

## Preschool Attendance as a Predictor of Self-Regulation in Kindergarteners

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**ABSTRACT.** Research has found that early childhood education positively impacts the academic success and educational achievement of children all the way through early adulthood (Barnett & Frede, 2010; Campbell & Ramey, 1994; Lamy, 2013). Tough (2012) suggested that preschools help children develop self-regulation skills that are necessary for educational success. It was hypothesized that preschool attendance would predict higher self-regulation than nonattendance, and that girls would have higher self-regulation than boys, as measured by behavioral scores and teacher ratings of self-regulation. Participants included 37 kindergartners. Preschool attendees and nonattendees were tested by condition-blind researchers on 2 subtests of the Preschool Self-Regulation Assessment. Additionally, teachers used items from the Children's Self-Control Scale to rate participants. A 2 x 2 (Condition x Sex) Analysis of Variance was performed on the Balance Beam, the Gift Wrap Scores, and the teacher ratings of behavioral and cognitive self-control. The Balance Beam Scores were higher in the preschool condition than in the nonpreschool condition,  $F(1, 33) = 6.18, p = .02, \eta^2 = .15$ . Also, the Gift Wrap Scores were higher in the preschool condition than in the nonpreschool condition,  $F(1, 33) = 10.69, p = .003, \eta^2 = .24$ . Teacher's ratings of behavioral self-control for girls was higher than for boys,  $F(1, 33) = 6.94, p = .01, \eta^2 = .17$ . Also teacher's ratings of cognitive self-control for girls was higher than for boys,  $F(1, 33) = 7.73, p < .001, \eta^2 = .19$ . The benefit of preschool education for the acquisition of self-regulation is addressed.

Academic performance is about more than good test scores and a high grade point average. The educational system seems designed to teach students how to get along with their peers, follow instructions, and solve problems, among other things. All of these skills depend on self-discipline as demonstrated by numerous studies, which have shown that the most successful students (behaviorally and academically) are those who have high levels of self-discipline (Bear, 2010; Denham et al., 2012; Duckworth & Seligman, 2005; Kuhnle, Hofer, & Kilian, 2012; Rimm-Kaufman, Curby, Grimm, Nathanson, & Brock, 2009). Additionally, children who have higher levels of

self-regulation were found to have higher levels of success in the future (Barnett & Frede, 2010; Campbell & Ramey, 1994; Lamy, 2013).

Although self-discipline and self-regulation are often closely tied in operational definitions, Rui and Yi-Lung (2015) described self-discipline as the ability to execute a task while suppressing the urge to become engaged in distractors when pursuing a goal. Although slightly different, self-regulation was defined as the extent to which individuals are able to demonstrate control over their own behavior (Baumeister, Bratslavsky, Muraven, & Tice, 1998; Shoda, Mischel, & Peake, 1990). Kopp (1982) traced the development of self-regulation

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and noted that young children who manifested only some degree of self-control, a precursor to self-regulation, continued to have problems in delaying gratification and were not able to make use of diversionary strategies, behaviors necessary in self-regulation. Because the terms *self-regulation* and *self-discipline* are similar, the main distinction between these definitions is the presence of an alternative goal to be accomplished. This is found in self-discipline, though is not necessarily required for the operational definition of self-regulation. Because Duckworth, Grant, Loew, Oettingen, and Gollwitzer (2011) found that one probable mechanism by which students acquired self-discipline was through self-regulation strategies, the current study examined both self-discipline and self-regulation, and specifically measured self-regulation as a means of achieving self-discipline.

Researchers Duckworth and Seligman (2005) substantiated the vital connection between self-discipline and academic performance. Their study measured students' academic performance and self-discipline through standardized tests, student surveys, and teacher questionnaires. Self-disciplined students had better attendance and performed better in academics compared with students who were not self-disciplined. More importantly, self-disciplined students were more successful than students with a higher IQ. This finding had implications for what increases academic performance and challenged the generally accepted idea that a smarter student is a more successful student. Similarly, Kuhnle et al. (2012) suggested that self-control was important to success both inside and outside of the classroom. In the classroom, self-control helps students curb their social impulses that distracted them from learning, and outside of the classroom, it helped them schedule their free time for studies. The study used eighth graders and took measurements of self-control, life balance, and flow at the beginning and end of the school year. Similar to Duckworth and Seligman, they found that self-control predicted school grades and was also related to life balance and satisfaction of life.

Not only does the presence of self-discipline have positive effects on academic performance, but the lack of it may have negative effects as well. Cleary, Platten, and Nelson (2008) found that students who were referred for academic problems were more likely to have a deficit in self-regulation and motivation skills. Similarly, Lee, Cheng, and Lin (2013) collected academic information from

adolescents, as well as surveys of self-control, an indicator of self-regulation. According to the results, self-control was necessary to sustain a satisfactory quality of life. This further underlined the importance of self-regulation in academic performance and to a general positive quality of life.

Research has pointed out the importance of both self-discipline and self-regulation in academic success. However, of more relevance is how and whether self-regulation can be taught. Based on his work in humanistic-experiential psychology, Combs (1985) provided self-regulatory principles as a means of achieving self-discipline that teachers can use in the classroom. These included setting the context for experiences of success and feelings of belonging. Bear (2010) surveyed the current research and presented strategies to encourage self-discipline in the classroom. His comprehensive guide promoting self-discipline emphasizes student-centered strategies and techniques in which students learn to guide and regulate themselves. Duckworth et al. (2011) tested a method of teaching self-regulation called mental contrasting. This exercise includes thinking about dreams, leaving goals that are wasteful, and planning for the future. As a result, the mental contrasting group completed significantly more practice questions than the control group, suggesting that behaviors that encourage planning can have an impact on an individual's self-regulation.

Further research has suggested that the earlier years in life are crucial in learning self-regulation. For example, Rimm-Kaufman et al. (2009) found that the quality of the classroom, more specifically the teacher's effectiveness in classroom management, was linked to children's behavioral and cognitive self-control, indicating that the nature and quality of the classroom environment may encourage students to be more self-regulated. In addition, Lee et al. (2013) found that self-control may be strengthened by increasing self-esteem in earlier years. Fuhs, Farran, and Nesbitt (2013) examined preschool teacher's interactions and behavior in the classroom, and found that more approving behavior and positive emotional tone were related to children's subsequent gains in cognitive self-regulation skills. Denham et al. (2012) tested a large sample of 3- and 4-year-olds on measures of emotion knowledge and preschool self-regulation assessments in late fall and again in early spring. Developmental changes in emotion knowledge as well as self-regulation were seen, with higher levels associated with later academic success.

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Preschool, which is intended as a foundational introduction to the workings of school life, is an ideal launching pad from which self-regulation can develop. The early acquisition of self-regulation sets students on a positive trajectory, potentially enabling them to reach greater achievements than otherwise possible.

Further, Bassett, Denham, Wyatt, and Warren-Khot (2012) found a positive relationship between teachers' reports of children's school readiness and executive control, measured by an assessment battery of preschooler's self-regulation. More recently, it was found that, although girls seem to consistently earn better grades than boys in early primary school, the mechanism to explain this appears to be involved in teachers' reports of self-discipline (Duckworth et al., 2015). Using teachers' reports of kindergarten girls' more positive learning approaches such as task persistence and self-discipline, Ready, LoGerfo, Burkam, and Lee (2005) also noted a strong connection between high academic performance and self-discipline. This combined research has suggested that, from the start, girls seem to have the upper hand with self-discipline and academic performance. However, this pattern does not necessarily take into account whether children were exposed to a prekindergarten environment.

Raver (2012) determined that self-regulation is modifiable (e.g., increasing executive functioning skills) by earlier educational intervention, which points to the necessity for accessible preschool education for every child. Although Love, Chazan-Cohen, Raikes, and Brooks-Gunn (2013) did not find differences in the early academic achievement between Early Head Start (EHS) and non-EHS students, they did find that EHS students had better attention spans, more effective approaches to learning, and fewer behavioral problems than non-EHS students.

Currently, 30 states are attempting to draft legislation that would make prekindergarten education accessible to all. In the 2014 State of the Union address, President Obama called on Congress to invest in high-quality early education for all (Kristof, 2014). The rationale behind this movement is the research that has shown that early childhood education will positively impact the academic success and educational achievements of children all the way up through early adulthood (Barnett & Frede, 2010; Campbell & Ramey, 1994; Lamy, 2013). Tough (2012) suggested that preschools help children develop critical skills such

as self-regulation that are necessary for life success rather than simply providing academic enrichment. But before a national preschool education referendum should be set into law, more studies need to be conducted to determine whether preschools are in fact teaching critical skills like self-regulation.

To that end, the current study sought to examine whether preschool attendance affected self-regulation, and would thereby increase the likelihood of acquiring self-discipline at an earlier age. Based on previous research, we hypothesized that preschool attendance would predict higher self-regulation scores, measured by behavioral tests and teacher ratings of kindergarten children. We also hypothesized that self-regulation would be higher for girls than for boys.

## Method

### Participants

Participants consisted of 37 children (17 girls, 20 boys) ranging in age from 4 to 6 years old ( $M = 5.08$ ,  $SD = 0.43$ ) attending a small public elementary school in northern California. The ethnic breakdown of the sample included 26 Hispanic (70%) and 11 European American participants (30%). Several of the Hispanic kindergarteners were not proficient in English comprehension and were tested by the Spanish speaking researcher. With respect to preschool attendance, 28 children (13 girls, 15 boys) had attended preschool and nine (4 girls, 5 boys) had not. The 28 children who had attended preschool consisted of seven (25%) European American and 21 (75%) Hispanic participants. The nine children who had not attended preschool consisted of four (44%) European American and five (56%) Hispanic participants. Although participants were selected on the basis of signed parental consent forms, children signaled their assent when they agreed to leave the classroom with the experimenter and be tested in a nearby area.

### Materials

Two subtests from the Preschool Self-Regulation Assessment (Smith-Donald, Raver, Hayes, & Richardson, 2007) were used to assess self-regulation in the kindergarten children: Balance Beam and Gift Wrap. These subtests were selected because Smith-Donald et al. (2007) found high reliabilities (intraclass correlation); the Balance Beam task had a reliability of .98 and the Gift Wrap had a reliability of .90 (peek) and .81 (touch). They were also selected for their ease of administration and

because extensive experimenter training was not required, thus minimizing potential error.

For the Balance Beam task, a simulated balance beam was made from a 6-foot piece of masking tape. The piece of tape was placed on the floor for subjects to walk on like a balance beam. Participants were asked to walk across the beam as slowly as they could (measured in seconds) on three different trials. In Trial 1, they were simply instructed to walk the balance beam. In Trial 2, they were asked to walk as slowly as possible. For Trial 3, participants were asked to walk even more slowly. Larger differences between Trial 3 and Trial 1 related to higher levels of behavioral self-control.

The Gift Wrap portion of the experiment used scissors, wrapping paper, and 37 prewrapped pencil gifts. The scissors and wrapping paper were used to simulate the wrapping of a gift; the gifts were already wrapped to save time during data collection. Self-regulation was measured by timing how long (up to 60 s) participants would wait without peeking at the gift while the researcher was wrapping the gift and how long participants would wait without touching the gift (up to 60 s). The time without peeking and the time without touching the gift were summed, and higher scores related to higher levels of cognitive self-regulation. The cognitive self-regulation score from the Gift Wrap and behavioral self-regulation score from the Balance Beam were summed to obtain a combined behavioral score of self-regulation. Higher scores related to higher levels of self-regulation. Children's times from the Balance Beam and the Gift Wrap sections were scored on a data sheet (see Appendix A).

Teachers were given a rating sheet comprised of a modified Teacher's Self-Control Rating Scale (Humphrey, 1982). The original scale rated participants' cognitive and behavioral levels of self-regulation with test-retest reliabilities of .93 and .88, respectively. This scale rates the frequency of several behaviors on a 7-point Likert-type scale from 1 (*hardly ever*) to 7 (*frequently*). Although Humphrey used a 5-point scale, to allow for higher order analyses the scale was expanded to a 7-point scale. Only three items from each subsection were used in order to help make the rating scale shorter, quicker, and less onerous for the teachers to fill out. The three items of cognitive self-control were "sticks to what he or she is doing, even during a lengthy, unpleasant task," "anticipates the consequences of his/her actions," and "works toward goals," which had test-retest reliabilities of .95, .57, and .93, respectively. The three items of behavioral

self-control were "talks out of turn," "gets into fights with other children," and "disrupts others when they are doing things," with reliabilities of .79, .78, and .76, respectively. These behavioral self-control items were reverse-scored so that higher ratings related to higher levels of self-control

### Procedure

Prior to conducting the study, the researchers received institutional review board approval from Pacific Union College in a letter dated October 22, 2013. Researchers were blind to which students had attended preschool and which had not during data collection. Five researchers (3 men and 2 women) individually introduced themselves to participants. There were no sex difference detected for the researchers on the children's self-regulation scores. Each participant was taken outside the classroom where masking tape simulating a balance beam was on the ground. The researcher instructed participants to walk the balance beam from one end to the other. Trial 1 was timed and recorded. Next, participants were told to rewalk the balance beam as slowly as they could for Trial 2. Finally, participants were told to walk the balance beam for Trial 3 even more slowly if possible. The third trial was also timed and recorded, and the difference between Trial 3 and Trial 1 was used to determine the child's level of self-regulation.

For the Gift Wrap test, participants were told that they would receive a gift for their participation but that it first needed to be wrapped. Participants were instructed to turn around in their seat and told that they should not peek while the gift was being wrapped. The researcher pretended to wrap the present by creating noise with wrapping paper and a scissors. When the participant peeked or at 60 s, the participant was allowed to turn around and the time was recorded. Next, the gift was placed in front of the participant, who was instructed not to touch the present, while the experimenter finished cleaning up the wrapping paper. During these 60 s, or until the participant touched the present, the researcher would clean up the surrounding area, and the time was recorded. The sum of the two intervals determined a second measure of self-regulation. The Gift Wrap and the Balance Beam measures were added to make a behavioral score of self-regulation. At the end, participants were thanked and praised for their participation. They were also told to put their gift in their backpack so that their classmates would not be able to see the gift.

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In addition to these two subtests, the kindergarten teachers filled out selected items from the Children's Self-Control Scale, which rated participants' cognitive and behavioral levels of self-regulation (Humphrey, 1982).

## Results

### Descriptive Statistics

Measured in seconds, the Balance Beam Scores ( $M = 4.41$ ,  $SD = 9.73$ ) and Gift Wrap Scores

( $M = 95.01$ ,  $SD = 33.90$ ) were used as two behavioral measures of self-regulation. The Children's Self-Control Scale, which measured each kindergarten's cognitive ( $M = 14.68$ ,  $SD = 6.85$ ) and behavioral ( $M = 13.89$ ,  $SD = 5.31$ ) levels of self-regulation, provided a teacher rating of self-regulation for each kindergartener ( $M = 28.57$ ,  $SD = 10.82$ ). Tables 1 through 4 summarize the means, standard error of the means, and confidence intervals for the Balance Beam and Gift Wrap Scores and the teacher

**TABLE 1**

**Estimated Marginal Means of Sex, Condition, and the Interaction for the Balance Beam Scores**

Variable	<i>M</i>	<i>SE</i>	95% CI	
			<i>LL</i>	<i>UL</i>
Sex				
Men	1.50	2.32	-3.22	6.22
Women	2.86	2.57	-2.36	8.09
Condition				
Preschool	6.49	1.70	3.02	9.95
No preschool	-2.12	3.02	-8.26	4.01
Sex*Condition				
Male-Preschool	8.29	2.32	3.57	13.01
Male-No preschool	-5.28	4.02	-13.46	2.89
Female-Preschool	4.69	2.49	-0.38	9.76
Female-No preschool	1.04	4.49	-8.10	10.18

Note. CI = confidence interval; *LL* = lower limit; *UL* = upper limit.

**TABLE 2**

**Estimated Marginal Means of Sex, Condition, and the Interaction for the Gift Wrap Scores**

Variable	<i>M</i>	<i>SE</i>	95% CI	
			<i>LL</i>	<i>UL</i>
Sex				
Men	87.92	7.92	71.80	104.03
Women	81.80	8.77	63.95	99.64
Condition				
Preschool	104.18	5.81	92.35	116.01
No preschool	65.53	10.29	44.59	86.47
Sex*Condition				
Male-Preschool	106.43	7.92	90.32	122.55
Male-No preschool	69.40	13.72	41.48	97.32
Female-Preschool	101.93	8.51	84.62	119.24
Female-No preschool	61.66	15.34	30.45	92.87

Note. CI = confidence interval; *LL* = lower limit; *UL* = upper limit.

**TABLE 3**

**Estimated Marginal Means of Sex, Condition, and the Interaction for the Teacher Ratings of Cognitive Self-Control**

			95% CI	
Variable	<i>M</i>	<i>SE</i>	<i>LL</i>	<i>UL</i>
Sex				
Men	11.47	1.27	8.88	14.05
Women	16.74	1.40	13.88	19.60
Condition				
Preschool	14.08	0.933	12.18	15.98
No preschool	14.13	1.65	10.77	17.49
Sex*Condition				
Male-Preschool	11.93	1.27	9.35	14.52
Male-No preschool	11.00	2.20	6.52	15.48
Female-Preschool	16.23	1.37	13.45	19.01
Female-No preschool	17.25	2.46	12.24	22.26

Note. CI = confidence interval; *LL* = lower limit; *UL* = upper limit.

**TABLE 4**

**Estimated Marginal Means of Sex, Condition, and the Interaction for the Teacher Ratings of Behavioral Self-Control**

Variable	<i>M</i>	<i>SE</i>	95% CI	
			<i>LL</i>	<i>UL</i>
Sex				
Men	12.03	1.63	8.73	15.34
Women	18.42	1.80	14.76	22.09
Condition				
Preschool	14.66	1.19	12.23	17.08
No preschool	15.80	2.11	11.50	20.10
Sex*Condition				
Male-Preschool	11.47	1.63	8.16	14.78
Male-No preschool	12.60	2.82	6.87	18.33
Female-Preschool	17.85	1.75	14.29	21.40
Female-No preschool	19.00	3.15	12.59	25.41

Note. CI = confidence interval; *LL* = lower limit; *UL* = upper limit.

ratings on cognitive and behavioral items of the Children's Self-Control Scale.

### Primary Analysis

To test the hypotheses that preschool attendance and child sex would predict higher self-regulation in kindergarteners, a 2 x 2 (Condition [preschool, no preschool] x Sex) between-subjects Analysis of Variance was performed on the Balance Beam and the Gift Wrap Scores. The Balance Beam Scores were significantly higher in the preschool attendance condition ( $M = 6.62$ ,  $SD = 8.68$ ) than in the no preschool attendance condition ( $M = -2.47$ ,  $SD = 10.06$ ),  $F(1, 33) = 6.18$ ,  $p = .02$ ,  $\eta^2 = .15$ . Also, the Gift Wrap Scores were significantly higher for those in the preschool attendance condition ( $M = 104.34$ ,  $SD = 22.99$ ) than in the no preschool attendance condition ( $M = 65.96$ ,  $SD = 46.18$ ),  $F(1, 33) = 10.69$ ,  $p = .003$ ,  $\eta^2 = .24$ . There were no significant main effects for sex or condition by sex interactions for the Balance Beam and Gift Wrap Scores. To further test the hypothesis that preschool attendance and child sex would predict higher self-regulation in kindergarten children, a 2 x 2 (Condition [preschool, no preschool] x Sex) between-subjects Analysis of Variance was performed on the teacher ratings of behavioral self-control and the teacher ratings of cognitive self-control. The main effect for sex was significant with teacher's ratings of behavioral self-control for girls ( $M = 18.12$ ,  $SD = 5.22$ ) higher than for boys ( $M = 11.75$ ,  $SD = 6.81$ ),  $F(1, 33) = 6.94$ ,  $p = .01$ ,  $\eta^2 = .17$ . In addition, the main effect for sex was significant with teacher's ratings of cognitive self-control for girls ( $M = 16.47$ ,  $SD = 3.67$ ) higher than for boys ( $M = 11.70$ ,  $SD = 5.58$ ),  $F(1, 33) = 7.73$ ,  $p < .001$ ,  $\eta^2 = .19$ . There were no significant main effects for condition or condition by sex interactions for the teacher ratings of behavioral or cognitive self-control.

### Discussion

The results of the current study were mixed in support of the hypothesis that preschool attendance would be an important predictor of self-regulation in kindergarten children. Preschool attendees were better able to regulate their speed during the Balance Beam test and manage their urge to touch or peak at the present during the Gift Wrap test. However, the teacher ratings of self-regulation did not corroborate the behavioral measures and failed to differentiate between those who had been to preschool and those who had not. Additionally, the correlations between teacher ratings and

behavioral measures of self-regulation were not significant. This was contrary to the findings of Rimm-Kaufman et al. (2009) who found teacher ratings and behavioral measures of self-regulation to be highly correlated. One explanation may lie in the difference between teacher ratings for boys and girls.

It is possible that the sex differences found in teacher ratings of self-regulation were due to the subjective nature of self-report surveys. The hypothesis that girls would have higher levels of self-regulation than boys, though not supported in the behavioral scores of self-regulation, was found in the teacher ratings of self-regulation. This sex bias in teacher ratings found in the current study supported the research of Miller, Koplewicz, and Klein (1997) who found evidence that preschool boys were rated much higher than girls in hyperactivity, inattention, and conduct problems in the classroom. Given that this sex difference in the current study was only present in the subjective views of the teachers, it is possible that this difference is due to a sex bias in primary school instructors. Pollack (1998) believed that many teachers suffer from the myth of boys' toxicity, which states that part of being a boy is misbehaving and getting into trouble. This might explain why teacher ratings of self-regulation for boys were lower despite the fact that boys were no different from girls on their ability to self-regulate on the Balance Beam and Gift Wrap tasks.

A unique aspect of the current study was having both dual language learners (DLL) and English-only (EO) children in the sample. Although research (Yazejian, Bryant, Freel, & Burchinal, 2015) has shown that age of entry and duration in preschool yielded higher language outcomes for both populations, there was a bigger difference for those who were DLL. This suggests that the DLL who attended preschool may not have had any discernible difficulty understanding the simple task directions, and having a Spanish translator available may have eliminated most instances of misunderstanding due to language comprehension.

One limitation of the study might have been that some participants realized that they were being timed during the Balance Beam trials, and this might have affected their performance. The possibility of demand characteristics could have influenced the data in the opposite direction of the hypothesis. Future studies should find a way for researchers to record the time in a less conspicuous way.

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Similarly, the gift items used in the Gift Wrap test were pencils, which were easily identifiable as pencils when wrapped. This could have dissuaded the children from wanting to peek or touch the gift, which would confound the essential detail of the subtest. Future research could control for this by wrapping the item in a more concealed manner. The current study also did not provide the specific practices that were implemented or quality of the preschools that the participants attended. In addition, there was no access to socioeconomic information or parenting styles of either preschool or nonpreschool attendees. Further, there was no way to evaluate whether these factors influenced the self-regulation of students going through these preschool programs.

Despite these limitations, there are some significant outcomes, which could offer additional perspectives into the effectiveness of preschool. Because the students who attended preschool had the ability to better control themselves in each task, their high self-regulation level predicted that they will be more ready to enter a kindergarten learning environment. Children with higher levels of self-regulation were found to have higher levels of future academic success (Barnett & Frede, 2010; Campbell & Ramey, 1994; Lamy, 2013). The current study offered additional evidence that self-regulation is present in primary school children who have attended preschool. Preschool is a valid avenue of learning self-regulation. Therefore, because of this connection between early childhood self-regulation and later academic success, it is important that states work to improve and provide access to preschool programs.

However, these findings and practical significance do not stop here. The current study may also serve as an agent to inspire future research into how self-regulation is formed. Although we found that primary school children who had gone to preschool were significantly more self-regulated than those who had not, the current study did not find a correlation between behavioral measures and teacher ratings unlike the work by Matthews, Ponitz, and Morrison (2009). Gestsdottir et al. (2014) in their examination of both teacher ratings and behavioral measures of self-regulation in three culturally distinct child samples noted that teacher ratings of self-regulation for girls were culturally dependent and were not always correlated with behavioral self-regulation measures. Although this discrepancy may be due to the subjective nature of teacher ratings, it may also be that there is a

potential difference in the cultural environment between the actual kindergarten setting and the testing setting, and that measurements do not reflect classroom behavior, but may reflect a more general internalization of self-regulatory principles. This discrepancy points to the need for multiple measures to be utilized in future research of this nature. Exactly why this discrepancy may exist should be assessed by observing students in the first week of classes as well as collecting parent and teacher measurements.

It is apparent that there are still many questions left unanswered. Kopp (1982) suggested that children in preschool are better able to recognize a set of behaviors that consist of self-regulatory constructs. Studies that focus on how children learn self-control and transition to self-regulation would be beneficial to educators. Future studies that address how self-regulation is taught and developed in both the home and school will enable young children to acquire the tools they need for lifelong success. In the meantime, the evidence is clear. Children who attended preschool scored higher on behavioral measures of self-regulation. Because self-regulation has been identified as an important factor in school success, these results underline the urgency of making preschool education accessible for all, regardless of income.

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## APPENDIX A

### Self-Regulation Data Sheet

Researcher \_\_\_\_\_

Child's Name \_\_\_\_\_ Child's Sex: Boy Girl

Teacher's Name \_\_\_\_\_

"Hello! My name is \_\_\_\_\_ and I want to see if you can walk on this tape and pretend it's a balance beam, like this." *Demonstrate: make sure they start at one end and go to the end.* "Now let's see if you can do it. Very nice! Now, I want you to walk on the tape as slowly as you can. Can you do that? I'm going to give you a little gift when you're all done. Can you try walking one more time, just as slowly as you can, okay? That was great! Now, I have a present for you but I need to wrap it first. I don't want you to look. So turn around and don't look." *Turn child's seat around or, if on picnic table, have child sit facing opposite direction. Wrap the present noisily for 60 s or until child peeks.* "Okay, now you can turn around. Can you sit without opening the present while I tidy up?" *Tidy up the pieces of paper and wrapping paper, put away scissors and tape for 60 s or until child touches the present.* "You've been great, thank you. Now you can take this back to your room with you, but don't let the others see it because I want it to be a surprise for them too. Okay?"

Balance Beam

Gift Wrap

Trial 1 \_\_\_\_\_

Phase 1 (until peeks) \_\_\_\_\_

Trial 2 \_\_\_\_\_

Phase 2 (waiting to touch) \_\_\_\_\_

Trial 3 \_\_\_\_\_

TOTAL BEHAVIORAL SELF-CONTROL \_\_\_\_\_

TOTAL COGNITIVE SELF-CONTROL \_\_\_\_\_

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