an AAC training for special education teachers in Sri Lanka, a low- and middle-income country. *Augmentative and Alternative Communication*, 34(4), 276–287. doi: 10.1080/07434618.2018.1512651**

This study investigated the effect of using low-tech visual scene displays and aided language modeling on the number of communication turns taken by preschool-aged children with complex communication needs. The communication matrix was used to describe and quantify communication skills of participants.

**Muttiah, N., Drager, K. D. R., Beale, B., Bongo, H., & Riley, L. (2019). The Effects of an Intervention Using Low-Tech Visual Scene Displays and Aided Modeling With Young Children With Complex Communication Needs. *Topics in Early Childhood Special Education*, 0271121419844825. doi: 10.1177/0271121419844825**

This study investigated the effect of an augmentative and alternative communication training for special education teachers living in Sri Lanka on the number of communication opportunities for students with complex communication needs. The communication matrix was used to describe and quantify communication skills of participants.