

# **Self-regulated Learning to Improve Daily Activities and School Task in Children with Autism Spectrum Disorders**

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## Introduction

- Children with autism spectrum disorders (ASD) commonly find daily activities and school tasks challenging.
- Limited interventions were found in these areas to address the needs of these children.

## Objectives

- To evaluate the effectiveness of self-regulated learning (SRL) and sensory integration intervention (SI) and compare it with a control activity-based intervention (AB) in improving daily activities and school tasks in children with autism spectrum disorders

# Introduction/Objectives

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## **Inclusion Criteria:**

- Diagnosed with ASD according to DSM-5
- Aged between 6-12 years old
- Normal to moderate intellectual quotient (IQ).
- Overall raw score <10 on the Maladaptive Behaviour Index of the Vineland Adaptive Behaviour Scales 2nd edition (VABS-2)<sup>1</sup>

## **Exclusion Criteria:**

- Diagnosed with Asperger syndrome or had any other pervasive developmental disability or dual diagnosis
- Children who did not attend school or were home schooled were also excluded.

**Intervention Duration:** 12 week/60 minutes per session

**Outcome measures:** VABS-2 (Daily living skills domain)<sup>1</sup>, School function Assessment (SFA)<sup>2</sup>

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1. Sparrow, S. S., Cicchetti, D. V., & Balla, D. A. (2005). *Vineland adaptive behavior scales* (2nd ed.). Circle Pines, MN: American Guidance Service.  
2. Coster, W., Deeney, T., Haltiwanger, J., & Haley, S. (1998). *School function assessment*. San Antonio, TX: The Psychological Corporation.

## Enrollment

Assessed for eligibility (n= 76)

Excluded (n=16)

- ◆ Not meeting inclusion criteria (n=16)
- ◆ Declined to participate (n=0)
- ◆ Other reasons (n=0)

Randomized (n=60)

## Allocation

Allocated to SRL intervention (n=20)  
Received allocated intervention (n=20)  
Did not receive allocated intervention (n= 0)  
drop out/move to another centre

Allocated to SI intervention (n=20)  
Received allocated intervention (n=17 )  
Did not receive allocated intervention (n=3 )

Allocated to AB control group (n=20)  
Received allocated intervention (n=17)  
Did not receive allocated intervention (n= 3)  
drop out/could not commit

## Follow-Up

Lost to follow-up (n=0)  
Discontinued intervention (n=0)

Lost to follow-up (n=0)  
Discontinued intervention (n=3)

Lost to follow-up (n=0)  
Discontinued intervention (n=3)

## Analysis

Analysed (n=20)  
◆ Excluded from analysis (n=0)

Analysed ITT (n=20)  
◆ Excluded from analysis (n=0)

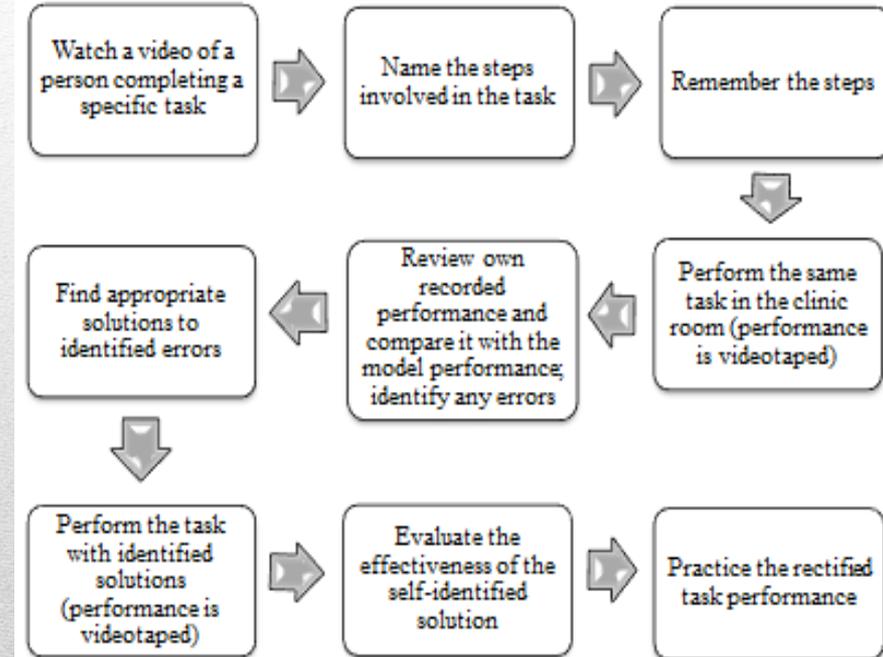
Analysed ITT (n=20)  
◆ Excluded from analysis (n=0)

- The tasks chosen for the SRL intervention is done through a review on Hahn-Markowitz, et al.<sup>3</sup> and Liu and Chan<sup>4</sup>. Fifteen tasks included were:

### Targeted tasks

- Pick up rubbish and throw it in the rubbish bag
- Pour water in the water bottle for school
- Tidy up after play activity
- Organise pencil case for school
- Pack own lunchbox for school
- Organise backpack for school
- Clean up after meals
- Cut along lines using scissors
- Glue and paste on paper
- Place books on bookshelves
- Erase pencil marks from books
- Write letters between lines in a book
- Keep clothing cupboard tidy
- Make own sandwich for school
- Buy snacks from school canteen

**Table 1. Fifteen targeted tasks in the SRL intervention**



**Figure 1. Steps-by-step procedure for the SRL intervention**

3. Hahn-Markowitz, J., Manor, I., & Maeir, A. (2011). Effectiveness of cognitive-functional (cog-fun) intervention with children with attention deficit hyperactivity disorder: A pilot study. *American Journal of Occupational Therapy*, 65(4), 384–392. doi:10.5014/ajot.2011.000901

4. Liu, K. P. Y., & Chan, C. C. H. (2014). A pilot randomized controlled trial of selfregulation in promoting function in acute post-stroke patients. *Archives of Physical Medicine and Rehabilitation*, 95(7), 1262–1267. doi:10.1016/j.apmr.2014.03.018

# Examples of the SRL Intervention



Figure 2. Use of camcorder to record the intervention session and use for intervention medium



Figure 3. Use of laptop/tablet to show the video of the client performing the task and comparing it with the original video for self-learning on identifying error and action for correctional purpose

# Result

- Greater improvement was shown in the SRL group on daily activities and school tasks components in both assessments: VABS-2 ( $p < 0.001$ ) and SFA ( $p < 0.001$ ) on pre and post, and compared to SI ( $p_s < 0.05$ ) and AB group ( $p_s < 0.05$ ).
  - SRL improvement shown were on majority of the VABS-2 daily living skills domain (personal, domestic, community) and in majority of the SFA domain including using materials, set-up and clean-up, clothing management, written work, memory & understanding, tasks behavior/completion, compliance with adult directives and school rules, safety.
  - Continuous improvement was shown in the SRL group at follow-up.
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# Discussion/Conclusion

- Greatest improvements in daily activities and school tasks were observed in the SRL group.
  - The SRL was a promising intervention to enhance both daily activities and school tasks for children with ASD.
  - SRL intervention offers children ways to learn new skills of self-reflection and monitoring. This promotes their ability to think creatively and learn new tasks under a new perspective.
  - SRL intervention should be considered in occupational therapy practice.
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# **Thank you**

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