

Abstract

Motor skill is a crucial aspect of early academic success. Fine motor ability is foundational towards optimal development in areas such as drawing, copy-design, and block building. Manual coordination in preschool has been found to cascade into later academic performance in areas such as reading and math. Specifically, school readiness programs that support change in fine motor skills may positively affect academic performance over time. The current study investigated changes in fine motor skills after participation in a summer school readiness program prior to kindergarten entry. This study also examined whether level of fine motor skill at pre-treatment predicted subsequent change in school readiness, positioning fine motor skills as a potential marker of success in early academic performance.



Impact of fine motor skills on children's school readiness following a summer school program

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Introduction

Early motor experiences have cascading effects on cognitive gains that also influence academic outcomes across development.

Aims:

1. Assess improvement in fine motor skills from pre- to post- treatment.
2. Examine relation between level of fine motor skill pretreatment and change in school readiness post treatment.

Methods

Participants: 4 to 5 year-olds ($N = 65$; 98.6% Black/ African American) with attention and behavioral deficits from low SES households.

STP-PreK: 7-week summer treatment program that targeted executive functions (e.g. self-regulation and academic performance) in pre-kindergarteners.

School readiness and fine motor skills were assessed at pre- and post treatment. See [Table 1 STP-PreK example schedule](#).

Motor Skills: Fine motor manipulation (FM) and fine motor writing (FW) were measured via the Learning Accomplishment Profile-Diagnostic Edition (LAP-D).

School Readiness: Measured via the Bracken School Readiness Assessment 3rd Edition.

Results

Paired samples t-tests:

1. Children showed enhancement in FM skill, $t(62) = -4.211, d = .43, p < .001$ (Fig. 1).
2. Children showed enhancement in FW skill, $t(61) = -4.412, d = .37, p < .001$ (Fig. 2).

Partial change score modeling:

3. Pre-STP-PreK FW skill did not predict change in school readiness, $F(1,61) = 3.321; \beta = .290, p = .073$.
4. Pre-STP-PreK FM skill predicted change in school readiness, $F(1,61) = 4.118; \beta = .659, p = .047$.

→ Overall, [PreK summer program promotes gains in fine motor skill](#).

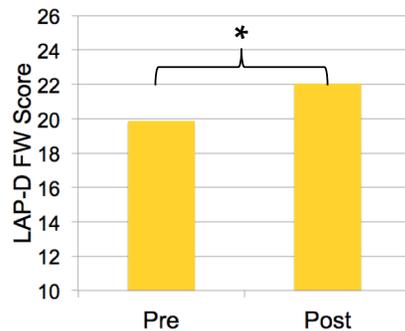


Fig. 1. Mean LAP-D fine motor writing score pre/post treatment, $p < .001$.

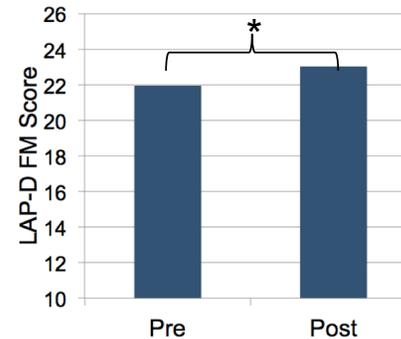


Fig. 2. Mean LAP-D fine motor manipulation score pre/post treatment, $p < .001$.

→ Additionally, children with **higher levels of fine motor manipulation skill at pretreatment** were more likely to demonstrate **higher rates of change in school readiness**.



Table 1. Example of STP-PreK daily schedule

Time	Activity
8:00-8:20	Arrivals & Parent sign-in Breakfast
8:20-8:30	Transition/ Bathroom break
8:30-8:45	CDI Time (Social-emotional/ behavioral/ language development)
8:45-9:15	Morning Meeting: Social-emotional skill lesson & literacy express activities
9:15-9:40	1 st academic period: Independent seatwork (literacy, math, writing)
9:40-9:50	Transition
9:50-10:20	1 st exercise period (MTW: Sport skills; R&F: Sport games)
10:20-10:30	Transition/ Bathroom break
10:30-11:10	2 nd academic period: group centers (MWF: reading/ technology, writing, math; T&R: Science)
11:10-11:50	3 rd academic period: Reading/ ELA (whole- & small- group)
11:50-12:00	Transition/ Bathroom break
12:00-12:20	Lunch
12:20-12:25	Transition
12:25-12:45	Recess (free play)
12:45-1:00	Transition/ Bathroom break
1:00-1:30	Enrichment period (M&W: Art; T&R: Technology)
1:30- 1:40	Transition
1:40- 2:10	4 th academic period: M&W: Math; T&R: Science (whole- & small-group)
2:10- 2:40	2 nd exercise period (self-regulation act.)
2:40-2:55	Transition/ Snack/ Bathroom break
2:55- 3:30	End of Day Meeting: Review academic lessons & social-emotional skills lesson
3:30- 3:35	Transition
3:35- 3:55	Recess (free play)
3:55- 4:00	Transition
4:00- 4:30	Snack, dismissals, & parent sign-out

References & Acknowledgements

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STP-PreK was generously funded by a local grant from The Children's Trust awarded to KCH. We thank the families for their time.

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