HAYO TERBAND - CURRICULUM VITAE

General information

Name:	Hayo Terband
Date of birth:	25-08-1976
Place of birth:	Rotterdam, the Netherlands
Nationality:	Dutch
Marital status:	Married to Maria Gabriela
Children:	Aafke, Douwe, Jochem & Femke
Hobbies:	Cooking, mountain sports, music
Residence:	1824 Graslon dr, 52246 Iowa City IA, USA
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Summary of interests

My research revolves around speech-language acquisition in normal and disordered development and comprises fundamental, translational, and applied research. In fundamental research, my focus is on internal representations for speech production and perception and the interplay between different types of internal representations during development with a unique approach combining behavioral experiments with neurocomputational modelling. Long-term goals of my translational and applied research include the implementation of a process-oriented method for diagnostics and individually tailored treatment planning of childhood speech-language disorders in a user-friendly computer-based clinical instrument.

Education

2006 - 2011	PhD Medical Sciences, University of Groningen.
2004 - 2006	MA Language- and Speech Technology, Utrecht University.
2003 - 2006	BA Phonetics, Utrecht University.
1994 - 2000	LLM International Law, Utrecht University.
Employment	
2022 – present	Assistant professor. Department of Communication Sciences and Disorders. Co

2022 – present	of Liberal Arts & Sciences, University of Iowa.
2018 - 2021	Assistant professor , Department of Language, Literature & Communication, Faculty of Humanities, Utrecht Institute of Linguistics OTS & University College Utrecht, Utrecht University.
2017 - 2018	Visiting assistant professor, Department of English, College of Arts & Sciences, American University of Sharjah.
2017 – 2018	Research affiliate, Utrecht Institute of Linguistics OTS, Utrecht University.
2015 - 2017	Assistant professor , Department of Language, Literature & Communication, Faculty of Humanities & Utrecht Institute of Linguistics OTS, Utrecht University.
2012 - 2015	Researcher, Utrecht Institute of Linguistics OTS, Utrecht University.
2011 - 2014	Researcher , Department of Medical Psychology/ENT, Radboud University Nijmegen Medical Centre & Centre for Language and Cognition, University of Groningen.

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- 2006 2011Junior researcher/PhD-candidate, Department of Medical Psychology/ENT,
Radboud University Nijmegen Medical Centre, from March 2010 Research School of
Behavioural and Cognitive Neurosciences, University of Groningen.
- 2001 2006 Various legal advisory positions, Municipality of Oldebroek & AXA Leven N.V.

Research

Awarded grants

- 2017 **Damsté Terpstra fund** (co-applicant; €6.100) "ICS-digital; a multilingual app version of the Intelligibility in Context Scale".
- 2015 **HU University of Applied Sciences Utrecht;** NWO Doctoral Grant for Teachers (co-applicant; €192.550; PhD voucher Anniek van Doornik) "SPEECH SPraakontwikkelingsstoornissen En de Ernst van de Communicatieve Handicap (Speech Sound Disorders and the severity of the communicative handicap)."
- 2015 **Dynamics of Youth** Utrecht University (principal-investigator; €75.000; strategic theme seed money fund). "When language fails: communication skills as a predictor of behavioural problems in children and adolescents". Project nr. SM.DoY.2015.7.T.
- 2014 UIL OTS Equipment Fund (principal-investigator; €8.500; internal grant). Sixmonth rental of a 3D Electromagnetic Articulograph for the "Control parameters of phonological cues"-project.
- 2012 **Dutch Rehabilitation Fund** (principal-investigator; €50.000). "Clinical implementation of process-oriented diagnostics and treatment planning of complex sensorimotor disorders in children". Project nr. 2011/0165-060.
- 2012 **NWO VENI** (principal-investigator; €247.000). "Modelling processing deficits in developmental speech sound disorders". Project nr. 275-89-016.
- 2008 **Fulbright** (\$6.000). Six-month research visit to the Department of Cognitive and Neural Systems, Boston University.

Rejected grant applications

2022 **Apraxia Kids** (principal-investigator; €50.000) "Speech-Music Therapy in the treatment of Childhood Apraxia of Speech (CAS)". 2020 **NWO** – **ZonMW** (principal-investigator; €598.384) "Towards a process-oriented clinical road map for the diagnosis and treatment of speech sound disorders (SSD) in children". 2015 **Dynamics of Youth** Utrecht University (co-investigator; €81.000; strategic theme seed money fund). "Keeping the baby in the bath: Early predictors of developmental language disorders (DLD) in at-risk groups". 2013 **Dynamics of Youth** Utrecht University (principal-investigator; €102.000; strategic theme seed money fund). "Learner Identities in Language Acquisition (LIiLA)". 2011 **NWO** – **Rubicon** (principal-investigator; €110.000) "Modelling speech coordination in developmental speech disorders" 2010 Niels Stensen Stipend (principal-investigator; €43.464) "Modeling speech coordination in Childhood Apraxia of Speech (CAS)"

Brief summary of projects

- Developmental models of childhood speech disorders: the dynamic 2022 - present interaction between cognitive-sensory processing functions and representations. The main thesis of this project is: How a developmental speech disorder surfaces as a functional impairment is determined by the balance between the different cognitive-sensory processing functions and representations. This balance interacts with the development of cognitive-sensory strategies underlying phonological- and speech-motor learning (attention, monitoring, and feedback processing parameters) and thus determines the developmental trajectory of the speech production system, i.e., how underlying deficits express themselves in symptomatology. The project features a unique approach combining state-of-the-art behavioral experiments with neurocomputational modelling.
- 2021 present **Speech-Music Therapy for children with Childhood Apraxia of Speech.** Introduction of the recently developed Dutch method Speech-Music Therapy (SMT) as a treatment option for English-speaking children with CAS, including translation and adaptation to English of the treatment protocol and crosslinguistic evaluation of treatment efficacy. Collaboration with Rehabilitation Centre "Revalidatie Friesland", Beetsterzwaag, The Netherlands and University of Groningen, Groningen, The Netherlands.
- 2021 present **Sensory processing in children with complex motor-speech disorders.** Evaluation of sensory-processing and oromotor skills in named population. Collaboration with Karolinska Institutet, Stockholm, Sweden.
- 2016 present **SPEECH: Speech production disorders and the severity of the communicative handicap.** Development of a severity index of childhood speech sound disorders addressing the ICF levels of Body Functions, Activities and Participation. Collaboration with Utrecht University, Utrecht, The Netherlands and HU University of Applied Sciences, Utrecht, The Netherlands.
- 2015 2016 When language fails: Communication skills as a predictor of behavioural problems in children and adolescents. Development of a tablet game for children featuring different scenarios of communication breakdown (corresponding to different cognitive-linguistic levels) to assess the children's behavioral response.
- 2014 present **Control parameters of phonological cues.** 3D kinematic data collected. This project combines measurements of the e.g., perceptual weighting of acoustical cues of phonological contrasts with acoustical and articulatory measurements (EMA & EMG) of the production of those contrasts.
- 2013 present **Computer Articulation Instrument (CAI).** Development and validation of a computer-application comprising a norm-referenced articulation test. Continued development and expansion of the test battery in light of a process-oriented analysis of speech development. Collaboration with Radboud University Nijmegen Medical Centre, Nijmegen, The Netherlands and HAN University of Applied Sciences, Nijmegen, The Netherlands.
- 2012 2016 **Modelling processing deficits in developmental speech sound disorders.** Research Associate (3 years 1 fte). This project investigated which neurocognitive processes cause some children to experience problems in learning to speak with a unique approach combining behavioral experiments with neurocomputational modelling.
- 2012 Speech production in adults with intellectual disabilities: Assessment and intervention of dysfluencies and speech intelligibility. Research Associate (2 months 0.7 fte). This project specified the speech characteristics underlying poor

intelligibility and reduced fluency in adults with ID and formulated and evaluated a therapy program.

- 2011 2016 **Development of a process-oriented method for diagnosis and treatment planning of developmental speech disorders.** Research Associate (3 years 0.1 fte). This collaboration with several Dutch Universities of Applied Sciences (HU, Fontys, and HAN) is the first detailed individualistic, process-oriented approach to speech disorders.
- 2011 Assessment of movement stability in children with a variety of different developmental speech disorders. Research Associate (10 months 0.1 fte). 3D kinematic data collected in a student project. This work was the first to investigate articulatory variability in the lateral (left-to-right) plane.
- 2009 2011 **Aging-related changes in speech rate and control strategies.** 2D kinematic data collected in a student project. This work ruled out the speed/accuracy trade-off strategy in elderly speakers and proposed a strategy aimed at facilitating closed loop control.
- 2006 2011 **Tracing back the neurological deficits underlying Childhood Apraxia of Speech.** PhD-project (5 years 0.8 fte). This project was the first to utilize neurocomputational modelling and simulate speech disorders and to combine and quantitatively compare computer simulations and behavioral experiments.
- 2005 2006 **Development and validation of a method for the automated measurement of the speech reception threshold in noise.** Internship at TNO Human Factors, Soesterberg, The Netherlands (1 year 0.5 fte). This work constituted the first automated sentence-based hearing test.

Teaching

Teaching qualifications

2014 - 2017	Basic University Teaching Qualification, Utrecht University.
21/03/2017	Teaching training "Accreditation", University Medical Centre Utrecht.
02/09/2016	Teaching training "Reinforcing collaboration", University Medical Centre Utrecht.
31/05/2016	Teaching training "Interdisciplinary Education", University Medical Centre Utrecht.
20/05/2015	Teaching training "Learning objectives", University Medical Centre Utrecht.

Courses

2023 – present	Developmental Speech Disorders (CSD4112; BA Speech and hearing science), University of Iowa.
2022 – present	Basic Acoustics for Speech & Hearing (CSD2111; BA Speech and hearing science), University of Iowa.
2022 – present	Anatomy & Physiology of speech production (CSD3112; BA Speech and hearing science), University of Iowa.
2020 - 2021	Experimental psycholinguistics (BA Linguistics/BSc Artificial Intelligence; with dr. Shalom Zuckerman & dr. Jakub Dotlacil), Utrecht University.
2019 - 2021	Language and speech pathology (ReMA Linguistics), Utrecht University.
2019 - 2021	Capstone Course: Research, Writing and Reflection (BA Linguistics; with dr.

	Frank Drijkoningen), Utrecht University.
2019 - 2021	Speech production and perception (BA/BSc Liberal arts & sciences), University College Utrecht.
2018 - 2021	Methods & Statistics 1 (BA Linguistics; with dr. Marijn Struiksma), Utrecht University.
2018 - 2021	Phonetics (BA Linguistics), Utrecht University.
2018 - 2021 2015 - 2017	Clinical linguistics & phonetics (BA Linguistics; with dr. Annemarie Kerkhoff/ Brigitta Keij/ dr. Tessel Boerma), Utrecht University.
2018 - 2021	Research methods in linguistics (BA Language and cultural studies; with dr. Margot van den Berg), Utrecht University.
2018 - 2020 2014 - 2015	Foundations of sound structure & language acquisition (ReMA Linguistics; with prof. dr. René Kager), Utrecht University.
2018 - 2019	Research in context (BA/BSc Liberal arts & sciences), University College Utrecht.
2013 - 2017 2018 - 2019	Speech production and perception (MSc Clinical Language, Speech and Hearing Sciences & ReMA Linguistics), Utrecht University.
2017 - 2018	Language Acquisition and Development (MA TESOL), American University of Sharjah.
2017 - 2018	Advanced Academic Writing (undergraduate), American University of Sharjah.
2017 - 2018	Public Speaking (undergraduate), American University of Sharjah.
2015 - 2017	Academic skills (premaster MSc Clinical Health Sciences), University Medical Centre Utrecht.
2015 - 2017	Writing assignment Fundamentals of Neuroscience and Cognition (MSc Neuroscience and Cognition), Utrecht University.
2013 - 2017	Workshop "How to write a research grant proposal?" (yearly workshop ReMA Linguistics), Utrecht University.
2013 - 2017	Workshop "How to create and present a scientific poster?" (yearly workshop ReMA Linguistics), Utrecht University.
2011 - 2014	Practical Phonetics (BA Linguistics), Utrecht University.

Thesis supervision

- 2021 present Co-supervisor Mirjam van Tellingen, **PhD Neurolinguistics**, University of Groningen: "Speech-Music Therapy for children with Childhood Apraxia of Speech".
- 2021 present Co-supervisor Helena Björelius, **PhD Medical Sciences**, Karolinska Institutet: "Sensory processing in children with complex motor-speech disorders".
- 2016 present Co-supervisor Anniek van Doornik-van der Zee, **PhD Clinical Language, Speech and Hearing Sciences**, Utrecht University: "SPEECH: SpraakProductiestoornissen en de Ernst van de Communicatieve Handicap".
- 2014 2022 Co-supervisor Sanne Diepeveen, **PhD Medical Sciences**, Radboud University Nijmegen Medical Centre: "Towards process-oriented diagnostics in children with Speech Sound Disorders".

- 2011 2013 Co-supervisor Marjolein Coppens-Hofman, PhD Medical Sciences, Radboud University Nijmegen Medical Centre: "Communication in adults with intellectual disabilities".
- 2007 2021 Yearly 1-3 BA, MA, MSc-level theses in the areas of Linguistics and Speech- and Language Pathology at Radboud University Nijmegen, University of Groningen, and Utrecht University.

Departmental service

- 2022 present Member of UG Program Committee, Department of Communication Sciences and Disorders, University of Iowa.
- 2022 present Member of DEO Search committee, Department of Communication Sciences and Disorders, University of Iowa.
- 2018 2021 Member of Program committee MSc Clinical Health Sciences (Track Clinical 2015 - 2017 Language, Speech and Hearing Sciences), University Medical Centre Utrecht.
- 2018 2020 Coordination Minor Clinical Language, Speech and Hearing Sciences, BA Linguistics, Utrecht University.
- 2018 2020 Coordination clinical internships BA Linguistics (Minor Clinical Language, Speech and Hearing Sciences), Utrecht University. 2016 - 2017
- 2016 2017 Member of Curriculum committee MSc Clinical Health Sciences, University Medical Centre Utrecht.
- 2014 2017 Coordination Matching & Information events BA Linguistics, Utrecht University.
- 2013 2017 Member of Program committee annual workshop Experimental Methods in Language Acquisition Research (EMLAR), Utrecht University.

Professional service

2020 – present	Member of ANCDS pediatric motor speech disorders committee.
2017 - 2020	Member of ANCDS Writing Committee on Childhood Apraxia of Speech.
2006 – present	Member & co-chair (2017; 2022) of Organization committee 5 th , 6 th , 7 th , & 8 th International Conference on Speech Motor Control held 2006, 2011, 2017, and 2022 (<u>www.slp-nijmegen.nl/smc2021</u>).
2012 - 2017	Member of Organization committee EMLAR X-XIII, annual workshop Experimental Methods in Language Acquisition Research held in April in Utrecht, the

Editorial experience

2016 - present Associate editor Folia Phoniatrica et Logopaedica, section Motor Speech Disorders.

Netherlands (http://www.let.uu.nl/emlar).

- 2022 2023 **Guest editor** Journal of Speech, Language, and Hearing Research, special issue 8th International Conference on Speech Motor Control.
- 2018 2019 **Guest editor** Journal of Speech, Language, and Hearing Research, special issue 7th International Conference on Speech Motor Control.
- 2012 present Ad hoc reviewer for o.a., Cortex, Journal of Speech, Language, and Hearing Research, Journal of the Acoustical Society of America, Journal of Communication Disorders,

Laboratory Phonology, International Journal of Speech-Language Pathology, American Journal of Speech-Language Pathology. Folia Phoniatrica et Logopaedica, International Journal of Developmental Disabilities, Disability and Rehabilitation, International Congress of Phonetic Sciences (ICPhS).

2011 – present **Journal manager** & **Editor** (2014 – present) Stem-, Spraak- en Taalpathologie (Dutch peer reviewed journal "Voice-, Speech-, and Language Pathology"; www.sstp.nl).

Languages

Dutch	Native
English	Fluent
French	Good knowledge
German	Good knowledge
Spanish	Basic skills

Programming languages

Matlab	Good knowledge
Delphi Pascal	Good knowledge
R	Basic skills
JAVA	Basic skills

References

Prof. dr. Carolyn Brown Chair & Professor of Hearing Science - Department of Communication Sciences and Disorders, College of Arts, University of Iowa, Ioway City IA, USA Email: <u>carolyn-brown@uiowa.edu</u> Tel.: +1 319 330 1176

Prof. dr. Ben Maassen
Professor of Dyslexia & Clinical Neuropsychology - Centre for Language and Cognition (CLCG) & University Medical Centre, University of Groningen, Groningen, The Netherlands
Email: <u>b.a.m.maassen@rug.nl</u>
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Prof. dr. P.H.H.M. van Lieshout Chair & Professor of Speech science and motor control - Department of Speech-Language Pathology, University of Toronto, Toronto, Canada Email: <u>p.vanlieshout@utoronto.ca</u> Tel.: +1 416 946 8552

Prof. dr. F.H. Guenther Professor of Cognitive and Neural Systems - Department of Cognitive and Neural Systems, Boston University, Boston MA, USA Email: <u>guenther@cns.bu.edu</u> Tel.: +1 617 353 9481

Prof. dr. Frank Wijnen Professor of Psycholinguistics - Department of Languages, Literature and Communication, Faculty of Humanities, Utrecht University, Utrecht, the Netherlands Email: <u>f.n.k.wijnen@uu.nl</u> Tel.: +31 30 253 6436

Prof. dr. Hugo Quené Director of Undergraduate Studies & Professor of Quantitative Methods of Empirical Research in the Humanities - Department of Languages, Literature and Communication, Faculty of Humanities, Utrecht University, Utrecht, the Netherlands Email: <u>h.quene@uu.nl</u>

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Publications

Doctoral dissertation

Terband, H. (2011). Speech motor function in relation to phonology: Neurocomputational modeling of disordered development. Doctoral dissertation, University of Groningen. ISBN 978-90-367-4749-4 (printed version); ISBN 978-90-367-4798-1 (electronic version).

Peer-reviewed journal publications

- **Terband, H.** & Van Brenk, F. (In press). Modeling responses to auditory feedback perturbations in adults, children, and children with complex speech sound disorders: evidence for impaired auditory self-monitoring? *Journal of Speech, Language and Hearing Research.*
- Diepeveen, S., **Terband, H.**, van Haaften, L., van de Zande, A.M., Megens-Huigh, Ch., De Swart, B., & Maassen, B. (2022). Process-oriented profiling of speech sound disorders. *Children*, *9*(10), 1502. DOI: 10.3390/children9101502
- van Tellingen, M., Hurkmans, J., **Terband, H.**, Jonkers, R., & Maassen, B. (2022). Music and musical elements in the treatment of childhood speech sound disorders: A systematic review of the literature. *International Journal of Speech-Language Pathology*. DOI: 10.1080/17549507.2022.2097310
- van Haaften, L., Diepeveen, S., **Terband, H.**, De Swart, B., Van den Engel-Hoek, L., & Maassen, B. (2021). Maximum Repetition Rate in a large cross-sectional sample of typically developing Dutch-speaking children. *International Journal of Speech-Language Pathology*, 23(5), 508-518. DOI: 10.1080/17549507.2020.1865458
- Murray, E., Iuzzini, J., Maas, E., **Terband, H.**, & Ballard, K. (2020). Diagnosis of Childhood Apraxia of Speech compared to other Speech Sound Disorders: A Systematic Review. *American Journal of Speech-Language Pathology*, *30*(1), 279-300. DOI: 10.1044/2020_AJSLP-20-00063
- Diepeveen, S., van Haaften, L., **Terband, H.**, De Swart, B., & Maassen, B. (2020). Clinical Reasoning for Speech Sound Disorders: Diagnosis and Intervention in Speech-Language Pathologists' Daily Practice. *American Journal of Speech-Language Pathology*, 29(3), 1529-1549. DOI: 10.1044/2020_AJSLP-19-00040
- van Brenk, F. & **Terband, H.** (2020). Individual differences in compensatory and adaptive responses to realtime formant shifts in adults and children. *Journal of the Acoustical Society of America, 147*, 2261. DOI: 10.1121/10.0001018
- **Terband, H.**, Rodd, J., & Maas, E. (2019). Testing hypotheses about the underlying deficit of apraxia of speech (AOS) through computational neural modelling with the DIVA model. *International Journal of Speech-Language Pathology*, 22(4), 475-486. DOI: 10.1080/17549507.2019.1669711
- Maassen, B., **Terband, H.**, Maas, E., & Namasivayam, A. (2019). Preface to the Special Issue: Select Papers From the 7th International Conference on Speech Motor Control. *Journal of Speech, Language and Hearing Research, 62*(8S), 2923–2925. DOI: 10.1044/2019_JSLHR-S-CSMC7-19-0247
- Terband, H., Namasivayam, A., van Brenk, F., Diepeveen, S., Mailend, M-L., Maas, E., Van Lieshout, P. & Maassen, B. (2019). Assessment of Childhood Apraxia of Speech: a review/tutorial of objective measurement techniques. *Journal of Speech, Language and Hearing Research, 62*(8S), 2999–3032. DOI: 10.1044/2019_JSLHR-S-CSMC7-19-0214
- Diepeveen, S., van Haaften, L., **Terband, H.**, De Swart, B., & Maassen, B. (2019). A standardized protocol for Maximum Repetition Rate assessment in children. *Folia Phoniatrica et Logopaedica*, 71, 238–250. DOI: 10.1159/000500305

- **Terband, H.**, Maassen, B. & Maas, E. (2019). A psycholinguistic framework for diagnosis and treatment planning of developmental speech disorders. *Folia Phoniatrica et Logopaedica, 71*, 216–227. DOI: 10.1159/000499426
- van Haaften, L., Diepeveen, S., **Terband, H.**, Vermeij, B., Van den Engel-Hoek, L., De Swart, B., & Maassen, B. (2019). Clinical validation of the Computer Articulation Instrument (CAI). *American Journal of Speech-Language Pathology*, 28(2S):844-856. DOI: 10.1044/2018_AJSLP-MSC18-18-0112
- **Terband, H.**, Spruit, M., & Maassen, B. (2018). Speech impairment in children with Fetal Alcohol Spectrum Disorders. *American Journal of Speech-Language Pathology*, *27*, 1405–1425.
- van Doornik, J.C., Gerrits, E., McLeod, S., & **Terband, H.** (2018). Impact of communication partner familiarity and speech accuracy on parents' ratings of their child for the Intelligibility in Context Scale: Dutch. *International Journal of Speech-Language Pathology*, *20*(3), 350-360.
- **Terband, H.**, Coppens-Hofman, M.C., Reffeltrath, M., & Maassen, B. (2018). Effectiveness of speech therapy in adults with intellectual disabilities. *Journal of Applied Research in Intellectual Disabilities*, *31*(2), 236-248.
- Coppens-Hofman, M.C., **Terband, H.**, Snik, A.F.M., & Maassen, B. (2016). Speech characteristics and intelligibility in adults with mild and moderate intellectual disabilities. *Folia Phoniatrica et Logopaedica*, 68, 175-182.
- **Terband, H.**, Maassen, B., & Maas, E. (2016). Klinisch Forum: Een procesgerichte aanpak van differentiaaldiagnose en therapieplanning bij spraakontwikkelingsstoornissen. *Stem- Spraak-Taalpathologie, 21,* 1-31. (in Dutch)
- Nijssen, M., van Brenk, F. & **Terband, H.** (2015). Procesanalyse van spraakproductie bij kinderen met spraakontwikkelingsstoornissen. *Stem- Spraak- Taalpathologie*, *20*, 216-237. (in Dutch)
- Nijland, L., **Terband, H.**, & Maassen, B. (2015). Cognitive functions in Childhood Apraxia of Speech. *Journal* of Speech, Language and Hearing Research, 58, 550-565.
- **Terband, H.** & van Brenk, F. (2015). Compensatory and adaptive responses to real-time formant shifts in adults and children. *Proceedings of the 18th International Congress of Phonetic Sciences* (ICPhS 2015), Glasgow, August 10-14.
- **Terband, H.**, Rodd, J., & Maas, E. (2015). Simulations of feedforward and feedback control in apraxia of speech (AOS): Effects of noise masking on vowel production in the DIVA model. *Proceedings of the* 18th International Congress of Phonetic Sciences (ICPhS 2015), Glasgow, August 10-14.
- **Terband, H.**, van Brenk, F., & van Doornik-van der Zee, J.C. (2014). Auditory feedback perturbation in children with developmental speech disorders. *Journal of Communication Disorders*, 51, 64-77.
- **Terband, H.**, Maassen, B., Guenther, F. H., & Brumberg, J. (2014). Auditory-Motor Interactions in Pediatric Motor Speech Disorders: Neurocomputational Modeling of Disordered Development. *Journal of Communication Disorders, 47*, 17-33.
- van Brenk, F., **Terband, H.**, van Lieshout, P., Lowit, A., & Maassen, B. (2014). Rate-related kinematic changes in younger and older adults. *Folia Phoniatrica et Logopaedica*, *65*, 69-77.
- Coppens-Hofman, M.C., **Terband, H**., Maassen, B., van Schrojenstein Lantman-De Valk H.M.J., van Zaalenop 't Hof, Y., & Snik, A.F.M. (2013). Dysfluencies in the speech of adults with intellectual disabilities and reported speech difficulties. *Journal of Communication Disorders*, *4*6, 484-494.
- **Terband, H.**, van Zaalen, Y., & Maassen, B. (2012). Lateral jaw stability in children with developmental speech disorders, *Journal of Medical Speech-Language Pathology*, *20*(4), 112-118.
- **Terband, H.** & Maassen, B. (2012). Spraakontwikkelingsstoornissen: Van symptoom- naar procesdiagnostiek, *Logopedie en Phoniatrie, 7-8*, 229-234.(in Dutch; invited paper)

- **Terband, H.**, Maassen, B., Van Lieshout, P., & Nijland, L. (2011). Stability and composition of functional synergies for speech movements in children with developmental speech disorders. *Journal of Communication Disorders*, *44*(1), 59-74.
- **Terband, H.**, & Maassen, B. (2010). Speech motor development in Childhood Apraxia of Speech (CAS): generating testable hypotheses by neurocomputational modeling. *Folia Phoniatrica et Logopaedica*, 62, 134-142.
- Maassen, B., **Terband, H.**, & Nijland, L. (2009). Modellen van spraakontwikkelingsdyspraxie. *Stem- Spraak-Taalpathologie, 16*(03), 137-154.(in Dutch)
- **Terband, H.**, Maassen, B., Guenther, F. H., & Brumberg, J. (2009). Computational neural modeling of Childhood Apraxia of Speech (CAS). *Journal of Speech, Language and Hearing Research, 52*(6), 1595-1609.
- van Brenk, F., **Terband, H.**, Maassen, B., van Lieshout, P., & Lowit, A. (2009). An analysis of speech rate strategies in aging. *Proceedings of Interspeech 2009*, 792-795.
- **Terband, H.**, van Brenk, F., van Lieshout, P., Nijand, L. & Maassen, B. (2009). Stability and composition of functional synergies for speech movements in children and adults. *Proceedings of Interspeech 2009*, 788-791.
- **Terband, H.** & Drullman, R. (2008). Study of an automated procedure for a Dutch sentence test for the measurement of the speech reception threshold in noise. *Journal of the Acoustical Society of America*, 124(5), 3225-3234.

Clinical instruments and applications

- Maassen, B., van Haaften, L., Diepeveen, S., **Terband, H.,** van den Engel-Hoek, L., Veenker, Th., & De Swart, B. (2019). *Het Computer Articulatie Instrument (CAI)*. Amsterdam: Boom Testuitgevers.
- McLeod, S., Harrison, L. J., & McCormack, J. (2013). Schaal voor Verstaanbaarheid in de Context [Intelligibility in Context Scale: Dutch]. (J.C. van Doornik-van der Zee & H. Terband, Trans.). Bathurst, NSW, Australia: Charles Sturt University.
- **Terband, H.** & Drullman, R. (2008). *Een automatische methode voor het meten van de spraakverstaanvaardigheid*. TNO Human Factors.

Edited books & collections

- Maassen, B., **Terband, H.**, & Maas, E. (Eds.) (2022). 8th International Conference on Speech Motor Control Groningen: Abstracts. *Stem- Spraak- Taalpathologie, 27 (Suppl.)*.
- Maassen, B., **Terband, H.**, Maas, E., & Namasivayam, A. (2019). Special Issue: Select Papers From the 7th International Conference on Speech Motor Control. *Journal of Speech, Language and Hearing Research, 62*(8S).
- van Brenk, F. & **Terband, H.** (Eds.) (2018). Research tutorials door Nederlandstalige onderzoekers in het buitenland II. *Stem- Spraak- Taalpathologie, 23 (Special issue)*. (in Dutch)
- Maassen, B. & **Terband, H.** (Eds.) (2017). 7th International Conference on Speech Motor Control Groningen: Abstracts. *Stem- Spraak- Taalpathologie, 21 (Suppl.)*.
- Van Lieshout, P., Maassen, B., & **Terband, H.** (Eds.) (2016). *Speech Motor Control in normal and disordered speech: Future developments in theory and methodology*. Rockville, MD: ASHA.
- **Terband, H.** (Ed.) (2015). Research tutorials door Nederlandstalige onderzoekers in het buitenland. *Stem-Spraak- Taalpathologie, 20 (Special issue)*. (in Dutch)

- Maassen, B., Van Lieshout, P., & **Terband, H.** (Eds.) (2011). 6th International Conference on Speech Motor Control Groningen: Abstracts. *Stem- Spraak- Taalpathologie, 17 (Suppl.)*.
- Maassen, B., Van Lieshout, P., & **Terband, H.** (Eds.) (2006). Abstracts 5th International Conference on Speech Motor Control Nijmegen. *Stem- Spraak- Taalpathologie, 14 (Suppl.)*.

Book chapters

- van Doornik, A., Beers, Gerrits, E., & Fikkert, P., **Terband, H.** (Accepted). Speech-language development in Dutch. In: McLeod, S. (Ed.). *The [Oxford] Handbook of Speech Development in Languages of the World*. Oxford, UK: Oxford University Press.
- Terband, H., Maassen, B., & Maas, E. (2016). Toward a model of pediatric speech sound disorders (SSD) for differential diagnosis and therapy planning. In: P. van Lieshout, B. Maassen, and H. Terband (Eds). Speech Motor Control in normal and disordered speech: Future developments in theory and methodology (pp. 81-110). Rockville, MD: ASHA.
- Maassen, B. & Terband, H. (2015). Process-oriented diagnosis of Childhood and adult Apraxia of Speech (CAS & AOS). In: M.A. Reford (Ed). *Handbook of Speech Production* (pp. 331-349). Oxford, UK: Wiley-Blackwell.
- Jonkers, R., **Terband, H.**, & Maassen, B. (2014). The diagnosis and therapy in adult dysarthria and apraxia of speech in the Netherlands. In: A. Lowit and N. Miller (Eds). *Communication Disorders Across Languages: Acquired motor speech disorders* (pp. 156-167). Bristol, UK: Multilingual Matters.
- Maassen, B., Nijland, L., & **Terband, H.** (2010). Developmental models of Childhood Apraxia of Speech. In:
 B. Maassen and P. van Lieshout (Eds). *Speech motor control: New developments in basic and applied research* (pp. 234-258). Oxford, UK: Oxford University Press.

Selected peer-reviewed conference contributions: talks

- **Terband, H.**, Rankenberg, Y., van Doornik, A. (2022). Speech production errors in Australian-Dutch bilingual children. Paper presented at the 2022 Speech Motor Conference, Groningen, The Netherlands, August 24-27.
- Maas, E., Schölderle, T., Williams, P., Hayden, D., Iuzzini-Seigel, J., Kent, R., Murray, E., Nip, I., & Terband,
 H. (2022). Pediatric Motor Speech Disorders: A Panel Discussion on a Consensus Delphi Project.
 Paper presented at the 2022 Speech Motor Conference, Groningen, The Netherlands, August 24-27.
- **Terband, H.** (2022). Causes and Mechanisms of Childhood Apraxia of Speech: insights from neurocomputational modeling and simulation studies. Paper presented at the 2022 Apraxia-Kids Research Symposium, Las Vegas NV, July 5-7. *Invited speaker*.
- van Tellingen, M., Hurkmans, J., **Terband, H.**, van de Zande, A.-M., Maassen, B. & Jonkers, R. (2022). Treatment of Childhood Apraxia of Speech with Speech and Music Therapy. Paper presented at the 2022 Apraxia-Kids Research Symposium, Las Vegas NV, July 5-7.
- van Doornik, Gerrits, E., McLeod, S., **Terband, H.** & Welbie, M. (2020). Speech-language pathologists' views on the severity of speech sound disorders in children. Paper presented at the Early Childhood Voices Conference 2020, Sidney - online, November 16-20.
- **Terband, H.** (2020). Developmental models of childhood speech disorders. Paper presented at the IMPRS Conference 2020: Interdisciplinary Approaches in the Language Sciences, Nijmegen, June 3-5. *Invited speaker*.
- Murray, E., Iuzzini, J., Maas, E., **Terband, H.**, & Ballard, K. (2019). How do we diagnose childhood apraxia of speech versus other speech sound disorders? Answers from a systematic review. Paper presented

at the Joint Speech Pathology Australia (SPA) and the New Zealand Speech-language Therapists' Association (NZSTA) Conference, Brisbane, June 2-5, 2019.

- **Terband, H.** (2019). The DIVA model and motor speech disorders. Paper presented at the Workshop Motor Speech Disorders: characterizing phonetic speech planning and motor speech programming/execution and their impairments, University of Geneva, January 16-17, 2019. *Invited speaker*.
- Murray, E., Iuzzini, J., Maas, E., **Terband, H.**, & Ballard, K. (2018). Diagnosis of Childhood Apraxia of Speech compared to other Speech Sound Disorders: A Systematic Review. Paper presented at the ASHA Convention 2018, Boston MA, November 15-17, 2018.
- van Doornik, Gerrits, E., **Terband, H.** & McLeod, S. (2018). Self-evaluation of communicative attitude by children with speech sound disorders. Paper presented at the 17th International Clinical Phonetics and Linguistics Association Conference 2018, Malta, October 23-25.
- Lentz, T. & **Terband, H.** (2018). Articulatory strategies to mark prominence in consonants. Paper presented at the Hanyang International Symposium on Phonetics and Cognitive Sciences of Language 2018, Seoul, Korea, May 18-19, 2018.
- Maassen, B., Diepeveen, S., van Haaften, L., **Terband, H.**, Van den Engel-Hoek, L., & De Swart, B. (2018). Clinical validation of the Computer Articulation Instrument (CAI). Paper presented at the Conference on Motor Speech 2018, Savannah GA, February 21-25.
- **Terband, H.**, Rodd, J., & Maas, E. (2018). Testing hypotheses about the underlying deficit of apraxia of speech (AOS) through computational neural modelling: Effects of noise masking on vowel production in the DIVA model. Paper presented at the Conference on Motor Speech 2018, Savannah GA, February 21-25.
- Keij, B., Janssen, L., Van der Graaff, J., De Mulder, H., Verhagen, J., & **Terband, H.** (2017). The relation between linguistic skills and problem behaviour in typically developing pre-schoolers. Paper presented at the 18th European Conference on Developmental Psychology, Utrecht, August 29 – September 1.
- van Doornik, J.C., **Terband, H.**, Gerrits, E. & McLeod, S. (2017). Differences in intelligibility ratings by parents of children with and without speech sound disorders using the ICS-NL. Paper presented at the Speech Pathology Australia National Conference 2017, Sydney, May 28-31.
- **Terband, H.** (2017). Toward a model of speech development and disorders for diagnosis and treatment planning. Paper presented at the Workshop on Speech Perception and Production across the Lifespan (SPPL) 2017, London, April 26-27. *Keynote speaker (invited)*.
- **Terband, H.** (2017). Toward a model of speech development and disorders for diagnosis and treatment planning. Paper presented at the EMLAR XIII, annual workshop Experimental Methods in Language Acquisition Research, Utrecht, the Netherlands, April 19-21. *Invited speaker*.
- **Terband, H.** & Spruit, M. (2017). Speech impairment in children with FASD: causes, consequences, clinical profile, and treatment. Paper presented at the 7th International Conference on FASD, Vancouver, March 1-4, 2017.
- Spruit, M, & **Terband, H.** (2016). Speech production disorders in children with FASD. Paper presented at the European Conference on FASD 2016, London, September 12-14.
- Maassen, B., **Terband**, H., van Haaften, L., Diepeveen, S., & De Swart, B. (2016). The development and standardization of a speech production test for children: The Computer Articulation Instrument (CAI). Paper presented at the Conference on Motor Speech 2016, Newport Beach CA, March 2-6.
- **Terband, H.**, Maassen, B., & Coppens-Hofman, M.C. (2015). Effectiveness of speech therapy in adults with intellectual disabilities. Paper presented at the ASHA Convention 2015, Denver CO, November 12-14.

- Maassen, B., van Haaften, L., Diepeveen, S., De Swart, B., & **Terband, H.** (2015). Construction and Evaluation of a Computer Articulation Instrument (CAI) for Children. Paper presented at the ASHA Convention 2015, Denver CO, November 12-14.
- van Doornik-van der Zee, J.C. & **Terband, H.** (2015). Intelligibility measurements in developmental speech disorders. Paper presented at the 9th European Congress of Speech and Language Therapy (CPLOL 2015), Florence, May 8-9.
- **Terband, H.**, van Brenk, F., van der Zee, J.C., Nijssen, M., & Cai, S. (2014). Auditory feedback perturbation in children with developmental speech sound disorders. Paper presented at the Conference on Motor Speech 2014, Sarasota FL, February 27-March 2.
- **Terband, H.** (2013). Neurocognitive-Behavioral Research in Childhood Apraxia of Speech: where do we go from here? Paper presented at the CASANA Childhood Apraxia of Speech Research Symposium, Atlanta GA, February 21-22. *Invited speaker*.
- **Terband, H.** & Maassen, B. (2011). Speech motor development in Childhood Apraxia of Speech (CAS): generating testable hypotheses by neurocomputational modeling. Paper presented at the 6thInternational Conference on Speech Motor Control, Groningen, June 8-11. *Invited speaker*.
- **Terband, H.**, Maassen, B., Guenther, F.H., & Brumberg, J. (2010). Testing hypotheses about the neurological mechanisms underlying Childhood Apraxia of Speech (CAS). Paper presented at the Conference on Motor Speech 2010, Savannah GA, March 4-7.
- **Terband, H.**, Maassen, B., & Guenther, F.H. (2009). Testing hypotheses about the neurological mechanisms underlying Childhood Apraxia of Speech (CAS). Paper presented at the TABU-dag 2009, Groningen, June 11-12. *Best presentation award.*

Selected peer-reviewed conference contributions: posters

- van Tellingen, M., Hurkmans, J., **Terband, H.**, van de Zande, A.-M., Maassen, B. & Jonkers, R. (2022). Treatment of Childhood Apraxia of Speech with Speech and Music Therapy. Paper submitted for the 2022 Speech Motor Conference, Groningen, The Netherlands, August 24-27.
- van Tellingen, M., Hurkmans, J., **Terband, H.**, van de Zande, A.-M., Maassen, B. & Jonkers, R. (2022). Treatment of Childhood Apraxia of Speech with Speech and Music Therapy. Paper submitted for the 34th Annual Meeting European Academy of Childhood Disability - EACD 2022, Barcelona, May 18-21.
- **Terband, H.,** Van Brenk, F. & Maassen, B. (2022). SimpleDIVA modelling of SSD speakers' responses to formant perturbations. Poster to be presented at the Conference on Motor Speech 2022, Charlotte, SC, February 20-23.
- Diepeveen, S., van Haaften, L., van de Zande, A.M., Megens-Huigh, Ch., **Terband, H.**, De Swart, B., & Maassen, B. (2022). Towards a typology of speech sound disorders. Poster to be presented at the Conference on Motor Speech 2022, Charlotte, SC, February 20-23.
- **Terband, H.** & Lentz, T. (2020). Perception-production relationships in weighting phonetic cues of vowel contrasts. Poster at the Conference on Motor Speech 2020, Santa Barbara CA, February 20-23.
- Van Brenk, F., Terband, H. & Maassen, B. (2020). SimpleDIVA modelling of individual differences in speakers' responses to auditory feedback perturbation. Poster at the Conference on Motor Speech 2020, Santa Barbara CA, February 20-23.
- van Doornik, Gerrits, E., **Terband, H.** & McLeod, S. (2020). Severity of speech sound disorders (SSD). Poster at the Conference on Motor Speech 2020, Santa Barbara CA, February 20-23.
- Diepeveen, S., van Haaften, L., **Terband, H.**, Van den Engel-Hoek, L., De Swart, B., & Maassen, B. (2020). Maximum Repetition Rate normative data from a large sample of Dutch-speaking children, and its role in speech profiling. Poster at the Conference on Motor Speech 2020, Santa Barbara CA, February 20-23.

- Spruit, M, & Terband, H. (2018). Speech production disorders in children with Fetal Alcohol Spectrum Disorders. Poster at the 10th European Congress of Speech and Language Therapy (CPLOL), Cascais, May 10-12, 2018.
- **Terband, H.**, Maassen, B. & Maas, E. (2018). A model of speech development and disorders for diagnosis and treatment planning. Poster at the Conference on Motor Speech 2018, Savannah GA, February 21-25.
- **Terband, H.** (2018). Deviant coarticulation in children with childhood apraxia of speech (CAS) does <u>not</u> include hyperarticulation. Poster at the Conference on Motor Speech 2018, Savannah GA, February 21-25.
- Keij, B., Janssen, L., Van der Graaff, J., De Mulder, H., Verhagen, J., & **Terband, H.** (2017). The relation between phonological skills and problem behaviour in pre-schoolers. Poster at the 14th International Congress for the Study of Child Language 2017, Lyon, July 17-21.
- **Terband, H.** (2017). Deviant coarticulation in children with childhood apraxia of speech (CAS) does <u>not</u> include hyperarticulation. Poster at the 7th International Conference on Speech Motor Control, Groningen, July 5-8.
- **Terband, H.**, van Montfort, M., Bax, L., Hart, P., Sehgal, S., Smorenburg, L., Versteeg, F., & Lentz, T. (2017). Articulatory control parameters of phonological contrasts: the case of cue-weighting for Dutch /a/-/a/. Poster at the 7th International Conference on Speech Motor Control, Groningen, July 5-8.
- Diepeveen, S., van Haaften, L., **Terband, H.**, De Swart, B. & Maassen, B. (2017). Maximum Repetition Rate: Normative data and a comparison of children with Speech Sound Disorders (SSD). Poster at the 7th International Conference on Speech Motor Control, Groningen, July 5-8.
- Maassen, B., **Terband, H.**, van Haaften, L., Diepeveen, S., & De Swart, B. (2016). Maximum Repetition Rate (MRR) in Children: Standardization and Bench-marking. Poster at the Conference on Motor Speech 2016, Newport Beach CA, March 2-6.
- Spruit, M., **Terband, H.**, & Maassen, B. (2016). Speech disorders in children with Fetal Alcohol Syndrome: Commonalities and individual differences. Poster at the Conference on Motor Speech 2016, Newport Beach CA, March 2-6.
- **Terband, H.**, Nijssen, M., van Brenk, F., van der Zee, J.C., & Maassen, B. (2014). Development of a learning task for a process-oriented diagnostics of developmental speech sound disorders: a pilot study. Poster at the Conference on Motor Speech 2014, Sarasota FL, February 27-March 2.
- van Brenk, F., **Terband, H.**, & Cai, S. (2014). Auditory feedback perturbation in adults and children. Poster at the Conference on Motor Speech 2014, Sarasota FL, February 27-March 2.
- **Terband, H.**, van Zaalen, Y., Hommeles, S., Martens, A., Savelkoul, N., & Maassen, B. (2012). Lateral jaw stability in children with developmental speech disorders. Poster at the Conference on Motor Speech 2012, Santa Rosa CA, February 29-March 4.
- **Terband, H.**, van Brenk, F., van Lieshout, P., Maassen, B., & Lowit, A. (2012). Speech rate strategies in younger and older adults. Poster at the Conference on Motor Speech 2012, Santa Rosa CA, February 29-March 4.
- **Terband, H.**, Maassen, B., Lieshout, P., & Nijland, L. (2010). Stability and composition of functional synergies for speech movements in children with developmental speech disorders. Poster at the Conference on Motor Speech 2010, Savannah GA, March 4-7.
- Maassen, B. and **Terband, H.** (2008). Modeling feedback mechanisms in Childhood Apraxia of Speech. Poster at the 12th Congress of the ICPLA, Istanbul, June 25-28.
- **Terband, H.**, Maassen, B., Brumberg, J., & Guenther, F. H. (2008). Increased levels of neural noise as the core deficit in Childhood Apraxia of Speech (CAS). Poster at the Conference on Motor Speech 2008, Monterey CA, March 6-9.

- **Terband, H.**, van Brenk, F., Maassen, B., & Nijland, L. (2008, March 6-9). Articulation in children with developmental speech disorders. Poster at the Conference on Motor Speech 2008, Monterey CA, March 6-9.
- Maassen, B. & **Terband, H.** (2007). Neurophysiological Precursors of Dyslexia in Infancy. Poster at the ASHA Convention 2007, Boston MA, November 15-17.
- **Terband, H.**, Maassen, B. & Brumberg, J. (2007). Computational Neural Modeling of Childhood Apraxia of Speech. Poster at the ASHA Convention 2007, Boston MA, November 15-17.

Selected professional lectures and workshops

- Keij, B., Janssen, L., Van der Graaff, J., De Mulder, H., Verhagen, J., & **Terband, H.** (2017). The relation between phonological skills and problem behaviour in preschoolers. Congres TaalStaal 2017: Effectiviteit van behandelinterventie, Utrecht, November 10, 2017.
- **Terband, H.** (2017). Naar een model van spraakontwikkelingsstoornissen voor differentiaaldiagnose en therapieplanning. *Invited lecture* at the Noorddag Logopedie ELANN, Groningen, March 11, 2017.
- **Terband, H.** (2016). Testing hypotheses about the underlying deficit of apraxia of speech (AOS) through computational neural modelling: Effects of noise masking on vowel production in the DIVA model. *Invited lecture* at NOSHC: New Observations in Speech and Hearing Colloquium, Institute of Phonetics and Speech Processing, Ludwig-Maximilians Universität München, December 7.
- Janssen, L., Keij, B., De Mulder, H., Verhagen, J., Van der Graaff, J., & **Terband, H.** (2016). Communicatieve vaardigheden als voorspeller van gedrag bij kleuters. SCEM Symposium Taalontwikkeling: stoornis of achterstand?, Ede, December 1, 2016.
- **Terband, H.** (2016). Naar een model van spraakontwikkelingsstoornissen voor differentiaaldiagnose en therapieplanning. *Invited lecture* at Capita selecta ANLU, Utrecht, January 22.
- Maassen, B. & **Terband, H.** (2014). Computer-articulatie instrument: een gestandaardiseerde assessment van fonologische en spraakmotorische ontwikkeling en stoornissen. Workshop at Alle Taal Centraal symposium (Koninklijke Kentalis), Eindhoven, November 13.
- **Terband, H.** & Maassen, B. (2012). Klinische implementatie van procesdiagnostiek en indicatiestelling van complexe, senso-motorische spraakstoornissen bij kinderen. *Invited lecture* at NVSST, Utrecht, December 22.
- Terband, H. (2012). Vroege verwerving spraakmotoriek. Invited lecture at WALS, Utrecht, May 22.

Manuscripts under review or in preparation

- van Tellingen, M., Hurkmans, J., **Terband, H.**, van de Zande, A.-M., Maassen, B. & Jonkers, R. (Revised manuscript submitted). Speech and music therapy in the treatment of CAS: An introduction and a case study. *Journal of Speech, Language and Hearing Research.*
- van Doornik, A., Welbie, M., Gerrits, E., McLeod, S. & **Terband, H.** (In preparation). Speech and language therapists' insights regarding the construct of severity of speech sound disorders in children. *International Journal of Language & Communication Disorders.*
- van Doornik, A., **Terband, H.**, McLeod, S. & Gerrits, E. (In preparation). A severity index of speech sound disorders in children of 4-6 years old. *International Journal of Language & Communication Disorders.*
- Maassen, B. & **Terband, H.** (In preparation). Towards process-oriented, dimensional approaches for diagnosing SSD in children. State-of-the-art and future perspectives. *Journal of Speech, Language and Hearing Research.*

- **Terband, H.** & van Doornik, A. (In preparation). Speech production errors in Australian-Dutch bilingual children. *Journal of Speech, Language and Hearing Research.*
- van Doornik, A., Franken M-C., McLeod, S., **Terband, H.** & Gerrits, E. (In preparation). Self-evaluation of communicative attitude by children with speech sound disorders. *Clinical Linguistics & Phonetics*.
- **Terband, H.**, Diepeveen, S., Van Doornik, A. & Maassen, B. (In preparation). Severity and topology of developmental speech disorders. *TBA*.
- **Terband, H.** (In preparation). Deviant coarticulation in children with childhood apraxia of speech (CAS) does <u>not</u> include hyperarticulation.
- **Terband, H.** & Lentz, T. (In preparation). Perception-production relationships in weighting phonetic cues of vowel contrasts.
- Keij, B., Janssen, L., Van der Graaff, J., De Mulder, H., Verhagen, J., & **Terband, H.** (in preparation). The relation between linguistic skills and problem behaviour in typically developing pre-schoolers.

Submitted & upcoming conference papers