

Preliminary Results of a Quasi-experimental Research of the Efficacy of Parents' Home Training on Improving the Social Communication of Students with Autism Spectrum Disorder (ASD)

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Introduction

Poor communication, weak understanding of the social context, and social skill deficit are common weaknesses of students with Autism Spectrum Disorder (ASD) (White, Keonig, & Scahill, 2007). **Social Thinking**, developed by Winner (2007), is an effective training paradigm to enhance the understanding of social exchange and interaction, increase positive social behaviors and impressions, and decrease less desirable social behaviors of students with ASD (Pamela, Ryan, & Janine, 2007). We adopted the Social Thinking treatment framework and techniques to provide intensive group coaching to students with ASD in the school setting. Frequent, regular, and intensive trainings are found to be effective to enhance social competence of the students with ASD (Tse, Strulovitch, Tagalakis, Meng, & Fombonne, 2007). Nonetheless, **with limited resources, practitioners can usually provide group coaching to students on a weekly basis at most.**

Parent Involvement

Parent involvement may be a way out to sustain and enhance the effectiveness of the social competence training, and **help students transfer and generalize the skills** they learned to other settings in their daily lives. We reported elsewhere that **parents experienced difficulties in implementing home social training** when they merely received paper-form training notice and piecemeal presentations on training principles. We concluded that **systematic train-the-trainer courses** should be delivered to parents so that parents could be better equipped with the skills needed, clarify good and bad practices when conducting home training, and get the chance the practice and rehearse the skills acquired before applying them.

Our professional team has been conducting a research on the efficacy of providing systematic training of the beginner-level Social Thinking training, instead of piecemeal presentations, to facilitate parents to acquire home training skills, so as to **improve social performances of their children**, who are at the same time attending the JC A-Connect: Jockey Club Autism Support Network coaching program. In series of workshops, parents whose children attended the group coaching program acquired knowledge about social thinking and relevant skills to facilitate training outside of schools, such as proper ways to use reminder cards and verbal cues. We propose a coherent **non-one-off training framework** that includes practices and rehearsals, session observation, administration of homework with explicit instruction, regular consultation sessions for homework feedback or relevant difficulties, distribution of relevant tools and certain teaching materials for parents, and Q&A sessions.

Lesson Plan in the Proposed Parents' Home Training Program

Review of homework

Concepts teaching and experience sharing

Key reminders teaching

- Whole body listening
- Expected behaviors/unexpected behaviors
- Good thoughts/Weird thoughts
- Thinking with your eyes
- Thinking about what other people think
- Identifying one's own feelings
- Figuring out other people's behaviors, gesture and posture, facial expression
- Figuring out other people's feelings
- Figuring out other people's likes/dislikes
- Figuring out other people's plans
- Figuring out other people's intentions
- Smart guess/wacky guess
- Social behavior mapping

- Major theories of ASD
- Social thinking
- Social skills
- Home training skills
- Impression system
- Reinforcement scheme
- Implicit norms
- Emotions and behaviors
- SOLVE: seek, observe, listen, vocalize, evaluate
- Blueprint of social behavior
- Analysis of classroom behavior
- Establishing expectation
- Growth and developmental needs of students with ASD

Practice and rehearsal

Questions and answers

Assigning homework

Aim

We aimed to evaluate the **efficacy of the systematic parents' home training program on improving functioning and adaptation of students with ASD**. By so doing, we compared the pre-post difference of advanced theory of mind, adaptation, and social responsiveness of **students attending the group coaching program whom parents received systematic training to those whom parents did not.**

Methodology

Within-subject measures design was adopted to evaluate the effectiveness of the systematic parents' home training group program on students' functioning and adaptation. **Students' advanced theory of mind (ToM)** was measured by Happé's (1994) **Strange Stories test**. The Strange Stories test included 12 social contextual stories, e.g., persuasion, white lie, contrary emotion, etc. Students responded to two questions for each story. Demonstration of complete and accurate metalizing answers secure a full mark for a story. A total score of Strange Stories test was computed by summing up the marks from the 12 stories. Students completed the Strange Stories test at two time points – before and after the group coaching program.

Students' **classroom, social, and emotional adaptations** were measured by the 58-item **Learning, Social, and Emotional Adaptation Questionnaire – Short Form for Primary Students (LSEAQ-SF)**. Students' **social competence** was measured by the 65-item **Social Responsiveness Scale – 2nd Edition for School-age Students (SRS-2)** (Constantino, 2012). **School personnel** filled out LSEAQ-SF on a four-point Likert scale, while **parents** completed SRS-2 on a four-point Likert scale respectively at two time points – before and after students attending the coaching group.

Moreover, **parents** filled out **qualitative questionnaire** to evaluate the systematic training program at the end of the program.

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Results and Discussion

A total of 28 primary school students with ASD completed the group coaching program, of which half of their parents simultaneously received systematic training (i.e., **experimental group**), while the other half did not (i.e., **control group**). Sets of mixed analysis of variance (ANOVA) were used to evaluate the effectiveness of the intervention within-subject across time and between groups. Further, students from the two groups were matched on their initial scores of functioning and adaptation. Students' pre-intervention scores were entered as covariates in sets of analysis of covariance (ANCOVA).

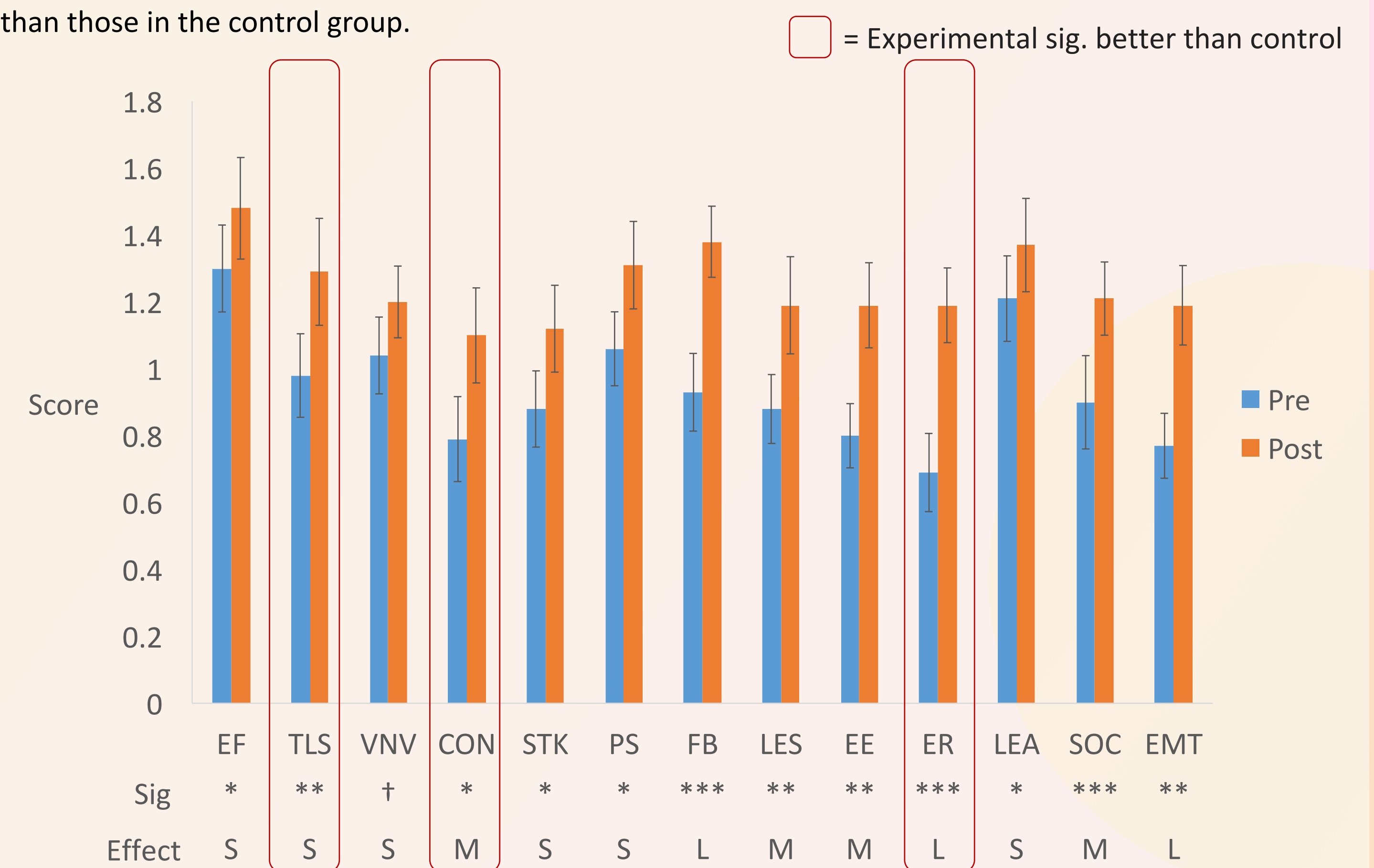
Training Effectiveness in Students' Advanced Theory of Mind

After receiving intervention, results revealed that **students in the experimental group improved statistically significantly** when compared to the pre-measure scores, and **more extensively** when compared to students in the control group. This demonstrated that parents training contributed to the improvement of students' advanced ToM on top and beyond the effect of group coaching alone.

Training Effectiveness in Students' Adaptations

After receiving intervention, **students in the experimental group improved statistically significantly** in various domains, as shown in the figure below. **Higher scores suggest higher levels of adaptation.**

Moreover, when the pre-measure scores were entered as covariates to compare the improvements of adaptations between groups, the **pre-post difference scores** of three domains (denoted by red rectangles in the following figure) **in the experimental group differed statistically significantly from those in the control group**, in that students from the **experimental group improved more extensively** than those in the control group.

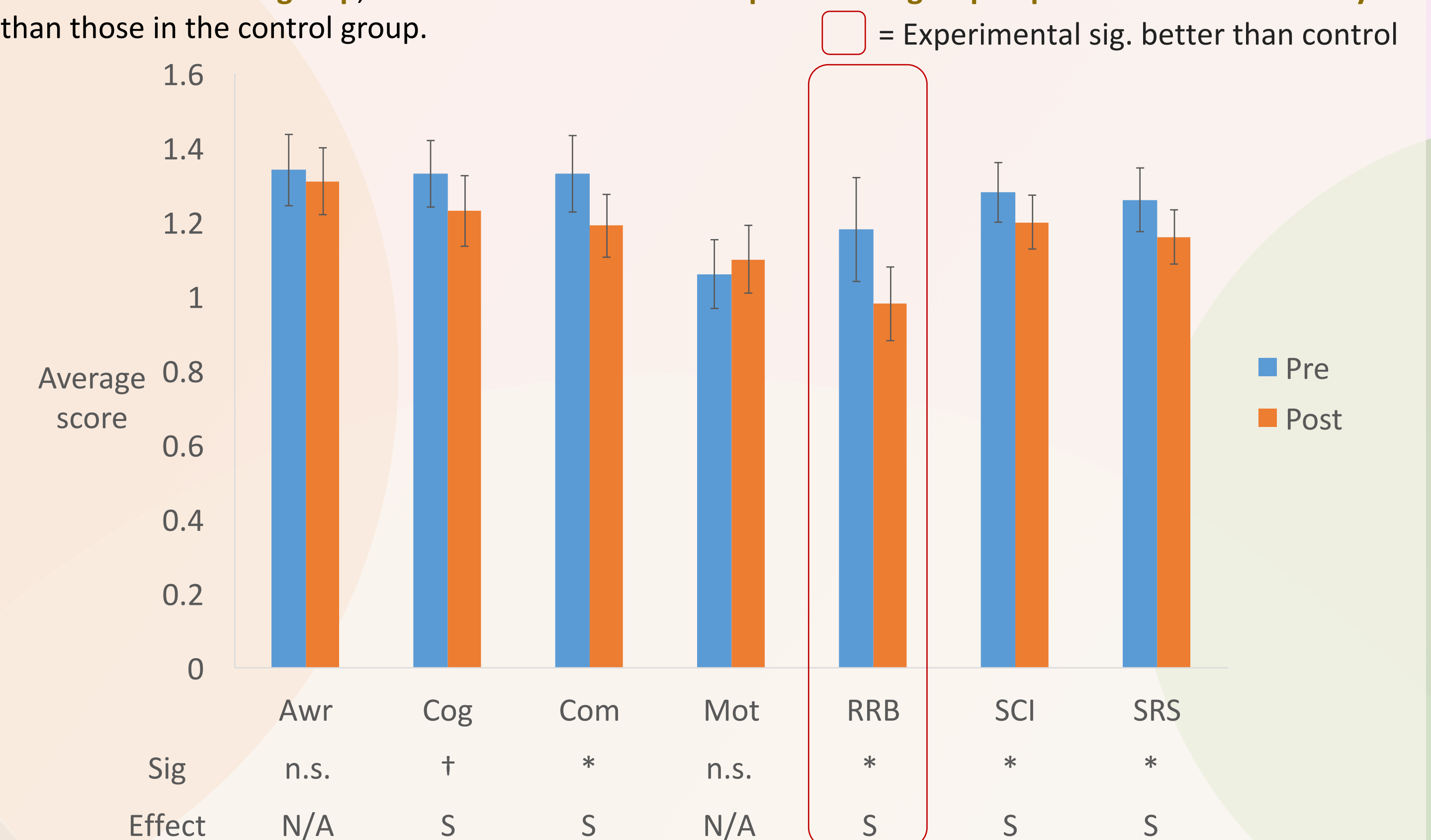


Note. EF = Executive function. TLS = Thinking and learning skills. VNV = Verbal and non-verbal communication. CON = Conversational skills. STK = Social thinking. PS = Problem solving and self-advocacy. FB = Friendly behaviors. LES = Leisure activities. EE = Emotion expression and comprehension. ER = Emotion regulation. LEA = Learning adaptation. SOC = Social adaptation. EMT = Emotional adaptation. Pre = Pre-measure. Post = Post-measure. Standard errors of means are represented in the figure by the error bars attached to each column. Sig = Significance level, one-tailed. † $p < .1$. * $p < .05$. ** $p < .01$. *** $p < .001$. Effect = Effect size (Cohen's d). S = Small ($d \geq .2$). M = Medium ($d \geq .5$). L = Large ($d \geq .8$).

Training Effectiveness in Students' Social Competence

After receiving intervention, **students in the experimental group improved statistically significantly** in five domains, as shown in the figure below. **Lower scores suggest less severe deficits.**

Moreover, when the pre-measure scores were entered as covariates to compare the improvements of social competence between groups, the **pre-post difference scores** of one domain (denoted by a red rectangle in the following figure) **in the experimental group differed statistically significantly from those in the control group**, in that students from the **experimental group improved more extensively** than those in the control group.



Note. Awr = Social awareness. Cog = Social cognition. Com = Social communication. Mot = Social motivation. RRB = Restricted interests and repetitive behavior. SCI = Social communication and interaction. SRS = SRS-2 total. Pre = Pre-measure. Post = Post-measure. Standard errors of means are represented in the figure by the error bars attached to each column. Sig = Significance level, one-tailed. † $p < .1$. * $p < .05$. n.s. = not significant. Effect = Effect size (Cohen's d). S = Small ($d \geq .2$). N/A = not applicable.

Parents' Feedback

Based on qualitative feedback from parents in the experimental group, training efficacy might be further enhanced by providing more consultation and practicum sessions.

Conclusion and Future Directions

The parents' home training is **effective in improving advanced ToM, learning, social, and emotional adaptations, and social responsiveness of students with ASD**. This **still holds after accounting for the sole effect of students' group coaching** on students' functioning and adaptation. Research and intervention are still ongoing and are expected to complete by the third quarter of 2018. Future research might explore the effectiveness of incorporating more consultation and practicum sessions in the systematic parents' home training program.

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