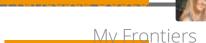
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EVENT ABSTRACT

Improvement of communicative-pragmatic ability in a group of adolescents with ASD measured using the adapted version for adolescents of the Cognitive Pragmatic Treatment: A pilot study

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Introduction: Autism spectrum disorders (ASD, APA 2013)1 is a complex pathology that includes within the distinct symptoms, difficulties in the social interaction. Some authors2,3 have identified an impairment in empathic/theory of mind (ToM) ability as the core problem of individuals with ASD. Several authors have argued that an intact and fully developed ToM is necessary to communicate efficiently4,5,6. Indeed, individuals with ASD often exhibit communicative-pragmatic impairment7.

In the present investigation, the term pragmatics refers to the ability to use speech and other expressive means, such as gestures, or paralinguistic cues, including tone, intonation, rhythm and prosody, to convey communicative meaning in a given context8. The difficulties individuals with ASD have with comprehending an interlocutor's communicative intention, specifically when it does not correspond to what it is literally proffered, are well documented in the existing literature7. Individuals with ASD also have problems with production abilities. Such difficulties also refer to the non-verbal/extralinguistic domain, i.e., the use of gestures for communicative purposes, as well as to the paralinguistic one9,10,11,12.

Several treatments have been proposed, in the existing literature, to improve social and mentalistic/ToM abilities of individuals with ASD13,14. However, to our knowledge, less attention has been paid to programs specifically devoted to improving communicative-pragmatic ability15.

The present study aims to test the efficacy of the adapted version of the Pragmatic Cognitive Treatment16 to improve the communicative-pragmatic ability of adolescents with high functioning ASD. The CPT has previously shown a good level of efficacy in improving pragmatic-communicative performance in patients with schizophrenia17,18 and with traumatic brain injury16,19. We hypothesize to detect an improvement of the communicative-pragmatic abilities of the adolescents due to their participation to the training. We also tested cognitive functions such as attention, memory, planning and ToM, in order to test the role played by such abilities pre- and post-treatment. Finally, we tested the participants' IQ in order to exclude a possible effect of such variable on the results.

Methods

Sample: 9 male adolescents with ASD participated to the study; they ranged in age between 12 and 16 years (M = 13.33; SD = 1.47). All participants had an IQ \geq 80 as measured by the WISC IV20.

The Training: The CPT focuses on all the aspects that allow a person to communicate effectively, namely linguistic, extralinguistic and paralinguistic abilities, social appropriateness, awareness, conversational and narrative skills, in addition to ToM and planning abilities. The efficacy of the treatment was evaluated by administering the equivalent forms of the Assessment Battery for Communication (ABaCo)21.

The original version of the CPT16 consists of two sessions per week (12 weeks) for a total of 24 sessions; each session lasts approximately 90 minutes and includes a 10-minute break in the

middle. The material used consists of short videoclips representing a brief communicative interaction (e.g., a communicative failure occurs, as an actor does not understand what his interlocutor says). At the end of each videoclip the participants are thus invited to discuss with the other participants what they just observed and they are asked to suggest, for example, what the actor could say to recover the communicative failure given the observed situation. Furthermore, in each session the participants take an active part in role playing activities. Finally, at the end of each session they are assigned specific "homework" tasks, dedicated to the particular aspect taken into consideration during that session, with the aim of extending what the participants experienced during the training session to their everyday life. The adapted version of the CPT16 consists of a total of 12 sessions (one session a week each

The adapted version of the CPT16 consists of a total of 12 sessions (one session a week each lasting approximately 90 minutes, including a 10-minute break). The tasks that make up the original version of the CPT16, which are not considered suitable for adolescent participants, have been revised and adapted for this age range (for example all the role paying has been adapted to situations that are relevant to adolescents).

Assessment measures: The participants' communicative-pragmatic skills were assessed by administering the equivalent forms of the ABaCo battery in three stages: T1 (pre-training), T2 (post-training) and T3 (Follow-Up, three months after the end of the treatment). The equivalent forms of the ABaCo are composed of 4 assessment scales - linguistic, non-verbal/extralinguistic, paralinguistic, contextual - that evaluate the comprehension and production of several communicative phenomena such as direct and indirect communicative acts, irony and deceit. The Neuropsychological Evaluation Battery for adolescents aged 12-18 (BVN 12-18)22 was also administered pre-and post-training. ToM was evaluated using the Sally & Anne task2, a selection of six scenarios from the Strange Stories task23 and the Reading the Mind in the Eyes test 24.

Results: Wilcoxon Signed-Rank Test was run to assess whether statistically significant improvement could be detected as a result of the rehabilitation treatment in the three assessment phases. Overall, considering performance on the ABaCo, the analysis revealed improvement at T2 when compared to T1 (Z = 2.073; p = .038) (see Figure 1). The improvements observed were stable even after three months from the end of the treatment, as suggested by the absence of any difference between the participants' performance at T2 (post-treatment) and at T3 (Follow Up) (Z = .365; p = .715). Moreover, Wilcoxon Signed-Rank Test was run to investigate the participants' cognitive performance pre- and post- training: no significant improvements were detected in the participants' performance on neuropsychological and ToM tasks, administered before and after the treatment (see Table 1).

Discussion and conclusion The training was effective in improving the participants' overall communicative performance, while there was no generalized improvement in cognitive and ToM tasks. The main limit of the present study, which is currently in progress, concerns the small number of participants and the lack of a control sample. Future studies conducted on larger samples, together with the recruitment of a control group, will be able to confirm its effectiveness.

Figure 1

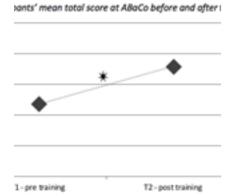


Figure 2

Pre-training (T1) score	Post-training (T2) score
49.26	76.10
81.90	89.93
84.68	95.89
96.22	102.57
93.14	101.32
101.29	108.47
84.43	101.69
103.93	111.01
84.66	100.97
֡	49.26 81.90 84.68 96.22 93.14 101.29 84.43 103.93

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Conflict of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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