PPA & Post-stroke Aphasia Symposium: Advances in Clinical Neuroscience
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U-Residence, Vrije Universiteit Brussel, Pleinlaan 2, Brussels, Belgium

BOOK OF ABSTRACTS

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KEYNOTES

A1. Primary Progressive Aphasia: a Journey Through Language, Neuroimaging, Cellular and Genetic Signatures of a Fascinating Clinical Syndrome.

Elena Barbieri[1]

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Primary Progressive Aphasia (PPA) is a clinical syndrome defined by progressive decline of language functions that leaves other cognitive functions primarily intact at least for the first 1-2 years. PPA offers a unique window into the complexity of neurodegenerative disease, as it can be caused by several distinct neuropathological entities, including, for example, Alzheimer's Disease and Pick's Disease. Because of the focality of atrophy (i.e., loss of gray matter) in the initial stages of the disease, PPA has also provided insightful contributions to the investigation of the neuro-anatomical and functional anatomy of the language network. This talk will provide data from several studies aimed at unveiling the complexity of the relationship between language symptoms, language network disruption and neuropathology. A special focus will be the investigation of the mechanisms underlying language network disruption in TDP43 pronteinopathy Type C (TDP-C), a unique disease pathology that is strongly associated with the semantic variant of PPA.

A2. Development and Validation of the Mini Linguistic State Examination

Peter Garrard[1]

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In this lecture I will describe the motivations and methods that led up to the development of the Mini Linguistic State Examination (MSLE) – a clinical tool that enables the user to detect, describe, classify, quantify and monitor the language deficits of patients with Primary Progressive Aphasia (PPA). I will go on to describe the machine-learning approach used to validate the MLSE's accuracy at classifying the three classical PPA syndromes, and suggest that the outputs of the Random Forest classifier may prove useful to the process of harmonising the versions of the MLSE that have since been developed in multiple languages. Finally, I will introduce the electronic version of the MLSE (the eMLSE) and the features that have been added to it over the last 12 months. The latter are aimed at contributing to the development of an intelligent version (the iMLSE) which will enhance consistency of error-classification across users.

PLENARY TALKS

A3. Neuromodulation in Primary Progressive Aphasia

Silke Coemans[1]

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Neuromodulation techniques are increasingly used to study and potentially support language functioning in Primary Progressive Aphasia (PPA). In this talk, I will give a brief overview of current perspectives and discuss several practical and methodological considerations relevant to applying neuromodulation in a progressive language disorder. I will touch on issues related to patient characterization, stimulation choices, and the interpretation of treatment effects, as well as challenges commonly encountered in clinical or research settings. The aim is to provide a pragmatic, high-level view of what neuromodulation can offer in PPA and where opportunities for future work may lie.

A4. Incorporating Patient and Carer Perspectives in PPA Research to Improve Understanding and Support

Chris Hardy[1]

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In this talk I will outline recent collaborative work embedding patient and carer perspectives to improve understanding and support across the three major PPA variants. Using large international caregiver surveys and mixed-methods analyses, we developed a symptom-led staging framework for each PPA subtype, providing a roadmap for the disease. Subsequent co-produced work with PPA caregivers has explored the emotional journey through these stages, resulting in care pathway recommendations for clinical practice. I will also describe an ongoing collaboration between myself, the artist William Lindley, and people with lived experience of PPA, in which we are working to produce an audiovisual installation that communicates what it feels like to live with PPA.

ORAL PRESENTATIONS

A5. Artificial Intelligence to Detect Chronic Post-Stroke Aphasia From Natural Speech

Mara Barberis[1]*, Ella Eycken[1], Andi Smet[1], Bastiaan Tamm[2,3], Hugo Van hamme[2], Maaike Vandermosten[1]

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Aphasia assessment often relies on isolated tasks using single phonemes, words or sentences, which lack ecological validity. It is therefore recommended to add natural speech tasks to aphasia assessment. However, this has only been applied to a limited extent due to the time-consuming nature of manual transcription and a lack of knowledge on what features to extract from these data. Recent advances in artificial intelligence can overcome these issues. Four natural speech tasks (descriptive, responsive and free speech) were administered in 75 individuals with chronic post-stroke aphasia and 75 neurologically healthy older persons. Automatic Speech Recognition and Natural Language Processing were used to transcribe the speech samples and extract 26 natural speech features, spanning different subdomains of language. Each feature was analyzed separately using linear mixed-effect models with Satterthwaite adjusted degrees of freedom looking at main effects of task and group and the interaction between task and group. We found that differences in natural speech features can depend on the task that is administered, which emphasizes the importance to administer a task that elicits what you want to measure. In addition, the 26 features were provided as input to a nonlinear support vector machine classifier to detect aphasia at the individual level. The classifier detected persons with aphasia with an accuracy between 81.36% and 88.14% depending on the natural speech task that was used. The proposed AI approach is promising to enable natural speech analysis in a time efficient manner in clinical settings.

A6. Compound Processing in Primary Progressive Aphasia

Christina Manouilidou[1]

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Introduction: Compounds (e.g., *truck-driver*) are complex word formations that enable us to examine how lexical morphology interacts with semantics. They are rarely studied in neurodegenerative conditions (Manouilidou, 2025). We present data from compound processing of 7 people with PPA.

Methods: Participants: 3 svPPA, 1 nfavPPA, 3 lvPPA, and 19 healthy elderly controls (HC). **Tasks:** *a) Production by definition:* participants were given the definition, and they had to utter the actual compound. *b) Picture Naming*, c) *Lexical decision task (LDT)*. **Stimuli:** 42 nominal compounds (*ku'klospito*/'dollhouse') and 42 simple nouns (*peta'luδa* 'butterfly') for the picture naming task, while for the other two tasks: 70 dependent (*aɣri'oɣata*/'wild cat'), 45 coordinate (*alato'pipero*/'salt&pepper'), and 15 exocentric compounds (*kokkino'malis*/'redhead').

Results: pwPPA were worse than HC, in accuracy and response speed in all tasks. In **naming**, they made more errors in compounds than in simple words, contrary to HC, which did not exhibit a difference between simple and compound words. In the **definition task,** pwsvPPA-s and nfavPPA responded mostly with other existing or structurally possible compounds (e.g., *plusi'opedo*/'rich child' instead of *kaloanathre'menos*/'well-bred'). PwlvPPA produced mostly simple words and circumlocutions. In **LDT,** pwnfavPPA were significantly more accurate and faster than the other two variants.

Discussion: All pwPPA exhibited difficulties with compounds. Error analysis revealed that semantic and morphological knowledge of the compound structure was differentially impaired in PPA variants, although one can find common patterns. The specific findings will be discussed within existing theories of compound processing as well as the pathology of each condition.

A7. Detecting Primary Progressive Aphasia and its Variants via Digital Analysis of Connected Speech

Petronilla Battista[1], Gaia C. Santi[1], Simona Aresta[1], Cinzia Palmirotta[1], Allegra Benzini[1], Paola Santacesaria[1], Roberta Tomasoni[1], Serena Tagliente[1], Chiara Griseta[1], Alberto Benussi[2], Christian Salvatore[3], Maria Luisa Gorno-Tempini[4]

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Introduction: Primary progressive aphasia (PPA) has distinct variants, including nonfluent/agrammatic (nfvPPA) and logopenic (lvPPA), that require accurate differentiation for diagnosis and care. Here, we implemented digital language analysis to classify PPA and its variants in Italian-speakers to refine diagnostic accuracy.

Material and Methods: We recruited 88 participants, including n=20 lvPPA; n=24 nfvPPA; and n=44 healthy controls (HCs). Each completed the SAND picture description task [1]. Audio was recorded, transcribed with Whisper-OpenAI, and then analyzed with CLAN [2]. Twenty-four linguistic features across four linguistic levels were extracted. Four machine-learning classifiers were trained to classify PPA-vs-HCs; lvPPA-vs-HCs; nfvPPA-vs-HCs; lvPPA-vs-nfvPPA.

Results: Machine-learning models achieved AUCs (%) of 93.3±4.6 for PPA-vs-HCs, 90.0±5.6 for lvPPA-vs-HCs, 97.5±5.6 for nfvPPA-vs-HCs, and 85.0±10.5 for nfvPPA-vs-lvPPA. Explainability analysis revealed that lower speech and articulation rate, noun and preposition ratios and higher disfluencies, increased the probability of being PPA. Compared to HCs, slower speech, fewer nouns, a lower type–token-ratio, and more disfluencies and pauses increased the likelihood of being lvPPA, whereas reduced articulation and speech rates, lower lexical diversity, and more disfluencies with motor-speech errors increased the probability of being nfvPPA. Finally, in lvPPA-vs-nfvPPA, higher articulation rate, number of utterances, preposition ratio, lower nouns ratio and motor speech errors increase the probability of being classified as lvPPA.

Conclusion: Digital analysis of connected speech reliably differentiates Italian-speaking PPA and nfvPPA/lvPPA individuals, offering a scalable, objective tool to streamline diagnosis, personalize monitoring, and provide sensitive endpoints for clinical trials.

A8. Word Surprisal in Frontotemporal Lobar Degeneration and Parkinson's Disease Reflects Changes in Syntax and Lexical Content of Speech

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Frontotemporal lobar degeneration (FTLD) and Parkinson's disease (PD) both affect speech and language. Word surprisal, a measure of predictability, is a sensitive index of linguistic atypicality. We analysed picture description transcripts from age matched healthy controls (HC; n=88), PD (n=63), and FTLD-spectrum disorders (FTLD+; n=18). Surprisal (bits/word) was computed using the Dutch pretrained variant (on cleaned mC4 dataset) of GPT2-medium. Transcripts were processed with the Stanza Dutch pipeline for lemmatization, part-of-speech, and dependency parsing. Lexical metrics included word counts, content/function ratios, and frequency-weighted averages; syntactic metrics came from UD Dutch LassySmall dependency frequencies. Values were compared with a Kruskal-Wallis test. For surprisal, PD transcripts had significantly higher values than HCs. FTLD+ showed the highest values, but not significantly. FTLD+ transcripts were shorter, lexically impoverished, and had fewer function words. PD transcripts had intact lexical profiles but lower syntactic frequency. In conclusion, FTLD+ participants spoke less and used less varied words, while PD speakers had typical vocabulary but less predictable sentence structure. These findings indicate that surprisal reflects both lexical and syntactic changes in neurodegeneration.

A9. From Words to Discourse: Investigating the Cognitive and Neural Overlap Between Picture Naming and Connected Speech in PPA

Francesca Conca[1], Valentina Esposito[2], Margherita Papaccio[1], Gaia C. Santi[3], Cristina Polito[4], Silvia P. Caminiti[5] Carmen Morinelli[6], Valentina Berti[7], Salvatore Mazzeo[8], Alessandra Marcone[9], Sandro Iannaccone[10], Sandro Sorbi[4,11], Daniela Perani[8], Stefano F. Cappa[1,12], Valentina Bessi[6,11*], Eleonora Catricalà[1]

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Background. Picture-naming and connected speech are central to assess language deficits in Primary Progressive Aphasia (PPA). While both tasks can reveal some error types (e.g. semantic errors), connected speech offers additional insights into spontaneous language through features like information units. However, the cognitive and neural mechanisms driving their shared and distinct characteristics remain unclear. Here, we examined the relationship between picture-naming and connected speech by analyzing their linguistic features and neural correlates.

Methods. Forty-eight PPA patients completed the picture-naming and the connected speech task (picture description) from the SAND battery [1], alongside an FDG-PET scan. Naming accuracy, error types (semantic, phonological, anomia) and connected speech features (e.g., information units, noun rate, mean length of utterance–MLU) were extracted and correlated among tests and with brain metabolism from 10 Regions-of-Interest.

Results. Naming accuracy and anomia correlated with information units, noun rate, and semantic-anomic errors in connected speech, while phonological errors correlated with utterance count ($p < .017$). Naming accuracy, semantic and anomic errors were associated with the anterior fusiform, with the latter also linked to the IFG and posterior inferior temporal gyri ($p < .015$). MLU correlated with posterior temporal regions, noun rate with posterior inferior and anterior middle temporal gyri, and number of subordinates with the IFG ($p < .021$).

Discussion. This findings reveal shared and unique neural bases for picture-naming and connected speech, with anterior and inferior temporal regions supporting a common lexico-semantic process. Combining both tasks improves clinical assessment, deepening the understanding of language decline in PPA.

A10. EEG-Based Neural Assessment of Post-Stroke Aphasia

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Globally, approximately 13 million people suffer from a stroke each year, with about one third developing aphasia, an acquired language disorder. Behavioral tests are the current standard to detect aphasia, but they are time-consuming, have limited ecological validity and require active task performance which is often confounded by cognitive comorbidities. We therefore aim to investigate language abilities in stroke patients by applying a new method of EEG-based neural tracking of the speech envelope, which relies on natural continuous speech and does not require active performance from patients. Previous neural tracking studies in neurotypical controls have found a relation with speech and language processing but it has not yet been applied in post-stroke aphasia

We recorded EEG data in 40 patients with aphasia (PwA), 20 patients without aphasia (PwNA) and 23 healthy controls while they listened to a 25-minute story. All patients were in the chronic phase (> 6 months post-stroke). Results show that PwA had reduced neural tracking in specific frequency bands compared to PwNA (Delta & Broad), while healthy controls showed higher tracking across multiple bands. Using a support vector machine, we classified PwA and PwNA on an individual level with 84% accuracy, demonstrating the clinical potential of this approach.

In conclusion, neural envelope tracking presents a promising, efficient technique for assessing language impairments in stroke patients.

A11. Cortical Speech Envelope Tracking Reflects Lesion-Symptom Profiles in Post-Stroke Aphasia

Guangting Mai[1], Emily Upton[2], Timothy D. Griffiths[3], Alexander P. Leff[2], Jennifer T. Crinion[2], Gordon Mills[2], Douglas Neville[2], Storm Anderson[2], Cathy J. Price[2], Ajay D. Halai[1], Martyn Blairs[1], Máté Aller[1], Lucy J. MacGregor[1], Matthew H. Davis[1], Holly Robson[2]

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Speech comprehension in aphasia is usually investigated using isolated linguistic stimuli which poorly reflect continuous real-life listening. Cortical speech envelope tracking measures the alignment of neural activity with speech rhythms and may serve as a marker of comprehension. Envelope tracking at different timescales/frequencies reflects neural responses to distinct linguistic information. This study investigates the relationship between envelope tracking at syllable and multisyllable rates and lesion-symptom profiles in people with aphasia (PWA). The envelope tracking-speech comprehension relationship is also evaluated.

EEG was recorded while 15 PWA with temporal lesions, 14 PWA with frontal lesions, and 15 controls listened to intelligible and unintelligible stories with embedded non-verbal comprehension trials. Groups were matched for age, hearing, lesion volume, and time post-stroke. Envelope tracking was measured using decoding and encoding models at syllable (2–9Hz) and multisyllable (0.5–2Hz) frequencies, derived from the speech modulation spectrum. Linear mixed-effects modelling tested the influence of group, intelligibility, and frequency on envelope tracking. Partial correlations examined tracking–comprehension relationships controlling for age, hearing, and lesion volume.

Impaired comprehension was best reflected in envelope decoding, particularly at multisyllable rates and this measure was also sensitive to speech intelligibility. Conversely, local sensor-level reductions in syllable-encoding occurred independent of comprehension impairment. At an individual-level, comprehension correlated with syllable-tracking in the residual network, but the effect direction depended on lesion-symptom profile. In the temporal group, positive correlations suggested that more stable envelope representations support linguistic processing. In the frontal group, negative correlations may reflect increased listening effort with greater comprehension difficulty.

A12. Lesion Correlates of Speech Rhythm Insensitivity in Post-Stroke Aphasia

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Speech rhythm provides cues to syllable timing, prosody, and phrase boundaries, supporting comprehension. When rhythm is disrupted, word recognition is impaired in typical listeners (Aubanel & Schwartz, 2020). Recent findings indicate atypical rhythm processing in post-stroke aphasia (Robson et al., 2024), whereby isochronous speech rhythm impairs comprehension in people with aphasia (PWA) to a lesser extent than in typical listeners. This study replicates these findings in a larger cohort and explores lesion sites associated with atypical rhythm processing. Forty PWA completed a sentence-verification task, judging final words as congruent or incongruent (with unrelated or phonological distractors). Data were compared to 10 controls. Sentences were presented in four conditions in a 2x2 design: rhythm (natural vs. isochronous) x rate (typical vs. slow). D' analysis measured sensitivity to incongruency. Rhythm sensitivity was indexed by subtracting normalised d' scores in isochronous from natural rhythm conditions. Linear mixed-effects analyses tested the influence of group, rhythm, rate, and ending. VLSM analyses, using binary lesion maps from automated detection methods, examined stroke damage associated with total d' (comprehension success) and rhythm sensitivity scores.

We replicate evidence for reduced rhythm sensitivity in aphasia, suggesting more limited use of rhythm during comprehension. VLSM linked overall comprehension success to the inferior longitudinal fasciculus (ventral stream), but reduced rhythm sensitivity was associated with arcuate fasiculus damage (dorsal stream). As natural rhythm is used as a cue to disambiguate acoustically degraded speech, these findings may explain why some PWA who comprehend well on clinical testing are disproportionately affected by noisy environments.

A13. Adapting the Mini-Linguistic State Examination (MLSE) to Norwegian

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Despite the growing demand for language-specific tools to assess and monitor language impairments and outcomes in persons with Primary Progressive Aphasia (PPA), there are currently no tools specifically for PPA in Norwegian. People with PPA in Norway are often assessed with assessment tools developed for English-speaking populations that are directly translated to Norwegian, which limits their applicability in non-English-speaking contexts, or with assessment tools for post-stroke aphasia.

This study outlines the adaptation of the *Mini-Linguistic State Examination* (MLSE; Patel et al., 2022), a language screening battery with good validity and specificity for people with PPA, and efforts to establish norms for this test. The MLSE was adapted from English to Norwegian, incorporating linguistic and cultural features, while keeping fidelity to the original version. Linguistic variables, including frequency, word, and syllable structure, were considered. New illustrations were commissioned, and name agreement ratings were obtained from 50 people. The test was piloted on 15 adults without PPA (aged 50 years and older), and the final version is currently being normed on individuals with and without PPA. So far, three people with PPA (2 females) and 25 without PPA (18 females) haven been included. Norming data are still being collected, but preliminary explorations indicate that participants with PPA score as expected based on their diagnosed PPA subtype. This study marks the first development of tools for assessing language in Norwegian-speaking individuals with PPA. Preliminary findings from the norming process will provide insights into the reliability and diagnostic utility of the tools.

A14. The Dutch Mini-Linguistic State Examination (MLSE-NL): Preliminary Findings in Primary Progressive Aphasia (PPA)

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Introduction: Speech and language alterations offer the possibility of early and non-invasive detection within the broader spectrum of Frontotemporal Degeneration (FTD) including PPA, however, the use of speech and language markers is limited by the fact that 75% of studies only investigate English-speaking FTD patients (Coppieters et.al., 2024). The Mini-Linguistic State Examination (MLSE) is an easy to use speech and language test developed to detect and diagnose PPA (Patel et.al., 2021), which we are in the process of validating in Dutch (MLSE-NL).

Methods: MLSE-NL was collected in 21 Dutch-speaking patients (nfvPPA n=7, primary progressive apraxia of speech (PPAOS) n=3, lvPPA n=6, svPPA n=5) (mean age: 69, 50% male) and 113 controls (mean age: 65, 34% male). The MLSE is composed of subscores in different domains (motor speech, phonological structure, semantic knowledge, syntax, working memory) as well as a total score. Scores were compared between controls and patients, as well as between the variants, using linear models adjusting for age, sex, and education.

Results: MLSE-NL shows significantly lower total scores for all PPA variants with scores ranging from 33-91/100 (average = 70.1±16.1) in patients and 83-100/100 (average = 97.3±2.9) in controls (<.0001). Subdomain analysis showed that nfvPPA and PPAOS had more motor speech errors than controls (p < 0.001), svPPA exhibited more semantic errors (p < 0.001), while lvPPA had the most working memory deficits (p < 0.0001). Syntax errors were more frequent compared to controls in all PPA variants except PPAOS, while phonological deficits were observed more in lvPPA and nfvPPA compared to controls (p < 0.001). To summarize, MLSE-NL shows promise for accurate detection and differentiation of the variants of PPA in Dutch.

A15. Quantitative Assessment of Agrammatism in Turkish Speaking Patients With Primary Progressive Aphasia

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Background: The goal of this study is to reveal distinctive features of agrammatism in Turkish speaking individuals with primary progressive aphasia (PPA).

Methods: Fourteen agrammatic PPA patients and 12 healthy controls were included. Narrative samples were recorded using a voice recorder during a novel picture description task. The speech output was then quantitatively analyzed using *Systematic Analysis of Language Transcripts* (SALT clinical v9) software.

Results: PPA and control groups did not differ in the production of *simple sentences* (13.28 vs 13). However, PPA group produced fewer *complex sentences* (2.14 vs 8.83) and *compound sentences* (0.21 vs 3). On the other hand, the use of *conjunctions* was comparable in both groups after controlling for the *total number of words* produced. PPA patients' narration included fewer *derivational suffixes* (1.5 vs 7.33), *derivational diversity* was reduced (1.14 vs 6) and *derivational/inflectional suffix ratio* was significantly lower in the PPA group compared to the controls (0.04 vs 0.09). *Subordinate clause* production was also reduced in the PPA group (2 vs 13.75). *Total number of temporal suffixes* in the PPA group (11.62) was similar to that of the control group (12.33).

Conclusions: PPA patients had relatively preserved skills for producing *inflectional suffixes* including *temporal suffixes*. However, *derivational suffix* formation was more troublesome in PPA group. Moreover, *passive voice* formation was also preserved in the PPA group as this process requires relatively simple inflectional suffixation within a canonical sentence in Turkish. On the other hand *subordinate clause* formation requires relatively more complex morphosyntactic processing in Turkish and patients had greater difficulty in this grammatical category. Despite relatively preserved use of *conjunctions* within a clause, PPA group had difficulty using *conjunctions* to bind clauses to create *compound sentences*.

A.16 A Neuro-Psycholinguistic Study of Primary Progressive Aphasia in Arabic

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Background: Primary Progressive Aphasia (PPA) is a neurodegenerative syndrome characterized by a progressive decline in language abilities, manifesting in four primary clinical variants: non-fluent/agrammatic (nfvPPA), semantic (svPPA), logopenic (lvPPA), and mixed (mvPPA). Research on PPA among Arabic-speaking individuals is notably sparse. This study presents a case series aimed at characterizing the clinical and linguistic diversity of PPA within this underrepresented population.

Methods: We report on patients diagnosed with PPA (n=8) according to the current consensus criteria (Gorno-Tempini et al., 2011), encompassing main variants. Each participant underwent a battery of neuropsychological and neurolinguistic assessments tailored for Arabic. The linguistic analyses concentrated on evaluating motor speech, grammaticality, word retrieval, and comprehension, with particular attention to features potentially influenced by Arabic linguistic characteristics.

Results: The analysis of the case series identified the presence of all three canonical variants (nfvPPA, svPPA, lvPPA), as well as some atypical or mixed (mvPPA) phenotypes. Notably, the detailed neurolinguistic profiles exhibited variations from those described in Indo-European languages. For example, specific patterns of morphological errors in nfvPPA and distinct presentations of dysnomia and semantic association deficits in svPPA and lvPPA were observed.

Conclusion: This case series provides empirical evidence of the phenotypic expression of PPA within an Arabic linguistic and cultural context. The findings highlight the necessity of linguistically sensitive assessment protocols and suggest that the morpho-syntactic and lexical complexities of Arabic may influence the precise manifestation of PPA variants. This work contributes to the broader understanding of PPA's diverse clinical trajectories globally and cross-linguistically.

A17. Characterizing Speech and Language Impairments in Primary Progressive Aphasia: Cross-Linguistic Insights From English, Chinese, and Italian

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Background: Most evidence on Primary Progressive Aphasia (PPA) comes from English-speaking cohorts, leaving the role of language typology unclear. Using a data-driven approach, we examined speech–language profiles in English-, Chinese-, and Italian-speaking individuals with PPA to identify cross-linguistic similarities and differences.

Methods: Ninety individuals with PPA (30 per language, 10 per PPA variant) produced connected speech using the Picnic picture description. CLAN analyses characterized phonetic–phonological, lexico-semantic, morpho-syntactic, and discourse–pragmatic features. For each language, we ran community detection analysis (CDA) on speech, language, and demographic variables, then compared the resulting profiles across languages.

Results: English CDA yielded three clusters (modularity 0.37) reflecting predominant semantic, lexical, and articulatory deficits. Chinese CDA produced five clusters (modularity 0.48) capturing semantic impairment, articulatory and tone impairment, agrammatism, anomic production with compensatory strategies, and anomic production with reduced output. Italian CDA identified four clusters (modularity 0.34) reflecting semantic impairment, combined phonological–morphological deficits, anomic production with phonological dysfunction, and anomic production with increased word repetition.

Conclusions: A consistent semantic cluster emerged across languages, whereas non fluent/agrammatic and logopenic impairment were more heterogeneous and language-specific. Findings highlight typology-linked markers, e.g., tone errors in Chinese, morphological errors in Italian, and underscore the need to adapt diagnostic criteria beyond English to capture variant-specific manifestations across languages.

A18. Neuroplasticity of Language Networks in Aphasia [NeuroLap]: An Exploratory Study Towards Advanced Diagnosis and Rehabilitation

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Background: Neuronal plasticity plays a crucial role in aphasia recovery after stroke. Current aphasia rehabilitation is usually symptom-based, determined by behavioural outcomes of conventional language tests. However, this approach does not take into account the mechanisms underlying symptomatology nor the functional reorganisation of language networks.

Objective: This study evaluates the patented NeuroLap algorithm by comparing the effectiveness of neuroplasticity-oriented rehabilitation with symptom-based therapy.

Method: Six individuals with post-stroke aphasia, either in the subacute or chronic phase, were included in the study. Behavioural and electrophysiological language assessments were administered at baseline, after three weeks of symptom-based therapy, and following three weeks of individualised neuroplasticity-guided rehabilitation. The NeuroLap algorithm generated personalised therapy guidelines in accordance with the individual's amplitude, latency, and topography of language-related ERP components (MMN, P300, N400, and P600). Behavioural and electrophysiological changes were analysed at single-subject level to compare outcomes between the initial symptom-based therapy period and the subsequent NeuroLap-guided neuroplasticity-oriented intervention.

Results and conclusion: While behavioural scores remained stable across time points, electrophysiological data revealed substantial intra-individual variability. Notably, when neuroplasticity-oriented guidelines differed from symptom-based therapy content, ERP measurements enhanced towards normative values after therapy. This highlights the sensitivity and clinical relevance of individualised electrophysiological diagnostic and rehabilitation approaches, as provided by the NeuroLap algorithm.

Future perspectives: The observed variability underscores the need for longitudinal validation of NeuroLap in larger cohorts. Further studies on test-retest reliability in healthy individuals and insights into neural oscillatory dynamics underlying language comprehension will support ongoing refinement of the algorithm.

A19. Language Intervention and Follow-up in Different Stages of Alzheimer's Disease

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Background: Semantic processing is often affected in Alzheimer's Disease (AD) as shown by reduced behavioural accuracies and altered N400 event-related potential (ERP) characteristics. However, longitudinal data on semantic decline across AD stages remain scarce.

Aim: This study aimed to implement and evaluate a multiple pretest-posttest lexical-semantic intervention to support language skills.

Method: Participants underwent pen-and-paper tasks and EEG recordings eliciting N400, Mismatch Negativity (MMN), and P300 components at each evaluation moment. The intervention included two pretests three weeks apart, a three-week lexical-semantic training (five hours/week) via the Speech Therapy App (STAPP), and immediate, three-, and six-month post-tests. At the immediate post-test, participants also completed a subjective satisfaction questionnaire.

Results: Two participants are presented, with a focus on N400 results: Patient 1, a 57-year-old man with Mild Cognitive Impairment (MCI), and Patient 2, a 77-year-old woman with Mild AD. In Patient 1, the N400 was consistently present, with best accuracy at the immediate post-test. In Patient 2, the N400 was absent at both pretests, but appeared at the immediate post-test with a delayed onset and an atypical topography, and gradually approached typical patterns in later post-tests, with maintained accuracy. Both participants reported high satisfaction with the intervention.

Conclusions: The protocol appears feasible in MCI and Mild AD. Disease stages could initially be distinguished by N400 presence or characteristics, with differences gradually diminishing in later post-tests. While behavioural changes were minimal, the N400-effect was influenced by the intervention in mild AD. Additionally, the subjective questionnaire revealed high satisfaction with the procedure.

A20. Speech Comprehension Impairments in Post-Stroke Aphasias and Primary Progressive Aphasias Affecting the Left-Temporoparietal Junction

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The stroke-related conditions of Wernicke's and Conduction aphasia and dementia-related condition of Logopenic-variant Primary Progressive Aphasia involve lesions or atrophy to the left-temporoparietal junction, which supports successful speech comprehension through its role in auditory processing (von Steinbüchel et al., 1999), phonological processing, semantic processing and sentence processing (Vigneau et al., 2006), as well as cognitive functions such as working memory (Deschamps et al., 2014) and executive functions (Wager et al., 2005). Despite impairments to these constituent perceptual, linguistic and cognitive processes in Wernicke's, Conduction and Logopenic aphasias, speech comprehension impairments in these groups differ. Studies in the dementia and stroke aphasia fields posit that distinct underlying processes drive speech comprehension behaviours in these groups. However, a lack of unified and sensitive testing across the full speech processing hierarchy limits the ability to directly compare neuropsychological and aphasia profiles across these conditions.

In this study, a unified, comprehensive and sensitive battery of neuropsychological tests is used for assessing the constituent processes influencing speech comprehension, as well as behavioural measures of speech comprehension in these conditions affecting the left-temporoparietal junction for the first time. Preliminary case-series data suggests some divergent and convergent patterns of neuropsychological impairment across aphasia profiles. Group-level analysis will reveal the possible contributions of the constituent neuropsychological processes that influence speech comprehension behaviours in these conditions. These results will aid in identifying if speech comprehension impairments in these conditions are truly different, or an artefact of variable testing methods.

A21. Effects of Speech and Language Therapy on Daily Communication in People with Primary Progressive Aphasia and Their Carers

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Introduction: In speech and language intervention, the perspectives of people with Primary Progressive Aphasia (PPA) are often overlooked, leaving the fit between interventions and real needs underexplored. This study evaluates the impact of speech and language therapy (SLT) on psychological well-being and everyday communication in people with PPA and their carers.

Materials and Methods: We enrolled n=25 patients with PPA, including n=11 non-fluent/agrammatic PPA (nfvPPA); n=11 logopenic PPA (lvPPA); and n=3 semantic PPA (svPPA) (F: 13; age: 65.64±6.87; education: 13.24±3.39; CDR≤1) and their respective caregivers (F: 20; age: 56.52±10.25; education: 14.2±3.25). Participants were asked open-ended questions to collect feedback on the SLT and their perceived change relative to pre-treatment. A reflexive thematic analysis was conducted on their responses, following six phases: familiarization, coding, theme identification, review, naming, and report writing [1].

Results: Four main themes common to both patients and caregivers were identified through the analysis of participants' responses: (1) reduction in negative emotions and increased self-efficacy, (2) proactivity, (3) strategies, and (4) setting and patient–clinician relationship. In addition, (5) communicative effectiveness emerged specifically from the group of people with PPA, while (6) awareness and (7) interpersonal relationships were identified from the caregivers' surveys.

Conclusions: Qualitative analysis of opinions on the SLT gives voice to people with PPA and their carers, highlighting the positive effects of treatment on communications and psychological well-being, aiming to develop protocols that effectively address their real needs

POSTER PRESENTATIONS

A22. Lexical-Semantic Organisation and Tip-of-the-Tongue States in Typical Ageing

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Word selection relies on the organisation of the lexical-semantic network, in which semantic richness and prototypicality both influence target activation (Krethlow et al., 2020). Disruptions to this organisation can result in temporary retrieval failures, such as the Tip-of-the-Tongue (ToT) phenomenon, or more severe word-finding difficulties observed in conditions such as primary progressive aphasia and post-stroke aphasia (Nickels et al., 2022). A previous study with young neurotypical adults found that the momentary organisation of the lexical-semantic network has an influence on the ToT state (Couvreu, M. & Laganaro, M., in prep.). As lexical-semantic organisation evolves with age (Wulff et al., 2022), the current study aims to investigate this phenomenon in older adults, assessing potential age-related differences in how lexical-semantic networks impact on the ToT phenomenon. To this end, 40 older neurotypical adults performed a picture-naming task in French, followed by a continuous free word association task. The results showed that semantic richness had an influence, with fewer associates produced in a ToT state. However, neither prototypicality nor the type of associates had any effect, which contrasts with observations made in younger adults. Thus, the present findings may provide a new perspective on the processes underlying ToT and highlight the importance of considering the organisation of the lexical-semantic network of the speaker's and its changes across the lifespan. These variables may be worth considering when developing clinical tasks, both for neurodegenerative conditions such as PPA and for post-stroke aphasia, as they could provide useful cues for early detection.

A23. Early Lexico-Semantic Disruption in Non-Semantic Primary Progressive Aphasia: Evidence From Eye-Tracking and Cortical Thickness Analysis

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Primary progressive aphasia (PPA) is a neurodegenerative disorder in which language impairment precedes other cognitive impairments. While semantic variant PPA (PPA-S) is characterized by prominent comprehension deficits due to anterior temporal lobe (ATL) atrophy, non-semantic variants (PPA-NS; agrammatic or logopenic) may also exhibit subtle semantic degradation as degeneration spreads toward temporal regions. Detecting these early lexical-semantic impairments could provide valuable clues about the transition toward mixed-type PPA, shedding light on how degenerative processes propagate across the frontotemporal semantic network.

In this study, eleven PPA patients with relatively preserved comprehension and ten healthy controls performed a word–object matching task designed with semantically related and unrelated distractors. Eye movements were recorded using the EyeLink 1000 system to capture fixation patterns and gaze durations, while structural MRI data were analyzed with FreeSurfer to obtain cortical thickness maps. Results revealed atrophy not only areas typical for non-semantic variants (inferior frontal gyrus (IFG) and temporoparietal junction (TPJ)), but also in temporal poles. Although behavioral accuracy remained high (90.6% in PPA vs. 99.5% in controls), eye-tracking analysis indicated that PPA patients fixated longer on semantically related distractors and required more refixations before identifying the correct target.

These findings suggest that eye-tracking measures can capture subtle preclinical lexical-semantic disturbances before overt comprehension deficits appear, providing a potential biomarker for monitoring disease progression in PPA.

A24. Validation and Reliability of Telephone-Based Language Interviews to Assess Language Recovery After Stroke.

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The degree of language recovery after stroke can vary greatly between persons with aphasia. In addition, language problems can change over time, resulting in a different language profile six months post-stroke compared to the language profile in the acute phase. The trajectory of language recovery over time is still unclear because previous studies lack longitudinal language data during these crucial first months of recovery. Tracking language across time is methodologically very challenging, as various language tests need to be administered at multiple time points, which might induce learning effects, and which requires significant time investment from both patients and researchers. However, recent technological advancements allow language data to be collected and analyzed efficiently by using natural speech, which allows to effectively extract multiple language features across language components without learning effects and with the additional benefit of being highly ecologically valid. By collecting natural speech in stroke patients along their rehabilitation trajectory by means of monthly telephonic interviews, this project aims to track and unravel productive language recovery after stroke. To assess the validity and reliability of this new interview approach, this study administered the telephonic interviews in 50 neurotypicals (ranging 25 to 90 years), focusing on the validity and reliability of three natural speech tasks included in each interview. From each task, speech samples are automatically transcribed, and micro- and macrolinguistic features are extracted from the transcriptions using Natural Language Processing (NLP). Using these features, preliminary analyses are conducted on the validity and reliability of the different interview tasks.

A25. Testing the Cognate Advantage in Anomia Therapy in Catalan-Spanish Bilinguals With Aphasia: Preliminary Evidence From Two Cases.

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Anomia therapy for bilinguals with aphasia (BWA) could capitalize on cross-language similarities (cognates) to promote gains in the treated language and cross-language generalization to the untreated language. However, cognate-based treatment shows mixed evidence (Lerman & Malcolm, 2025), suggesting that therapy outcomes in BWA may depend on premorbid language proficiency and postinjury impairment profiles (Peñaloza & Kiran, 2019). We investigated the effects of a semantic-based anomia therapy on the treated language (Spanish), and cross-language generalization (Catalan) across cognates and non-cognates in two Spanish-Catalan BWA. P1 was an unbalanced Spanish-dominant bilingual with severe global post-stroke aphasia (frontal and basal ganglia damage). P2 was a balanced bilingual, showing mild fluent aphasia after a brain aneurism surgery (temporo-parietooccipital damage). Both completed a semantic anomia treatment in Spanish (12 2-hour sessions over 4 weeks). We evaluated naming accuracy across all Spanish item sets (treated/control, including cognates and non-cognates), and their Catalan translations and computed treatment effect sizes (ES). P1 showed no significant naming gains for treated (ES=0.57) versus control (ES=-0.80) items, no advantage for treated cognates (ES=-0.22) relative to non-cognates (ES=1), and no cross-language generalization to untreated translations (ES=0). P2 showed substantial improvement for treated (ES=18.57) versus control (ES=0) items, superior gains for cognates (ES=10.39) versus non-cognates (ES=6), with cross-language generalization limited to cognate translations of treated items (ES=4.62). Our findings suggest that targeting cognates in treatment may be beneficial for some BWA, although direct treatment gains and cross-language generalization benefits may ultimately depend on individual profiles of aphasia severity and pre-stroke proficiency across languages.

A26. Treating PPA: What Happens in Daily Practice in Absence of Evidence-Based Guidelines?

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Background: Primary Progressive Aphasia (PPA) is a type of aphasia, with progression of language deficits as key symptom[1]. Due to the underlying degenerative process, PPA is significantly different from aphasia due to acute brain damage. Hence, this subgroup is often excluded from clinical trials and the evidence for treatment in post-stroke aphasia is not applicable. Still, most persons with PPA (PwPPA) are referred to speech-and language therapists (SL-therapists) for treatment and guidance[2]. We were interested to find out what SL-therapists do with PwPPA, in absence of solid scientific evidence.

Method: we conducted a workshop at the Dutch annual Aphasia Conference that was held in Octobre 2025. We presented a case of a working person with a mixed PPA (logopenic and non-fluent) and asked attendees the following questions: (1a) what will you do during treatment (1b) on what scientific grounds (2) how does this treatment fit within specialized medical rehabilitation (3a) do you include proxies in treatment (3b) if so, how (4) if and how will work be involved?

Results: 130 SL-therapists with affinity with aphasia attended the workshop, divided into two sessions. Regional differences were large. A great variety of treatment approaches were discussed during the workshop. Detailed results shall be presented at the symposium.

Discussion and conclusion: in absence of a robust evidence base for the treatment of PPA, the differences in everyday practice for PwPPA are substantial, even in a small country as the Netherlands. Hence, we are working on a national consensus for the treatment of PwPPA.

A27. Bringing Modern Language Assessment to the Memory Clinic for Young-Onset Dementia

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Background: Academic centers have a pathfinder role in translating innovative methods into care practice. In young-onset dementia (YOD), early subtype differentiation—especially considering bvFTD and PPA variants—could benefit from systematic speech-and-language profiling, yet recordings and their analyses are rarely embedded in standard workflows.

Objective: Implement a routine audio capture and an explainable analysis pipeline within the neuropsychological appointment to modernize language assessment for a more informed diagnostic process for atypical dementia variants.

Methods: The implementation site is the Amsterdam Alzheimer Center, a tertiary memory clinic with ~650 new YOD patients/year, including special groups typical of tertiary care (e.g., motor-speech impairment, aphasia-dominant presentations). We integrate audio recording into the neuropsychological examination (e.g., word fluency, sentence repetition, confrontation naming, short retell) and add 3–5 minutes of semi-spontaneous speech (3–4 open prompts) plus the CAT-NL picture description task. Audio is processed offline to derive explainable metrics in fluency (pause duration/density, articulation and speech rate), syntax (grammatical error density, sentence/clauses complexity), lexico-semantics (type–token ratio, content-word ratio, paraphasias), and prosody/voice (intensity and pitch variability).

Conclusion: The analytic building blocks already exist; the novelty of this project is operationalizing them at memory-clinic scale—standardized capture within the neuropsychological examination and explainable outputs aligned with multidisciplinary decision making—making language assessment more objective, scalable, and robust. This project explicitly serves as a test case for wider use, providing portable SOPs, templates, and evaluation metrics that can be adopted across regional networks and other memory clinics.

A28. Assessing Word Production With Referential Tasks: From Isolated to Scene Integrated Item Presentation

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Language impairments affect one third of acute stroke patients. Their performances are partly assessed with batteries exploring language skills by asking to name drawings of items, presented one after the other on neutral slides or sheets. Often, patients complain that speaking in real life seems more impaired than in the assessment tasks. Some research has reported a scene consistency effect, meaning that a consistent background facilitated object identification and enabled shorter and more precise naming latencies. However, the blocked-cyclic picture-naming paradigm demonstrated a semantic interference effect on naming in sequences of other semantically related items in comparison with a semantically heterogenous context. But this experimental background condition seems remote from real-life conditions. We aimed to explore this scene background impact on another mechanism: lexical access. The experiment consisted of 19 neurotypical adults and 1 PWA in a blocked-cyclic picture-naming task in two conditions: (a) a single 3D drawing, (b) an item included in a background market scene. During cycles 2 to 4, when interference is supposed to happen, we observe the same usual interference pattern of performances between the two conditions, isolated and scene integrated, whereas cycle 1 shows a reversed effect. The scene integrated presentation induces interference instead of facilitation. As data are still being collected, we expect with future patients to enrich our results by errors type analyses. Those results would lead to the development of assessment tools providing more ecological validity.

A29. Public Awareness of Aphasia in Bangladesh

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Background: Despite a high prevalence of stroke (11.39 per 1,000 adults) in Bangladesh, public awareness of post-stroke aphasia remains limited, with no prior research addressing this issue. Consequently, the potential influence of factors such as age, sex, education, and socio-economic status on awareness levels has yet to be explored.

Aims: This study aims to investigate the level of awareness of aphasia among individuals in Bangladesh and to examine whether demographic factors influence that awareness.

Methods: A cross-sectional survey was conducted using an adapted version of the questionnaire developed by McCann et al. (2013). The survey was distributed via social media using Google® Forms. It collected demographic information and assessed participants' awareness and knowledge of stroke and aphasia, including causes and symptoms. A total of 126 individuals aged 18–54 years (80 males, 46 females) participated. Data were analyzed to determine overall awareness levels and potential influencing factors.

Results: While 93.8% of participants were aware of stroke, only 35.7% were familiar with aphasia, and 64.3% reported no knowledge of the condition. Older individuals (B = 0.86, SE = 0.39, p = 0.026) and women (B = 0.96, SE = 0.42, p = 0.022) were significantly more likely to be aware of aphasia drawing information mainly from school (27.8%) and social media (38.9%).

Conclusion: Public awareness and knowledge of aphasia in Bangladesh remains very low. Existing efforts are inadequate, highlighting the urgent need for targeted public education. Raising awareness especially within health and educational sectors could improve support and outcomes for people with aphasia and their families.

A30. Cortical Tracking of Acoustic and Linguistic Features in Post-Stroke Aphasia

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During speech listening, our brains track both acoustic fluctuations in the speech envelope and higher-level linguistic representations (Gillis et al., 2021). Altered linguistic and/or auditory networks in post-stroke aphasia often cannot support typical speech processing. Cortical speech tracking methodologies offer unique insights into hierarchical speech representations during naturalistic listening in people with aphasia (PWA). Critically, however, our recent exploration of speech envelope tracking suggests that neural responses, as well as the relationship with comprehension, differ by lesion-symptom profile (Mai, Upton et al., submitted). In this follow-up study, we re-analyse these data to evaluate (1) the extent to which acoustic, phonological, lexical and semantic information is represented during continuous speech listening in PWA following frontal or temporal lobe stroke and (2) the relationship between tracking of these higher-order features and behavioural speech comprehension.

EEG data was collected during story listening with 15 PWA and temporal stroke, 14 PWA and frontal stroke, and 15 control participants. Cortical tracking of acoustic and linguistic features will be computed via custom code and the mTRF toolbox, enabling quantification of the extent to which EEG data can be reconstructed from speech features after partialling out speech envelope responses. We will examine tracking of acoustic (spectrogram, spectrotemporal modulation), phonemic (phoneme onsets, phonetic features, phoneme surprisal and entropy) and lexical-semantic (word onsets, frequency, word surprisal and entropy) information. Group comparisons will be conducted using linear mixed effects modelling and associations with behaviour using partial correlations accounting for lesion volume, age and hearing status. Preliminary results will be reported.

A31. Interpreting Object vs. Subject Relatives Asymmetries in Post-Stroke and Primary Progressive Aphasia: Evidence From Italian and French

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The asymmetry between subject (SRs) and object relatives (ORs) offers a key testing ground for interpretative accounts of agrammatic aphasia. Competing hypotheses attribute the OR disadvantage either to structural impairments, to processing limitations, or to the interaction of both, as in Generalized Minimality.

I report two studies addressing this contrast in different clinical populations. The first examined 10 Italian-speaking individuals with post-stroke agrammatism, testing comprehension (sentence-to-picture matching) and production (sentence priming) of SRs, ORs. Number mismatch between the two NPs in the sentences was considered as potential facilitation factor. Results showed an overall OR disadvantage with partial facilitation linked to number mismatch but marked interindividual variability. The second study investigated 13   French-speaking participants with Primary Progressive Aphasia (3 nonfluent, 3 logopenic, 7 semantic). Comprehension of SRs and ORs was tested while manipulating number mismatch (present vs. absent) and its phonological audibility in the verb inflection (overt vs. covert). ORs were more impaired than SRs in the nonfluent and logopenic variants, with facilitation from number dissimilarity, independent of its phonological realization. Participants with the semantic variant performed at ceiling.

The comparative analysis presented in this talk suggests that Generalized Minimality provides the most comprehensive explanation of the data across languages and aphasia aetiologies. Indeed, while limita8ons in processing resources alone can account for the observed variability, their combination with morphosyntactic structural factors captures the regular patterns in the data.

A32. SMOG-Gebaren bij Personen met Afasie – Afasie-Expertise Gezocht (SMOG Signs in People With Aphasia – Seeking Aphasia Expertise)

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Speaking with Sign Support (SMOG) has existed for 40 years and was developed to support individuals with disabilities who experience difficulties with communication. The system, derived from Flemish Sign Language, was formalized in 1986 and transferred to the organization *Gezin en Handicap* in 1992, which continued to further develop and disseminate it. An estimated 30,000 people with disabilities and their surroundings use SMOG. In 2024, a new non-profit organization, SMOG & CO, was established by *Gezin en Handicap* to enable the growth and expansion of SMOG. SMOG & CO is receiving increasing interest from groups with aphasia and dementia. The concept of SMOG aligns with the proven added value of iconic gestures in supporting both functional communication and language learning. International research in this population has so far mainly focused on spontaneous iconic gestures. Through SMOG pilot projects, we aim to explore the potential of *trained* SMOG gestures. Before we can structurally embed this form of support as part of the services offered to this population, more empirical research is needed on (1) Does SMOG support functional communication and/or language rehabilitation? (2) Is the added value of SMOG dependent on the aphasia profile? (3) Which different communication methods are used among clients with aphasia, and how do these relate to the use of SMOG in this group?

We are currently seeking an academic partner with expertise in the neurocognitive mechanisms and multimodal language processing in aphasia so that the research can take into account the specific needs of this population.