

Unlocking Cognitive Potential: the efficacy of Co.Di.S. Intervention and qualitative & quantitative analysis of Audio-Recorded Speech in Psychotic Spectrum Disorder

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Background

Psychosis spectrum disorders are complex and potentially lifelong conditions marked by **atypical cognitive, linguistic and social functioning**.

Language domain has been demonstrated to be impaired in various aspects, including syntax, semantics and pragmatics. Studies have consistently shown disruptions in the coherence and organization of speech and challenges in expressing thoughts cohesively.

Aims

This study aims to observe the preliminary effectiveness of specific cognitive exercises for **semantic differentiation** (esercizi Cognitivi di Differenziazione Semantica, Co.Di.S) as reinforcement of standard cognitive remediation rehabilitation treatment. Additionally, it seeks to conduct a **qualitative and quantitative analysis of audio-recorded voice samples** from a group of patients suffering from psychotic spectrum disorders (compared with a healthy control group).

Methods

Preliminary data were collected from a longitudinal research investigation. A cohort of 19 participants (79% males; mean age: 29.4 years) was recruited from the psychiatric outpatient program of Policlinico Tor Vergata in Rome.

Pre and post treatment **global cognitive, social cognition and functional assessments** were administered; in addition we collected **vocal-audiological samples recorded during these evaluations**.

All participants engaged in a conventional cognitive remediation treatment (Cogpack®) enhanced by the Co.Di.S.

Results

- Notably, statistically significant improvements were identified in verbal learning (HVL) ($p < .001$) and **working memory** (LNS) ($p = .003$).
- Additionally, RAVLT and Verbal Fluency-Semantic Category, which investigated **verbal learning and the organization of semantic network abilities**, also exhibited statistically significant enhancements ($p = .003$ and $p = .010$, respectively).
- Finally, the LSP, **global functioning**, demonstrated a statistically significant improvement ($p = .003$).

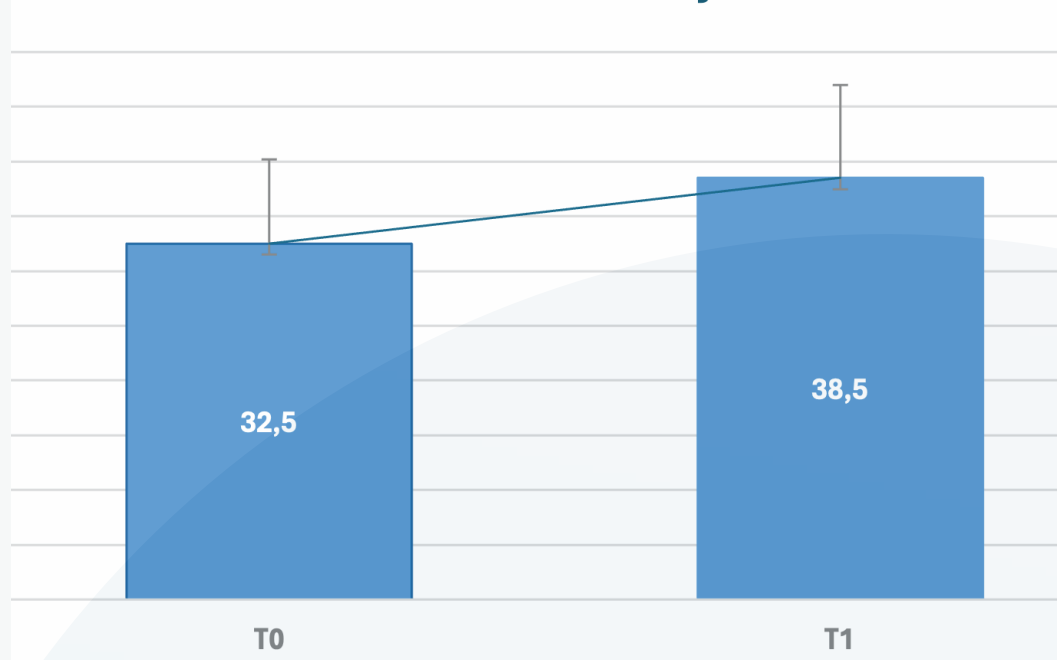
Speech record results - AI

- The audiological speech analysis indicates improvement in **social cognition and perception**.
- Additionally, evidence of extended pauses and increased specificity and quality of words and sentences suggest **reduced response impulsivity**.
- Finally, the **increased density of expressions with affective content** implies a broader range of emotional features in patients' speech.

Conclusion

Considering the restricted effectiveness observed in pharmacological treatments for cognitive and language impairments in psychosis, **the integration of psychosocial and rehabilitation interventions becomes imperative**, also with the support of new technologies like **artificial intelligence**. Subsequent investigations will be conducted to assess the impact of **semantic fluency** improvement on both positive and negative symptomatology. Future research endeavors should expand the study's sample size and compare treatment effectiveness with a control group.

Semantic Fluency



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