Persistence During an Unmonitored Task: Associations with Elementary School Students' Self-Regulation and Academic Skills

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Introduction

- Persistence falls under the broader umbrella of motivation and is defined as children's motivation to persevere and complete a challenging task (Morgan et al, 1995).
- Persistence is generally measured through self- or adult (parent, teachers) report, although direct assessment is considered the "gold standard".
- Direct assessments of persistence provide a less biased perspective of a child's behaviors. They allow for information on how persistence changes due to time and task conditions.
- To engage in the classroom, children need both motivation and self-regulation skills are necessary to pay attention and learn new academic material.
- Persistence on challenging tasks is associated with children's academic success (Magi et al., 2018), and even adult educational outcomes (McClelland et al., 2013).

Purpose & Hypotheses

Purpose:

- Examine patterns of persistence on an unmonitored picture search task
- Understand how persistence during a picture search task is linked to academic and self-regulation skills in second grade students

Hypotheses:

- Persistence would decrease over time as the challenging puzzle task became more difficult
- Higher rates of persistence will be positively associated with children's self-regulation and academic skills

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Method

- Parents reported on the names of children's teachers, and teachers were contacted via email to complete a set of online surveys discussing children's academic skills and self-regulation skills in the classroom during the last 6 months.
- During assessment, the children completed a picture search activity looking for 12 individual objects from an I-Spy book finding (e.g., keys, pigs).
- Out of 12 objects, 9 were present on page, whereas 3 were not present on the page. Children indicated which objects they found on a check list and were given 7 minutes to complete the task.
- Video data was analyzed in 15-second epochs and data was coded by a 1, 2, or 3.

Measures

- **Persistence:** Measured by proportion of time on-task and amount of time until children were off-task on the picture search task
- **Self-regulation skills:** Teacher report on the Behavior Rating Inventory of Executive Function (BRIEF-2) on a 3-point Likert Scale with 1 = *never*, 2 = *sometimes*, and 3 = *often*
- **Reading and math skills:** Teacher report of children's English/language arts and mathematical skills based on the Nebraska State Standards for second grade on a 5-point Likert scale with 1 = *poor or well below grade level*, 2 = *needs improvement*, 3 = *satisfactory or at grade level*, 4 = *very good, above average for grade level*, 5 = *excellent, well above grade level*

Descriptive Statistics

Variable	N	Mean	SD	Range
Proportion of time on-task	90	0.86	0.18	0.35 – 1.00
Proportion of time off-task, no activity	90	0.08	0.12	0.00 – 0.48
Proportion of time off-task, activity	90	0.05	0.12	0.00 – 0.65
Time until off-task	90	5.39	1.97	0.50 – 7.00
Time until off-task, activity	90	6.28	1.53	1.00 – 7.00
Self-regulation skills	75	2.66	0.39	1.33 – 3.00
Reading scores	75	3.39	0.95	1.00 – 5.00
Math scores	75	3.52	0.84	1.00 – 5.00

Bivariate Correlations

		1	2	3	4	5	6	7
1	Proportion of time on-task	____						
2	Proportion of time off-task, no activity	-.75***	____					
3	Proportion of time off-task, activity	-.73***	.10	____				
4	Time until off-task	.76***	-.58***	-.55***	____			
5	Time until off-task, activity	.63***	-.16	-.79***	.68***	____		
6	Self-regulation	.17	-.31*	.07	.04	-.14	____	
7	Reading scores	.10	-.15	.01	.20	-.03	.33**	____
8	Math scores	.27+	-.28+	-.11	.28+	-.06	.29*	.82***

Note. + p < .10, * $p < .05$, ** $p < .01$, *** $p < .001$

Coding Scheme

Code	Description
Off-Task Activity	Child got out of seat, wandered around room, played with toys.
Off-Task, No Activity	Pencil out of hand, fidgeting in seat, looking at toys/camera, moving chair.
On Task	Focused and engaged on picture search task, going through check list while seating in seat.

Results & Discussion

Results:

- Overall, children were on-task for most of the picture search activity, with most children not going off task until 5.39 minutes into the 7-minute task
- On-task behaviors decreased over time ($r = -.26$, $p < .001$)
- On-task behaviors were positively associated with math scores
- Off-task behaviors were negatively associated with self-regulation and math skills

Future Work and Implications:

- Next steps will be continuing to collect data and code picture search videos
- Preliminary results provide evidence of the importance of persistence during unmonitored task for adaptive classroom behaviors and learning
- Implications for the classroom include supporting children's persistence skills to have cascading benefits for their self-regulation and math skills

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