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

Farahiyah Wan Yunus, Universiti Kebangsaan Malaysia
Karen Liu, Western Sydney University
Michelle Bissett, Griffith University
Stefania Penkala, Western Sydney University
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| • 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. | • 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 |
Method

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)\(^1\)

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)\(^1\), School function Assessment (SFA)\(^2\)

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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)

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.\(^3\) and Liu and Chan\(^4\). 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

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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
• 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.
• 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.
Thank you

Contact Email: farahiyahwanyunus@ukm.edu.my