

The Impact of Kindness Curriculum Training on Children's Social & Self-Regulation Skills

The Kindness Project Team



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Selected References

Acknowledgements



Introduction to the Kindness Project

- The Kindness Project assesses the **impact of a mindfulness-based Kindness Curriculum** on preschoolers' **social-emotional, self-regulation, and cognitive skills**.
- The Project also examines the **impact of teacher training** on their own mindfulness practices, their **ability to implement the Kindness Curriculum (KC)** in their classrooms, and **their well-being** as educators.
- The goal of this report is to examine the **impact of the Kindness Curriculum (KC)** on **direct measures** of preschooler's (3-5 years) **social, behavioral, and emotional regulation skills**.



Earlier Work Using the Kindness Curriculum with Young Children

The Kindness Project for preschool children was based on a study done by
Flook, Goldberg, Pinger, & Davidson (2015)

- **Flook et al. (2015) Study Design:**
 - Sample of **68 preschool children** (4-5 years old) in a public school setting
 - **Randomly assigned** by classroom to Kindness Curriculum (KC) Intervention group or Control group
 - KC group participated in the **12 week mindfulness-based Kindness Curriculum training**
 - **Taught by experienced mindfulness instructors** as opposed to regular classroom teachers
 - Looked at the impact of Kindness Curriculum training on:
 - **Executive function (i.e., cognitive flexibility and inhibitory control)**
 - **Self-regulation**
 - **Prosocial behavior**



Findings of the Flook & Colleagues 2015 Study

- Children who received the Kindness Curriculum (KC) showed **greater improvement in teacher-reported social competence (TSC)** in the areas of **prosocial behavior, emotional regulation,** and their **total scores** than those in the Control group.
- **Children in the KC Group** also had **higher report card grades** in the areas of approaches to learning, health and physical development, and social-emotional development.
- On the **Sharing task**, the **control group demonstrated more selfish behavior**, keeping more stickers for themselves over time, than did the KC group.
- The **KC Group** also showed **modest positive effects** (effect sizes favoring the KC group) in **cognitive flexibility** (Card Sort task) and **delay of gratification** compared to the Control Group.
- The **Kindness Curriculum** appeared to be **particularly beneficial** for **children with lower baseline functioning** (i.e., started out with lower social competence & lower executive functioning) as they showed **greater improvement in social competence over time** compared to those in the control group.



Our Kindness Project: Comparisons to the Flook & Colleagues (2015) Study

Our Kindness Project was based on **Flook & colleagues' study**:

- We used many of the same outcome measures: Sharing, Social Competence, Executive Function measures (Card Sort & Flanker Task), and School Grades.
- We added measures of: Social Self-Efficacy, Physical Self-Regulation, Empathy Skills, Social-Emotional Competency (ASQ-SE), School Success Skills (TS-Gold), & Mindfulness Skills.
- Their Mindfulness Coaches trained our Coaches & our teachers in June 2018.

We expanded their work in 3 important ways:

- **A larger, more diverse sample of over 225 children, more than 50% from lower income and non-White families.**
- **Younger children, preschoolers (3-4 years) were included in addition to 4K (4-5 years) children.**
- We worked with **Healthy Minds Innovation** & employed their mindfulness coaches to train our **classroom teachers** to implement the Kindness Curriculum (KC) → a **“train the teacher model,”** instead of using the mindfulness coaches to implement the KC.
 - The goal of the “train the teacher model” was to make the Kindness Curriculum available more broadly & support the teachers through their development of personal mindfulness practices & mindful teaching skills. Their Mindfulness Coaches and ours offered ongoing support to teachers in their implementation of the KC & in their personal mindfulness practices.



Previous Research on Mindfulness with Young Children

- Previous research with 29 economically disadvantaged preschoolers (Mean age = 47 months) found that mindfulness intervention increased children's attentional focus & self-regulation skills, with improvement in skills maintained at a 3-month follow up (Poehlmann-Tynan et al., 2015). The 12-week mindfulness intervention (the Kindness Curriculum) was delivered by trained instructors & focused on children's empathy & self-regulation skills.
- Another mindfulness program for 170 preschoolers (ages 3-5) found significantly higher teacher-ratings of children's emotional expression & recognition, resilience, and prosocial behaviors (Kim et al., 2020). The mindfulness-based social-emotional learning program, OpenMind Korea, was implemented by classroom teachers & incorporated mindfulness & meditation practices, along with social emotional skills (e.g., self-awareness, relationship skills, self-management).
- In another study, 219 children from two schools serving low-income families (Mean age = 4.75 years) participated in one of the following: Mindfulness + Reflection Training (MRT), Literacy Training, or Business as Usual (Zelazo et al., 2018). Children in MRT attended 30 small-group sessions over 6 weeks focused on reflection & stress reduction delivered by local teachers. All three groups showed improvement in Executive Function skills, measured behaviorally over the 5-month span of the study; however, children in the MRT group had the highest rankings (i.e., determined by grades & behavior) by the end of the study (Zelazo et al., 2018).



Research Questions for the Kindness Project

Primary Questions:

- What are the benefits of the mindfulness-based *Kindness Curriculum*?
 - Does the Curriculum contribute to children's improved **social skills**?
 - Does the Curriculum contribute to improved **cognitive & academic skills**?
- Is the *Kindness Curriculum* effective in both *preschool (3-4 years) and 4K (4-5 years) classrooms*?
- Is participation in the Kindness Curriculum particularly beneficial to *children from lower income families*?
- Does the Curriculum provide measurable benefits beyond what already occurs in classrooms using a strong social-emotional learning curriculum?

Practical Questions & Logistics:

- Do teachers find the Kindness Curriculum useful personally & in their classrooms?
- Can the Kindness Curriculum be cost-effectively implemented in preschool & 4K classrooms?
- Does the Kindness Curriculum provide teachers with additional tools to support the positive development of all children?

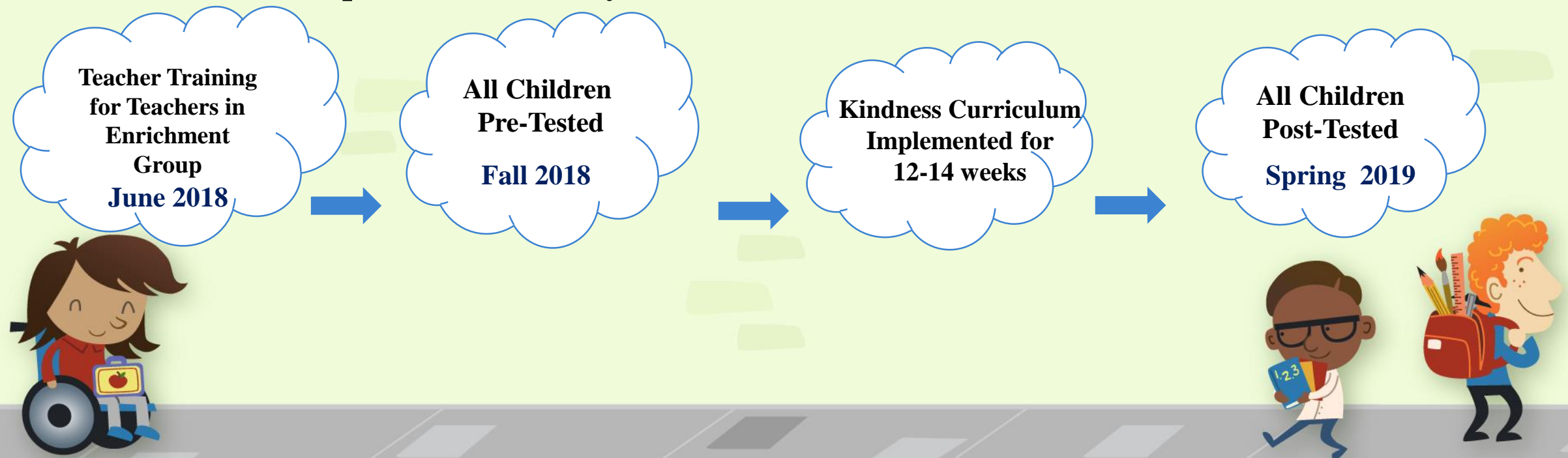


Study Design - Year 1: 2018-2019

Goal: Using random assignment, classrooms were either placed in the Kindness Curriculum (KC) Enrichment group or in the control group (programming as usual) to measure the effectiveness of the mindfulness-based Kindness Curriculum for preschool and 4K children.

- Randomized by classroom; 10 assigned to **Kindness Curriculum (KC) Enrichment** because some teachers taught both am & pm 4K; 6 classes assigned to **Control Group**.
- Teachers assigned to KC enrichment received training in **June 2018**; Teachers assigned to the Control Group received training in **June 2019**.

There were four main phases in the study:



Study Design: Phase Descriptions

- **Teacher Training – Over two weeks in June 2018**
 - Teachers participated in 26 hours of mindfulness and Kindness Curriculum (KC) training led by Mindfulness coaches focused on personal mindfulness practices, mindful teaching, & teaching the KC.
 - Coaches encouraged and supported teachers in developing their personal and teaching mindfulness practices, though the teachers were not allowed to start the Kindness Curriculum until November.
- **Pre-Testing of Children: September & October 2018 (about 6 weeks)**
 - In September & October 2018, college-student researchers individually assessed children on six measures: cognitive flexibility & attention (DCCST & Flanker tasks), physical self-regulation (Balance Beam), Mindfulness, Social Self-Efficacy, & a Sharing task. Teachers & parents reported on children’s social & cognitive skills. *All children, KC Enrichment group & Control Group, were assessed.*
- **Teachers Implement the Kindness Curriculum (KC) in classrooms: About 12 weeks**
 - The curriculum began in November 2018 going through 24 lessons total over 12 weeks. Each lesson is about 20 -30 minutes. Teachers encouraged to break-up lessons as needed to meet the needs in their classrooms.
 - Teachers completed reflection measures about how each lesson went. Teachers finished teaching the curriculum by February of 2019. Teachers were encouraged to reinforce mindfulness practices regularly.
- **Post-Testing of Children: March & April 2019 (about 6 weeks)**
 - In early March, 2019, teachers & parents reported on children’s social & cognitive skills.
 - In late March & April 2019, student researchers re-assessed all children on all 6 measures.



Kindness Project Participating Agencies: Randomization by Classroom

16 Total Classrooms

Bridge's Child Enrichment Center
Two Preschool Classrooms

1 KC Enrichment 1 Control

Four 4K Classrooms (am & pm)

2 KC Enrichment 2 Control

Note: same teachers teach am & pm

UW-Oshkosh Head Start, CELC
Two Preschool Classrooms

1 KC Enrichment 1 Control

Four 4K Classrooms

2 KC Enrichment 2 Control

Appleton Even-Start Family Literacy
Morning Classroom

KC Enrichment

Afternoon Classroom

Note: same teachers teach am & pm

Children's Center, UWO Fox Cities
Two Preschool Classrooms

KC Enrichment

Note: teachers teach in both rooms

Children in the KC Enrichment group were taught the Kindness Curriculum for 12-14 weeks



The Mindfulness-based Kindness Curriculum for Preschoolers

Healthy Minds Innovation (2017)

- Available at <https://centerhealthyminds.org/join-the-movement/sign-up-to-receive-the-kindness-curriculum>
- This Project trained classroom teachers to implement the Kindness Curriculum (i.e., Train the Trainer Model)

8 Themes, each with 3 lessons

Theme 1: Mindful Bodies & Planting Seeds of Kindness

Theme 2: I Feel Emotions on the Inside

Theme 3: How I Feel on the Inside, Shows on the Outside

Theme 4: Taking Care of Strong Emotions on the Inside & Outside

Theme 5: Calming & Working Out Problems

Theme 6: Gratitude

Theme 7: All People Depend on Each Other & The Earth

Theme 8: Gratitude & Caring for Our World & Wrap Up



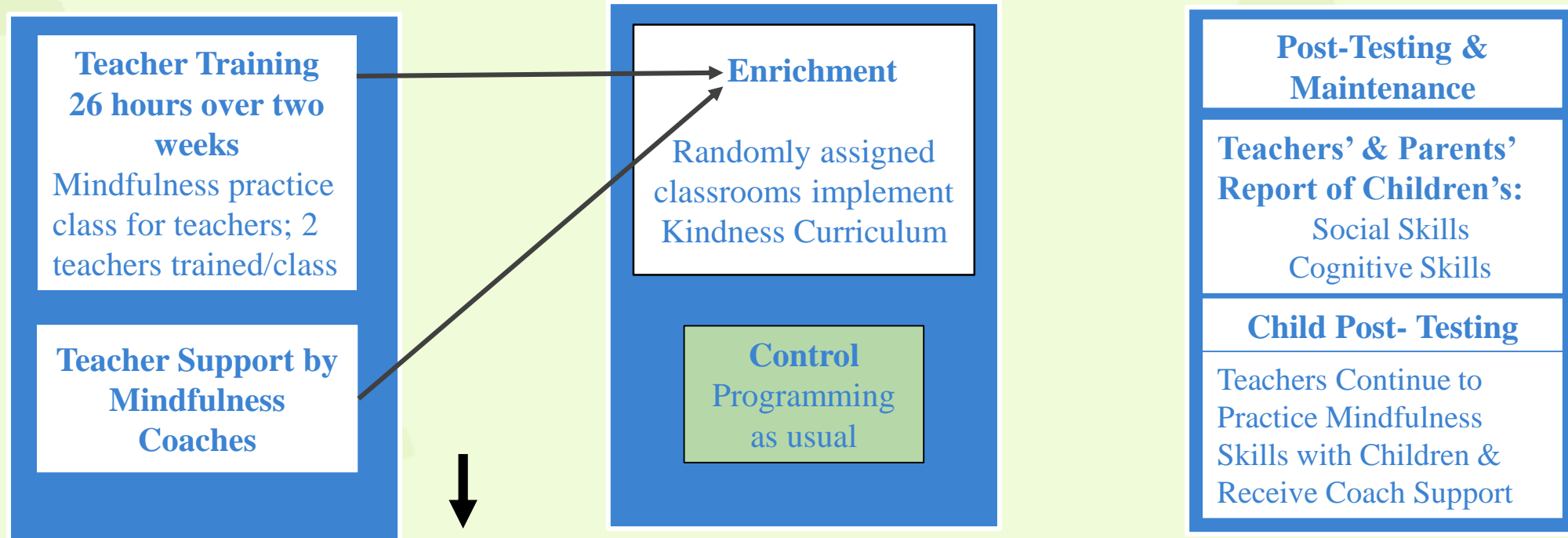
The Kindness Curriculum Themes are designed around these A to G Principles

- **Attention.** Children learn that what they focus on is a choice. Through focusing attention on a variety of *external* sensations (the sound of a bell) & *internal* sensations (feeling happy or sad), children learn they can direct their attention & maintain focus.
- **Breath & Body.** Children learn to use their breath to cultivate peace & quiet. The children rest on their backs with a stuffed toy on their belly. The toy provides an object to “rock to sleep” with the breath, while the breathing calms the body.
- **Caring.** Children learn to think about how others are feeling & cultivate kindness. Children experience books that teach about struggles, & brainstorm ways to help—even if just offering a smile.
- **Depending on other people.** We emphasize that everyone supports & is supported by others. Children learn to see themselves as helpers & begin to develop gratitude for the kindness of others.
- **Emotions.** Teachers & children take turns pretending to be mad, sad, happy or surprised, guessing which emotion was expressed, & talking about what that emotion feels like in the body.
- **Forgiveness.** Young children can be particularly hard on themselves – and others – and we teach them that everyone makes mistakes. Children learn to forgive themselves & others.
- **Gratitude.** Children learn to recognize the kind acts that other people do for them. Then, they talk about being thankful to those people for how they help us.



Study Design: 272 Children Overview

10 KC Enrichment Classrooms 6 Control Classrooms



Pre-Testing Fall 2018: Children Assessed & Teacher Reports



Child Demographics

*SES Categories based on the eligibility for free/reduced lunch		Time 1 (Fall)		Time 2 (Spring)		Overall
		Kindness Enrichment	Control	Kindness Enrichment	Control	
Overall		143 (59.8%)	96 (40.2%)	150 (61%)	96 (39%)	259
Gender	Female	70 (29.29%)	41 (17.15%)	74 (30.08%)	43 (17.48%)	140 (54%)
	Male	73 (30.54%)	55 (23.01%)	76 (30.89%)	53 (21.54%)	119 (46%)
SES*	Lower Income	90 (37.66%)	71 (29.71%)	89 (36.18%)	70 (28.46%)	169 (65.3%)
	Higher Income	53 (22.18%)	25 (10.46%)	61 (24.80%)	26 (10.57%)	90 (34.8%)
Age Group	<48 Months	50 (20.92%)	27 (11.30%)	61 (24.80%)	29 (11.79%)	94 (36.3%)
	4-5 Years	93 (38.91%)	69 (28.87%)	89 (36.18%)	67 (27.24%)	165 (63.7%)
Ethnicity	Non-White	70 (29.29%)	66 (27.62%)	72 (29.27%)	66 (26.83%)	148 (57.14%)
	Black	16 (6.69%)	13 (5.44%)	16 (6.50%)	14 (5.69%)	35 (13.5%)
	Latinx	23 (9.62%)	36 (15.06%)	24 (9.76%)	35 (14.23%)	61 (23.6%)
	Asian	21 (8.79%)	7 (2.93%)	21 (8.54%)	6 (2.44%)	30 (11.6%)
	Other/Mixed	10 (4.18%)	10 (4.18%)	11 (4.47%)	11 (4.47%)	22 (8.5%)
	White	73 (30.54%)	30 (12.55%)	78 (31.71%)	30 (12.20%)	111 (42.9)

Child Social & Self-Regulation Measure	Measure Description	Number of Items	Subscales
Sharing	Participants are asked to distribute stickers between a target recipient and themselves.	5 trials 10 stickers each	Trials 1-4 (Four target recipients): Most-liked peer; least-liked peer; unknown child; sick child Fifth Trial: Child asked to share stickers with the 4 target recipients, but can't keep any for themselves.
Mindfulness Scenarios	Three social scenarios for which children identify the feelings of the main character, how they would feel themselves, & what they would do in that situation.	3 scenarios Open ended questions & quantitative ratings of emotion on a 7-point scale	Other-Oriented Kindness: Measures empathy and kindness toward others. Self-Oriented Kindness: Measures emotion regulation and kindness toward self. Self- and Other-Oriented Kindness: Measures kindness to self and others in a situation that elicits a negative emotion.
Mindfulness Scale	Measures mindfulness skills: Has the child rate whether they “never” do something, “sometimes” do something, or “always” do something on a 9-point scale.	17 items Rated along a 9-point scale (never, sometimes, always)	General Mindfulness: Measures attentional focus, self-calming, and being present. Self-Oriented Kindness: Measures kindness directed toward oneself. Other-Oriented Kindness: Measures prosocial behavior and kindness directed toward others.

Child Social & Self-Regulation Measure	Measure Description	Number of Items	Subscales
Balance Beam	<p>Measures children’s physical self-regulation skills. Children are instructed to walk across a balance beam three separate times, with instructions to go more slowly each time.</p>	<p>Three timed trials with different pace instructions for each</p>	<p>Trial 1: Children asked to walk across the balance beam. Trial 2: Children walk “as slow as they can go” Trial 3: Children are asked to go “even slower”</p>
Social Self-Efficacy	<p>Measures children’s perceived confidence in their ability to achieve social goals.</p>	<p>15 items Rated along a 9-point scale</p>	<p>Self-Regulatory Efficacy: measures children’s confidence in regulating their own behavior and emotions. Social Self-Efficacy: measures children’s confidence in their ability to develop and maintain relationships with other children. Self-Regulated Learning: measures children’s confidence in their ability to achieve their learning goals.</p>

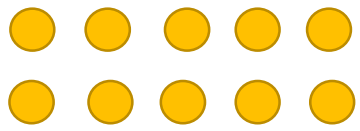
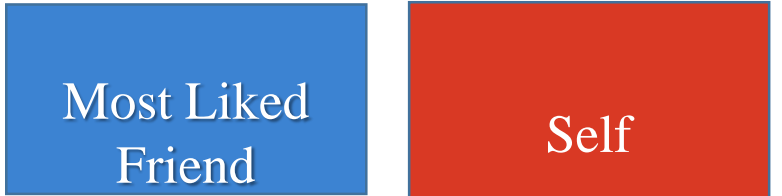


Sharing Task

Children were asked to share stickers with target recipients

Targets on Other Trials:
Trial 2: Less Liked Child
Trial 3: Unknown Child
Trial 4: Sick Child

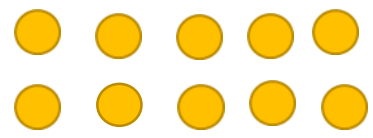
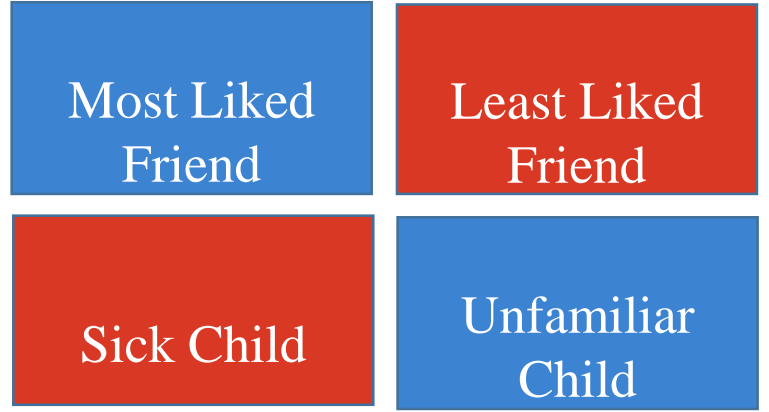
Trial 1:



Stickers

The child is given 10 stickers, & asked to share as many or as few of the 10 stickers **between a friend** they enjoy playing with the most and **themselves**.

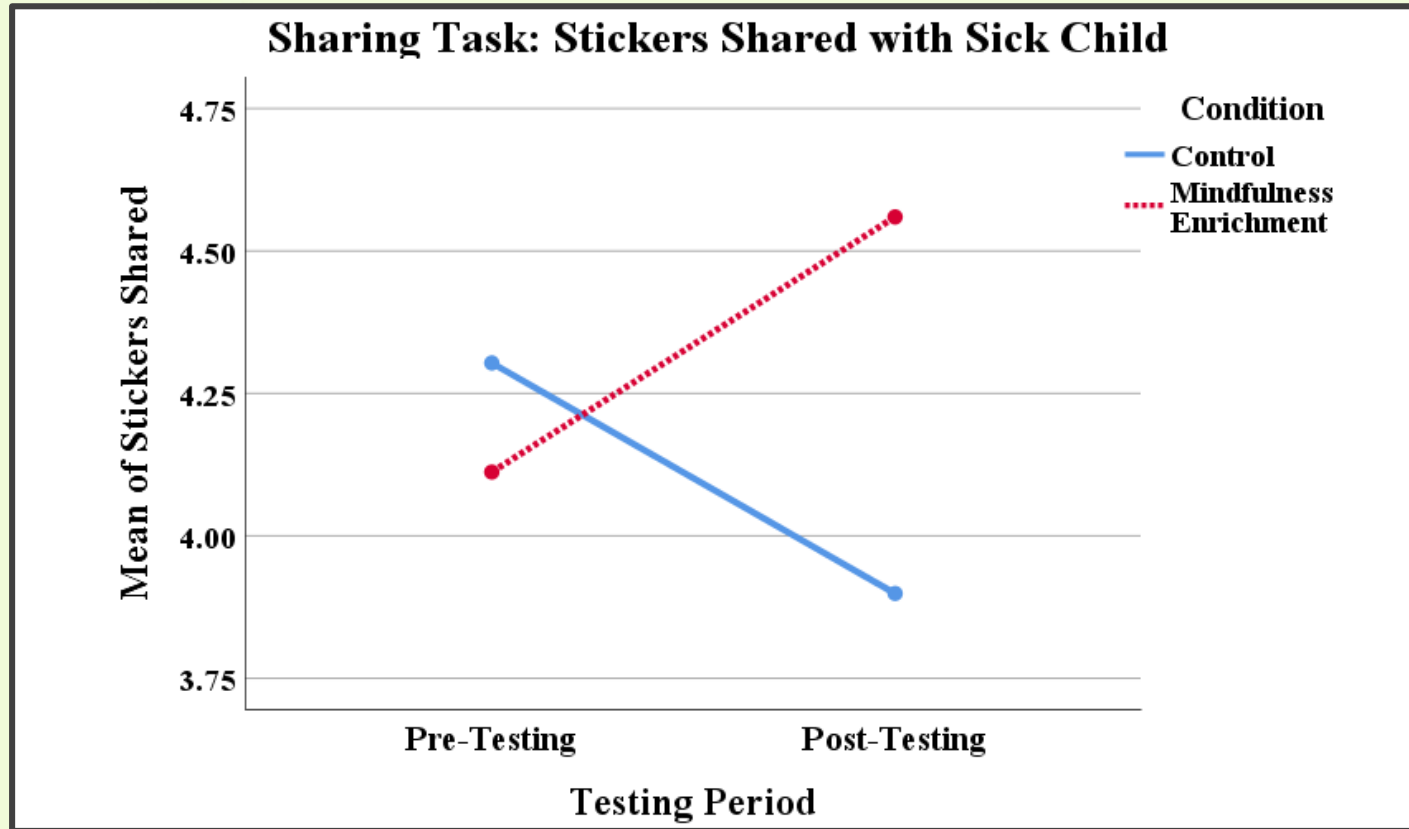
Trial 5:



Stickers

The child is given 10 stickers and asked to share as many or as few of the stickers with a: **most liked** friend, **least liked** friend, **sick** child and **unfamiliar** child. None of the stickers can be kept for self.

Sharing with a Sick Child: Mindfulness Enrichment Group Shared More!

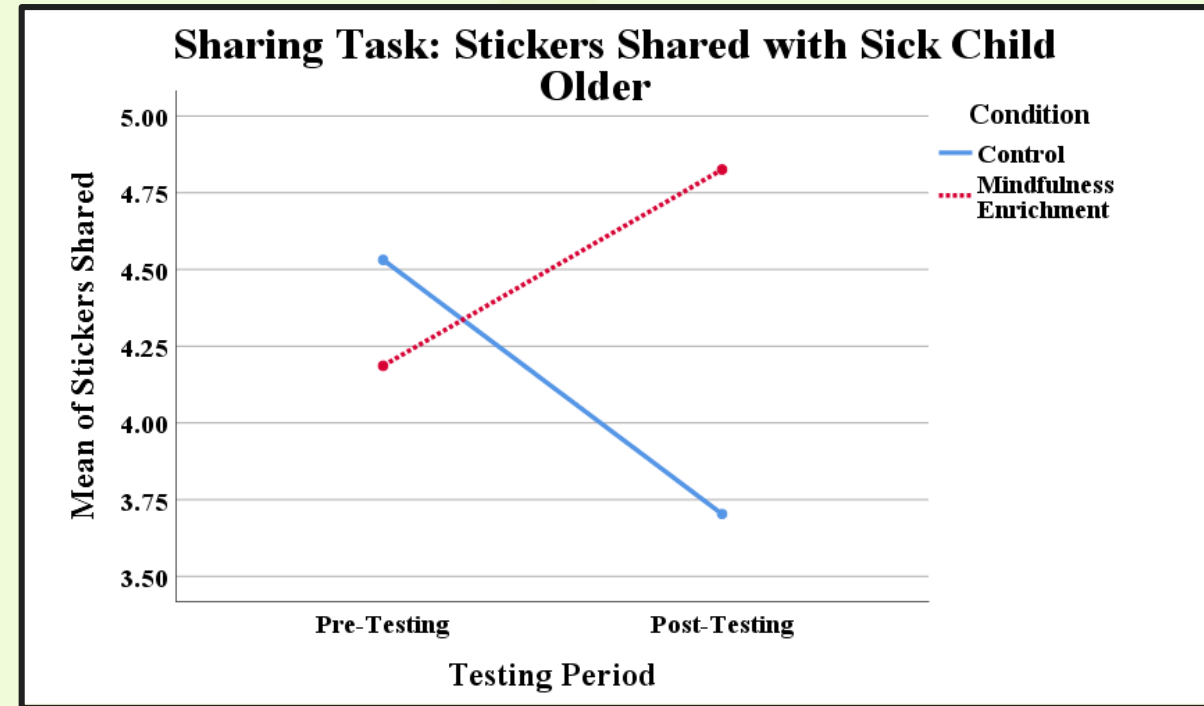
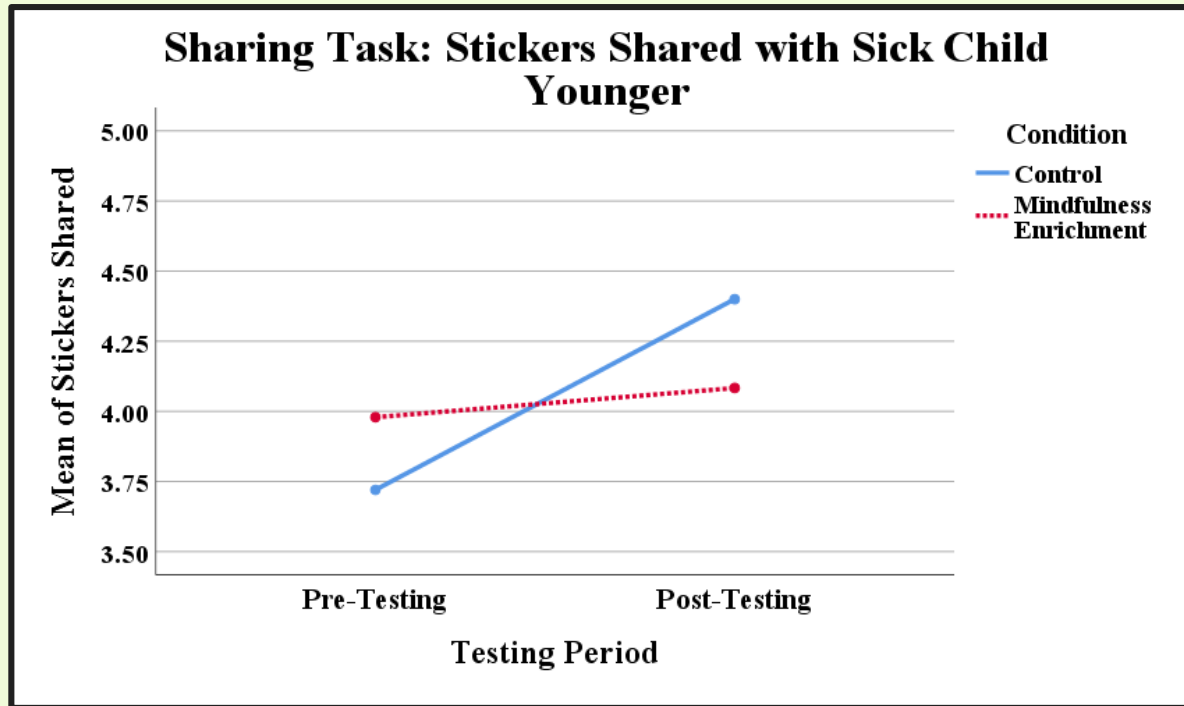


Children in the Mindfulness Enrichment Condition **shared significantly more stickers** with a 'Sick Child' after receiving the Kindness Curriculum than children in the Control Condition.

Time x Condition: $F(1, 221) = 3.88, p = .050$



Sharing with a Sick Child: Variations with Age



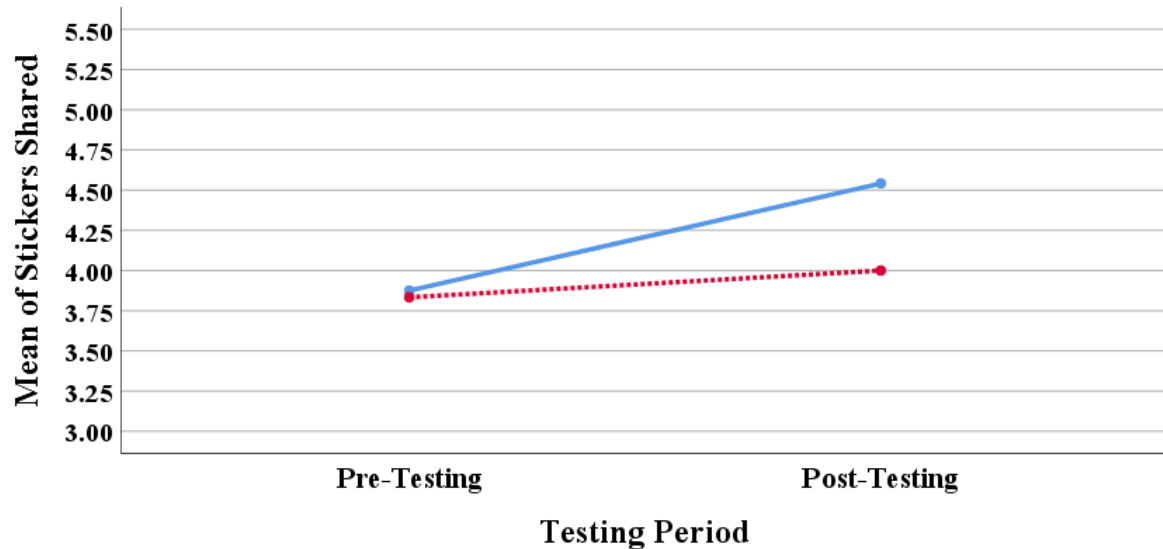
- **Older children** in the **Mindfulness Enrichment Condition** shared **significantly more stickers with a sick child** after receiving the Kindness Curriculum, whereas those in the Control Condition shared fewer.
- Performance was similar over time among the **younger children** in the Mindfulness Enrichment Condition while younger children in the Control Condition shared more stickers with a sick child at post-test.

Time x Cond x Age: $F(1, 219) = 4.81, p = .029$

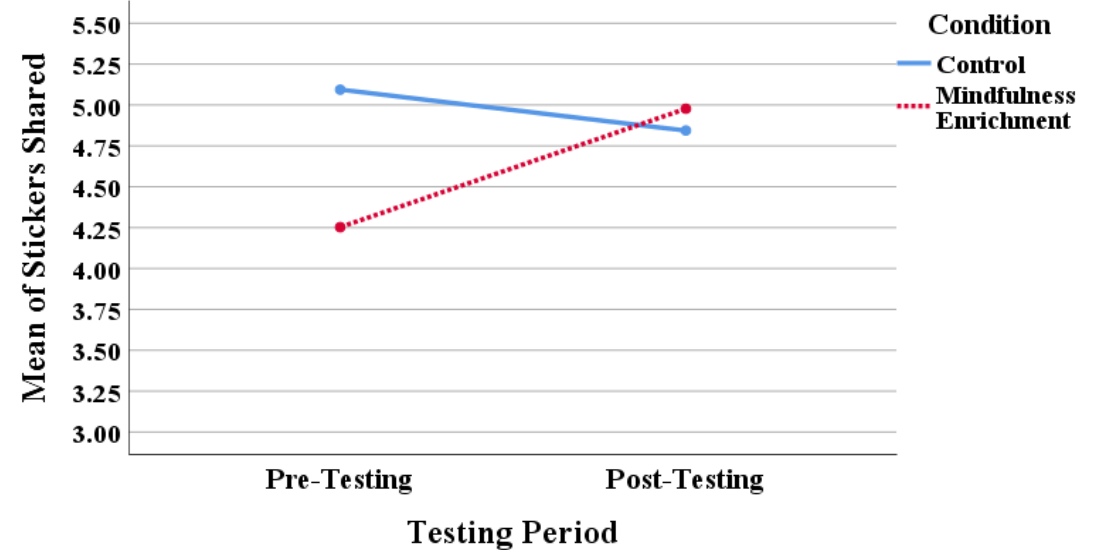


Sharing with Most Liked Child: Variations with Age

Sharing Task: Stickers Shared with Most Liked Younger



Sharing Task: Stickers Shared with Most Liked Older

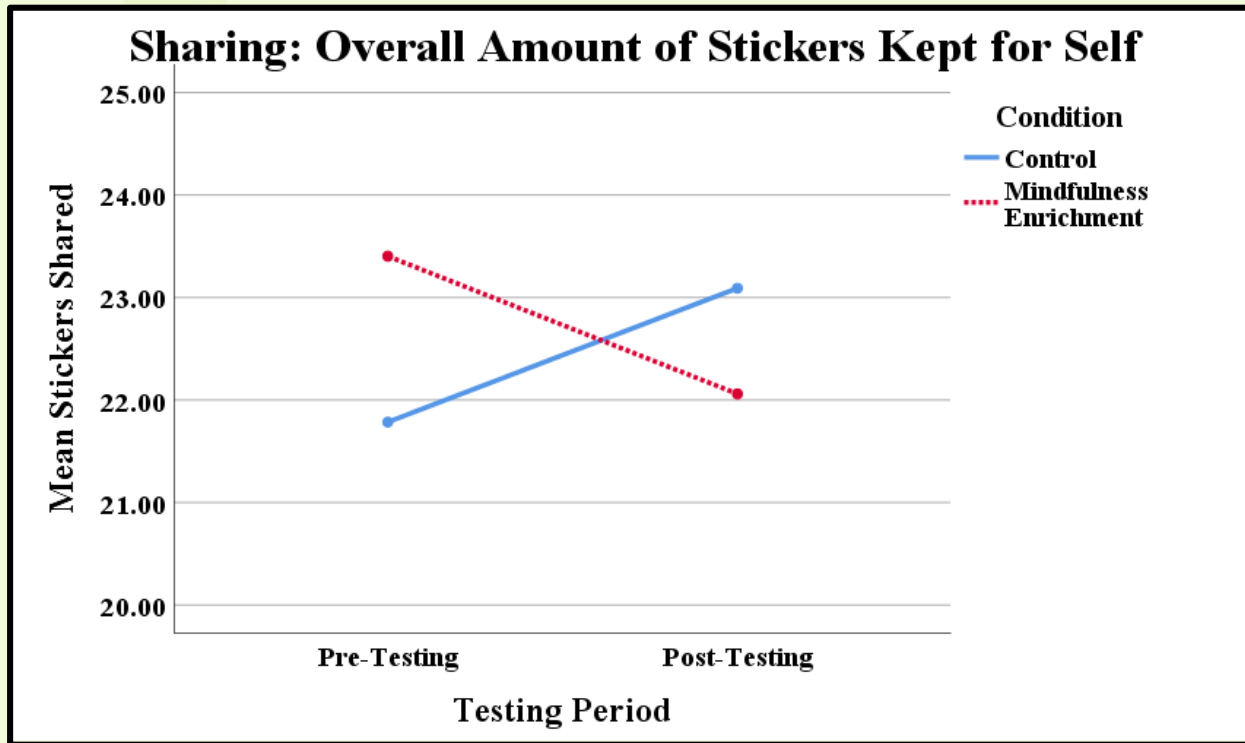


- **Older Children** in the **Mindfulness Enrichment Condition** shared more stickers with a ‘Most Liked Child’ after receiving the Kindness Curriculum than did children in the Control Condition who shared fewer stickers.
- **Younger Children** in the Mindfulness Enrichment Condition shared about the same number of stickers with a ‘Most Liked Child’ after receiving the Kindness Curriculum while control children shared slightly more stickers in spring.
- Overall, **older children** shared more stickers with a ‘Most Liked Child’ than did younger children.

Time x Condition x Age: $F(1, 219) = 2.85, p = .093$
Main Effect Age: $F(1, 219) = 9.86, p = .002$



Stickers Kept for Themselves: Mindfulness Enrichment Group Kept Far Fewer!



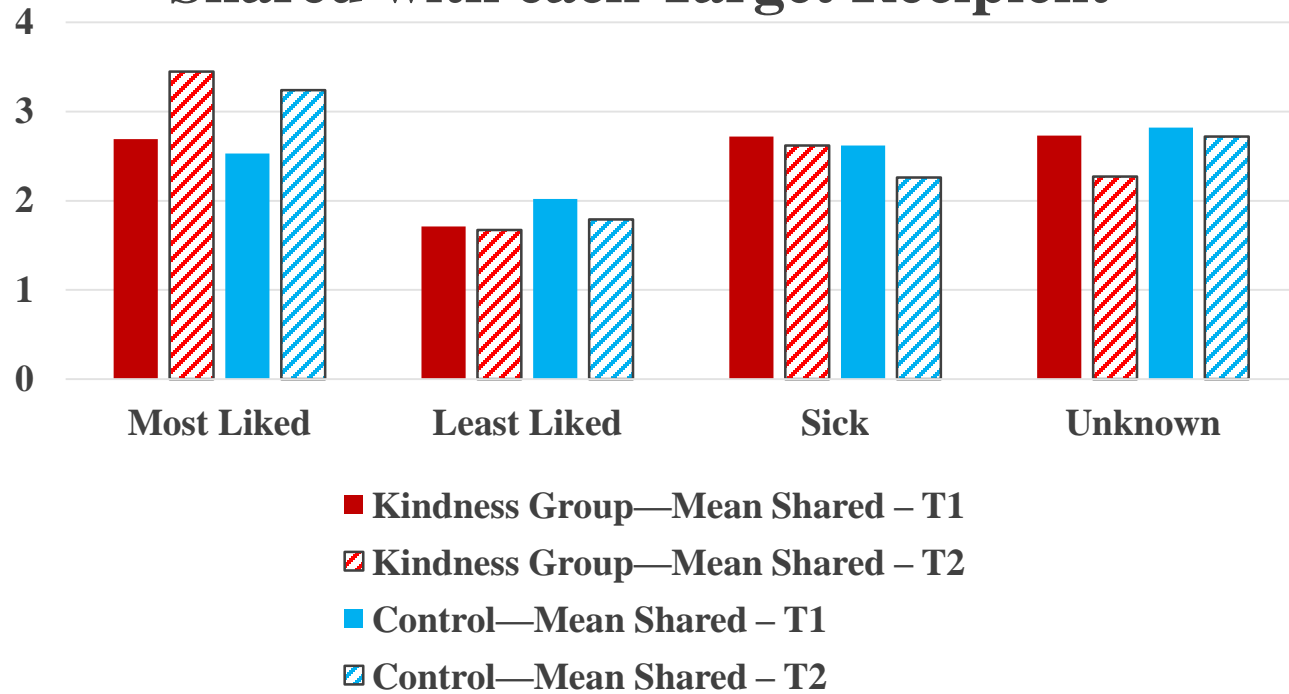
- Children in the **Mindfulness Enrichment Condition** kept significantly fewer stickers for themselves after receiving the Kindness Curriculum than did children in the Control Condition, who kept more for themselves over time.
- **Children in the Control Condition** exhibited more selfish behavior, sharing fewer stickers with others, whereas those in the Mindfulness Enrichment Condition demonstrated more generous sharing over time.

Time x Condition: $F(1, 220) = 5.58, p = .019$



Sharing Task (Trial 5): Differences in Stickers Shared with Others

Sharing Task: Number of Stickers Shared with each Target Recipient



When asked to distribute stickers among four target recipients (most liked, least liked, sick child, unknown child), children in the **Mindfulness Enrichment Condition** shared most of their stickers with a ‘**Sick Child**’ and a ‘**Most Liked Child**’ after receiving the Kindness Curriculum. Children in the Control Condition also shared most of their stickers with a ‘**Most Liked Child**,’ but also with an ‘**Unknown Child**’ perhaps reflecting less planning.





Sample Mindfulness Items

Other-Oriented Kindness Subscale

“I play with kids even if they look different from me.”

Mindfulness Subscale

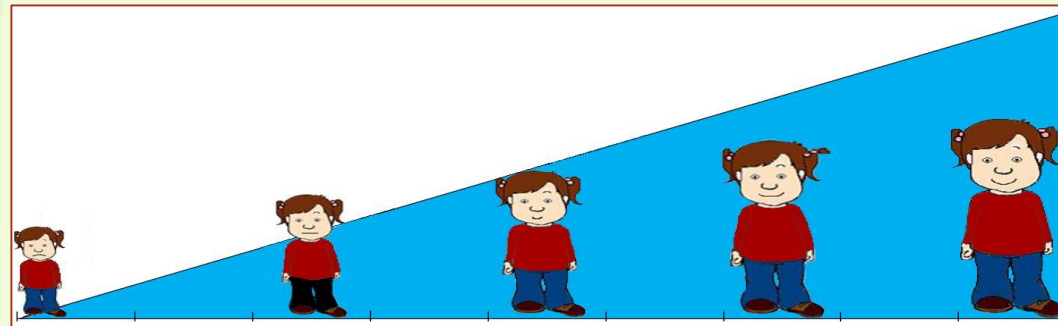
“How much do you calm yourself by breathing?”



The child is asked to rate whether they “never,” “sometimes,” or “always” do things related to kindness to self and others & mindfulness.

Self-Oriented Kindness Subscale

“When I am sad, I am kind and gentle with myself.”



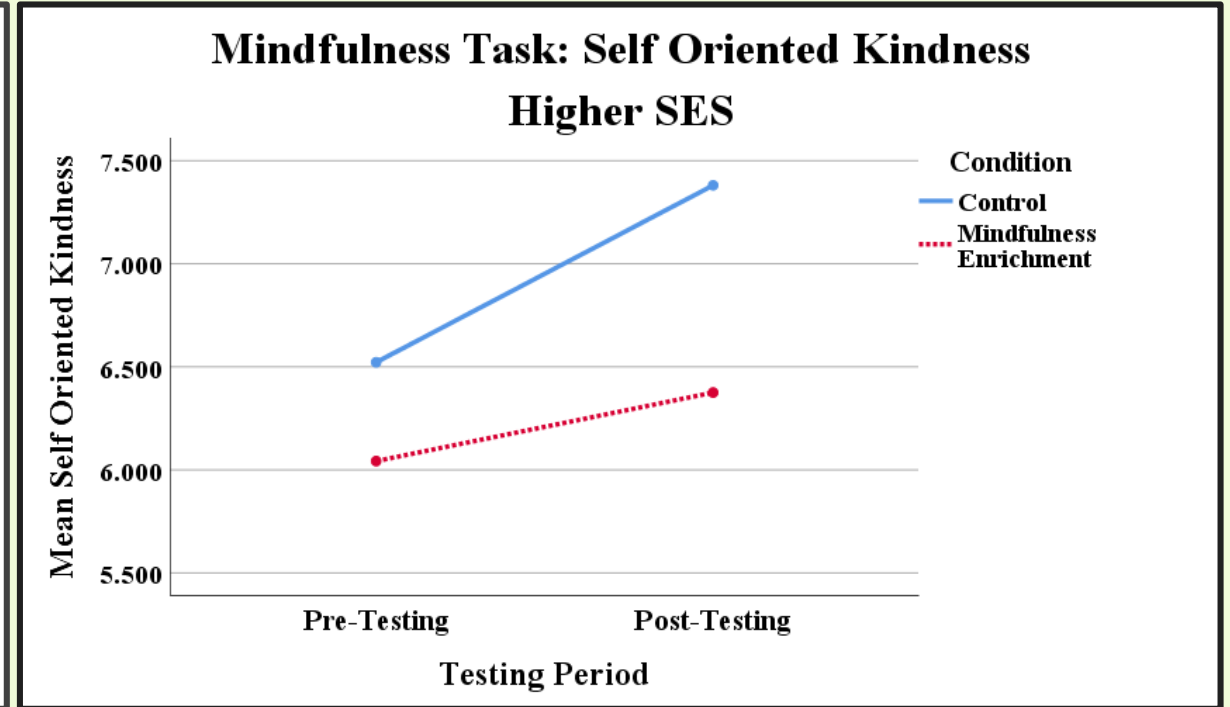
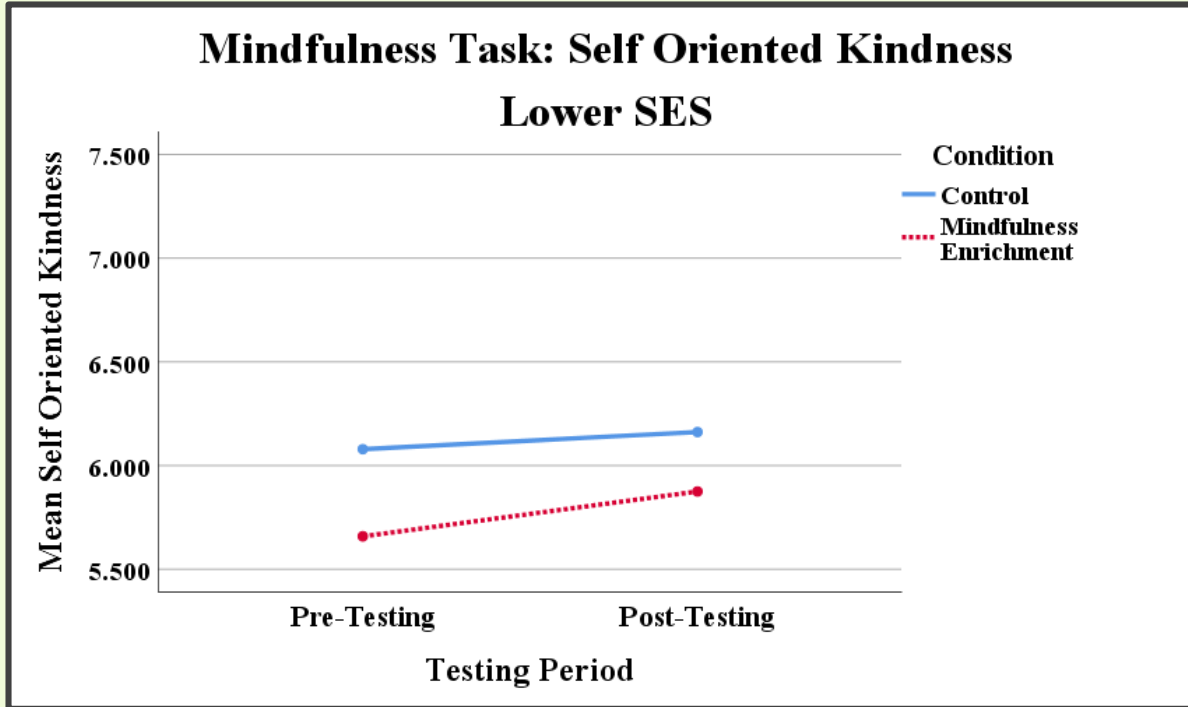
NEVER

SOMETIMES

ALWAYS



Mindfulness Scale – Self-Oriented Kindness: Variations by Socioeconomic Status

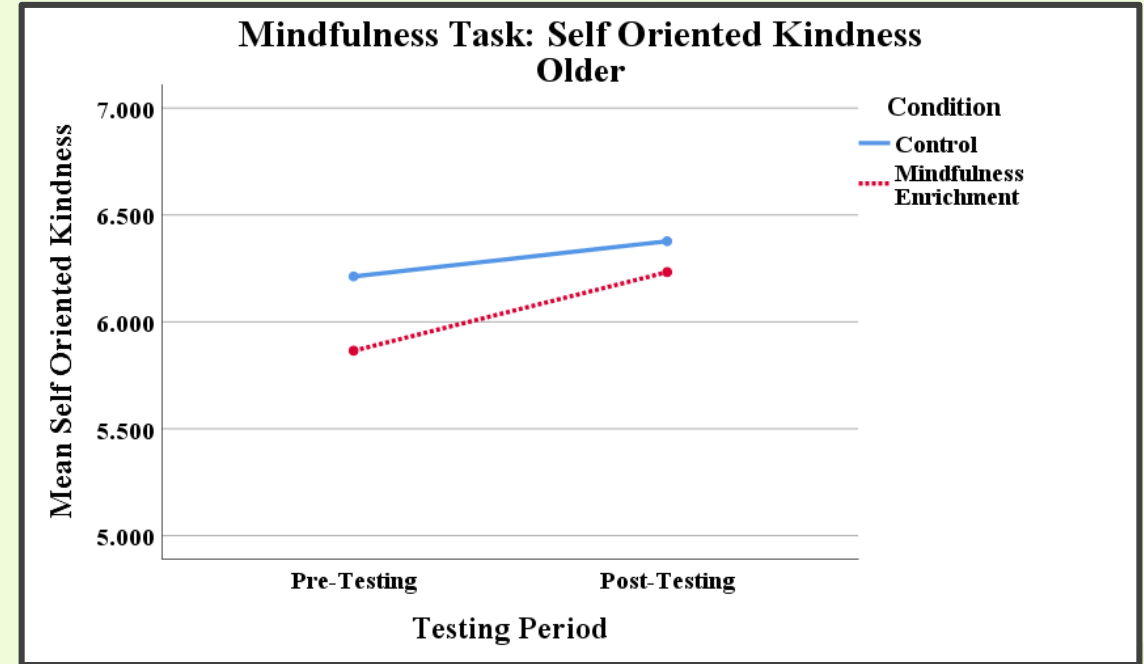
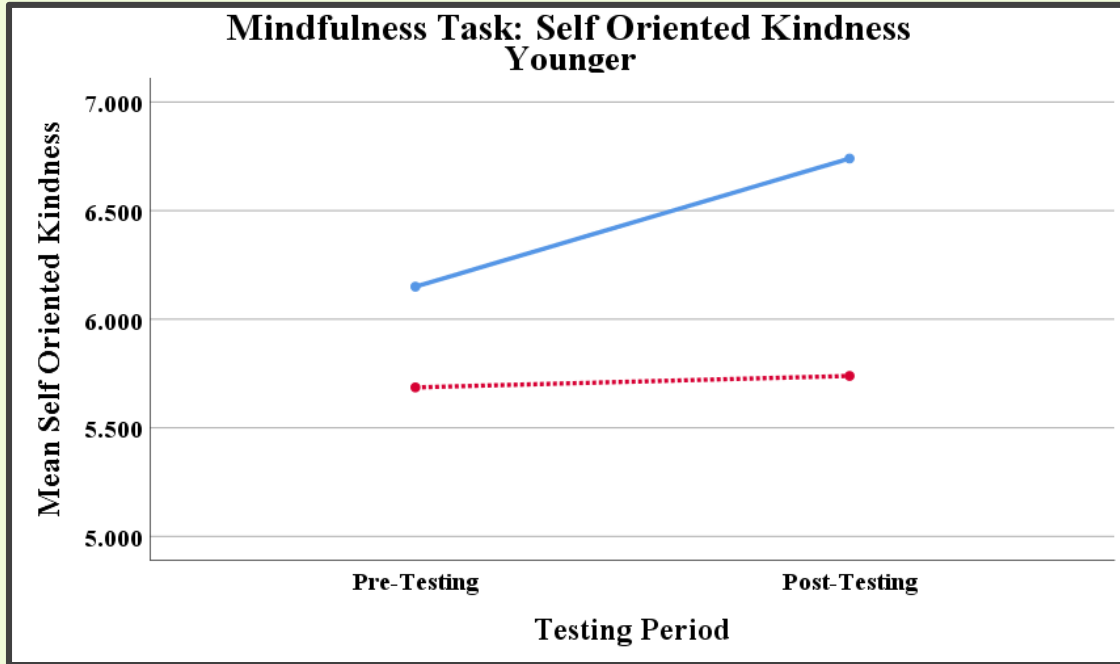


- Children with *higher SES* had higher **Self-Oriented Kindness** scores overall than did children with lower SES.
- In addition, children in the Control Condition had higher **Self-Oriented Kindness** scores overall than children in the Mindfulness Enrichment Condition, although children in both conditions improved over time.
- For young children, **self-oriented kindness** may reflect more “selfish thinking” & the Mindfulness Enrichment Condition may have had a more nuanced understanding of true self-oriented kindness resulting in lower scores.

Main Effect Time: $F(1, 216) = 3.58, p = .060$
ME Condition: $F(1, 216) = 5.95, p = .016$
ME SES: $F(1, 216) = 8.03, p = .005$



Mindfulness Scale - Self-Oriented Kindness: Variations by Age

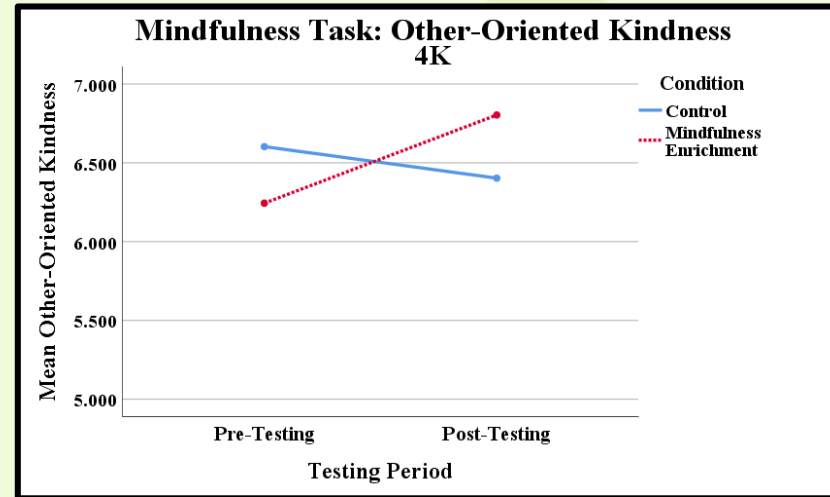
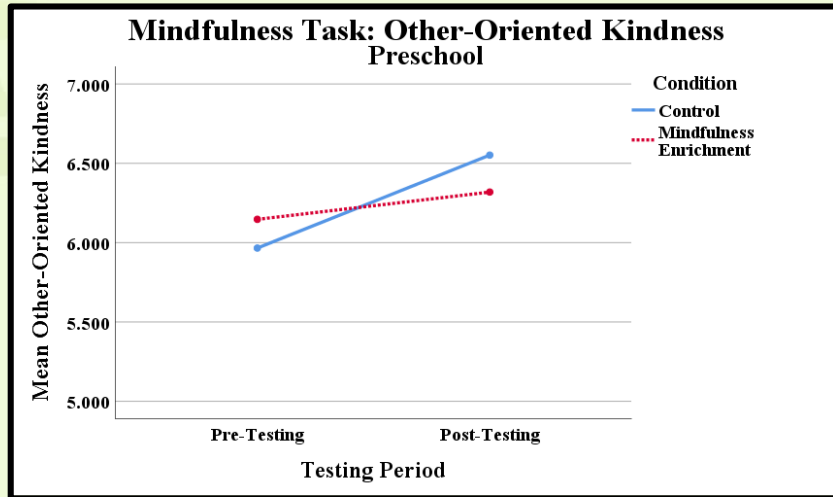


- *Younger children* in the Control Condition improved over time on **Self-Oriented Kindness** while younger children in the Mindfulness Enrichment Condition did not.
- Scores for **Self-Oriented Kindness** were similar for *older children* in both conditions over time.
- Children in the Control Condition had higher **Self-Oriented Kindness** scores overall than did children in the Mindfulness Enrichment Condition.
- As noted earlier, **self-oriented kindness** may reflect more “selfish thinking” & children in the Mindfulness Enrichment Condition may have had a more nuanced understanding of true self-oriented kindness

Time x Age: $F(1, 216) = .07, p = .020$
Main Effect Condition: $F(1, 216) = 4.68, p = .032$



Mindfulness Scale – Other-Oriented Kindness: Variations by Preschool vs. 4K

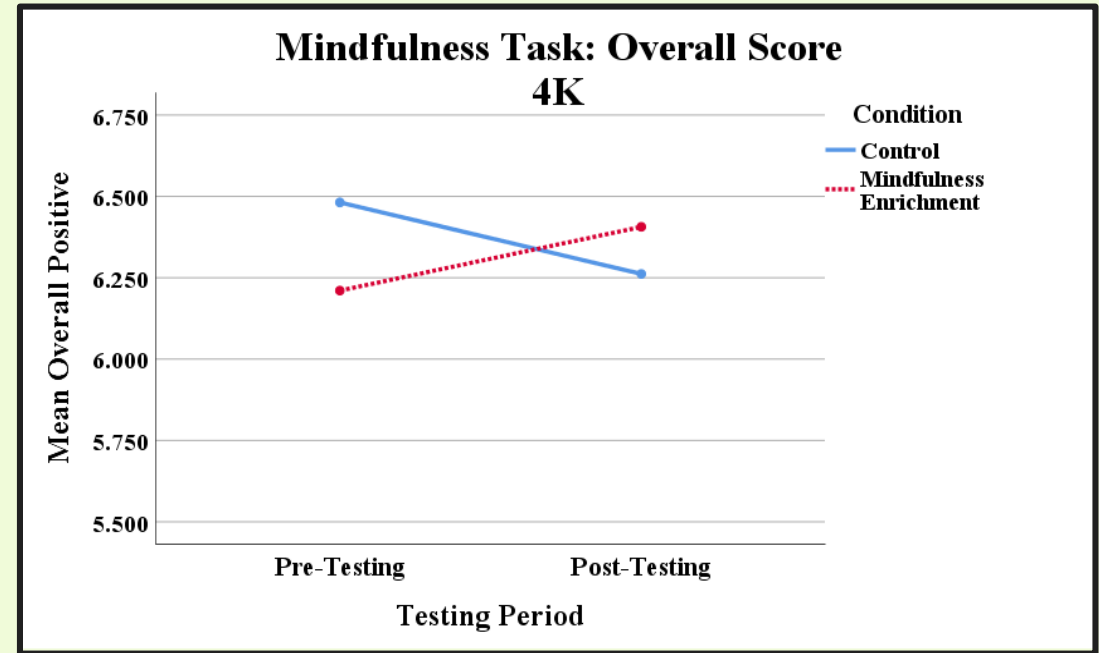
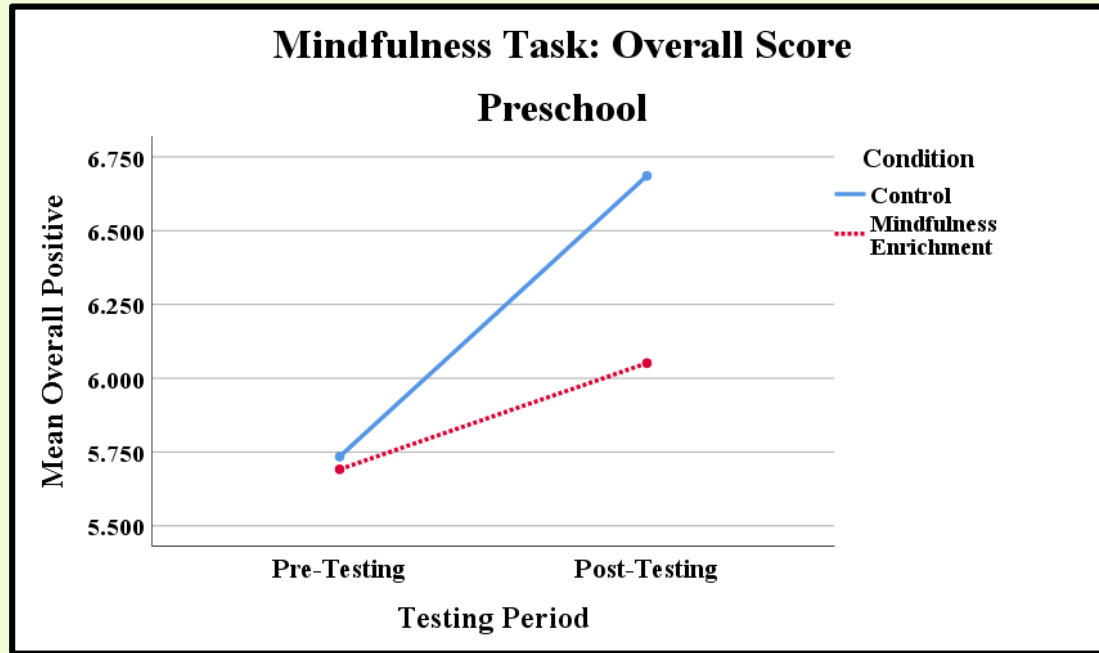


- The impact of the Kindness Curriculum on **Other-Oriented Kindness** was particularly noteworthy for **4K children**. Children in the Mindfulness Enrichment Condition showed increased empathy and kindness toward others over time, while scores for children in the Control Condition decreased over time.
- On the other hand, **Preschool children** in the Control Condition showed improvement in their scores on the **Other-Oriented Kindness Subscale** over time, while scores for children in the Mindfulness Enrichment Condition stayed about the same over time.

Time x Cond x Pre vs 4K: $F(1, 216) = 4.51, p = .035$



Mindfulness Overall Score: Variations by Preschool vs 4K



- **4K children** in the Mindfulness Enrichment Condition had higher **Overall Mindfulness scores** after receiving the Kindness Curriculum, while children in the Control Condition showed a decrease in Overall Mindfulness scores.
- **Preschool children** in both conditions started out about the same on **Overall Mindfulness scores**; however, children in the Control Condition improved more than did children in the Mindfulness Enrichment Condition.
- Lower **Overall Mindfulness scores** for preschool children who received the Kindness Curriculum may reflect early understanding of the persistence and ongoing work that is necessary to practice mindfulness effectively.

Main Effect Time: $F(1, 216) = 6.35, p = .012$
Time x Pre vs 4K: $F(1, 216) = 6.83, p = .010$
Time x Cond x Pre vs 4K: $F(1, 216) = 3.89, p = .050$
ME Pre vs 4K: $F(1, 216) = 3.07, p = .081$





Mindfulness Scenarios

Children were given three scenarios and asked how they would respond to each.



You are playing dress up in your class, and David dresses up as a Fairy Princess



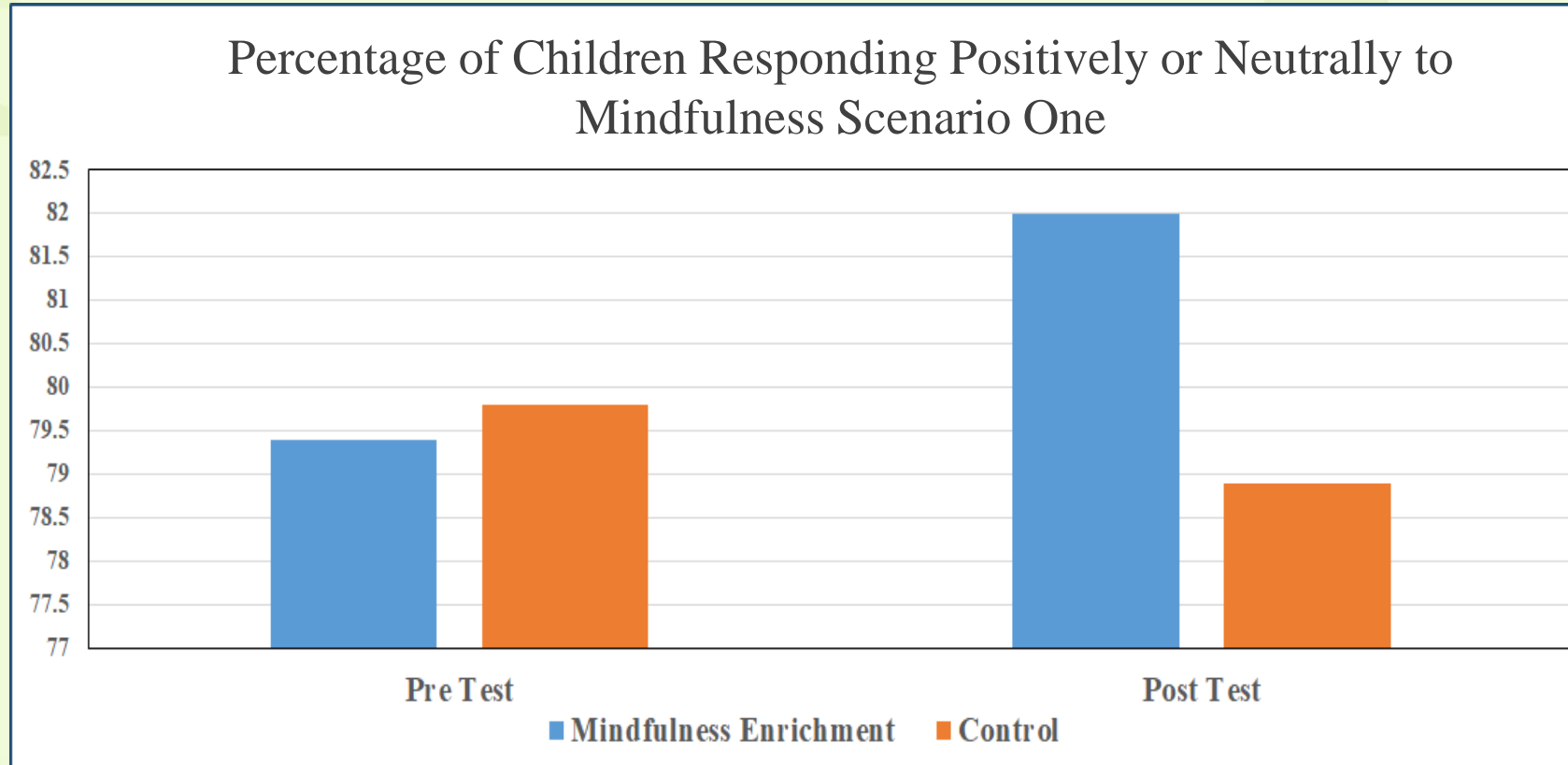
Then, some kids start laughing at him.

Scenario One: David dresses up as a Fairy Princess, and some kids are laughing at him. What would you do?

- **Sample Positive Response:** First tell the kids to stop and if they don't, then I would tell a teacher.
- **Sample Neutral Response:** I wouldn't do anything. It doesn't matter.
- **Sample Negative Response:** Take it off, don't wear girl stuff – it's gross.

Mindfulness Scenario One

This graph shows the percentage of children in the **Mindfulness Enrichment Condition** and **Control Condition** who provided *positive or neutral responses* to the “David” mindfulness scenario.



- Both conditions had similar percentages of positive/neutral responses to the “David” scenario in the fall prior-to-the Kindness Curriculum ($\chi^2 = .72, p = .698$).
- By spring, the **children who learned the Kindness Curriculum** in their classrooms, had a marginally **higher percentage of positive/neutral responses** to this scenario than the Control Condition who did not receive the Kindness Curriculum ($\chi^2 = 4.89, p = .087$).



TRIAL 1: “We’re going to pretend this is a balance beam... Now, I’d like you to walk the balance beam, ok? When I say go, you can go.”

TRIAL 2: Say “Ok, let’s do it again, but let’s see how slow you can walk the balance beam.”

TRIAL 3: “Ok, I want you to do it one more time, but as sloooow as you can go.”

Scoring: Amount of time to walk the “balance beam” (seconds)

Trial 1: _____

Trial 2: _____

Trial 3: _____

(Score each of the following)	YES	NO
Positive/Engages examiner	1	0
Defiant/Ignores Examiner	1	0
Refuses to complete task	1	0

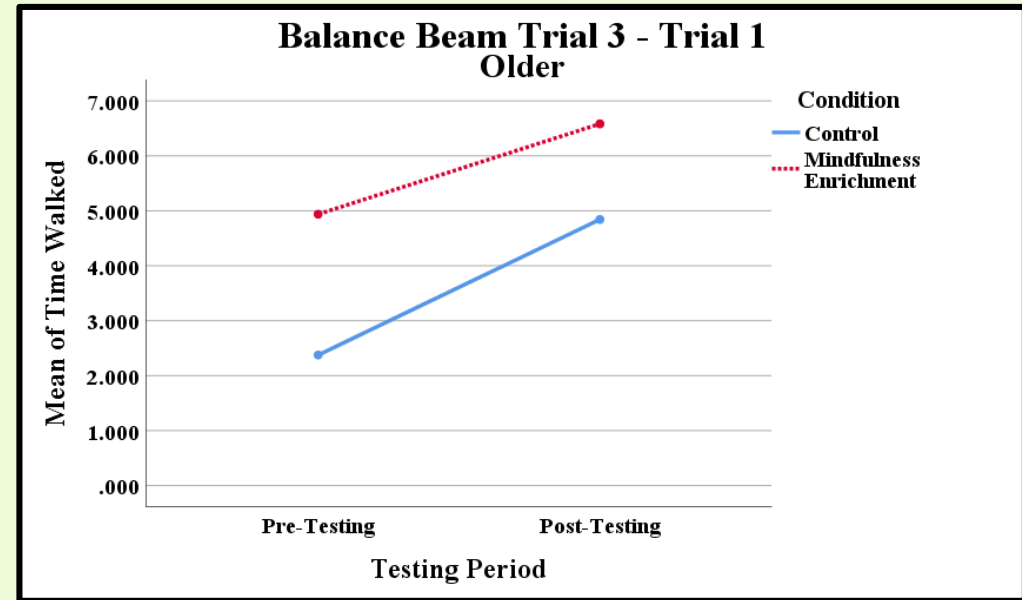
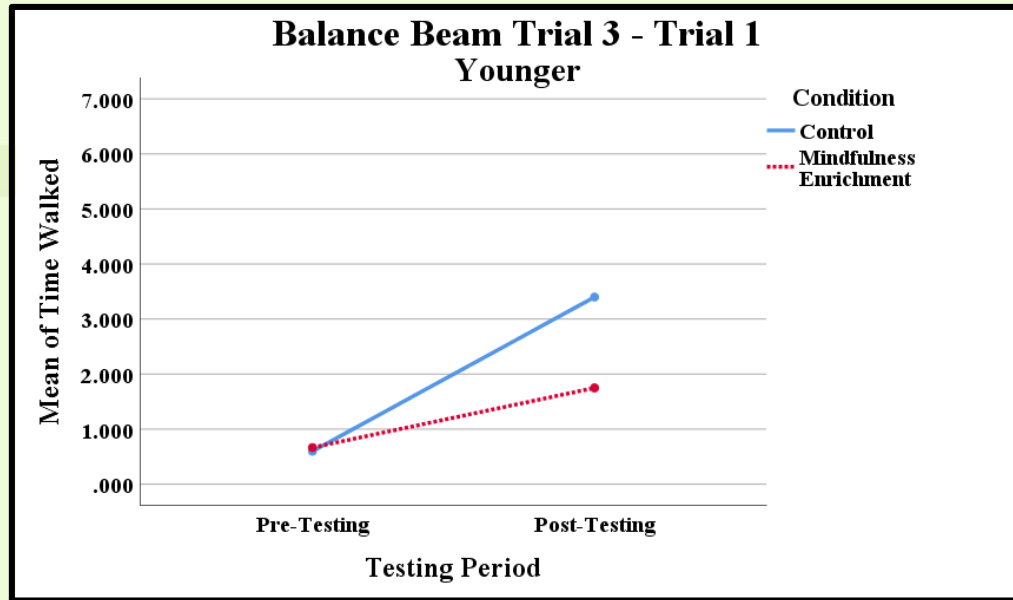


Balance Beam Task

Children were instructed to walk across a “balance beam” three separate times, with instructions to go more slowly each time.

The child’s ability to follow the instructions and inhibit their first impulse to speed up rather than slow down on the Balance Beam is an indicator of their physical self-regulation skills. The “balance beam” was a three-inch tape line on a yoga matt.

Balance Beam Task: Ability to Self-Regulate (First to Third Trial) - Variation by Age



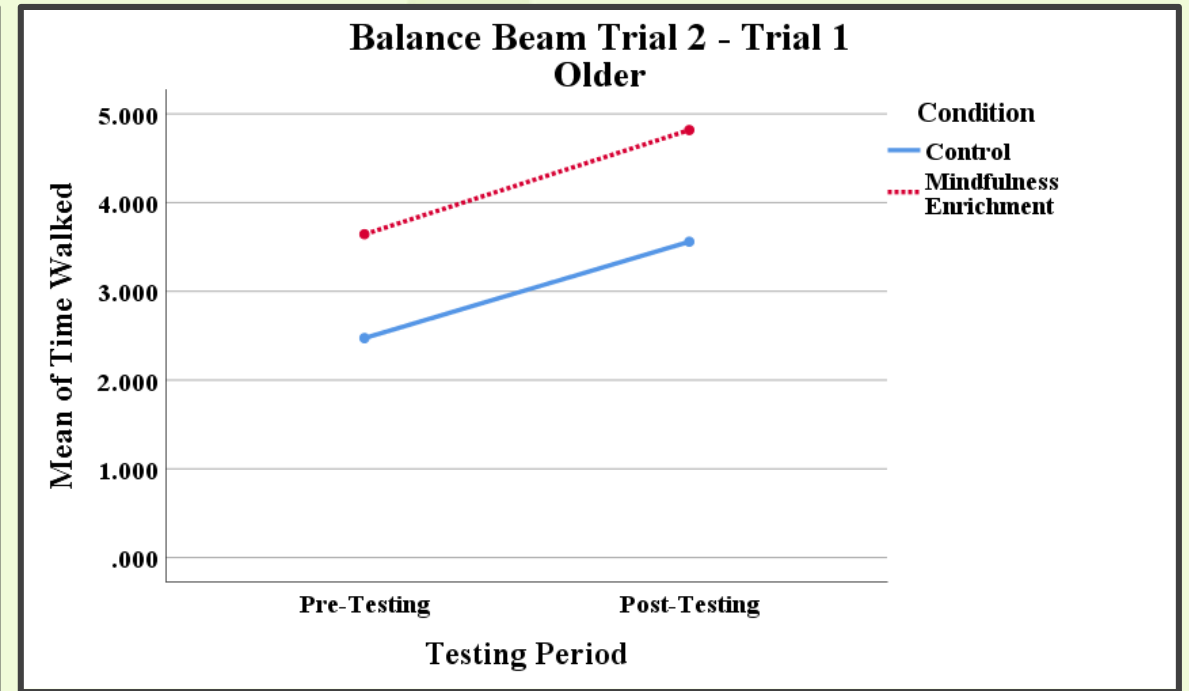
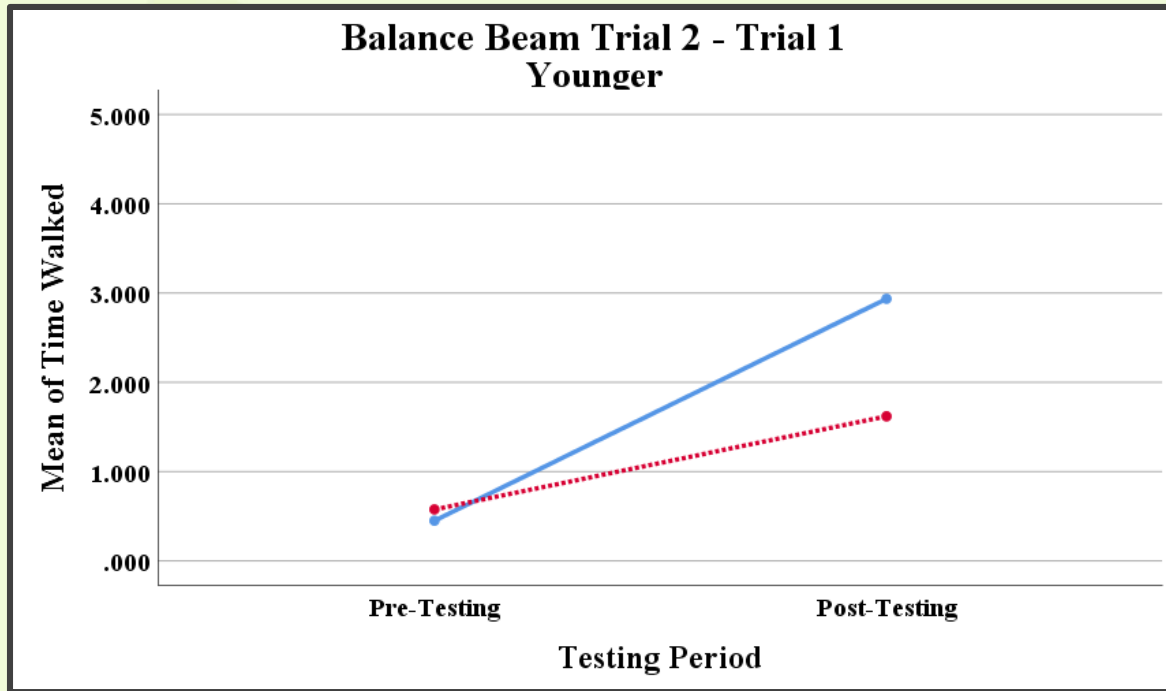
- *Older children* in the Mindfulness Enrichment Condition showed **stronger performance in self-regulation skills** (walking slower in Trial 3 than Trial 1) compared to children in the Control Condition.
- While *younger children* in both conditions started out about the same in **self-regulation skills**, children in the Control Condition improved more in self-regulation skills (walking slower in Trial 3 than Trial 1) compared to children in the Mindfulness Enrichment Condition.
- Overall, children in both conditions improved in their **ability to self-regulate** over time & older children showed stronger performance than younger children.

Main Effect Time: $F(1, 223) = 23.40, p < .001$
ME Age: $F(1, 223) = 17.27, p < .001$
Age x Cond: $F(1, 223) = 3.94, p = .048$



Balance Beam: Ability to Self-Regulate (First to Second Trial)

Variation by Age

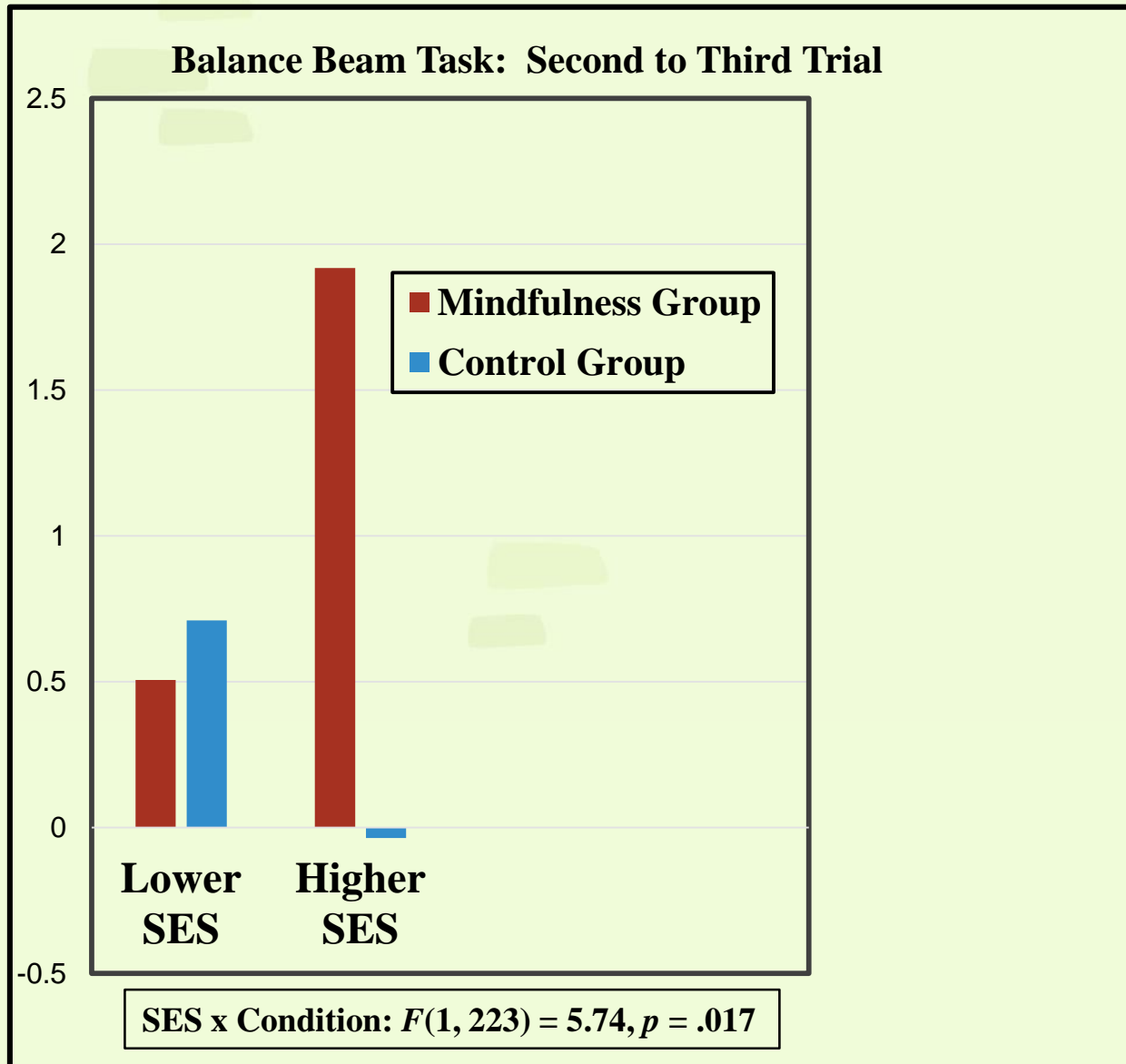


- **Older Children** in the Mindfulness Enrichment Condition showed stronger overall performance in **self-regulation skills** (walking slower in Trial 2 than Trial 1) compared to children in the Control Condition.
- While **younger children** in both conditions started out about the same in **self-regulation skills**, children in the Control Condition improved more in **self-regulation skills** than did children in the Mindfulness Enrichment Condition.

Main Effect Time: $F(1, 223) = 16.46, p < .001$
Main Effect Age: $F(1, 223) = 18.73, p < .001$
Age x Condition: $F(1, 223) = 3.09, p = .080$



Balance Beam Task: Ability to Self-Regulate (Second to Third Trial) Variation by SES



- *Lower SES children* in the Mindfulness Enrichment and the Control conditions **performed similarly on self-regulation skills** (i.e., walking slower in Trial 3 than Trial 2) on the balance beam task.
- On the other hand, *Higher SES children* in the Mindfulness Enrichment condition **showed stronger self-regulation skills** than did higher SES children in the Control condition, walking slower in Trial 3 compared to Trial 2, on the balance beam task.



- How sure are you that you can get yourself to pick up your toys when there are other fun things to do? (Self-Regulated Learning)



- How sure are you that you can make new friends? (Social Self Efficacy)

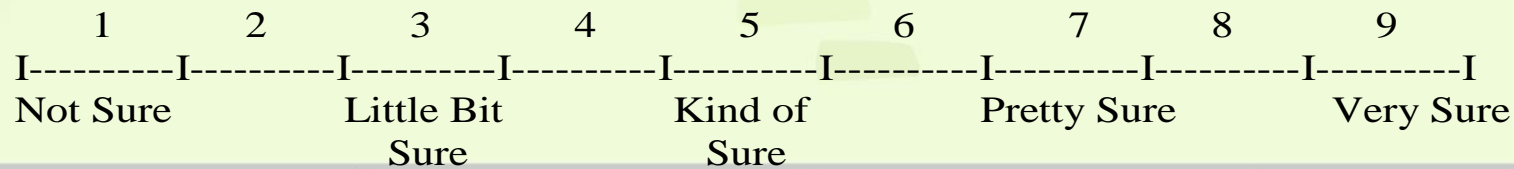


- How sure are you that you can control your temper when you get mad? (Self-Regulatory Efficacy)

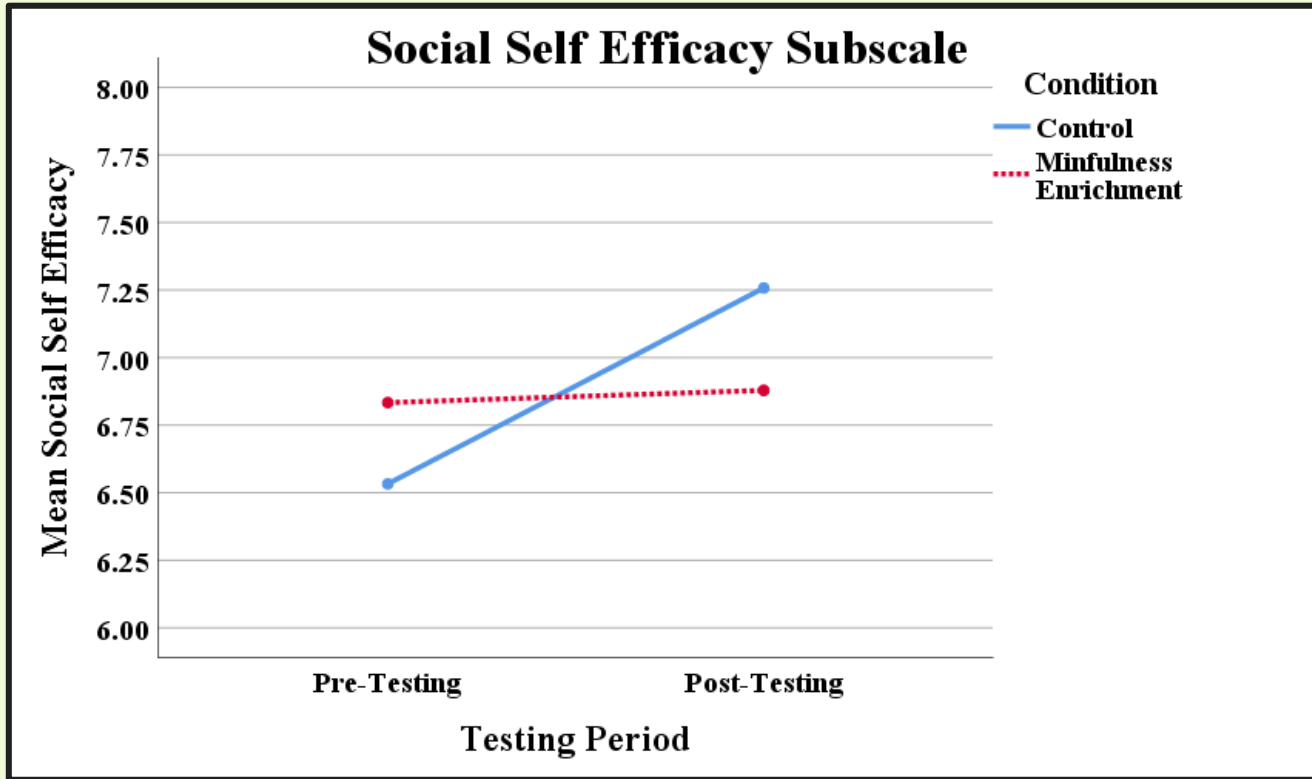
Social Self-Efficacy

Measures children's confidence in their ability to regulate their social behavior and achieve social goals

The Social Self Efficacy 9 point scale:



Social Self-Efficacy Subscale

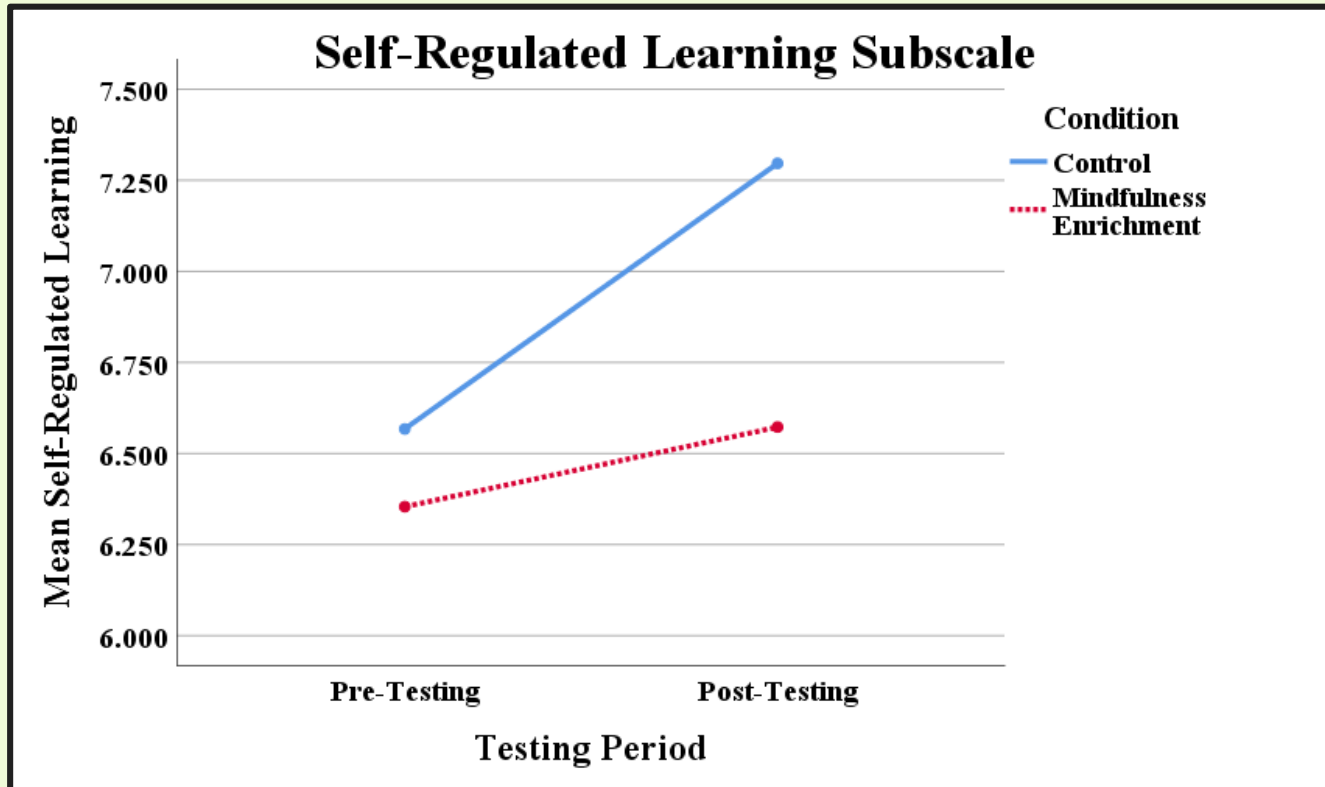


- Children in the Control Condition showed improvement in **Social Self-Efficacy** scores over time compared to children in the Mindfulness Enrichment Condition who stayed about the same.
- One explanation for this unexpected finding may be that children in the Mindfulness Enrichment Condition became more aware of the **complexities of social relationships & behaviors expected at school** after receiving the Kindness Curriculum; as a result, they may have provided less inflated ratings of their skills in these areas compared to children in the Control Condition.

Main Effect Time: $F(1, 218) = 5.36, p = .022$
Time x Condition: $F(1, 218) = 3.99, p = .047$



Social Self Efficacy: Self-Regulated Learning Subscale



- Children in the Control Condition had higher scores and improved more on the **Self-Regulated Learning Subscale** than did children in the Mindfulness Enrichment Condition, although both groups showed improvement over time.
- One explanation for this unexpected finding may be that children in the Mindfulness Enrichment Condition developed a more nuanced understanding of their **ability to regulate their behavior and emotions at school**, leading them to rate themselves more realistically on this subscale.

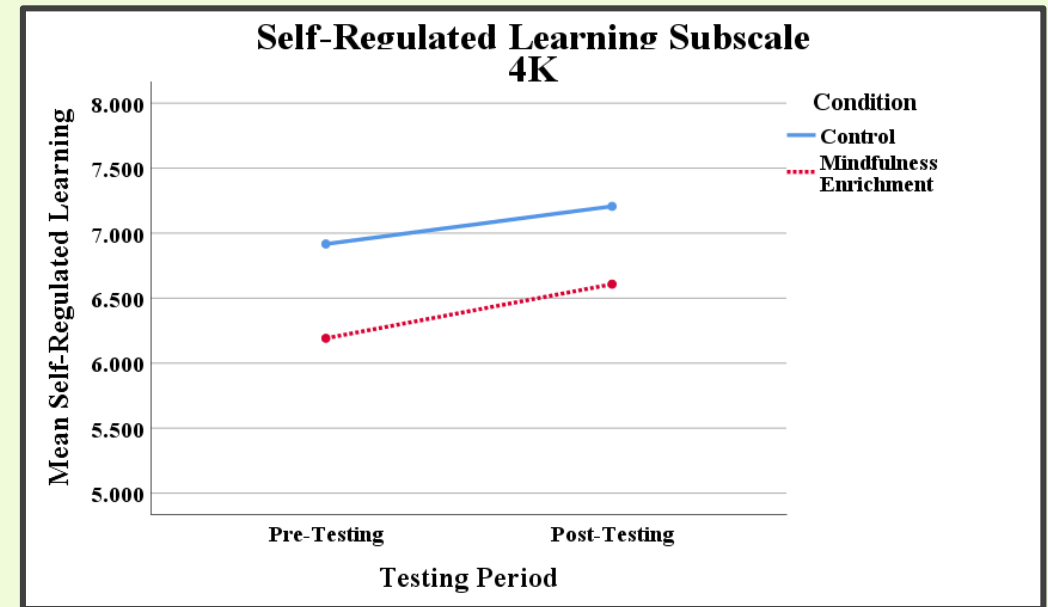
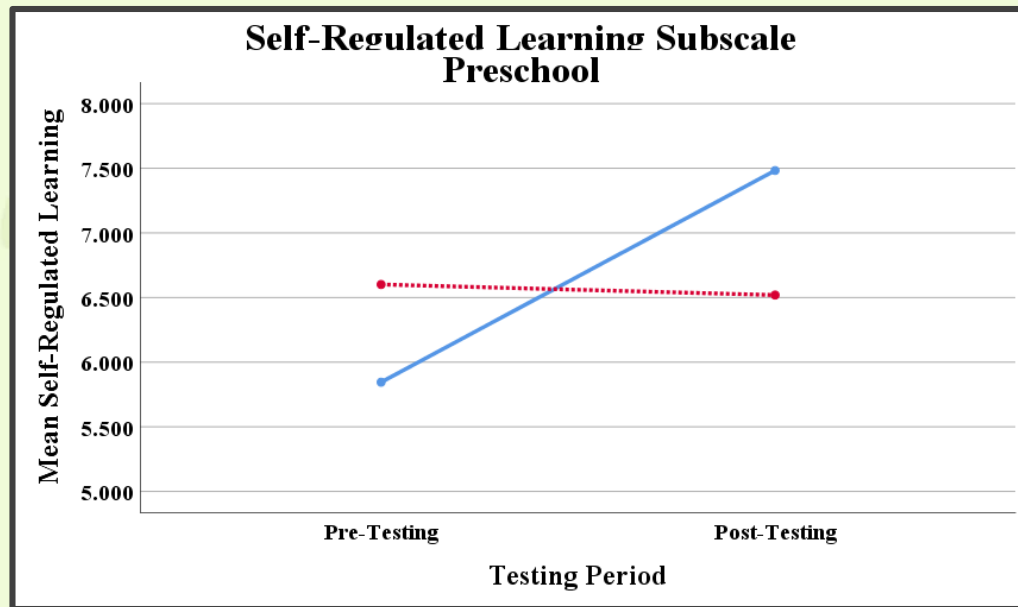
Main Effect Time: $F(1, 218) = 7.25, p = .008$

ME Condition: $F(1, 218) = 4.73, p = .031$

Time x Condition: $F(1, 216) = 3.85, p = .051$



Self-Regulated Learning Subscale: Variation by Preschool vs 4K

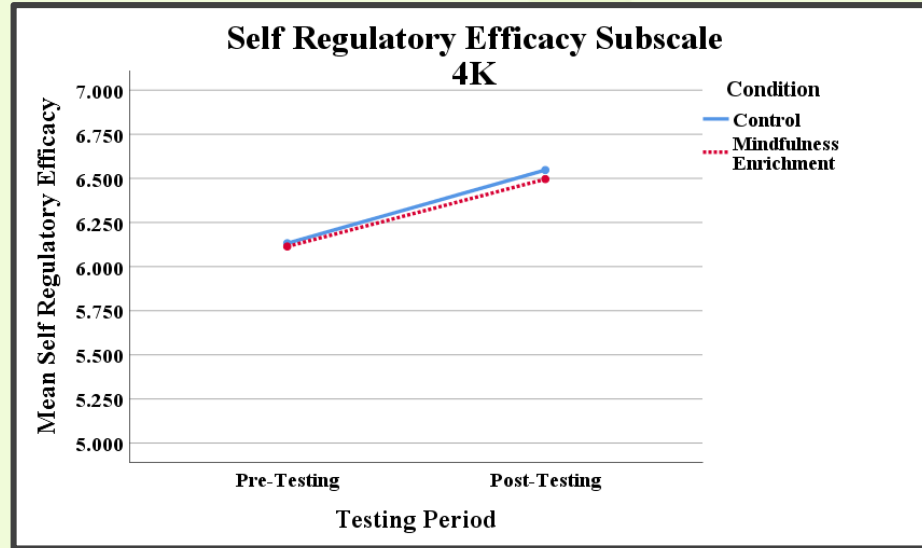
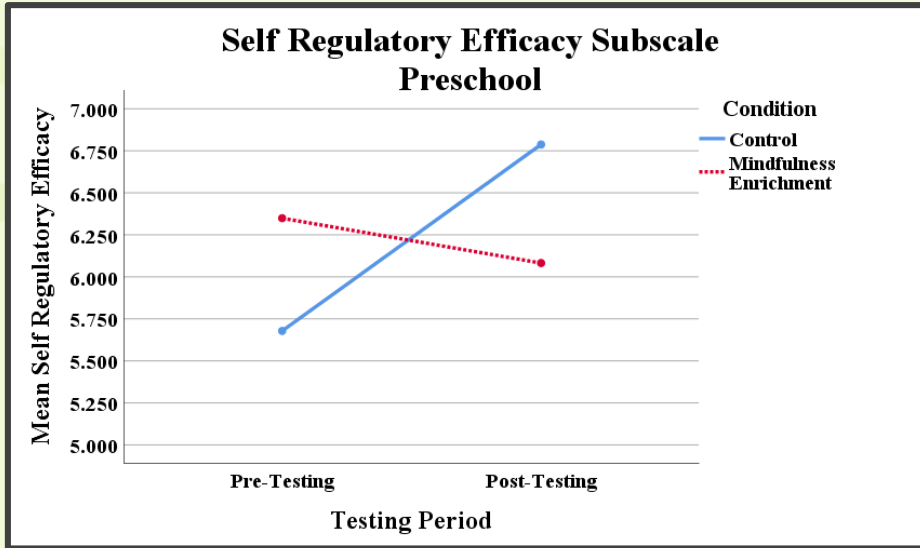


- *Preschool children* in the Control Condition showed improvement in their scores on the **Self-Regulated Learning Subscale** over time, while scores for children in the Mindfulness Enrichment Condition did not change significantly.
- *4K children* in the Control Condition had higher scores on the **Self-Regulated Learning Subscale** than did children in the Mindfulness Enrichment Condition, although both groups showed improvement over time.
- One explanation for lower scores on the **Self-Regulated Learning Subscale** is that children in the Mindfulness Enrichment Condition may be more reflective or aware of their ability to exercise self-control and achieve their learning goals, leading them to rate themselves lower on this subscale.

Main Effect Time: $F(1, 216) = 9.59, p = .002$
Main Effect Condition: $F(1, 216) = 2.86, p = .092$
Time x Condition: $F(1, 216) = 4.76, p = .030$
Time x Pre vs 4K x Condition: $F(1, 216) = 6.39, p = .012$



Self Regulatory Efficacy Subscale: Variation by Preschool vs. 4K

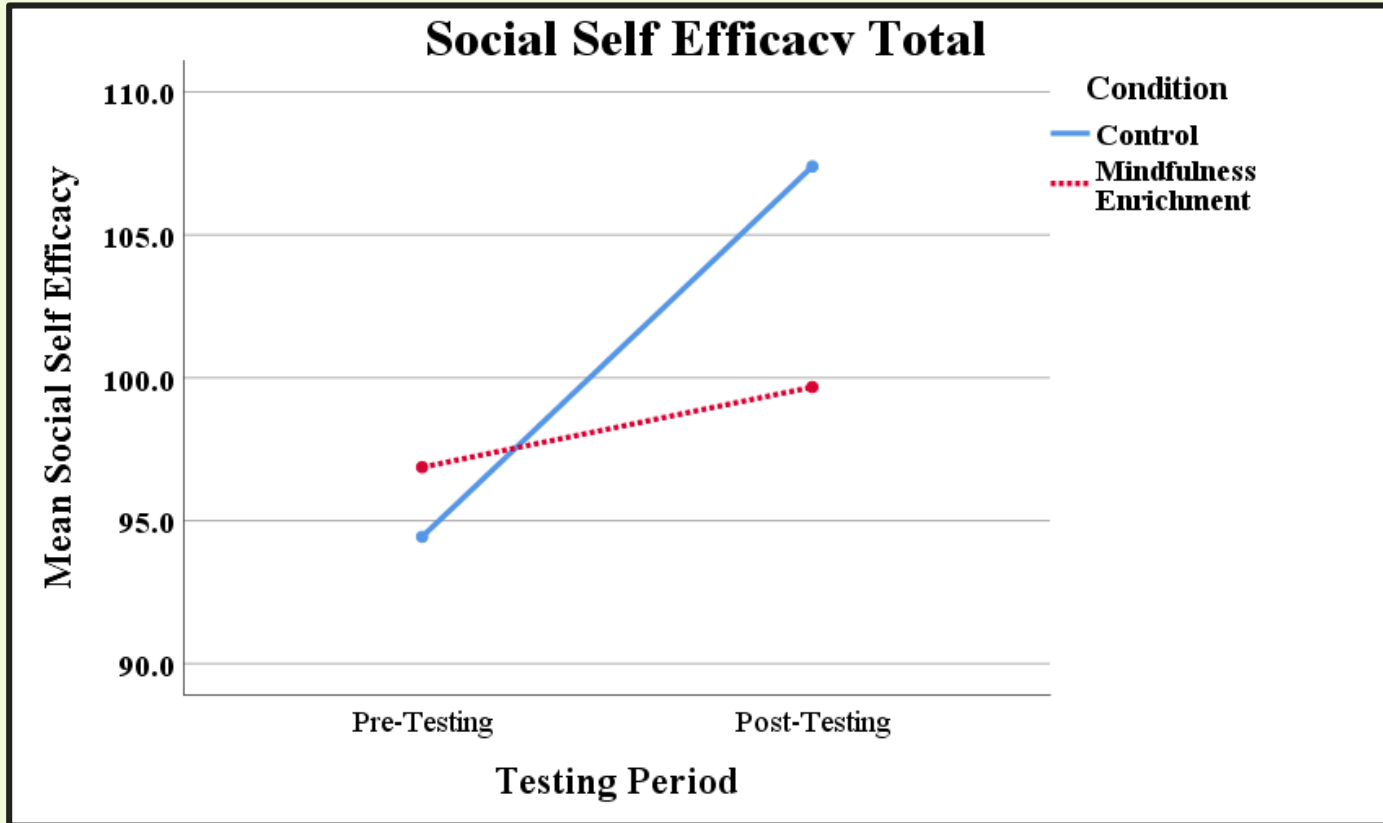


- *4K children* in both conditions scored similarly on the **Self Regulatory Efficacy Subscale** over time.
- *Preschool children* in the Mindfulness Enrichment Condition had higher scores initially but scored lower on the **Self Regulatory Efficacy Subscale** after receiving the Kindness Curriculum while scores increased over time for preschoolers in the Control condition.
- One explanation for these findings may be that children in the Mindfulness Enrichment condition have developed a more nuanced understanding of their **ability to regulate their own behavior and emotions**, thus leading them to rate themselves lower on self-regulation.

Main Effect Time: $F(1, 216) = 6.22, p = .013$
Time x Condition: $F(1, 216) = 4.59, p = .033$
Time x Pre vs 4K x Condition: $F(1, 216) = 4.17, p = .042$



Social Self Efficacy: Total Score



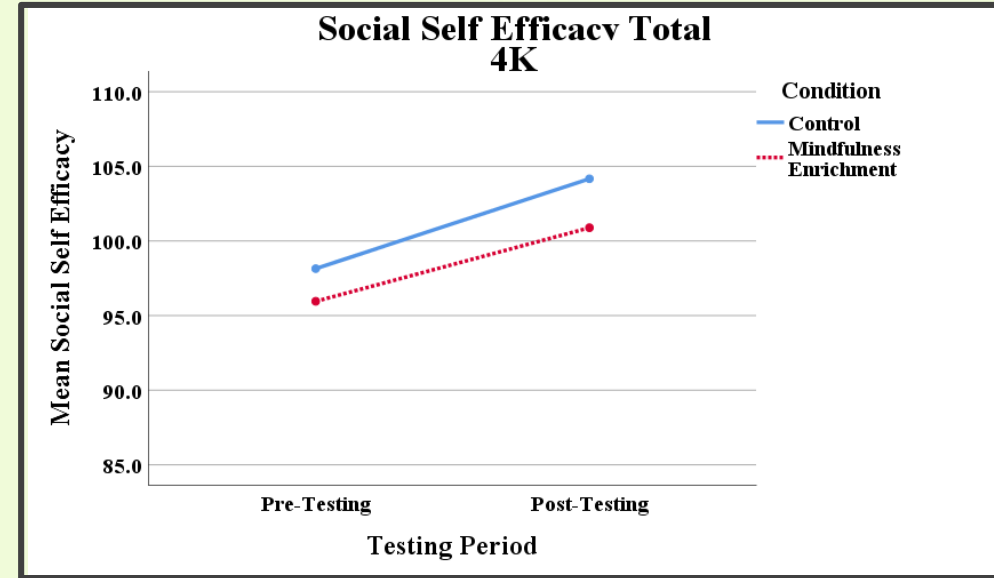
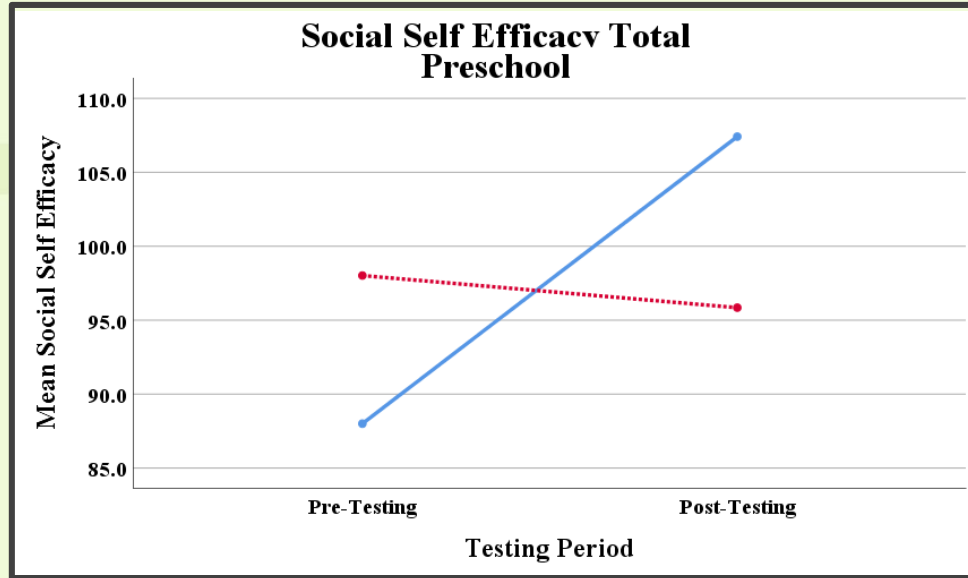
- While both groups started with similar scores and improved over time, children in the Control Condition improved more on their **Total Social Self-Efficacy Scores** than did children in the Mindfulness Condition.
- This unexpected finding of higher **total scores on social self-efficacy** for the children in the Control Condition may reflect inflated or unrealistic judgments of their overall effectiveness in social situations.



Main Effect Time: $F(1, 218) = 9.00, p = .003$
Time x Condition: $F(1, 218) = 3.95, p = .048$



Total Social Self-Efficacy Score: Variation by Preschool vs. 4K



- **4K children** in both conditions had similar **Social Self-Efficacy Total Scores** over time.
- **Preschool children** in the Control Condition showed improvement in their **Total Social Self-Efficacy scores** over time, while scores for children in the Mindfulness Enrichment Condition stayed about the same.
- This unexpected finding may be due to children in the Mindfulness Enrichment Condition having a better understanding of the complex nature of social relationships and their **ability to develop and maintain friendships, and regulate their social skills.**

Main Effect Time: $F(1, 216) = 10.58, p = .001$
Time x Condition: $F(1, 216) = 6.85, p = .009$
Time x Pre vs 4K x Condition: $F(1, 216) = 5.59, p = .019$



MEASURE	SUBSCALE	FINDINGS: Number & Percentage of Children who Improved Significantly		
<div data-bbox="104 515 308 651" style="border: 1px solid black; padding: 5px; width: fit-content;"> <p>*p ≤ 0.05 **p ≤ 0.01 ***p ≤ 0.001</p> </div> <h1 data-bbox="25 168 504 248">Sharing Task</h1>	1. Trial 1 Most Liked Child	Kindness Group: n = 135 Improved: 69 (51.1%)	Control: n = 88 Improved: 31 (35.2%)	$\chi^2 = 5.43, p = 0.020^*$
	2. Trial 2 Least Liked Child	Kindness Group: n = 135 Improved: 59 (43.7%)	Control: n = 88 Improved: 22 (25.0%)	$\chi^2 = 8.06, p = .005^{**}$
	3. Trial 3 Unknown Child	Kindness Group: n = 135 Improved: 53 (39.3%)	Control: n = 89 Improved: 31 (34.8%)	$\chi^2 = .45, p = .503$
	4. Trial 4 Sick Child	Kindness Group: n = 134 Improved: 60 (44.8%)	Control: n = 89 Improved: 31 (34.8%)	$\chi^2 = 3.32, p = .069$
	5. Overall Stickers kept for Self (“Selfish” behavior)	Kindness Group: n = 134 Improved: 82 (61.2%) (i.e., less selfish)	Control: n = 88 Improved: 34 (38.6%)	$\chi^2 = 10.83, p = .001^{***}$
<h1 data-bbox="25 975 410 1119">Mindfulness Scale</h1>	1. Self Oriented Kindness	Kindness Group: n = 132 Improved: 71 (53.8%)	Control: n = 88 Improved: 46 (52.3%)	$\chi^2 = .05, p = .825$
	2. Other Oriented Kindness	Kindness Group: n = 132 Improved: 70 (53.0%)	Control: n = 88 Improved: 40 (45.5%)	$\chi^2 = 1.21, p = .271$
	3. Overall Score	Kindness Group: n = 132 Improved: 66 (50.0%)	Control: n = 88 Improved: 44 (50.0%)	$\chi^2 = .00, p = 1.00$

MEASURE	SUBSCALE	FINDINGS: Number & Percentage of Children who Improved Significantly		
Social Self Efficacy	1. Self-Regulated Learning	Kindness Group: n = 131 Improved: 59 (45.0%)	Control: n = 89 Improved: 44 (49.4%)	$\chi^2 = .412, p = .521$
	2. Self-Regulatory Efficacy	Kindness Group: n = 131 Improved: 66 (50.4%)	Control: n = 89 Improved: 48 (53.9%)	$\chi^2 = .27, p = .605$
	3. Social Self Efficacy	Kindness Group: n = 131 Improved: 61 (46.6%)	Control: n = 89 Improved: 45 (50.6%)	$\chi^2 = .34, p = .560$
	4. Total Score	Kindness Group: n = 131 Improved: 69 (52.7%)	Control: n = 89 Improved: 53 (59.6%)	$\chi^2 = 1.02, p = .314$
Balance Beam Task	1. Trial 2 – Trial 1; Asked to “go slow” on trial 2	Kindness Group: n = 137 Improved: 83 (60.6%)	Control: n = 90 Improved: 63 (70.0%)	$\chi^2 = 2.10, p = .147$
	2. Trial 3 – Trial 2; Asked to go even slower on Tr 3	Kindness Group: n = 137 Improved: 75 (54.7%)	Control: n = 90 Improved: 57 (63.3%)	$\chi^2 = 1.65, p = .199$
	3. Trial 3 – Trial 1; Asked to go even slower on Tr 3	Kindness Group: n = 137 Improved: 81 (59.1%)	Control: n = 90 Improved: 64 (71.1%)	$\chi^2 = 3.38, p = .066$

Key Takeaways

After receiving the Kindness Curriculum, children showed:

- More *generous sharing with others*, keeping significantly fewer stickers for themselves; and older children sharing more stickers with a ‘Sick Child’ (Sharing Task)
- After the Kindness Curriculum, increased *empathy for others* by older children (Mindfulness Scale)
- More *accepting or positive helping* responses (Mindfulness Scenarios)
- Older children showed stronger performance in *self-regulation skills* (Balance Beam Task)

*****These results show that mindfulness training supports positive socioemotional development for young children. Even children as young as 3-years-old were more generous sharers (less selfish) after the Kindness Curriculum*****



Comparison to Flook et al.'s Findings (2015) on the Sharing Task

- On the same sharing task, Flook et al. (2015) found that the Control group kept more stickers for themselves over time than did children in the Kindness Curriculum group.
- Our findings on the Sharing Task are consistent with Flook and colleagues' (2015) smaller study, though we found additional significant results:
 - Similar to Flook et al.'s findings, the **Control group demonstrated more selfish behavior**, keeping more stickers for themselves over time, while the **Mindfulness Enrichment (ME) group demonstrated more generous sharing** over time.
 - In addition, we found that older children in the **ME group shared significantly more stickers with a 'Sick Child' and with a 'Most liked' child** after receiving the Kindness Curriculum than did children in the Control group. Children in the ME group kept fewer stickers for themselves, choosing instead to share more stickers with a "Sick Child," demonstrating more generosity with friends and children less fortunate as themselves.



Challenges & Considerations

The unexpected findings on the mindfulness scale and self-efficacy measures raise interesting questions about measuring mindfulness skills in very young children:

- **Measuring self-reported mindfulness skills is challenging because young children have a tendency to overestimate their skills when asked whether they do positive things. Also, when asked to use rating scales they often select the highest point on the rating scale to express positivity.**
- **Lower Mindfulness scale scores for children in the Mindfulness Enrichment group may reflect a higher self-awareness of the skills taught in the Kindness Curriculum. The items on the scale were based on the Kindness Curriculum, and the KC enrichment may have encouraged greater reflection and awareness of what is necessary to practice mindfulness effectively, thus leading to a lower tendency to give inflated positive responses.**
- **Consistent with this interpretation, lower scores on the Self-Oriented Kindness Subscale for children in the Mindfulness Enrichment group may reflect less selfish thinking.**
- **Alternatively, measuring mindfulness skills with a rating-scale format may be too complex for young children. The mindfulness scenarios may be more effective with this age group as they are less abstract, and ask children more concrete questions about how they would handle a difficult situation and what they would say or physically do.**



Additional Challenges & Considerations

Social Self Efficacy (SSE), or social self confidence, is another rating-scale based self-report measure. Findings here also ran counter to our expectations raising additional questions about best ways to measure social self-confidence in young children.

- **Lower overall SSE scores for children in the Mindfulness Enrichment group may similarly reflect the children having a more nuanced understanding of social self regulation, leading them to be more discriminative when rating their self-confidence in their skills. That is, the training might decrease the tendency to positively inflate their ratings.**
- **Lower self-regulated learning scores among lower SES children may reflect less access to resources important to social confidence in school. That is, self-regulated learning measures, for example, children's confidence in their ability to keep their mind on school work, and children with more resources often find it easier to focus on school work and resist other temptations.**



Putting the Findings in Context

- ❖ Most of the participating agencies already provide high quality programming and implement the **Pyramid Model for Supporting Social Emotional Competence** (Fox et al., 2009). We found that the **Kindness Curriculum provided further benefits for children's social-emotional development**, particularly in areas involving **more generous sharing**, and **among older children, greater empathy for others and stronger self-regulation skills**. Thus it seems that the Kindness Curriculum offers **classroom teachers additional tools to support children's learning and the development of school readiness skills**.
- ❖ The majority of our post-test individual assessments of children were completed more than a month after classroom teachers had finished the 24 lessons that make up the Kindness Curriculum. Moving forward, **assessing children soon after the delivery of the Kindness Curriculum would be optimal** to capture young children's learning before it fades.
- ❖ Several teachers continued to **reinforce the lessons** (e.g., bell practice, kindness garden) after they had finished the 12-week Kindness Curriculum, providing children with additional opportunities to practice the skills that they had acquired. Reinforcement of the KC practices may be important to **maintaining improvements** in these socioemotional areas of development over time.
- ❖ In addition, the **mindfulness scenarios/stories** that ask children how they would handle a difficult situation might be a **better, more accessible, way** for children to express what they've learned. Consistent with this suggestion, parents and teachers were able to provide specific examples of children using mindfulness skills. That is, **children may be better able to show what they've learned, than they are to express internal mental states**. Consequently, **teacher and parent reports of children's mindfulness skills might be a useful addition** to studies with very young children.



Conclusions and Future Implications

- ❖ Results showed that the **Kindness Curriculum (KC)** positively impacted children's skills, especially 4 and 5 year olds, in several important developmental areas, including sharing with others, empathy and kindness toward others, and self-regulation skills.
- ❖ Children as young as three-years-old can benefit from the Kindness Curriculum and begin developing important interpersonal skills in sharing with others. As shown in the report on teacher and parent perceptions, both teachers and parents reported significant gains by young children in empathy for others as well as other social skills.
- ❖ Given the **positive personal and social benefits for young children**, mindfulness-based programming, such as the Kindness Curriculum, should be implemented in pre-schools and 4K programs.
- ❖ Implementation of the Kindness Curriculum by classroom teachers instead of mindfulness experts makes this mindfulness programming more **affordable and cost-effective**, particularly for schools with fewer resources.



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